Feasibility of insuring local food production - Final Research Report Order Number: 12FPC320F0125

A Report for
USDA Risk Management Agency
and
Farm Production and Conservation - Business Center

January 2021

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Acronyms

Government Agencies	
AMS	Agricultural Marketing Service
CBO	Congressional Budget Office
ERS	Economic Research Service
FDA	Food and Drug Administration
FNS	Food Nutrition Service
FSA	Farm Service Agency
FSIS	Food Safety and Inspection Service
IRS	Internal Revenue Service
NASA	National Aeronautics and Space Administration
NASS	National Agricultural Statistics Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
OBPA	Office of Budget and Program Analysis
OMB	Office of Management and Budget
RMA	Risk Management Agency
SBA	Small Business Administration
Agricultural terms	
ARMS	Agricultural Resource Management Survey
ATTRA	Appropriate Technology Transfer for Rural Areas
BFR	Beginner Farmer and Rancher
CAE	Center for Agribusiness Excellence
CCOF	California Certified Organic Farmers
CEA	Controlled Environment Agriculture
CFAP	Coronavirus Food Assistance Program
CSA	Community Supported Agriculture
DM	Direct Marketers
DTC	Direct-to-consumer
ELS	Extra Long Staple
EQIP	Environmental Quality Incentives Program
GAP	Good Agricultural Practices
LFMP	Local Food Marketing Practices
NCAT	National Center for Appropriate Technology
NSAC	National Sustainable Agricultural Coalition
NSAIS	National Sustainable Agriculture Information Service
OSP	Organic Systems Plans

UPC	Universal Product Code
Crop Insurance	
A&O	Administrative and Operating
AGR	Adjusted Gross revenue
AIP	Approved Insurance Provider
APH	Actual Production History
ARH	Actual Revenue History
ARPI	Area Risk Protection Insurance
AYP	Area Yield Protection
CAT	Catastrophic Risk Protection
CBV	County Base Values
CCC	Commodity Credit Corporation
CEPP	Commodity Exchange Price Provisions
FCIC	Federal Crop Insurance Corporation
FOR	Farm Operation Report
LASH	Loss Adjustment Standards Handbook
LIP	Livestock Indemnity Program
LRP	Livestock Risk Protection
MPCI	Multi-Peril Crop Insurance
NAP	Noninsured Crop Disaster Assistance Program
NCIS	National Crop Insurance Services
NVS	Nursery Value Select
OLO	Occurrence Loss Option
PAW	Pre-Acceptance Worksheet
PM	Product Management
PRD	Production Reporting Date
PRF	Pasture, Rangeland, and Forage
PRH	Production and Revenue History
RI	Rainfall Index
RI-AF	Rainfall Index-Annual Forage
RMDA	Reference Maximum Dollar Amounts
RO	Regional Office
SRA	Standard Reinsurance Agreement
UPA	Unharvested Production Adjustment
WFHR	Whole-Farm History Report
WFRP	Whole Farm Revenue Protection
YP	Yield Protection

Other Acronyms	
AGI	Adjusted Gross Income
BI	Business Interruption
CBOT	Chicago Board of Trade
CFR	Code of Federal Regulations
CME	Chicago Mercantile Exchange
CMP	Commercial Multi-Peril
CPA	Certified Public Accountant
EBT	Electronic Benefit Transfer
FSMA	Food Safety Modernization Act
NAD	National Appeals Division
OECD	Organization for Economic Co-operation and Development
PNW	Pacific Northwest
PST	Pacific Standard Time
RP	Revenue Protection
SME	Subject Matter Expert
SNAP	Supplemental Nutrition Assistance Program
SOW	Statement of Work
VLS	Virtual Listening Sessions

EXECUTIVE SUMMARY

Sales of foods to local channels—including wholesale, and direct to retailers, institutions, and consumers—totaled $11.8 billion in 2017, according to data from the Census of Agriculture. This was approximately three percent of total farm sales, which totaled $389 billion in 2017. Direct to consumer (DTC) sales made up a significant portion of local food sales, totaling $2.8 billion. At the same time, farms supplying local and regional food systems accounted for approximately eight percent of all farms in the U.S. in 2017. Local food markets appear to be particularly important for beginning farmers and ranchers, with approximately 22 percent of them reporting DTC sales in 2012.

In June 2020, the U.S. Department of Agriculture's (USDA) Risk Management Agency (RMA) contracted with Agralytica to assess the feasibility of insuring local food production. Over several months, we conducted 17 virtual listening sessions with farmers and ranchers engaged in local food production, insurance agents, Approved Insurance Providers (AIPs), and adjusters across the nation. We supplemented the listening sessions with more than 30 interviews and fielded additional emails and phone calls from various local food production stakeholders.

RMA currently offers a variety of crop insurance programs to farmers and ranchers, including the Whole-Farm Revenue Protection (WFRP) program, which was specifically developed with local food producers in mind. Other existing plans of insurance offered by RMA include yield, revenue, and area-based policies for individual crops; Nursery Value Select (NVS); and Rainfall Index (RI), among others. USDA's Farm Service Agency (FSA) also administers the Noninsured Crop Disaster Assistance Program (NAP). Each of these plan designs presents a unique approach to crop insurance and many could, in theory, be modified to provide better insurance coverage for local food producers. Alternatively, or in addition, RMA might consider a new plan of insurance.

Our overarching recommendation is that, in the immediate term, modifying WFRP would be the simplest and quickest way to improve access to coverage for local food producers. Grower organizations and local food producers repeatedly stated in listening sessions and interviews that recordkeeping and reporting requirements in WFRP were too onerous and excessive. Agents are reluctant to sell the policy and producers are frustrated with the paperwork, which far exceeds what RMA asks of producers in other policies. Local food production is often a different farming model compared to conventional commodity production, and AIPs are generally unfamiliar with local food operations. Simultaneously, local food producers do not know much about WFRP.

Looking beyond modifications to WFRP and considering crop insurance more holistically, we question whether the law governing the provision of crop insurance implicitly incentivizes commercial production—the selling of food or food products to wholesalers or other intermediaries—over marketing channels local food producers are more likely to use. RMA's authority to offer insurance is outlined in 7 U.S Code section 1508. Specifically, section 1508(a)(2) notes that insurance cannot extend beyond "the period during which the insured commodity is in the field", except for tobacco, potatoes, sweet potatoes, and hemp, though WFRP is able to cover "market readiness" expenses. RMA has historically interpreted this to mean that it cannot cover post-production costs. Whether this is appropriate from a public policy perspective is a normative question we do not attempt to answer.

But we would be remiss if we did not note that the post-production costs associated with commercial production are generally far less than what local food producers experience. The result is that the insurance coverage RMA has historically been legally able to provide much more closely reflects the prices commercial producers receive than their direct marketing counterparts. Even if RMA could make it easier for local food

producers to account for post-production costs, the resulting insurance guarantee may not provide meaningful coverage.

One way to rectify this imbalance would be for Congress to change the law by adding "local food production" to the list of items exempt from the on-field/on-tree coverage provisions of section 1508(a)(2). In theory, this would eliminate the need for local food producers to document post-production costs. The definition of "local" and other considerations would likely need to be included, but much of that work has already been done by the Food and Drug Administration (FDA) in outlining eligibility for a qualified exemption from the Food Safety and Modernization Act (FSMA). From a practical standpoint, we think such legal changes would have a significant impact on local food producers' participation in crop insurance programs. However, they might also create an additional administrative burden for RMA, which would be responsible for identifying new projected/established prices for a multitude of crops sold in various local food markets.

Alternatively, one might interpret the Food, Conservation, and Energy Act of 2018 (the 2018 Farm Bill) as having already obviated the post-production cost issue by instructing RMA to make a local foods crop insurance policy available "notwithstanding section 1508(a)(2)" if such a policy were viable. In that case, one solution would be to use WFRP as a model for a new plan of insurance that allowed local food producers to cover their post-production costs. In practice, such a policy would operate similarly to the current WFRP program but provide coverage at a higher price guarantee and significantly reduce the paperwork and reporting requirements local food producers currently find burdensome. Other options include developing a plan based on the NVS model or considering a new plan concept entirely. Thus, while this report does not consider how the 2018 Farm Bill should be interpreted, if post-production costs were insurable, it would certainly improve the feasibility, marketability, and quality of insurance coverage for local food producers.

Regardless of whether Congressional action is necessary to address the post-production cost issue, there are several ways RMA could improve crop insurance options for local food producers, either by modifying existing plans of insurance or considering the development of a new plan. Ultimately, we settled on six main conclusions:

1) We believe minimizing the recordkeeping burden in WFRP would be the single biggest step in improving coverage for local food producers;
2) Better diversification discounts and higher coverage levels in WFRP would be attractive to local food producers, though additional analysis is needed to confirm whether such changes would be actuarially sound;
3) Many AIPs and agents would benefit from additional WFRP educational opportunities and higher Administrative and Operating (A&O) incentives;
4) Other crop insurance programs could be improved in several ways, including conducting additional research to determine Transitional yields (T-yields) for producers who use alternative production systems;
5) Conceptually, NVS could be a model for creating a local food producer plan of insurance; and
6) RMA should conduct additional research to determine the appropriateness of developing a new plan of insurance for local food producers.

We provide additional details on these conclusions below.

Conclusion 1: Minimizing the recordkeeping burden in WFRP would be the single biggest step in improving coverage for local food producers

We recommend RMA review all WFRP record requirements, including all forms producers are required to submit when applying for WFRP insurance, and eliminate any extra documentation or entries, especially those that duplicate information or are not needed to remove prohibited revenue or expenses. RMA should critically review what is required from a producer to obtain insurance rather than records needed for loss adjustment. This would bring RMA in line with what it requires from producers in other crop insurance programs. If, during its review of WFRP reporting documentation, RMA finds items that are indeed critical for program integrity, we suggest RMA consider accepting records producers are already completing for other purposes in lieu of the current forms. Additionally, assuming section 1508(a)(2) is no longer a constraint, WFRP could be used as a model for a new plan of insurance for local food producers.

To the extent RMA is concerned tax forms might be incorrect, we think producers are far more likely to be underreporting income or overreporting expenses, because doing so would lessen their tax burden. The result of this would decrease their WFRP insurance guarantee, minimizing the liability RMA is covering. We think it is unlikely producers would be inflating their revenue and/or decreasing their expenses for insurance purposes because this would result in a larger tax payment.

Conclusion 2: Better diversification discounts and higher coverage levels in WFRP would be attractive to local food producers

Many diversified producers said they are dissuaded from purchasing WFRP because the policy does not adequately account for diversification. RMA could consider allowing producers who sell many commodities to obtain a greater diversification discount, if supported by actuarial analysis. Separately, RMA could also consider increasing the coverage level for very diversified local food producers. Before implementing either of these recommendations, we suggest RMA conduct additional research into the rating implications of such changes.

Conclusion 3: Many AIPs and agents would benefit from additional WFRP educational opportunities and higher Administrative and Operating (A&O) incentives

Many AIPs and agents would benefit from additional WFRP educational opportunities. RMA could even consider requiring additional training. Additionally, A&O reimbursement incentives for AIPs selling to small, diversified operations might also be needed to incentivize agents to sell WFRP or even suggest to producers that it is a viable option. We understand this may require legislative changes, along with changes to the Standard Reinsurance Agreement (SRA). But without this change, there will be a natural ceiling on how much RMA can improve participation in WFRP if agents are not incentivized to sell it.

Conclusion 4: Other RMA crop insurance programs could be improved in several ways

For yield-based policies, we suggest RMA conduct additional research to determine Transitional yields (T-yields) for producers who use alternative production systems, where yields are often much higher. A policy endorsement covering failure of electrical supply for those engaged in Controlled Environment Agriculture (CEA) could also be considered. Regarding the price gap we mentioned at the outset, RMA could, in theory, address this issue by developing different projected/established prices for crops by method of sale, perhaps by capturing price data directly from producers with a price collection tool. However, the diverse nature of local food production presents a serious constraint to making such an exercise meaningful. Assuming section 1508(a)(2) is still binding, RMA would also need to determine post-production costs so that producers were only insured for the on-tree/on-field value of their crop. RMA could consider conducting research to determine these costs for all crops sold through various local market channels in a growing region. Alternatively, this might be determined for a group of crops with similar costs. Anecdotally, the National

Agricultural Statistics Service (NASS) is attempting to obtain post-production cost data through its Local Foods Marketing Practices (LFMP) survey, the results of which are expected to be published in 2021.

Conclusion 5: Conceptually, NVS could be a model for creating a local foods plan of insurance

Allowing local food producers to insure commodities they consider critical to their operation would be desirable to them (e.g., insuring only fruit commodities and not vegetables). Reporting acres of, say, berries or fruit trees as well as the producer's historic market value would provide a method of underwriting. The price producers obtain from their commodity sales would likely be well above current RMA prices. Pre-inspection appraisals could be part of the underwriting if the developer deemed it necessary. As with NVS, at loss adjustment, local food producers would need to provide evidence of their acres and historic revenue from the categories insured. If they overstated, they would pay the premium based on their higher value and the indemnity would be based on the value determined. That said, we see some potential issues with the NVS model, including whether local food producers could meet the requirements to provide verifiable sales records or price catalogues.

Conclusion 6: RMA should conduct additional research to determine the appropriateness of developing a new plan of insurance for local food producers

There are many different possible elements of a new plan design for local food producers. For this report, we simply defined basic programs for purposes of workability and developing estimates of potential liability, indemnities, and cost to the government. For whole-farm designs, there are various ways to determine the guarantee. We received several ideas, including one from an RMA regional office, of how this could be done. We also developed our own concept, both of which we elaborate on in Section 7.7 of the report. In all cases, the challenge is in how to do loss adjustment in a way that is meaningful while minimizing the recordkeeping burden on producers.

1. OBJECTIVES

Production of food and food related products for local markets is a significant and longstanding practice in the U.S. agricultural industry. While there are risk management options available to local food producers, depending on what they sell, there are several factors that can either restrict access to crop insurance or incentivize producers to forego it. For example, some Crop Provisions restrict access to direct marketers unless stated otherwise in the Special Provisions and the recordkeeping requirements of Whole-Farm Revenue Protection (WFRP) discourages many from obtaining coverage.

In response to this and other issues, the Food, Conservation, and Energy Act of 2018 (2018 Farm Bill) amended the Federal Crop Insurance Act to direct RMA to carry out a study to determine the feasibility of a policy to insure production of floriculture, fruits, vegetables, poultry, livestock, or the products thereof that is targeted toward local consumers and markets. It did not define "local" and various industry groups—including some U.S. government agencies—have defined the term differently.

The overarching objective was to undertake research that assesses the likelihood of successfully developing an insurance program for local food producers. Specifically, the Statement of Work (SOW) included the following objectives:

- Examine existing policies—such as WFRP, Nursery Value Select (NVS), yield protection, dollar plan, revenue protection, actual production history, or area risk protection insurance—and determine if it is possible to modify such programs or develop a similar program that will provide insurance coverage for local food producers;
- Obtain WFRP program performance analysis and industry perceptions as it relates to local food producers and provide recommendations or improvements for local food producers;
- Obtain industry perception of other existing RMA programs, as they relate to local food producers, and provide recommendations or modifications for local food producers;
- Evaluate the effectiveness of policies for production targeted toward local consumers and markets;
- Identify the definition(s) of "local" with respect to local food production applied by the relevant industries, determine how the definition varies (e.g., by region, end-user, etc.), and determine if "local" would need to be defined for an insurance product to be effective;
- Identify the types of production or revenue records local food producers maintain;
- Identify the perils specific to production grown in alternative systems such as vertical systems, greenhouses, rooftops, or hydroponic systems; and
- Research the feasibility of insuring production of floriculture, fruits, vegetables, poultry, livestock, or the products thereof that is targeted toward local consumers and markets.

The SOW also asked that we:

- Assess the feasibility and effectivity of modifying existing RMA insurance programs to better meet the needs of local food producers while considering:
    - Small-scale production in urban, suburban, and rural areas;
    - A variety of marketing strategies for local foods, including direct-to-consumer, farmers markets, farm-to-institution, and community-supported agriculture;
    - Production in soil and alternative systems such as vertical systems, greenhouses, rooftops, or hydroponic systems
    - The premium when accounting for production or revenue losses;

  - Whether to provide coverage for various types of production under one policy or for one species or type of plant per policy; and
  - Whether it is possible to streamline reporting and paperwork requirements
- Determine the existence of and identify consistent sources of pricing data that meet the requirements for developing an actuarially sound program;
- Implications or difficulties associated with insuring commodities produced for local consumers and markets;
- What products of local food could be insured within the law and whether it would be feasible to insure them; and
- Whether "products" would need to be defined independently with respect to local foods to insure them appropriately.

Finally, the SOW specified that the criteria for plan development must meet the following RMA standards:

- Conform to RMA's enabling legislation, regulations, and procedures that cannot be changed;
- Charge a premium that the insureds would be willing to pay;
- Be effective, meaningful, and reflect the actual risks of producers;
- Identify and appropriately categorize perils affecting production and/or revenue as insurable and non-insurable;
- Be ratable and operable in an actuarially sound manner;
- Contain underwriting, rating, pricing, loss measurement, and insurance contract terms and conditions;
- Produce enough interest for the risk to be spread over an acceptable pool of insureds;
- Not allow insureds to select insurance only when conditions are adverse;
- Avoid or control moral hazards;
- Not allow a change of beneficial gain; and
- Not allow a change in market behavior or market distortions.

This report was prepared by the staff of Agralytica—including André Williamson, Timothy Mitchell, and Alex Smith—and our partners at Agra View and Milliman, including Amy Roeder, Steve Vollrath, Maureen Ferentz, Carl Ashenbrenner, and Zachary Ballweg. Additionally, Dr. Becca Jablonski served as our subject matter expert (SME) and contributed to the research and analysis on local food production and markets. Dr. Jablonski is an Assistant Professor and Food Systems Extension Economist at Colorado State University's Agricultural and Resource Economics Department. Much of Section 3 relies directly or indirectly on work or publications in which Dr. Jablonski was a major contributor.

The research and analysis for this report was performed between June and October 2020. Our initial plan was to hold six in-person listening sessions, including two in California, plus a virtual session for each of the seven Census of Agriculture regions. COVID-19 pandemic restrictions, as well as concerns about in-person attendance, necessitated a change to the original plan. The modified plan included 17 virtual listening sessions, covering the seven Census of Agriculture regions, but adding other geographies, specific audiences, and/or producer categories. We supplemented the listening sessions with more than 30 interviews and fielded additional emails and phone calls from various local food production stakeholders. This input is reflected throughout the report, but principally in Section 6.

2. SPECIFIC TASKS AND WORK REQUIREMENTS

a) Research the local foods industry throughout the U.S. and provide an overview of the industry

- The universe of local food production and marketing is varied and differs from conventional methods in important ways. Many crop insurance programs were designed with conventional production and marketing strategies in mind and it is important to be mindful of the differences of these systems when considering potential modifications or new plans of insurance to better meet the needs of local producers. Additional detail is provided in Section 3.

b) Identify areas where Whole-Farm Revenue Protection (WFRP) could be improved to provide coverage for local food producers

- We believe RMA could improve WFRP in several ways, including minimizing excessive recordkeeping requirements, better accounting for diversification, and offering additional WFRP educational opportunities and higher Administrative and Operating (A&O) incentives. Additional details are provided in Section 4.1.

c) Assess the feasibility and effectivity of modifying the Nursery Value Select (NVS) model to meet the risk mitigation needs of local food producers

- Conceptually, NVS could be a model for creating a local food producer plan of insurance. However, we see some potential issues with the NVS model, including whether local food producers could meet the requirements to provide verifiable sales records or price catalogues. Additional details are provided in Section 5.

d) Assess the feasibility and effectivity of modifying other existing plans of insurance—such as actual revenue history, actual production history, yield protection, and area risk protection—as models of insurance to meet the risk mitigation needs of local food producers.

- For yield-based policies, we suggest RMA conduct additional research to determine Transitional yields (T-yields) for producers who use alternative production systems, where yields are often much higher. A policy endorsement covering failure of electrical supply for those engaged in Controlled Environment Agriculture (CEA) could also be considered.

  Regarding the price gap faced by local food producers, RMA could, in theory, address this issue by developing different projected/established prices for crops by method of sale, perhaps by capturing price data directly from producers with a price collection tool. If 7 U.S Code section 1508(a)(2) were still binding, there would also be a need to determine post-production costs so that producers were only insured for the on-tree/on-field value of their crop. RMA could consider conducting research to determine these costs for all crops sold through various local market channels in a growing region. Alternatively, this might be determined for a group of crops with similar costs. Anecdotally, NASS is attempting to obtain post-production cost data through its Local Foods Marketing Practices (LFMP) survey, the results of which are expected to be published in 2021. Additional details are provided in Section 5.

e) Identify any naturally occurring perils specific to production grown in alternative systems and discuss whether these causes of loss are currently covered, and if not, whether they could be legally covered

- High tunnels, greenhouses, and vertical farms all attempt to produce crops in controlled environments. CEA, which is also used in nursery production, ideally allows for the near complete nullification of the kinds of natural perils that crop insurance is designed to cover. Crops grown in

these systems are completely removed from most adverse weather or environmental damage that may occur. To the extent that there are naturally occurring perils facing CEA production systems, they largely involve extreme weather events or failure of the mechanical systems for an extended period.

RMA's individual crop policies were designed with conventional crop production systems in mind, and many of the causes of loss that are covered under those policies are not significant perils to alternative production systems. By contrast, by its very nature, the NVS program recognizes these differences. Much of the technology used by nurseries is also used in alternative production systems. However, RMA was instructed by Congress to consider "other causes of loss applicable to a controlled environment" when it developed the NVS policy. Thus, it is unclear to us whether these provisions can be applied to other crop insurance programs more broadly, though it is possible that perils beyond those that are naturally occurring could be covered by a local foods policy depending on one's interpretation of the 2018 Farm Bill. Additional detail is provided in Section 5.1.3.

f) Determine the existence of and identify consistent sources of pricing data that meet the requirements for developing an actuarially sound program

- Pricing data exists in limited fashion for many of the marketing channels that are typically considered local. We discuss the availability of pricing data in Section 3.11. Broadly, there is a lack of consistency in the data both among and between marketing channels. Some marketing channels have a standard reporting protocol outlined by the Agricultural Marketing Service (AMS), while others do not, in which case RMA leaves it to individual states to determine what data should be collected. There is also a general lack of participation among states. Only 18 states report any local pricing data and they do not report it for all marketing channels.

g) Implications or difficulties associated with insuring local food production

- Because local food producers tend to be very diversified operations, we think insuring or developing programs for individual crops is unlikely to be a useful exercise. This suggests a whole-farm design. But as we discuss in Sections 4.1 and 5, WFRP is operationally complex, dissuading producers and agents alike from participating in the program.

  The challenge with whole-farm designs is in limiting the recordkeeping burden required of producers to simply be eligible for coverage while also maintaining underwriting integrity. In theory, rating a whole-farm product requires knowledge of the yield and price distributions among all crops grown on a given farm and the covariances among those variables. But in practice, this information is often unavailable. In our experience, many producers often find it difficult to even provide evidence of a yield history to purchase an Actual Production History (APH) policy.

h) What local food products could be insured within the law and would it be feasible to insure them?

- In theory, under current law, any food product could be considered insurable as long as the associated post-production costs are not included in the insurance guarantee. This is the approach generally taken by WFRP. Even if a local foods policy were developed that covered post-production costs, RMA would still be limited by the definition of "agricultural commodity" in the Federal Crop Insurance Act, which appears to only allow for coverage of commodities in their raw forms.

i) **Would "products" need to be defined independently with respect to local food** production to insure them appropriately?

- Much of the value in food "products" is accounted for in the additional input costs associated with producing them. RMA has historically treated these costs as uninsurable because such inputs are

unrelated to the agricultural commodity itself. We believe this is true regardless of whether post-production costs can be covered because of the way "agricultural commodity" is defined in the Federal Crop Insurance Act. Thus, even if food products were insured independently, the resulting guarantee should not be any different.

j) Recommend improvements to WFRP and other existing RMA crop insurance programs for local food producers.

- We provide these recommendations in Sections 8.1 and 8.2.

k) Discuss relevant findings that should be considered in the development of a new policy for local food producers.

- In Section 7, we discuss the risks local food producers face, how the insured should be defined, the existence and consistency of pricing data, how the guarantee and loss trigger should be defined, implications or difficulties of offering insurance to local food producers, and producer willingness and ability to pay.

l) Discuss the pros and cons of coverage via a new plan of insurance developed for local food producers and whether such a program could be developed into a viable and marketable product.

- We provide this discussion in Section 7.7.

3. INDUSTRY RESEARCH

The universe of local food production and marketing is varied and differs from conventional methods in important ways. Many crop insurance programs were designed with conventional production and marketing strategies in mind and it is important to be mindful of the differences of these systems when considering potential modifications or new plans of insurance to better meet the needs of local producers. This section serves as a broad survey of the local food universe, focusing on those aspects that are particularly important to insurance.

Sales of local foods accounted for $11.8 billion in 2017, and direct to consumer (DTC) sales accounted for 31 percent of the total. This accounted for roughly three percent of the farm sales that year. Most local food producers are small businesses, with 85 percent making less than $75,000 in 2017. In general, local food producers are more likely to be highly diversified operations, growing multiple crops to meet market demand and mitigate risk. The high numbers of crops and limited resources makes recordkeeping difficult, as it is not feasible for these producers to maintain records by crop and method of sale the way conventional producers can.

Data on local food acreage and production is limited, in part because United States Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS) has not traditionally collected data by method of sale, though there have been some recent attempts to collect data on these producers, both in the Census of Agriculture and in the Local Foods Marketing Practices (LFMP) survey conducted by NASS. More robust data on local foods is expected to be available soon because of these efforts. USDA's Agricultural Marketing Service (AMS) collects some data on the prices received through local food marketing channels, but this data is incomplete, and it is unclear if it will continue to be collected in the future.

Local food producers face several challenges due to increasing consolidation in the agricultural sector. The COVID-19 pandemic has presented new challenges but also new opportunities. Overall, consumer demand for local foods has risen over the past 10-15 years and appears to have increased even more in the face of the current challenges confronting the food supply chains in the wake of the pandemic. Local food production is a small but growing portion of American agriculture that will be increasingly important in the future.

3.1. Economics of producing food for local markets

Sales of foods to local channels—including wholesale, and direct to retailers, institutions, and consumers—totaled $11.8 billion in 2017, according to data from the Census of Agriculture. This was approximately three percent of total farm sales, which totaled $389 billion in 2017. DTC sales made up a significant portion of local food sales, totaling $2.8 billion. Despite being a relatively small portion of total sales, farms supplying local and regional food systems accounted for approximately eight percent of all farms in the U.S. in 2017. Local food markets also appear to be particularly important for beginning farmers and ranchers, with approximately 22 percent of them reporting DTC sales in 2012.

There are two types of channels defined for selling foods and other agricultural products locally that are accounted for in the Census of Agriculture: selling DTC—e.g., roadside stands, farmers markets, or pick-your-own operations—and selling to institutions/local intermediary businesses—e.g., restaurants, grocery stores, and schools. Of these channels, the bulk of sales (74%) in 2017 were to intermediary institutions. The LFMP survey, a special survey conducted under the Census of Agriculture, further divided the intermediary category into those who sell to retailers and those who sell to institutions, such as schools or

intermediate businesses.[1] The LFMP survey found that, in 2015, approximately 41 percent of intermediary sales were direct to retailers, and the remaining 59 percent were to institutions and intermediary businesses. The Census of Agriculture does not collect this level of information, but it is likely that a similar split existed in 2017.

According to *Trends in U.S. Local and Regional Food Systems* (hereafter referred to as Low et al. (2015)), a congressionally-mandated report written by the Economic Research Service (ERS) in conjunction with leading scholars in local food systems, the income in local and regional food systems is relatively concentrated among a small number of farms.[2] Most farms producing for local systems have low sales, with 85 percent having gross cash farm sales of less than $75,000 per year. These farms accounted for 13 percent of local food sales. Farms that sell locally with gross cash farm income above $350,000 accounted for five percent of all local food farms and approximately 67 percent of sales. Indeed, approximately 48 percent of all local food sales in 2012 were generated by farms that fit this description and sold exclusively to intermediaries. This was approximately 2,800 farms, or two percent of the total population of farms that sell locally.

Data on local food sales have not been published since 2017 when the most recent NASS Census of Agriculture was published, but the data that is available suggests the situation has not changed substantially since 2012. The 2017 Census of Agriculture found that approximately 82 percent of farms sold DTC compared to just 18 percent to intermediaries, but sales to intermediaries comprised 76 percent of total local food sales that year. A report compiled by the Congressional Research Service noted that farms that made less than $75,000 in gross sales accounted for 85 percent of local food farms, suggesting the local food industry has become even more concentrated since 2012.[3]

3.1.1. Influence of selling local on farm survival and growth

Operations that sell through local channels have both advantages and disadvantages when it comes to long-term viability. When analyzing Census of Agriculture data, Low et al. (2015) found that farms that direct marketed their products had a greater chance of surviving five years later than farms that exclusively sold through commodity markets.[4] In 2012, roughly 61 percent of farms that reported direct sales had survived five years, compared to 55 percent of farms that did not report any direct sales. This trend was seen across all farm sales levels but was most pronounced for lower income farms—farm income of less than $50,000—where farms with direct sales survived at a rate nine percentage points higher than farms with no direct sales (the difference when looking at all operations was about six percent). Beginning farmers who engaged in direct sales also saw higher rates of survival across all scale classifications relative to those who did not. The table below shows the growth of survival rates of local and conventional producers, both for those who were beginning farmers and for those who were established.

[1] In the LFMP, institutions were defined as K-12 schools, colleges or universities, hospitals, workplace cafeterias, prisons, foodbanks, gleaners, senior care facilities, or preschools. Intermediate businesses were defined as a business or organization in the middle of the supply chain marketing locally- and/or regionally-branded products, such as distributers, food hubs, brokers, auction houses, wholesale and terminal markets, and food processors.

[2] Low, Sarah A., Aaron Adalja, Elizabeth Beaulieu, Nigel Key, Steve Martinez, Alex Melton, Agnes Perez, Katherine Ralston, Hayden Stewart, Shellye Suttles, Stephen Vogel, and Becca B.R. Jablonski. "Trends in U.S. Local and Regional Food Systems," AP-068, U.S. Department of Agriculture, Economic Research Service, January 2015.

[3] Congressional Research Service, "2018 Farm Bill Primer: Support for Local Food Systems" 2018.

[4] Low et al. (2015) considered "surviving" as follows: "if its operator reported positive sales in consecutive censuses. This understates actual survival rates since some operations may remain in business with no sales—e.g., if there were a total crop failure but the operator had sufficient crop insurance to continue operating." This is not synonymous with exiting.

Table 1: Survival and growth rates for direct and non-direct farm

Operation type	Non-direct farm	Direct farm	Difference	Non-direct farm	Direct farm	Difference
Survival rates						
Income level	Beginning farmer			All operations		
$1-9,999	42%	51%	9%	45%	55%	10%
$10,000-49,999	52%	61%	9%	58%	67%	9%
$50,000-249,999	59%	65%	6%	66%	74%	8%
$250,000+	66%	70%	4%	73%	79%	6%
All	47%	54%	7%	55%	61%	6%
Growth rates						
Income level	Beginner farmer			All operations		
$1-9,999	42%	35%	6%	37%	32%	5%
$10,000-49,999	2%	-17%	19%	3%	-12%	15%
$50,000-249,999	15%	-7%	21%	12%	-3%	15%
$250,000+	12%	-10%	21%	12%	4%	8%
All	26%	18%	8%	19%	14%	6%

Source: Trends in U.S. Local and Regional Food Systems

Low et al. (2015) presents several reasons why those who engage in DTC sales appear more likely to survive, though they note that further research is needed to prove this claim more completely. The authors argue that farms that direct marketed their products reported owning less machinery and land than farms of similar sales levels that did not direct market. This suggests that farmers who directly sold their products did not have to leverage as much of their wealth to obtain financing. The authors also argue that farms that direct market their products derive some of their income from marketing (post-farmgate) activities, shielding them from some of the uncertainty and risk of commodity and input prices as well as yields, which have been shown to be capable of swinging wildly. Farms that market locally are more likely to be vertically integrated, have more control over their supply chain, and have greater ability to set prices than farms that sell through conventional channels (King et al., 2010).[5]

By contrast, farmers who engage in direct marketing see less dynamic growth than those who sell through conventional channels. Among all farming operations, those who had positive income in both 2007 and 2012 saw their incomes increase 19 percent, compared to 13 percent for those who direct marketed.[6] When examined by income level, the disparities are even more pronounced: for farmers who earned between $10,000 and $249,000, those who direct marketed reported their income decreasing since 2007, while there was a slight increase for those who did not direct market.

[5] King, Robert P., Michael S. Hand, Gigi DiGiacomo, Kate Clancy, Miguel I. Gomez, Shermain D. Hardesty, Larry Lev, and Edward W. McLaughlin. "Comparing the Structure, Size, and Performance of Local and Mainstream Food Supply Chains," ERR-99, U.S. Department of Agriculture, Economic Research Service. June 2010.

[6] Low et al. (2015) conducted this analysis using the 2007 and 2012 Census of Agriculture. The 2017 Census of Agriculture has since been released, but farm level data is not publicly available to recreate this analysis.

There are several theories presented for the difference in growth rates between the two groups. Farms that sell direct reported more labor costs as a percentage of total variable expense than those that sold through commodity markets. This is likely because of the additional marketing costs associated with taking on additional supply chain functions that are necessary when selling to direct markets (i.e., marketing, processing, and distribution). It is also speculated that those who sell direct may have more off-farm income than those who sell wholesale.[7]

3.1.2. Economic impact of local food systems

According to Low, et al. (2015), it is difficult to draw conclusions about the economic impacts of local food systems because the existing literature is very narrow in scope. This is due to the costs of collecting data and the difficulty of accounting for opportunity costs involved in producing food for local systems. That said, AMS did commission a team of economists in 2014 to develop a toolkit to help outline best practices for evaluating the economic impact of local and regional food systems.[8] This project has helped with the evaluation of local food systems, producing several case studies and assisting with academic papers that help to more completely determine the impact of local systems.

Despite the narrow literature, studies that have been conducted suggest local food systems have a small, but positive impact on their local economies, and usually have more of an impact than their conventional counterparts. In *Local Food Systems: Concepts, Impacts, and Issues,* a report written for ERS, the authors note the most direct way local food systems impact their economies is through import substitution—the substituting of purchases from a different region or country with local purchases.[9] This has a multiplier effect, leading to more local interindustry linkages, which creates more local jobs and more re-spending in the local economy. Additional positive economic impact from farms selling through local food markets has been found to result from the extra labor needs as a percentage of total expenditure, as well as higher wage rates (Jablonski et al., 2020).[10] Wages are frequently re-spent locally, making local food systems increasingly reliant on labor, as opposed to capital investments. This has positive local economic spillover effects. For example, while farmers' markets have been found to have a multiplier effect ranging from 1.41 to 1.78, the system also supports approximately half a full-time equivalent job in other sectors of the economy, higher than what is estimated for conventional food systems. More recent studies echo this sentiment.[11]

Other methods of selling food locally, such as the USDA Farm-to-School program also have a significant impact on local economies. Using the framework established by the USDA Local Food Economics Toolkit, Christensen et al. (2017) found that school spending on local food drives resulted in over $1 billion in local economic activity.[12] A specific case study on a Minneapolis school found that for every $100 spent in variable costs by farms, $82 stayed in the region when the farm participated in the Farm-to-School program, compared to $70 for those that did not participate in the program.

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[7] The Census of Agriculture does not provide the data to prove this, but it is noted that those who sell wholesale had higher household income than those who sell direct.

[8] https://localfoodeconomics.com/.

[9] Steve Martinez, Michael Hand, Michelle Da Pra, Susan Pollack, Katherine Ralston, Travis Smith, Stephen Vogel, Shellye Clark, Luanne Lohr, Sarah Low, and Constance Newman
Local Food Systems: Concepts, Impacts, and Issues, ERR 97, U.S. Department of Agriculture, Economic Research Service, May 2010.

[10] Jablonski, B.B., Bauman, A. and Thilmany, D. (2020), "Local Food Market Orientation and Labor Intensity." *Applied Economic Perspectives and Policy*. doi:10.1002/aepp.13059

[11] Rossi, J., Johnson, T., and Hendrickson, M (2017). "The economic impacts of local and conventional food sales." *Journal of Agricultural and Applied Economics*. 49. 1-16.

[12] https://localfoodeconomics.com/wp-content/uploads/2017/10/Master_F2S_10.11.17.pdf

3.2. Acreage and production statistics

There is little data available that captures acreage and commodity for those farms that sell through local food markets. This universe is incredibly varied, including animal agriculture, row crops, specialty crops, and other niche value-added products. The figure below shows the types of products that were sold through local food markets in 2015.

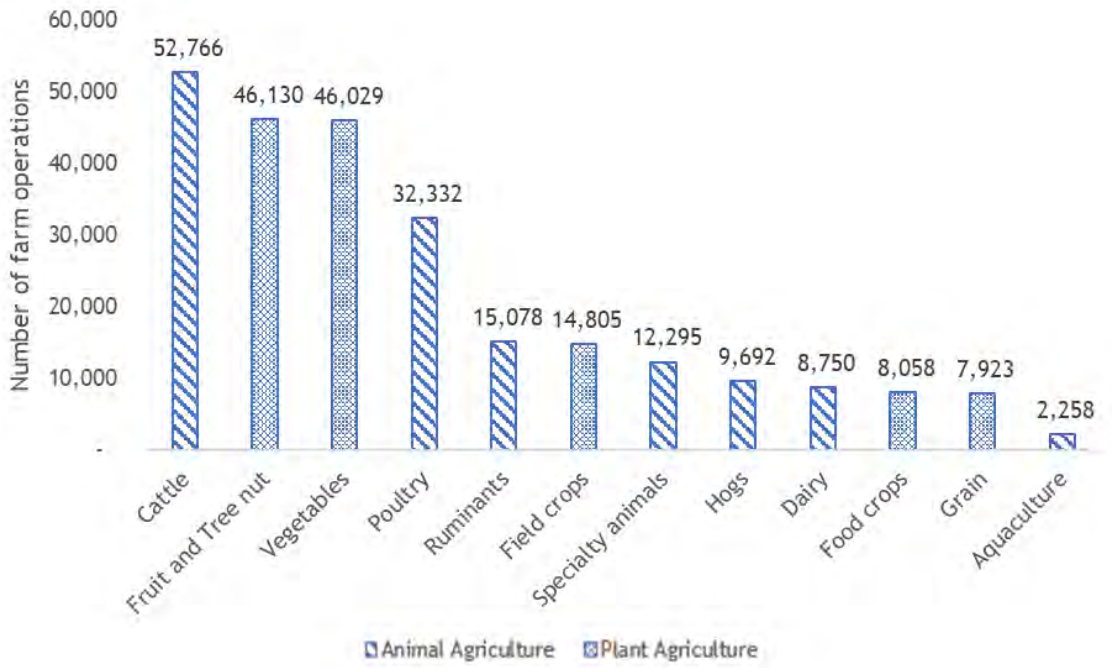
Local food producers are often highly diversified, growing multiple crops or a mix of crops and livestock on the same land during the same growing season. The high level of variability between operations makes it difficult to capture data that accurately reflects all that was produced for local food marketing channels, particularly when compared to conventional operations that are more likely to use traditional crop rotations and grow a single crop during the growing season. For this reason, research and data collection on local food systems has largely focused on collecting sales data. Researchers also focus on sales data because the prices received by local food producers are often higher and more varied than their conventional counterparts, resulting from the fact that these operations tend to take on additional post-farmgate supply chain functions.

NASS has historically not kept track of acreage and production by method of sale, instead focusing on crop type and utilization. Currently, to our knowledge, it is not possible to separate acreage dedicated to local food from the acreage for conventional marketing channels in the published Census of Agriculture data.[13] Likewise, NASS has not published any acreage or production data from the LFMP survey. There was some acreage data captured as part of the survey, but the survey did not ask respondents to designate which parts of their acreage was for local food marketing channels versus conventional marketing channels.

Since 2008, NASS has also tried to capture data on local food producers through the Agricultural Resource Management Survey (ARMS). ARMS is congressionally mandated to focus on the core agricultural states, which generally do not align with the location of most farms that sell through local food markets (California being an exception). Accordingly, while local food producers are included in the sampling it is not sampled with them in mind, making it difficult to extrapolate the data included in ARMS to the entire local foods producing population. At any rate, our SME on this project, Dr. Becca Jablonski, suggested this would not be an appropriate method of estimating local food acreage and noted there is not a sound way of doing so currently.

[13] It may be possible to estimate acreage data from the unpublished Census of Agriculture data. However, production data for local food producers would likely not be possible to estimate even with the unpublished data for the reasons stated above.

Figure 1: Number of farm operations selling through local food markets, by primary commodity



Source: 2015 LFMP survey

3.3. Current and future industry challenges

3.3.1. Distribution & Identity Preservation

There are several challenges facing farmers and ranchers who sell through local food markets. Many of these challenges exist or are made worse by the fact that most locally producing farms are small, preventing them from realizing any economies of scale. One of the biggest challenges faced by small producers stems from the fact that they are often vertically integrated and thus take on additional supply chain functions relative to commodity producers (King et al., 2010). Margins on distribution are small, so local food producers often face challenges with this aspect of their operation. According to a report written for ERS, local supply chains, on average, have higher per unit costs than mainstream supply chains. (King et al. (2010) Part of this stems from the fact that they typically use personal equipment, such as pickup trucks, to deliver their products to market. Having to deliver products in-person also takes farmers out of the field, reducing the amount of time they can spend with their crops.

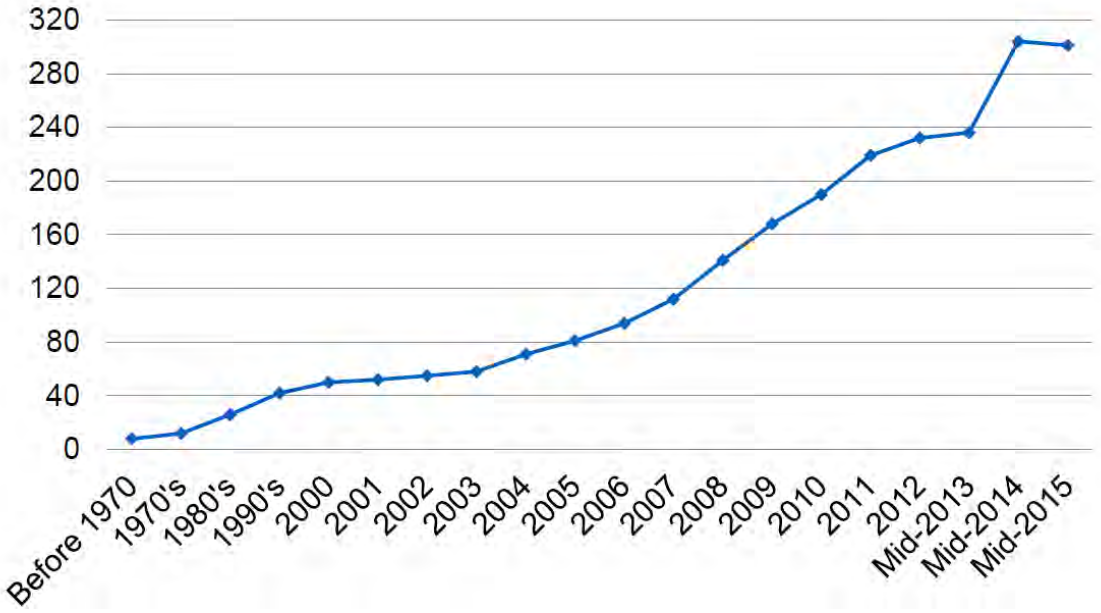
To use the "local" label, local food systems place particular importance on identity preservation across supply chains.[14] Identity preservation refers to the process of tracking the origin of agricultural products through the production and distribution process. Producers do this as there is substantial evidence that consumers are willing to pay a premium for items identified as local (Low et al. 2015). However, as product

[14] Woods, T., M. Velandia, R. Holcomb, R. Dunning, and E. Bendfeldt. 2013. "Local Food Systems Markets and Supply Chains". *Choices*. Quarter 4. Available online: http://choicesmagazine.org/choices-magazine/theme-articles/developing-local-food-systems-in-the-south/local-food-systems-markets-and-supply-chains

volumes increase and are derived from a greater number of local sources, it becomes difficult to associate products with particular farms (Woods et al. (2013).

The lack of identity preservation and economies of scale has led to the creation of alternate supply chains. There has been a trend of consolidation within and among food supply chains, which has also impacted small and midscale producers including local food producers.[15] Food value chains have emerged as an option for local farmers and take many forms, including food hubs. Regional food hubs have developed as small and mid-scale farms look for opportunities to access larger scale markets by aggregating their products. According to AMS, regional food hubs coordinate the aggregation, distribution, and marketing of primarily locally/regionally produced foods. The number of regional food hubs has increased significantly since the mid-2000s, due in part to federal subsidies and incentives. USDA seems to believe that regional food hubs can play an important role in supporting local food systems. This includes RMA, which has provided producer training events to encourage, support, and organize food hub development and successes. Figure 2 shows the growth in the number of regional food hubs since the 1970s.

Figure 2: Growth of regional food systems



Why Local Foods Matter: A View from The National Landscape.

3.3.2. Food safety standards and regulations

a) Produce

In 2011, Congress passed the Food Safety Modernization Act (FSMA) due to a rise in major outbreaks of foodborne illnesses and increasing bioterrorism concerns after 9/11. This was the most extensive change in food safety regulations since the 1950s and had implications for farmers who sell food through local markets. The requirements of FSMA, while they do reduce risk of contamination and foodborne illnesses, put additional financial costs on producers. These costs can vary significantly depending on what activities producers engage in, but generally have a more significant impact on small and local producers when

[15] Sexton, R. (2000). **"**Industrialization and Consolidation in the U.S. Food Sector: Implications for Competition and Welfare.**"** American Journal of Agricultural Economics, 82(5), 1087-1104. Retrieved October 13, 2020, from http://www.jstor.org/stable/1244236

measured by a per unit cost of production. In *Food Safety Policies and Implications for Local Food Systems*, Holcomb et al. (2013) note that the cost of regulatory compliance can inhibit the ability of local food systems to develop and expand.[16] In 2013, the FDA estimated that compliance with the new regulations would cost on average $11,430 per farm. However, existing evidence shows it is difficult to provide exact figures for additional costs of compliance given that each operation has different levels of investment needed to bring their operation up to specification (Sullins et al., 2016).[17]

In response to comments by local producers regarding the FSMA requirements, the Tester-Hagen amendment modified regulatory standards for farms that were under a certain income threshold or sold the majority of their produce locally (full details of the requirements are discussed in section 3.7). Eligible farms that meet those requirements are classified as qualified exempt. While the regulations are less onerous than the full FSMA requirements, small and local farms still must comply with product labeling. There is also a preventive control rule that applies to farms that manufacture, process, pack, or hold human food. The 2012 Census of Agriculture found that over 134,000 farms had packing facilities and sold at least some of the products DTC. This means approximately 7.5 percent of U.S. fruit/vegetable farms that had packing facilities in 2012; of these farms, 85 percent engaged in DTC or intermediated sales.

Outside of government regulation, retail chains often have their own food safety standards that exceed federal standards. According to Holcomb et al. (2013), Whole Foods and Walmart each have detailed standards they expect producers to follow. FSMA was passed after many retailers began implementing their own food safety standards. By law, retailer food safety standards must exceed that of FSMA, and producers must deal with changing retailer requirements on top of the FSMA requirements. Similarly, farm-to-school programs must adhere to strict USDA Food Nutrition Service (FNS) procurement requirements, potentially limiting the ability of local farms—particularly those that are small, beginning, or otherwise disadvantaged—to take part in these programs.

b) Meat

Food safety regulations for meat are dictated by the Federal Meat Inspection Act and administered by the Food Safety and Inspection Service (FSIS). While there are some exemptions to the inspection requirements for meat processors, most processors are subject to either federal and/or state inspection. According to Low, et al (2015), studies show that food safety requirements for meat processors have a larger impact on small processors, which are most likely to serve livestock farms that sell locally. Compliance with regulation is a high cost for local meat processors that operate on slim margins, and these costs are often passed on to producers.

Access to smaller-scale meat processors is critical for farmers and ranchers looking to sell meat locally as larger meat processors are often unwilling to support custom processing, where an animal is delivered to the processing facility and returned to its original owner for marketing after it has been processed. The number of small processing facilities has decreased approximately nine percent since 2000, according to historical data from the NASS Livestock Summary. The contraction of small processors, as well as the additional regulatory requirements, have led local meat marketing costs that are significantly higher than those for commodity meat. A study conducted by Gwin et al. (2013) found that those marketing beef locally

[16] Holcomb, R.B., M.A. Palma, and M.M. Velandia. 2013. "Food Safety Policies and Implications for Local Food Systems". Choices. Quarter 4. Available online: http://choicesmagazine.org/choices-magazine/theme-articles/developing-local-food-systems-in-the-south/food-safety-policies-and-implications-for-local-food-systems

[17] What Influences Produce Growers' On-Farm Expenditures for Food Safety? A Colorado Investigation of Relationships among Farm Scale, Value of Sales, Market Channel, and Expenditure Levels
MJ Sullins, BBR Jablonski - Western Economics Forum, 2016

spent $65,446 in marketing costs per 20 cattle compared to $38,981 for beef marketed as a commodity.[18] Indeed, when looking at all supply chain costs, local beef products cost approximately $8/lb., nearly double the commodity price at retail. The table below shows the breakdown in costs for local versus commodity beef:

Table 2: Beef supply chain costs, local (direct to retail) versus commodity

Local	Pounds	Cost/lb.	Cost	Share of final
Beef	13,200	$2.10	$27,720	42%
Livestock trucking			$350	1%
Processing (62% carcass to meat yield)		$0.65	$8,580	13%
Subtotal	8,184		*$36,650*	
20% margin for marketing and distribution	8,184		$9,163	14%
30% margin for retailer	8,184		$19,634	30%
Total			$65,446	
Average retail price/lb.			$8.00	
Commodity	**Pounds**	**Cost/lb.**	**Cost**	**Share of final**
Beef	13,200	$1.85	$24,420	64%
Livestock trucking	13,200	$0.02	$264	1%
Processing (62% carcass to meat yield)	8,184	$0.00	$0	0%
Distribution	13,200	$0.15	$1,980	5%
Subtotal			$26,664	
30% margin for retailer			$11,427	30%
Total			$38,091	
Average retail price/lb.			$4.65	

Source: Local Meat and Poultry Processing
The Importance of Business Commitments for Long-Term Viability

3.3.3. The COVID-19 pandemic and other future challenges

Local food markets, like all agricultural and food markets, have been impacted by the COVID-19 pandemic and the ensuing economic decline. The early stages of the pandemic saw widespread restrictions on travel as well as suggestions that crowded areas be avoided. The restrictions likely impacted foot traffic at farmers markets; many were closed for several months. Simultaneously, many restaurants and institutions were closed, shutting off other important local food markets. According to North Carolina State Extension, some farms have adopted online sales channels, opting to have websites designed so that they can sell their products directly to consumers in a manner that protects both the farmer and consumer, but this has resulted in additional costs to get the infrastructure up and running.[19]

[18] Gwin, L., A. Thibournery, and R. Stillman. 2013. "Local Meat and Poultry Processing: The importance of Business Commitments for Long-Term Viability", ERR-150, U.S. Department of Agriculture, Economic Research Service, June 2013.

[19] https://cals.ncsu.edu/wp-content/uploads/2020/08/EP-06-Local-Foods-Local-Opportunities.pdf

The pandemic is likely to have lasting impacts on local food systems due to the lingering economic effects, which are projected to last until the end of 2021, even in the event that a vaccine becomes available, according to projections by the Congressional Budget Office (CBO) and the U.S. Federal Reserve Board of Governors (Fed). An estimate by the Fed projected that the unemployment rate would be between four and eight percent throughout 2021, finishing at 5.5 percent at the end of 2021.[20] Wages are also projected to be impacted by the pandemic. David Autor, an economist with the Massachusetts Institute of Technology, indicated that the amount of the U.S. gross domestic product paid out in wages, salaries, and benefits would decrease by one to two percent as a result of the pandemic and that recovery would be a long-term process. The contraction of the economy will likely have implications for local food systems.

Local food systems often charge higher prices than retail chains, though this sometimes varies by location, as there is evidence suggesting that prices are lower than retail at rural farmers markets and higher in urban ones. The higher prices are typically reflective both of higher marketing costs associated locally marketed foods and customer willingness to pay for food grown locally. Customers are willing to pay a premium for local food for a variety of reasons, including freshness and taste. Indeed, some have argued that food sold locally at a higher price point could be viewed as a luxury good in the mind of consumers.[21]

Though the impact of COVID-19 on local food markets is still unknown, a paper prepared by several agricultural economists for the National Sustainable Agriculture Coalition estimates that sales declined by $689 million between March and May 2020 in local food markets.[22] However, evidence is mixed as some places in the country appear to have increased awareness of and interest in local food markets. The New York Times, for example, reported that 'local' is a bigger attraction and that consumer interest is increasing.[23] The impacts of COVID-19, both in the short term and in a post-COVID-19 world, are still unknown and we may not know for several years.

3.4. Emerging production practices

Given the wide universe of products produced for local markets, production practices vary widely depending on the region, what is being produced, and whether there is a premium for certain types of certification (e.g., grass-fed or organic). According to ARMS data, producers growing for local markets use less capital-intensive equipment than conventional producers. There are exceptions to this as there are small operations that sell local foods to institutions that account for a large amount of local food sales, but they are a small part of the local food universe.

One trend that some local producers have been adopting is the use of season-extending technology. For many local producers, the marketing season runs from May to October as there is limited ability to produce and market local foods in the winter (see Section 3.12). Using season-extending technologies, local producers report being able to push the marketing season into November and, in cases where greenhouses are used, have been able to produce for markets year-round. USDA has also incentivized the use of season extension practices, for example, through the Natural Resource Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP), which provides support for high tunnels, or hoop house, which protect plants from severe weather.[24]

[20] https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20200916.pdf
[21] https://dailyevergreen.com/30019/opinion/healthy-food-should-not-be-a-luxury/
[22] https://sustainableagriculture.net/blog/covid-economic-impact-local-food/
[23] https://www.nytimes.com/2020/09/08/dining/grocery-shopping-coronavirus.html
[24] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelprdb1046250

According to the National Sustainable Agriculture Information Service (NSAIS), season-extending technologies can be divided into two broad categories: cultural and "plasticulture" practices.[25] Cultural practices typically involve no additional infrastructure, while plasticulture practices involve the use of manufactured products, including the construction of structures such as hoop houses or greenhouses. Both the cultural and plasticultural practices involve providing heat for crops during colder months and insulating crops from potentially damaging weather. Plasticultural practices in particular have seen increased use in the upper Midwest, where winter weather arrives earlier and is typically harsher than in other parts of the country. The most comprehensive form of plasticultural practice is the use of greenhouses and high tunnels, which allow for near complete control of the production environment. These are discussed in more detail in Section 3.4.1.

Figure 3: Low tunnel systems

Image by Karpuz tarlasi image source

Cultural practices that can be used to extend a growing season are based around the concept of influencing the microclimate where the crops are grown. For example, drip or sprinkler irrigation systems may be used to protect orchards that are sensitive to cold weather. The systems are designed so that the irrigation will turn on when the temperature approaches freezing, with the water on the fruits or vegetables freezing and acting as an insulator. The use of oil and gas heaters and wind machines are other methods of protecting orchards from cold weather and frost. Other cultural practices include wind breaks, cultivar selection, shade, transplanting, multiple cropping, and other practices such as mulching.

According to NSAIS, plasticultural practices include plastic film mulches, drip irrigation tape, row covers, and low tunnels. Plastic mulches involve placing a plastic film over row crops, allowing some growers in the Northeast to grow sweet corn. The plastic film conserves heat while also reducing weed pressure. Floating row covers have a similar structure but allow for covering multiple rows with one large sheet of plastic. Low tunnels are hoop supported row covers, typically 14 to 18 inches high and the width of a typical crop row. Low tunnels offer many of the same benefits as floating row covers but are not permeable to air or water. High tunnels and greenhouses involve more substantial changes to production methods and are discussed in the following sections.

[25] https://attra.ncat.org/product/Season-Extension-Techniques-for-Market-Gardeners/

3.4.1. Alternative production systems

Vertical farming and hydroponic systems

In response to the increasing cost of agricultural land, as well as environmental concerns, there has been growing interest in the development of vertical farming systems. Vertical farms are typically defined as indoor farms based on multilevel factory design.[26] Vertical farms often use controlled environments, as it allows for maximizing production in relatively tight spaces. Vertical farms can experience over ten times the crop yield per acre than traditional methods.[27] In some cases, like strawberries, yields can be as high as 30 times higher according to Dickson Despommier, the original creator of the vertical farming concept.[28]

According to NSAIS, vertical farms use one of three main growing systems for producing crops: hydroponic, aeroponic, or aquaponic. All these systems are based around the fundamental idea of growing crops without the use of soil. Hydroponic systems are the most common, in which crops are grown in a nutrient rich solution that is constantly adjusted to ensure the correct balance of plant nutrition. These systems can use water or a chemically neutral medium such as sand to house the roots of plants. The aeroponic system concept was initially created by the National Aeronautics and Space Administration (NASA) for the purpose of growing plants in space. In these systems, plants are suspended in enclosed spaces and are moistened with nutrient solutions at regular intervals. Aquaponic systems combine hydroponic concepts with aquaculture, utilizing the nutrient rich wastewater created by fish as the solution for crops, which then purify the water for reuse for the fish or other aquatic animals being raised.

There are multiple types of vertical farms that are active in the U.S. Building-based vertical farms are the most typical, which exist in several major U.S. cities. Many vertical farms use existing or abandoned structures to help keep costs low, but there are instances when new structures are built explicitly for the purpose of vertical farming. A lower cost alternative to buildings is shipping containers. According to NSAIS, this type of vertical farm is increasing in popularity, likely in part due to the lower startup costs. Finally, though less common, there are also "deep farms", which use abandoned mine shafts to house vertical farming systems.

One of the primary challenges for vertical farms are startup costs and profitability. While agricultural land costs are increasing, so too is space in urban settings, and vertical farms must pay the same occupancy costs as other businesses. Benke et al. (2017) estimated that a vertical farm in Victoria, Australia would need to maintain yields 50 times higher than a rural farm for six to seven years to break even on just the startup costs. Examining vertical farms in an American setting, Louis Albright, an emeritus professor of biological and environmental engineering who helped pioneer controlled-environment agriculture, noted the high cost associated with vertical production systems, estimating that the price of a loaf of bread would be $23 to cover costs. These high startup and variable costs have prevented many vertical farms from becoming a more prominent business model.

[26] Kurt Benke & Bruce Tomkins (2017). "Future food-production systems: vertical farming and controlled-environment agriculture", *Sustainability: Science, Practice and Policy*, 13:1, 13-26, DOI: 10.1080/15487733.2017.1394054

[27] https://www.statista.com/statistics/752128/average-yield-for-indoor-and-outdoor-farming-worldwide-by-crop-type/

[28] http://www.verticalfarm.com/?page_id=36

Figure 4: Hydroponic production system

Image source

Plasticulture production

The use of high tunnels is an established practice in international agriculture and is growing in popularity in the U.S. According to data collected in the Census of Agriculture, 3,138 farms were producing food crops under cover in 2014, a significant increase from 2007 when there were 2,044 farms in this category. There are multiple varieties of high tunnels, and their functionality varies depending on how they were built. One common type of high tunnel is a hoop house, which is smaller and more easily transportable than a traditional high tunnel. High tunnel systems can be built to be climate controlled or mobile, but they need to be constructed this way in advance. Overall, the use of high tunnels and hoop houses presents a relatively low-cost method compared to building a greenhouse of extending growing seasons and protecting crops from many of the natural perils that can impact conventional farms. While the use of high tunnels is by no means limited to those who grow for local markets, it is a common practice for local food producers.

Figure 5: High tunnel hoop house

Image Source

Greenhouses

Greenhouses are a common agricultural production practice in the U.S., though a relatively small portion of them are used for horticultural production compared to other uses. Greenhouses differ from other types of high tunnels in that they are designed to be permanent structures, often with the goal of completely controlling the climate. This type of production is often referred to as Controlled Environment Agriculture (CEA) and is similarly practiced by vertical farms. The permanent nature of greenhouses allows for either glass or plastic to be used for insulation. Greenhouses are designed to be very durable, capable of handling the worst weather of the winter and summer seasons, protecting crops even when other plasticultural systems would fail.

Figure 6: Industrial greenhouse

Image Source

3.4.2. Small-scale production in urban, suburban, and rural areas

Small scale agricultural production in urban and suburban areas is often collectively referred to as urban farming. Today, urban farming is still a relatively minor phenomenon in American agricultural practice compared to conventional agriculture, and data on urban farms is limited. NASS recently began collecting data on urban agriculture on a pilot basis, but so far this has focused exclusively on Baltimore, and it is unclear if more extensive data collection will occur. In addition to vertical farms, which tend to be the largest urban farms in terms of revenue, urban farming also includes community gardens, rooftop farms, and more traditional production systems in areas not zoned for agriculture.

One type of urban/suburban producer are rooftop production systems. These systems can take a variety of forms including community gardens, greenhouses, shipping containers, etc. There are some examples of restaurants using rooftop production to grow their own supply of produce. Others operate as commercial entities. Rooftop production systems that are open-air face less risk than production systems on the ground, as pests such as deer do not have access. However, they do face the same insect and weather pressure as conventional systems. Such systems are a common part of the urban agriculture universe.

USDA defines a farm in the Census of Agriculture as "any place from which $1,000 or more of agricultural products were produced and sold or normally would have been sold during the census year." In further defining urban agriculture, AMS differentiates commercial from community urban agriculture. Commercial urban agricultural entities, which would be the kinds of entities that may be interested in crop insurance, are legal farm entities in urban or peri-urban areas that earn $10,000 or more in annual revenue from farm products. Based on a 2013 survey of urban farms conducted by the National Center for Appropriate Technology (NCAT), 49 percent reported making under $10,000, and 32 percent reported being a non-profit entity.[29] While there are community-based urban farms that meet USDA's definition of a farm, they tend to be gardeners, hobbyists, or side businesses. In fact, many urban farms are structured as 501(c)(3), and explicitly do not have profit built into their business plan.

The takeaways from the Dimitri et al. (2016) and NCAT surveys are: 1) many urban farms have non-economic motivations, focused mainly on promotional, educational, healthy eating, or food security outcomes; and 2) profitability is generally low. According to the NCAT survey, the vast majority (88%) of urban farms reported making under $50,000 a year and only 33 percent of urban farmers were able to make a living primarily based on farm income. The majority (67%) were reliant on off-farm income sources or grants to make ends meet. For those that sell their product as opposed to donating it to their community, most urban farms use local marketing channels. Farmers markets were the most popular marketing channel, with 41 percent reported having used them in 2013. Community Supported Agriculture (CSA), restaurants, and direct to retail sales were also common marketing channels. The data also suggests very few of these operations sell to wholesale channels (2% in 2013).

Most urban farms are in the Northeast (32% in 2013), followed by the South (26%), West (22%), and Midwest (19%).[30] Use of alternative production systems is common with urban farms. The NCAT survey found that 41 percent of urban farms reported using a greenhouse and approximately 18 percent were vertical systems. Approximately 30 percent reported using high tunnels and 12 percent were using hydroponic or aquaponic systems. Given that land/space for operations is expensive, alternative production systems allow for these types of operations to optimize for the space that they have.

[29] https://attra.ncat.org/product/urban-agriculture-in-the-united-states-baseline-findings-of-a-nationwide-survey/
[30] Regions were not defined in the report.

Urban farms that are not reliant on CEA and hydroponic production systems are still dissimilar to farms of similar sizes located in rural areas. According to a 2019 study by AMS, expected revenues for farms in rural areas that were five acres or less are estimated to be between $5,000 and $7,000, with only 29 percent of these farms making a profit according to data form the Census of Agriculture. This appears to be far less than revenues generated by small urban farms. Urban farms face challenges such as higher land costs than in rural areas. This increases the startup costs of urban farms relative to their rural counterparts. Still, the fact that urban farms generally have the advantage of being within close proximity to farmers markets gives them an advantage when it comes to transportation costs. These factors likely contribute to the income disparity between the two groups.

3.5. Seasonal and/or annual commodity diversification

While data on the extent of commodity diversification for local food producers is limited, feedback provided in listening sessions suggested that diversification is a very common practice among local food producers, with some indicating that they grow over 50 crops in a year. Intercropping, the practice of growing multiple crops in the same field with overlapping seasons, is a practice recommended by the National Sustainable Agriculture Council for those who want to practice sustainable agriculture. Local food markets often demand commodity diversification more than conventional markets. Customers demand a wide variety of products, and diversification allows for producers to meet this demand.

While sustainability is important for most agricultural production, it is particularly important for local food producers, and the concepts of sustainable agriculture and local production are deeply interconnected. In a publication intended to serve as an introduction to sustainable agriculture, NSAIS notes that sustainable farms tend to find their niche in local food systems. Indeed, those most ambitious about sustainable agriculture envision a future where all food is distributed by local and regional food systems and sourced from diversified farms.

In addition to the benefit of meeting consumer demand through intercropping, there are also agronomic and diversification benefits that are particularly important to local food producers. In a literature review of intercropping, Mousavi et al. (2011) note that the practice can lead to increased production due to reduced weed and pest pressure and higher growth rates.[31] Intercropping also allows for greater use of environmental resources, as crops of different species compete less for water, light, and space than crops of the same species. Finally, for those including legumes in their crop mix, soil fertility can increase due to the ability of legumes to fix nitrogen.

Commodity diversification through intercropping also presents several business advantages for local food producers. This is particularly important for smaller producers who struggle to generate profit year to year. Growers with high amounts of diversification can minimize the impact of crop failure on their operations, as the failure of any one crop or even multiple crops would not necessarily decrease their total revenue due to the fact they are constantly selling throughout the season. Overall farm yield is more stable when intercropping, as weather conditions and pests that impact one crop may be less significant to another. The practice of consistently growing crops with different growing seasons and time to harvest also works to smooth cash flow. Revenues are received much more frequently over the course of the marketing season as sales are much more evenly distributed. These benefits combine to serve as a significant risk management practice, and indeed is one of the primary risk management tools available to diversified local food producers.

[31] Mousavi, Sayed Roholla & Eskandari, Hamdollah. (2011). **"**A General Overview on Intercropping and Its Advantages in Sustainable Agriculture.**"** *Journal of Applied Environmental and Biological Sciences*. 1. 482-486.

3.6. Changes in consumer demand

Demand for locally grown and raised food has increased significantly since the mid-2000s. The number of farmers markets in the U.S. has nearly doubled since 2006, from 4,593 to 8,812 in 2019, according to data from the AMS Local Foods Directory and ERS. Other local marketing channels have grown as well. Between 2007 and 2014, the number of regional food hubs increased almost 300 percent, and the number of school districts participating in farm-to-school programs increased over 400 percent. The growth experienced over the past 10-15 years has made local foods into a multi-billion-dollar sector. Low et al. (2015) estimated the value of local foods markets at $6.1 billion in 2012. Data from the LFMP survey valued the total sales of local food at $8.1 billion in 2015. Some studies have produced even higher estimates. According to data from Packaged Facts, a market research firm, the market for local foods has grown from $5 billion in 2008 to $12 billion in 2014 and was projected to increase to $20 billion in 2019.

There are several reasons why consumers have gravitated towards local foods over the past 20 years. In a national study conducted in 2011 by the Food Marketing Institute, consumers cited freshness, support for the local economy, and knowing the source of the product as their primary reasons for buying locally, whether that was through local markets or conventional grocery retailers. Indeed, there are several emerging consumer preferences with regards to food consumption that has led to increased demand for local foods. In a 2018 report on changing food demand and local foods, AMS cited research conducted over the past 10 years summarizing the changing trends.[32] Specifically, AMS cited research by Phil Lempert, a leading market researcher who focuses on food purchasing trends, who reported that consumers are making food choices more holistically based on a variety of factors including taste, source, and understanding the environmental impact. These factors overlap significantly with factors cited as reasons for purchasing local foods. Additionally, a 2015 consumer survey found 28 percent of respondents indicated they wanted food with minimal processing, and a 2016 survey found that 36 percent of consumers worried about chemicals in their food.

While demand for locally sourced food has been increasing over the past 20 years, the impacts of COVID-19 have increased demand further. The spread of the virus and the subsequent government actions placed unprecedented stress on food supply chains, according to research from the Organization for Economic Co-operation and Development (OECD).[33] This led to some temporary food shortages as all sectors of the food supply chains experienced shocks. In the U.S., this was felt most heavily by the meat processing sector, though other sectors also were impacted. As a result of these forces, consumers began looking more towards local food systems to fill the gap left by conventional systems. For example, there is evidence that Google searches for the terms 'local food' and 'CSA' have increased significantly during the pandemic.[34]

While it is difficult to estimate the precise impact of the pandemic on local food demand, anecdotal evidence shows mixed effects based on a variety of factors including location, infrastructure, and utilized market channel. A local organic meat marketing and distribution service saw their March sales double.[35] Several farms have noted increases in CSA membership that have helped to compensate for declines in restaurant sales. There is some speculation that the increased demand for local foods may last beyond the

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[32] Tropp, D, "U.S Food Consumption Trends and Their Relationship to Local Food Demand. AMS, 2018. https://www.douglas.kstate.edu/docs/communitydevelopment/Debra%20Trop%20Keynote%20Presentation%20May%2031%202018.pptx.pdf

[33] https://read.oecd-ilibrary.org/view/?ref=134_134305-ybqvdf0kg9&title=Food-Supply-Chains-and-COVID-19-Impacts-and-policy-lessons

[34] Schmidt, C., Goetz, S., Rocker, S., & Tian, Z. (2020). "Google Searches Reveal Changing Consumer Food Sourcing in the COVID-19 Pandemic." *Journal of Agriculture, Food Systems, and Community Development*, 9(3), 9-16. https://doi.org/10.5304/jafscd.2020.093.032

[35] https://www.agriculture.com/crops/how-organic-and-local-food-markets-are-affected-by-covid-19

period of the pandemic, as consumers are becoming more conscious of where their food is sourced. The upcoming LFMP survey will cover the year 2020, and data from that should be able to more concretely capture the impacts of the pandemic on local food demand. Further, as part of an AMS project a nationally representative survey of consumers on their food purchasing behavior and values with a lens towards local markets will be available in the beginning of 2021.[36]

3.7. Differences in the definition of "local"

3.7.1. Legal Definitions

There is no federally defined, universal designation for what is considered "local". According to the Congressional Research Service, not only is there no established definition of "local foods" but there is not even a consensus of what primary factors would need to be considered to construct a definition.[37] That said, various USDA programs use a broad definition that is designed to encompass several different aspects of local. This definition is as follows: "…any agricultural food product that is raised, produced, and distributed in…the locality or region in which the final product is marketed, so that the total distance that the product is transported is less than 400 miles from the origin of the product; or…the State in which the product is produced" (7 U.S.C. §1932).

This definition includes not only direct marketers but also those who sell to local institutions, such as restaurants, schools, and hospitals. This definition is used for programs such as the Specialty Crop Block Grant Program, Farmers Market Promotion Program, and the Local Food Promotion Program, among others. On a state level, most states define local as "sold within state borders" for their state branding initiatives (e.g., Pride of NY, Colorado Proud), though some define local as a geographic region that can cross state lines. It is important to note that other than for specific program rules, USDA does not regulate the definition of local foods, instead leaving it up to states and localities to determine appropriate boundaries.[38]

In addition to the USDA definition, there is the definition contained in FSMA, which defines local producers for the purpose of granting an exemption from food safety regulations. In FSMA, which is administered by the FDA, a "qualified exempt" farm is defined both by the amount of sales and the distance from the farm the product is sold. This is more restrictive than the definition contained in 7 U.S.C. §1932. The FSMA qualified exempt definition is as follows:

> To be considered a qualified exempt farm and be eligible for modified requirements, you must meet certain criteria:
>
> - You have less than $500,000 in sales of all food (not just produce) based on an average of the previous three years and adjusted for inflation; and
> - Your sales to "qualified end users" exceed your sales to all other purchasers.
>
> A qualified end user is the consumer of the food (an individual, not a business), or a restaurant, or a retail food establishment, that is located either in the same State or same Indian reservation as the farm that produced the food, or not more than 275 miles from the farm.[39]

[36] https://lfscovid.localfoodeconomics.com/
[37] The Role of Local and Regional Food Systems in U.S. Farm Policy. Updated February 18, 2016. Renée Johnson. https://fas.org/sgp/crs/misc/R44390.pdf
[38] Tropp (2018).
[39] The rule can be found under exemptions at the following link:

3.7.2. **Aspects of "local"**

a) Distance

Distance is one of the top-of-mind factors for consumers when it comes to defining local. By its nature, the term local has a geographical connotation. That said, there is no concrete number of miles between production and consumption that is generally agreed upon, in part due to the diversity of scale of states across the U.S. A USDA conference held in 2009 reported that distances could vary from 25 to 350 miles. Most consumers believe that, when buying local, the food was produced within a "short distance" from where it was produced. A survey of consumers in Florida conducted by the University of Florida found that the most common definition of local was "within a radius of 100 miles of home", although "within the state of Florida" was also a popular answer. There was a similar finding in a survey conducted by the consulting firm AT Kearney. The survey, which polled 1,300 U.S. consumers, found that 64 percent of respondents defined local as "within 100 miles."[40] A survey conducted by Colorado State University and the Colorado Department of Agriculture of public attitudes towards food and agriculture that included a representative sample of Coloradoans asked, "what does local mean to you?" A total of 75 percent of respondents reported that "local" meant "within the same state" (Chriestenson et al., 2016).[41]

Definitions of local also depend on population density. Martinez et al. (2010) suggest that "local" in a sparsely populated area is sometimes defined differently than a more densely populated region. The authors cite a survey of producers in Washington that found those near urban areas considered local to be "in their own and surrounding counties," while rural producers considered a wider definition of local. Broadly, survey data indicates that most consumers consider local to be within their own state borders—only 3.9 percent of Florida respondents considered the southeast region of the U.S. as a whole to be local.[42] A national survey conducted by researchers writing for *Choices* magazine found that most respondents considered food produced within 300 miles to be regional, not local. The same survey found that food produced within the county and food produced within 50 miles of the respondent were the most accepted definitions of local in terms of geography.

The U.S. is not alone in struggling to define local in a concrete manner. A European Commission report filed in 2013 defined "local farming" as "the production of agricultural products and foodstuffs with the aim of selling them in an area reasonably close to the farm of production". The report concedes that there is no agreement on the distance of "relatively small geographic area", stating it can vary between 20 and 100 kilometers and that it is up to the consumer to define local for themselves. In Canada, local is defined as being within 31 miles (50 kilometers) of where the food was produced.[43]

b) Marketing channel

There is a broad range of marketing channels that fall under the local category. When the USDA started collecting data on local foods, its definition focused exclusively on direct-to-consumer sales. However,

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https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-produce-safety

[40] https://www.de.kearney.com/web/guest/consumer-retail/article/?/a/buying-into-the-local-food-movement

[41]. Chad Chriestenson, Michael Martin, Dawn Thilmany McFadden, Martha Sullins, and Becca Jablonski. "Public Attitudes about Agriculture in Colorado." 2016.
https://www.colorado.gov/pacific/sites/default/files/2016%20Public%20Attitudes%20Report%20Final.pdf

[42] The survey conducted by Kearney offered within the state as the broadest choice. There are likely consumers who live in transient border areas that consider local to be a multi-state geographic region (e.g., the greater Washington D.C. area which includes Virginia, Maryland, and D.C.)

[43] Canadian Food Inspection Agency, "Local Claim on Fresh Fruits and Vegetables," http://www.inspection.gc.ca.

starting with the 2011 Low and Vogel report, the USDA realized that most local food sales were through intermediated, and not direct to consumer channels. Most recently, depending on the survey, local food is generally split into two or three categories. The two-category definition includes direct to consumer (i.e., farmers markets, roadside stands) and intermediated channels (i.e., schools, restaurants, retailers). The three-category definition breaks intermediated channels into sales to retailers, and sales to institutions (i.e., schools, prisons, hospitals). While farmers markets are the top-of-mind marketing channels for selling direct to consumer, there are a variety of other direct to consumer channels, including CSAs, roadside stands, direct online sales, and others. The various marketing channels that are used to sell local foods are described in detail in section 3.8.

c) Perceived attributes

The definition of local foods in the minds of consumers encompasses different aspects beyond the physical distance the food has traveled at the point of sale. Martinez et al. (2010) found that production practices can also play a role in influencing how consumers view local food, as consumers look for environmentally friendly practices such as limiting chemical or pesticide residue. Similarly, Low et al. (2015) note that local food systems are associated with being environmentally friendly in the minds of consumers and popular media. Consumer association with production and business practices beyond traditional notions of local can lead to conflating local food production and other types of production practices, such as organic, even though very few local food producers actually have certified organic acreage. Research conducted by Onozaka et al. (2010) found that a sizeable number of local food consumers associate purchases with outcomes that impact their environment, local economy, and public health, and that they believe there is an element of altruism in their purchases compared to food purchases through conventional systems.

Supporting farmers and the local economy is top of mind for consumers when defining "local." Consumers want to support farmers and their local economic community, and often site this as one of their top reasons for purchasing local (Tropp, 2018). Many consumers place value in knowing who they are buying from and consider local to be not just physical distance, but also closeness of relationship and transparency. Thong et al. (2014) found that there are strong substitution effects between foods with local labels and support for small and family farms.[44] Ultimately, the concept of local is somewhat amorphous in the minds of consumers, encompassing many different aspects, and meaning different things to different people.

3.8. Marketing strategies

In practice, local foods are frequently defined by market channel. Yet, there are significant differences across types of local food markets, which have been shown to impact producer profitability. For example, producers who sell direct to consumer, especially through farmers markets, have been shown to have higher per unit post-farmgate variable expenses, particularly in terms of labor.[45] By contrast, producers who sell

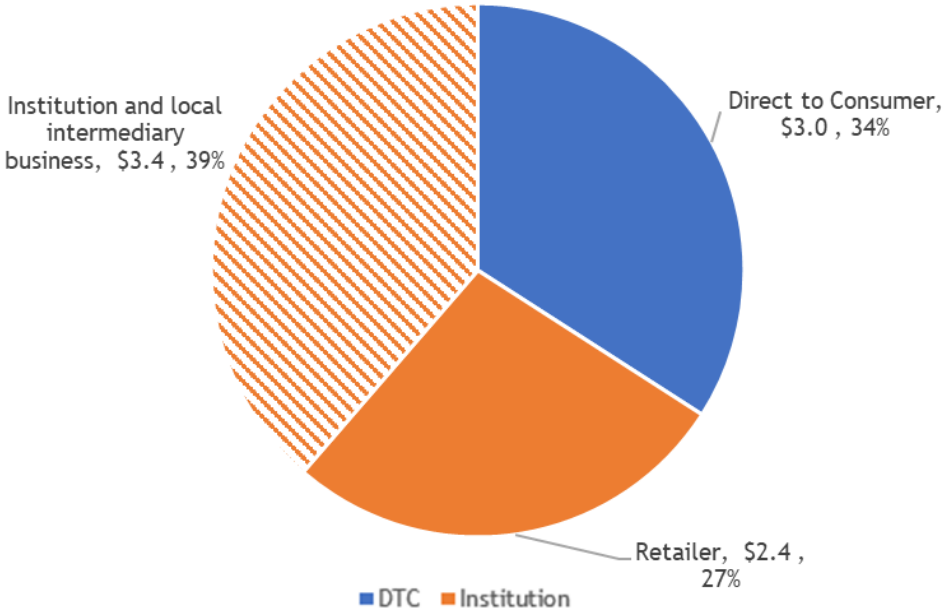
[44] Meas, Thong & Hu, Wuyang & Batte, Marvin & Woods, Timothy & Ernst, Stan. (2015). Substitutes or Complements? Consumer Preference for Local and Organic Food Attributes.
American Journal of Agricultural Economics. 97. 10.1093/ajae/aau108. AND
LeRoux, M.N.; Schmit, T.M.; Roth, M.; Streeter, D.H. Evaluating marketing channel options for small-scale fruit and vegetable producers. Renewable Agriculture and Food Systems 2010, 25, 16-23. AND Jablonski, B.B.R., M. Sullins, and D.T. McFadden. 2019.
Community Supported Agriculture Marketing Performance: Results from Pilot Market Channel Assessments in Colorado. Sustainability 11:2950.
https://doi.org/10.3390/su11102950

[45] Hardesty, S.D.; Leff, P. Determining marketing costs and returns in alternative marketing channels. Renewable Agriculture and Food Systems 2010, 25, 24-34, doi:10.1017/S1742170509990196.

to local institutions are more likely to have contracts and have better visibility into future cash flow. Such attributes have the potential to impact the type of insurance that is most appropriate for the producer.

As noted in section 3.1., selling direct to consumers as opposed to through an intermediary is the most popular form of local sales in terms of utilization. This may be due to the lower barriers to entry associated with sales through these channels. By contrast, selling to local institutions and intermediary businesses generated the most revenue in 2015. Figure 7 shows local food sales by marketing channel:

Figure 7: Local food sales by marketing channel (billions of 2015 dollars)



Source: 2015 LFMP survey

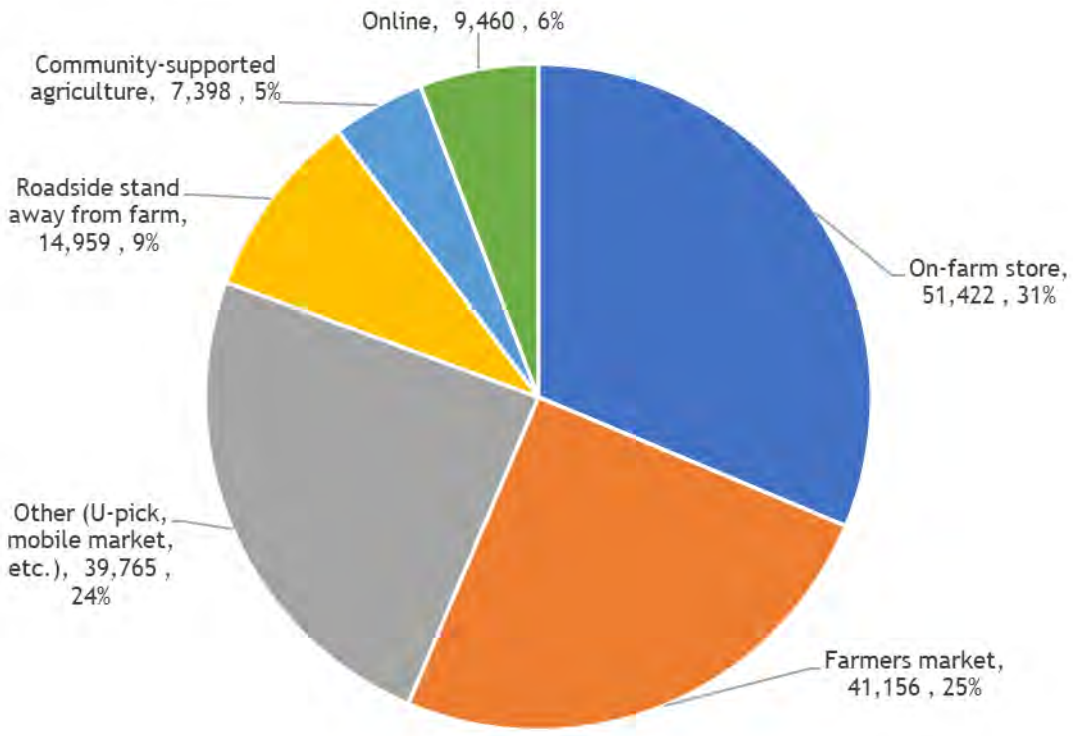
3.8.1. Direct to consumer (DTC)

Methods of sale for selling direct to consumer (DTC) vary, as there are many different ways to market local foods and this sector has experienced substantial innovation. These include the following:

- Farmers markets
- On-farm stores—stands or retail operations that are on the farm's premises
- Community Supported Agriculture (CSA)
- Roadside stands away from the farm
- Sales through an online marketplace
- Others (e.g., pick-your-own, mobile markets)

On-farm stores were the most common DTC method of sale according to data from the 2015 LFMP survey, with 31 percent of farm operations reporting having used them. Farmers markets are also common, used by 25 percent of farms selling locally. Other forms of DTC sales captured by the LFMP survey include roadside stands away from the farm, (9%), CSAs (5%), and online sales (6%). It is likely that online sales have grown recently due to COVID-19, as many operations reported developing online sales capabilities in response to changing consumer behavior, and market closures.

Figure 8: Number of Farms utilizing direct-to-consumer practices, 2015



Source: 2015 LFMP survey

Farmers' Markets

Farmers markets have been a longstanding method of sale in U.S. agriculture and have seen significant growth in the past 30 years (see section 3.6). The basic concept of farmers markets is that they are public and recurring assemblies of farmers or their representatives who sell the food that they produced directly to consumers (there are some farmers markets that allow for reselling). The majority of U.S. farmers markets are located in urban areas[46] (where the majority of people live), allowing rural farmers to connect directly with those who live in cities. For example, in New York City, there were 145 farmers markets in operation in 2014.[47]

The structure of farmers markets varies significantly in their sophistication. In their simplest form they include two farmers that sell products at a given place and time. More sophisticated markets have governing boards that set rules dictating everything from what can be sold, who can participate, and requiring a farmer commit to selling for the entire season. Listening sessions and interviews indicated that for one farmers market crop insurance was required, and that state guidance suggested all farmers markets in that state require producers take out Whole Farm Revenue protection.

[46] https://www.ers.usda.gov/amber-waves/2012/december/on-the-map-farmers-markets-concentrated-in-metro-counties/

[47] https://www.nycfoodpolicy.org/nyc-food-numbers-farmers-markets/

According to the Farmers' Market Coalition, some cities are home to regional farmers market networks. Some examples are Greenmarket in New York City, Sustainable Food Center in Austin, Texas, and Fresh Farm Markets in Washington, DC. There are also many that are operated independently. It is noted that in these larger networks there is always a market manager that enforces market rules and oversees business. The USDA AMS collects data on farmers markets, maintaining a national directory, pricing information by commodity for major metropolitan markets (an examination of pricing data is available in section 3.11.), and regularly conducting a farmers' market manager survey.

Community Supported Agriculture (CSA)

The principle behind CSA is that consumers support a farmer or group of farmers by paying for a share of production prior to harvest. This enables the farmers to pay for their inputs without having to wait until harvest for revenues. Under a typical structure, consumers take the risk of crop failure, and are not issued a refund on membership should no crops be produced due to factors outside of the farmers control (e.g., drought, disease). CSAs often go beyond a financial transaction arrangement, encouraging members to form relationships with participating farmers and other members. Some CSAs encourage members to visit the farms, socialize, and provide volunteer labor as part of the experience.[48]

Typically, customers purchase shares or subscribe to CSAs and in return receive a diverse selection of products delivered to them regularly during the harvest period, usually at designated pickup sites. CSAs were historically used primarily to market fresh produce, but increasingly there are meat, dairy, and even alcohol (beer, wine) CSAs around the U.S. Customers rarely receive the same mix of items twice as participating farms are often highly diversified. This means that the prices producers charge for shares/subscriptions do not directly reflect the retail value of the crops in each box. In fact, CSAs are themselves a risk management strategy that shifts some of the financial risk producers face, in terms of crop failure or market risk, onto consumers. For example, because shares/subscriptions are sold well in advance of harvest, it is possible for producers to suffer damage to their high-value crops and have little or none of them to provide customers. In such cases, other crops or farm products could be used as a substitute - even if the value of the substitute product is less. The financial risk to the producer was already minimized because he/she had already been paid for the crops in advance.

CSAs can take many different forms, as the responsibilities of both the farmers and members can vary depending on structure. In large CSAs, farmers typically control most of the operations, including hiring and training paid employees. Members of these CSAs are normally only responsible for picking up their share of harvest. Other CSA structures ask members to be much more involved in the operation. Sometimes, CSA members are asked to help with recruitment and marketing of the CSA members, and some even require members work on the farm in some capacity. Some are controlled by one farmer, while larger ones may have multiple farmers participating.

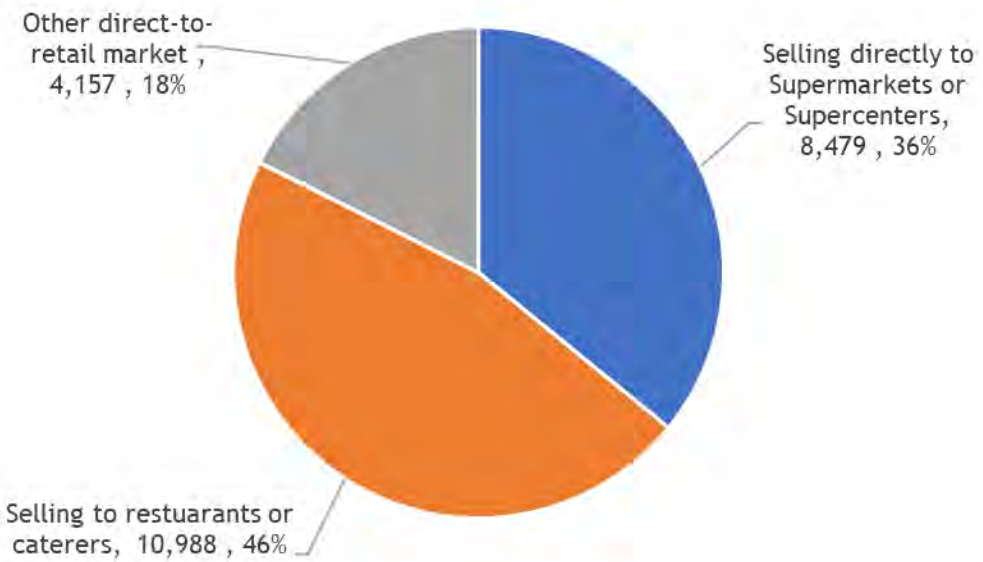
Broadly speaking, there are four types of CSA structures that are used; Producer-led, community led, producer-community partnerships, and community-owned. Producer led is the most common structure in the U.S. Under this structure the producer is responsible for production and sells subscriptions to consumers. Community led CSAs are when a farming enterprise is established by the community which also provides all of the labor. Under producer-community partnerships the CSA, which is owned by the community, works with local producers to secure a consistent supply for their members. Community-owned farms are purchased by a community, but the farming enterprise does not trade primarily with the community members. The structure a CSA takes on can have implications for insurance, and this is explored in section 5.1.2.

[48] https://extension.psu.edu/community-supported-agriculture-csa#section-6

3.8.2. Sales to retailers, local institutions, and intermediary businesses

According to the LFMP, most local food sales in the U.S. are to buyers who are not end-point consumers. Growth in sales to retailers, local institutions and intermediary businesses is largely a result of growing consumer interest in "local". Sales to retailers comprised 27 percent of all local food sales in 2015. According to NASS, this included sales to supermarkets, supercenters, restaurants, caterers, independent grocery stores, and food cooperatives. Sales to restaurants and caterers were the most common, followed by sales to supermarkets and supercenters. According to Low and Vogel (2011), sales of local produce to restaurants has been a long-standing practice on the west coast, dating back to the 1970s.[49] In the beginning, sales were organic crops and niche products for restaurants, and this has continued even as the sale of produce to restaurants has become a national trend. The LFMP survey found that 64 percent of sales to retailers were commodity sales, as opposed to value added products, a much higher share than DTC, which was about even between commodity and value-added products. Figure 9 shows the breakdown of local food sales to different types of retailers in 2015:

Figure 9: Number of operations selling to retailer by type (2015)[50]



Source: Local Food Marketing Practices survey

Sales to institutions and intermediaries account for 39 percent of local food sales in the U.S., making it the largest local food marketing channel. Data both from the LFMP and prior research conducted by ERS and other scholars indicates that sales to intermediaries is most common on the West coast, particularly in California. According to Vogel and Low (2011), farms on the West coast are more likely to be large and located further from metro areas than farms in the Northeast, the other predominant local food producing area. This naturally leads them towards intermediate channels, as large farms may have a comparative

[49] Low, Sarah A., and Stephen Vogel. Direct and Intermediated Marketing of Local Foods in the United States, ERR-128, U.S. Department of Agriculture, Economic Research Service, November 2011.
[50] Other direct to retail includes independently owned grocery stores, food cooperatives, small food stores, corner stores.

advantage in intermediated sales since many institutions require timely delivery of large volumes of food with consistent quality (Low and Vogel (2011)). Indeed, data shows that as farms grow in terms of revenue, they are more likely to use intermediated marketing channels, in part because this likely reduces marketing costs for these farms. In addition, larger operations are more likely to adhere to food safety practices and certifications, which are required of intermediated markets much more commonly than direct to consumer outlets.

3.9. Recordkeeping practices

Recordkeeping practices vary significantly among local food producers, as there are several variables that dictate how thorough records are likely to be. The universe of local food producers is large and includes a wide variety of crop commodities and livestock, and recordkeeping tends to vary depending on what is being produced. That said, there are several national programs that many local food producers participate in that standardize records to some extent. However, even in these cases, participation is low, or the requirements are vague, allowing for a lot of variance.

3.9.1. Record requirements for local producers under FSMA

The national records requirement that has the largest impact on local food producers are those of the FSMA. As noted in Section 3.7.1, FSMA has a large carve out for farms that are small, with a qualified exemption for those that meet certain income and sales method (market channel) requirements (Those who sell to institutions that are not retail or restaurant are not considered to be qualified exempt). Many farms that sell through local food markets are qualified exempt from FSMA and are required to keep records demonstrating their eligibility as qualified exempt.

Specifically, farms that are qualified exempt must keep records that can demonstrate the operation satisfies the qualified exemption criteria. In addition to these records, farms must also keep a written record attesting they have conducted an annual review and verified their continued eligibility. FDA also requires:

- All records for the produce to be detailed, accurate, legible, dated, and signed or initialed by the person performing the documented activity.
- Records can be stored offsite and can be handwritten or electronic.
- Sales receipts kept for the purposes of verifying revenue do not need to be initialed, but they do need to be retained long enough to verify the three-year rolling average aspect of the revenue requirement.
- FDA does not require verification of qualified exempt status every year, instead requiring that the records be retrievable within 24 hours should the farm be audited. However, it was noted in interviews that many producers do not have revenue records dating back three years.

3.9.2. Record requirements for organic certification

To have agricultural products that are certified organic, farmers must apply through the National Organic Program, which is run by AMS. Almost half of farms with certified organic acreage also have sales through local food markets. However, only a small portion of operations that sell through local food markets have certified organic acreage. Using 2012 NASS data, ERS found that there were 16,525 farms that reported organic sales, and 7,556 of those farms (45%) also sold to local markets. There were over 160,000 farms that sold locally that year, meaning that only five percent of all local farms were certified organic. There are likely more growers that market their products as organic but forego the certification due to the burdensome record requirements. Additionally, in direct markets the interaction between the producer and

consumer may mean that farmers are able to convey their growing practices without needing to undergo the expense (financial and human resource) of organic certification.

Having certified organic acreage requires adhering to a significant amount of record keeping, in order to obtain and maintain the certification. According to California Certified Organic Farmers (CCOF), the National Organic Program recordkeeping requirements are extensive and designed to track all farming activities from field preparation to harvest and selling of the crops. Included in these requirements are extensive harvest and sales record requirements. North Carolina State Extension groups records required of vegetable farms for organic certification in the following manner:

- Farm and field maps;
- Field history sheets;
- Seed purchase records;
- Input records (soil amendments, foliar sprays, pest control products, compost production record);
- Activity logs;
- Harvest records;
- Storage records;
- Lot numbering system for wholesale sales;
- Sales records; and
- Other records

Harvest records are required to capture the crop harvested, date of harvest, amount harvested, and where it was harvested (specifically field, plot, row, and bed number). These must be kept by variety if growers are growing multiple varieties of the same crops. Sales to wholesalers must be documented in the form of sales receipts, invoices, and sales summaries. For those organic producers who sell at farmers markets, it is expected that producers track how much of each product is taken to market and how much is left unsold each day in addition to the sales record requirements listed above. Those participating in organic certification are required to maintain these records for at least five years and be available on demand during normal business hours.

3.9.3. Widely used recordkeeping practices

Comprehensive research on the recordkeeping practices of local food producers is limited. Comments received during interviews and listening sessions suggest that many local food producers use accounting software such as QuickBooks to help track sales. Producers may also simply track sales in a spreadsheet, such as Microsoft Excel. Producers typically track sales by general category (e.g., tree fruit, vegetables, etc.) but struggle to keep track of sales by crop or variety. This is particularly true of highly diversified producers, as it becomes more difficult to maintain production and sales records as more crops are grown. To provide support, Cornell University designed market channel assessment tools to help producers track expenses by market channel (in addition to sales that most producers reported already tracking in this manner).[51] Market channel assessments have been adopted in several states, including Oregon and Colorado. The University of Minnesota's Center for Farm Financial Management is working to make these tools nationally available. Broader understanding and adoption of this financial management approach may support improved recordkeeping by producers selling in local food markets. However, at present, the

[51] http://publications.dyson.cornell.edu/outreach/extensionpdf/2014/Cornell-Dyson-eb1413.pdf.

feedback we received was that local food producers did their best to have records, but that the records they have are usually insufficient for insurance purposes, particularly for WFRP (see section 4.1).

We received some feedback that there has been adoption of mobile applications and other online software to assist with recordkeeping in the face of the pandemic. Since some producers have opened online channels for selling their produce, they have adopted technology that has assisted with recordkeeping. It is unclear whether local food producers who have adopted these technologies will continue to use them once the pandemic ends. It was noted that the producers who adopted these applications were typically younger, and that older producers are much less likely to use mobile applications or other recordkeeping software.

3.10. Grade standards and other factors that determine marketability

Foods marketed through local channels are not graded in the traditional sense. Agricultural grades, whether assigned by packhouses or representatives of AMS or another grading organization, help to standardize quality in agriculture produce. Grading helps ensure that all purchasers and producers are speaking the same language when negotiating sales contracts, helping reduce friction throughout the supply chain. Standards and factors that can determine the marketability of local food products vary depending on the method of sale and the consumer. Direct to consumer sales will have little to no regulation, with quality ultimately being a judgment call on the part of the consumer. In fact, many producers note that a benefit of direct sales is the ability to move product that would be deemed a second.[52] Sales to retailers and intermediary businesses are much more likely to be regulated, in part because they occur on a much larger scale than DTC sales, and the operations are willing to accept regulation to take advantage of the size of purchases.

Factors of marketability for DTC sales

Most direct to consumer transactions are not subject to the same regulatory burden as agricultural products sold through other markets, and a wider range of quality produce can be sold as a result. For example, CSA membership often outlines what consumers should expect from the produce they receive preparing them for produce quality outside of what they may be used to. Misshapen tomatoes (seconds) may be provided to customers that could otherwise not be sold to grocery stores. Similarly, customers may find insects on produce, which can be explained to customers as a side effect of not using pesticides. What would normally make produce unmarketable in a traditional grocery setting can potentially be overlooked. While these transactions are not officially regulated, ground rules are often established to ensure consumers and producers are on the same page, increasing satisfaction for both parties.

Consumers biggest expectation for local food is that it is of higher quality than the alternative (Tropp 2018). Some consumers express this as the food being more nutritious, while others point to the idea that the food is fresher. Freshness is oftentimes the foremost reason why consumers opt for local foods as opposed to food from conventional grocers. Farmers markets, CSAs, and other regulated DTC marketing channels will oftentimes have rules governing how far the food is allowed to travel, and how long farmers can wait after harvest until the food can be sold in an effort to increase the odds that the food meets customer demand.

Ultimately, marketability of produce in DTC sales is subjective, dependent on the attitudes of the consumer. Some may be sensitive to damaged produce, imposing tougher standards than even the grading that would have occurred. Other times, consumers may be willing to overlook flaws under the guise that such damage is natural and has little to no impact on the quality of the product. Farmers who have been direct marketing

[52] A second is a misshapen vegetable that is of similar quality but has lost marketability due to its misshapenness.

to the same group of consumers over a significant period of time will have the best sense of what their consumers will and will not accept come sales time.

Factors of marketability for institutional sales

Local food sales to institutions can be similar in nature to selling through conventional marketing channels, and often carry much of the same structure in terms of contracts. Institutions by their nature have to purchase commodities in bulk since they serve large amounts of people on a daily basis. This is true of retailers, intermediary institutions, and wholesalers. In the case of local foods, this can mean committing to purchases over a long period of time as many local foods are perishable and would lose quality if stored. Institutions will enter into contracts with local food producers to protect themselves and they can receive the needed product.

According to Rossi et al. (2018)[53], when institutional buyers enter into contracts with local food producers, buyers will identify volume amounts for purchase and quality specifications. A guide produced for small local producers in North Carolina[54] notes that buyers often rely on the fresh market fruit and vegetable grades established by AMS.[55] Many retailers will define the quality standards, likely deferring to the standards established by AMS, and retain the right to reject shipments or partial shipments if they feel the shipment is of deficient quality. They will often impose the same quality standards on local food producers as they do on conventional suppliers. This is particularly true if the buyer is considering replacing conventional products with locally sourced products. With institutional local producers, the factors that determine marketability of the product is much more objective than with producers who sell direct to consumer.

3.11. Pricing data

NASS collects prices for a wide variety of commodities in the U.S. and local and regional prices received are often captured in these prices. However, there is no way to segment these prices from the commodity price, and ultimately the prices reported by NASS are much closer to the commodity price than the local price (which tends to be higher). At a high level, the prices NASS collects are published in the monthly Agricultural Prices Report. In addition to the prices reported in the Agricultural Prices Report, NASS releases annual reports by crop type that contains more detailed prices. Specialty crop pricing data largely comes from these reports. Significant NASS reports include the vegetable and melon report, non-citrus fruit and tree nut report, and citrus fruit report. NASS also makes these prices available in their Quickstats database, which collates all the data NASS publishes into one platform where it can be queried.

In part due to the fact that NASS prices do not capture differences between local prices and commodity prices, AMS provided funding to certain states to collect pricing from multiple local food marketing channels.[56] This includes data on Farmers markets, Farmers Auctions, Farm-to-school programs, direct to consumer meat sales, and a report of national retail prices of local and organic food. The states with data vary by marketing channel, farmers markets having the most states submit data. At this point AMS has not

[53] Beyond Farmers Markets – Local Foods Opportunities in Southeastern Kentucky's Retail and Institutional Industry Jairus Rossi, A. Lee Meyer and Jann Knappage. Kentucky Center for Agriculture and Rural Develop. Pg. 30. https://cedik.ca.uky.edu/files/beyond_farmers_markets_final.pdf

[54] https://www.cefs.ncsu.edu/ncgt/wholesale-and-retail-product-specs.pdf

[55] Fresh market fruit and vegetable grades vary by crop and can be found here: https://www.ams.usda.gov/grades-standards/vegetables

[56] The data AMS collects can be found here: https://www.ams.usda.gov/market-news/local-regional-food

published data on food hubs but indicates that data is coming soon. Table 2 shows what data AMS has collected by state and marketing channel.

Table 3: AMS local pricing data by state and marketing channel

State	Farmers' Markets	Farmers' Auctions	Farm-to-School	DTC
Alabama	X		X	
Georgia	X			
Illinois	X			
Indiana		X		
Iowa			X	
Kentucky	X	X		
Mississippi	X			
Nebraska			X	
North Carolina	X		X	X
Ohio		X		
Oklahoma	X			
Pennsylvania		X		
South Carolina	X			X
Tennessee	X			
Texas	X			
Vermont	X			X
Virginia	X	X		
Wisconsin	X			

Source: AMS Local & Regional Food Market News

Farmers' market pricing data

There are 13 states that have worked with AMS to collect farmers market pricing data. It is the responsibility of the states to collect and publish the data, and AMS hosts all of the links on one page. USDA has developed a reporting template that can be used, but it appears use of this is voluntary, as multiple farmers markets report their data in formats different than the USDA suggested format. Elements to be captured include the product, variety, unit, and the price and or price range. Some farmers markets will report additional details such as the previous year's price range, prices for alternative production practices such as certified organic.

In addition to reporting detail, there is also variety in the extensiveness of the price collecting efforts by states. Some states, such as Georgia, collect information from multiple farmers markets, while others only release information on the primary farmers markets located in their state. Frequency of reporting is also different, with some states reporting prices weekly, biweekly, or monthly. The lack of consistency in the data makes it somewhat difficult to compare market conditions across states, but the reports do provide a useful snapshot of conditions in regions.

Farmers' auctions

Farmers' auctions allow buyers to purchase fresh market vegetables in bulk while negotiating on price. Reporting of prices in farmers auctions is significantly more uniform than farmers market reporting. There is a simple reporting template that collects price ranges, volumes, and a weighted average price. These auctions can involve both local food producers and conventional producers, and the prices collected are for both groups combined. Farmers auction pricing data is collected by AMS directly and is published daily.

Farm-to-School

There are four states that report farm-to-school purchases to AMS for publication on a regular basis. All states except for North Carolina report their data in a standard reporting template put together by AMS. The report notes the year-to-date totals of all local food purchases then breaks them down by major commodity category (i.e., fruit, vegetables, meat, daily, etc.). The reports then break down purchases by line items for each major category, noting the product, unit of measurement, volume, price range, weighted average price, and the prior years weighted average. North Carolina reports farm to school purchases using a simpler template, reporting the commodity, container (which serves as the unit of measurement), the total ordered, and the unit price.

Direct-to-consumer meat and dairy prices

AMS collects prices on direct-to-consumer animal agriculture sales on a national basis. Reports are published monthly on beef, lamb, pork, and poultry. These reports collect wholesale and DTC retail prices for the animal types, breaking them out by cut. The reports on pork, poultry, and beef also report prices on a multi-state regional basis (the national goat report does not provide this breakdown). These regions change depending on the report, with the poultry report having three regions while the beef section splits the U.S. into four regions. Prices are reported on a dollar per pound basis unless otherwise stated.

When examining DTC prices, the reports also provide the corresponding commodity price for the cut of meat. This allows for the calculation of the "pasture raised premium" which often times raises the price several fold relative to the commodity price. Some of the increase in price for the pasture raised products likely comes the fact that some of these are products that are sold locally via direct-to-consumer channels. Commodity prices are pulled from the national retail reports published by animal type.

In addition to the national reports on direct-to-consumer meat prices, North Carolina, South Carolina, and Vermont also report prices. North Carolina reports DTC prices for all types of meat, South Carolina reports pork and beef prices, and Vermont reports just beef. These are simpler reports than the ones compiled on a national basis. State based reports indicate the cut, price range on a dollar per pound bases, and the average and median prices received (all reports are also on a monthly basis). The Vermont beef report also indicates organic vs nonorganic beef prices.

Finally, AMS collects and reports on prices for organic dairy sold direct to consumer on a monthly basis. This report has prices for organic butter, cheese and milk. The commodity, type of product, package size and organic are reported. The type of category is primarily used to break out various kinds of cheese such as cheddar, Colby, Monterey jack, etc. Cheddar cheese is also broken out by how long the product has aged. These prices are collated from publicly available prices from farmsteads and online and do not have any state or regional breakdown.

National retail report

AMS collects advertised prices for all regions for sales to consumers for local and organic products. The report is published on a weekly basis and breaks out local prices and organic prices.[57] The report segments prices by commodity, reporting on fruit, vegetables, onions and potatoes, seasonal item, and meat. Within each category the commodity, variety, unit, number of stores offering the product, the price range, and the weighted average price are reported on. The weighted average is derived from the number of stores reporting each price point within the range and is not based on sales volume.

In this report, local is defined as items that are advertised as local. The report also contains statistics on the number of outlets included in the sample, the total amount of products advertised, and how many product advertisements were labeled local and organic. These statistics are broken down by commodity type. The national retail report is the most comprehensive of the various local price reporting AMS compiles but does not attempt to break down prices by region, instead reporting them for the entire country.

3.12. How and when different types of local food production are marketed and to whom

The universe of local food production in the U.S. is almost as broad as the general agricultural food production universe, as almost everything that can be grown and sold as food can also be sold through local channels. How local food is marketed, when is it marketed, and to whom largely depends on what is being produced and the intended method of sale. Farms that contract with retailers and institutions will have defined dates when products need to be delivered, and many retailers and institutions will work out ahead of time what products will be delivered at certain points during the year. Direct-to consumer sales are much less defined, and marketing strategies will vary significantly depending on several factors.

For DTC fresh fruit and vegetables sales, produce will have the most value if they are sold shortly after harvest. Marketing windows are tight for these products, as they cannot be put into storage for any significant amount of time. In the case of CSAs, oftentimes produce is boxed and shipped or made available for pickup to members right after harvest to ensure the product is as fresh as can be. The tight marketing window post-harvest for fruits and vegetables sold locally limits the overall window of sales to the growing season.[58] Local food producers attempt to accommodate for this by growing multiple crops with overlapping seasons to earn as much revenue during the growing season as possible (see section 3.6).

For products that are being grown for use as inputs into value added products[59] that will be sold DTC, the marketing window is wider but still somewhat restricted. Depending on the product, value added products can be stored for longer amounts of time than fresh vegetables. This gives producers more flexibility to sell throughout the growing season. Ultimately, depending on the method of sale, growers will have to market their wares within certain timeframes, likely tied around the growing season. Only 15 percent of farmers markets operate year-round according to the Farmers Market Coalition[60], with most farmers markets operating from mid spring to mid-autumn. Anecdotally, we have heard that even farmer-controlled marketing channels, such as on farm stores, are likely to receive much less traffic during the winter months

[57] AMS also reports prices for products that are advertised as both local and organic separately.
[58] The growing season is often summarized as first frost to last frost and will vary by region but typically be mid-Spring to Mid-Autumn. Information on growing season in the U.S. can be found here: https://www.nrcs.usda.gov/wps/portal/wcc/home/climateSupport/wetlandsClimateTables/growingSeasonDatesLength/
[59] Value added are made when agricultural products go through further processing after harvest. In terms of local foods, these can include a variety of products such as jams, jellies, pies, etc.
[60] https://farmersmarketcoalition.org/education/qanda/

than during other times of the year when the weather is better. Farmers who are able to produce year-round due to season extending technologies may be able to draw customers during nontraditional selling periods, but these appear to be a minority of all local food producers and most appear to be limited to selling in the growing season.

For locally marketed meat, producers send their animals to small, locally based processors designed to make specialty cuts. Many local meat producers send their animals to slaughter during the same period making it difficult to get a spot at slaughterhouses, (Gwin et al. (2013)) (see section 3.3). Meat producing regions often have a peak finishing season in which all producers in a region may have all finished animals at the same time (regardless of intended method of sale). Oftentimes peak slaughter season will occur in the fall, and that spring is lighter for slaughterhouses. This is particularly true of poultry, which is more seasonal then red meat and has less inspected plants.

Who is local food marketed to?

Millions of Americans buy local food each year, and the buyers of local foods are demographically diverse (Martinez et al. (2010)). In the Food Marketing Institute's nationally survey of U.S. grocery shoppers, over 80 percent of respondents indicated they purchase local foods occasionally.[61] There are mixed findings on relationships between consumers' demographic factors and likelihood or purchasing local foods. There are some studies that found farmers market patrons were predominantly female and that local food purchasing is more likely among white families. One study found that farmers markets tend to be patronized by the middle and upper class (Colasanti et al. (2010)).[62]

Numerous studies have taken place over the last 30 years that have found there are some similar characteristics for households that purchase local foods. Consumers who enjoy cooking, growing a food garden, frequenting health food stores, and purchasing organic food were found to be more likely to purchase local foods (Martinez et al. 2010). There have been some studies that have found consumers who were female, older, more educated, and higher income earners were more likely to purchase local food. Farm background was also associated with consumers who purchased local foods.

One factor that can influence the purchasing of local foods is the distance to market. A study of shoppers in North Carolina and Texas found that consumer willingness to shop at farmers markets increased incrementally with how close the farmers market was to their place of residence. This may contribute to sales of local foods in urban areas, as urban areas are more densely populated than rural and suburban areas and potentially offer a larger customer base.

3.13. Other differences between and amongst local food systems

There are local food systems present across the U.S., with local food sales occurring in all states. Each local food system is unique, and local food systems have regional distinctions, as geography can play a significant role in what can be produced, how long the growing season is, etc. For example, what is being sold locally in Colorado will be very different than what is sold in Washington, and the local food systems in Colorado may in some ways be more like the conventional marketing channels in Colorado than Washington's local food systems.

[61] Food Marketing Institute. 2011. U.S. Grocery Shopper Trends, Food Marketing Institute: Arlington, VA.
[62] Colasanti, K.J.A., D.S. Conner, and S.B. Smalley. 2010. "Understanding barriers to farmers' market patronage in Michigan: Perspectives from marginalized populations," Journal of Hunger and Environmental Nutrition 5(3):316-338.

There are broad similarities across local food systems that allow for comparison, but there are some significant differences that should be taken into consideration, particularly when doing "one size fits all" analysis. Urban and rural local food systems have been found to be different with regards to demand levels, and this has an impact on sales. Likewise, local food systems on the West Coast tend to have larger institutions and are more likely to see intermediated sales than other regions, where DTC is the primary method of sale.

Rural compared to urban local food systems

Several studies have found that the demand for local foods is concentrated in urban areas. A study by Malone et al. (2012) found that rural counties were underrepresented in DTC sales relative to urban and suburban areas. Consumer willingness to pay for local products in rural systems is lower than in urban systems, with Biermacher et al. (2010)[63] finding that there are often not enough customers in rural areas paying at a high enough price point to offset production and harvesting expenses. There could be multiple reasons for this. Incomes in rural counties tend to be lower than those in urban and suburban counties[64], meaning there may be less disposable income to spend on higher price point food. Those in rural areas are also more likely to be in agriculture themselves and may have a better sense of how local food should be priced than those in urban areas.

The differences between rural and urban systems can sometimes lead to producers traveling significant distances to sell their product to local markets. For example, data from the 2015 LFMP survey found that 39 percent of local food sales to farmers' markets occurred more than 20 miles from the producer's place of operation. Producers who must travel significant distances to urban areas to market their crops will have higher post-production costs, as they will inevitably have to spend more time transporting crops and interacting with customers. This may impact both how much revenue can be covered under RMA programs and producer willingness to pay for insurance.

Local food systems on the west coast vs the northeast and other regions

Data from both the Census of Agriculture and the LFMP survey suggests that local food sales in the U.S. are concentrated in two primary regions: the northeast[65] and the west coast (California, Oregon, and Washington). Even when controlled for urbanization, Low et al. (2011) found that sales were heavily concentrated in those two regions (this did not include institutional sales, which the authors suggest would have strengthened this trend). The west coast, despite only accounting for 15 percent of all farms with local food sales, accounted for over 50 percent of local food sales in 2017 according to data from the Census of Agriculture.

As mentioned in section 3.8, the west coast has a long history with local food sales, with both farmers' markets and local retail channels having been established in the 1970s. The long growing season and ideal microclimate on the west coast allows for significant agricultural production, particularly of fruits, vegetables, and other tree crops, all popular items at farmers' markets. Operations on the west coast are more likely to be larger than their east coast counterparts, which leads to institutional sales being more

[63] Biermacher, J., S. Upson, D. Miller, and D. Pittman. 2007. "Economic Challenges of Small-Scale Vegetable Production and Retailing in Rural Communities: An Example from Rural Oklahoma," Journal of Food Distribution Research 38(3):1-13.

[64] https://www.census.gov/newsroom/blogs/random-samplings/2016/12/a_comparison_of_rura.html

[65] The northeast region as defined by the Census Bureau includes the following states: Connecticut, Maine, Massachusetts, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island, and Vermont. Data reported for the northeast includes these states.
https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

common on the west coast than in other regions in the U.S. According to the 2017 Census of Agriculture, the west coast accounted for 58 percent of all institutional local food sales in the U.S. in 2017. Approximately 85 percent of all local food sales on the west coast were to institutions as opposed to DTC, which is consistent with estimates for west coast sales from previous years.

According to Low et al. (2011), local food sales in the northeast tend to be smaller, occur closer to urban areas, and are more likely to be DTC. Data from the 2017 Census of Agriculture suggests there has been increased institutional sales in the Northeast, as 55 percent of all local food sales in the region were to institutions in 2017. The local food systems in this region are likely influenced by the presence of two high income highly populated urban areas within a relatively close proximity to each other, as local food sales are at their highest in such areas. The northeast accounted for 14 percent of all local food sales, and together with the west coast these two regions accounted for 66 percent of all local food sales in 2017.

4. CROP INSURANCE PROGRAMS AVAILABLE TO LOCAL FOOD PRODUCERS

RMA currently offers a variety of crop insurance programs, including the Whole-Farm Revenue Protection (WFRP) program, which was specifically developed with local food producers in mind. Other existing plans of insurance offered by RMA include yield, revenue, and area-based policies for individual crops; Nursery Value Select (NVS); and Rainfall Index (RI), among others. USDA's Farm Service Agency (FSA) also administers the Noninsured Crop Disaster Assistance Program (NAP). We discuss these programs in the following sections.

4.1. Whole-Farm Revenue Protection (WFRP)

WFRP is a pilot program that provides protection against loss of revenue that producers expect to earn or will obtain from commodities they sell or purchase for resale during the insurance period. Whole-farm revenue consists of revenue from all insured commodities on the farm operation, including revenue from animals and animal products.

WFRP was specifically developed for producers who sell to direct, local, regional, and farm-identity preserved markets and who produce specialty crops, animals, and animal products. Local food producers are the very producers WFRP, and the predecessor policy, Adjusted Gross Revenue (AGR)/AGR-lite, was originally developed to target. There are several unique features to WFRP, including:

- Producers participate in WFRP by completing a Farm Operation Report (FOR) and update it multiple times during the year to determine their expected revenue. The approved revenue is the lower of the expected revenue or the producer's whole-farm historic average revenue, based on the IRS Schedule F.
- Producers must also provide expected values and expected yields to use on the FOR. The WFRP guarantee is based on revenue and most local food producers' operations require a steady revenue. While yields are important to determine revenue, many local food producers simply adjust their prices to manage revenue variability.[66]
- WFRP insured revenue is the total amount of insurance coverage provided by the policy. To determine a farm's insured revenue, the policy uses the Whole-Farm History Report (WFHR), the producer's FOR, any information regarding growth or other changes of the farm, and coverage level.
- Coverage levels range from 50 to 85 percent. Catastrophic Risk Protection (CAT) coverage is unavailable. The number of commodities produced on the farm affects producers' eligibility for higher coverage levels and has implications for premium subsidies. For example, a producer who grows three or more commodities is eligible for the 80 or 85 percent coverage level and those who plant three or more commodities obtain the maximum premium discount.
- WFRP can be purchased as a standalone policy or in conjunction with other Federal crop insurance policies. Purchasing a WFRP policy alongside another Federal crop insurance buyup policy results in an additional reduction of the WFRP premium.

While WFRP was created specifically with local food producers in mind, a very limited number of local food producers currently purchase WFRP. This is not surprising considering the policy has several issues

[66] For example, strawberries have a 50 percent loss, but pick-your-own is very popular and the producer increases his/her prices to counteract the loss. There is no resulting revenue loss and the producer's estimated price and yield information provided prior to the Sales Closing Date no longer reflect the realities of the farming operation.

preventing local food producers from participating. These issues include the policy requirements—particularly the recordkeeping requirements, which are extensive—a general lack of willingness among AIPs to sell WFRP, particularly to local food producers, and the policy's inability to provide meaningful coverage to local food producers. Grower organizations and local food producers repeatedly stated in listening sessions and interviews that recordkeeping and reporting requirements are too onerous. This is especially the case when producers grow 25 or more crops. Producers are frustrated with the paperwork, which far exceeds what row crop farmers are required to provide. Agents are also frustrated with the paperwork, as there is extensive time and effort involved in underwriting WFRP policies for local producers. Local food production is a different farming model compared to typical commodity production and AIPs are generally unfamiliar with local food operations. Simultaneously, local food producers do not know much about WFRP.

In the section below, we discuss how the WFRP Crop Provisions and Handbook could be adjusted to provide better coverage for local food producers.

4.1.1. WFRP Crop Provisions and Handbook

Feedback obtained from the listening sessions and interviews indicated that local food producers are generally interested in crop insurance but do not currently view WFRP as a viable option for several reasons, including:

- Excessive recordkeeping requirements that verify or duplicate the information on the Internal Revenue Service (IRS) Schedule F and other tax forms;
- The coverage and diversification factors do not adequately consider the lower risk faced by diversified producers;
- The lack of Approved Insurance Providers (AIPs) willing to market WFRP due to the time required to review, verify information, and write the policy; and
- The agent commission rate is not sufficient to cover the time expended on a WFRP policy.

We review each of these areas in the following sections.

Excessive recordkeeping requirements

Producers were very vocal about the unique reports they need to submit to be eligible for insurance and the requirement to report revenue by commodity. Providing sales records by commodity is cumbersome and viewed as excessive and unnecessary by local food producers. We tend to concur. For example, yield and revenue information by crop adds little value and producers who have many commodities find this burdensome, especially if they do not track revenue by commodity.

While the Direct Commodity Code RMA recently introduced in the 2021 WFRP Crop Provisions is meant to mitigate this issue, producers who track revenue by broad categories or maintain daily totals of all products sold still find the reporting requirement burdensome. Total annual revenue is already tracked and included on the IRS Schedule F, and the IRS requires supporting documentation to justify the information on tax forms. Producers who sell value-added products or have other farm income or expenses that are not allowed under the Federal Crop Insurance Corporation (FCIC) Act and WFRP policy would still be required to deduct those amounts and provide documentation to outline that revenue/expense, if IRS Schedule C is not available. Ultimately, the information captured on the Schedule F tax return is the critical piece of information; each commodity yield and price are of lesser importance.

We recommend RMA review all WFRP record requirements, including all forms producers are required to submit when applying for WFRP insurance. RMA should eliminate any extra documentation or entries,

especially those that duplicate information or are not needed to remove prohibited revenue or expenses. RMA should critically review what is required from a producer to obtain insurance rather than records needed for loss adjustment. For example, IRS Schedule F is used to establish historical revenue and expenses; yields are not. If there will be no changes to the operation, we question the usefulness of any additional reporting requirements. If the operation is growing or changing enough that it will impact revenue or expenses, perhaps only information regarding that change is needed.

It is worth noting that our recommendation would bring RMA in line with what it requires from producers in other crop insurance programs. For example, to obtain APH coverage, producers must certify their yield and only provide additional supporting documentation during an APH review or loss adjustment. In this light, requiring much of the additional documentation for WFRP up front essentially serves as an income tax audit. Either RMA believes the Schedule F—adjusted for post-production costs, value-added revenue/costs, etc.—or it does not. If it does, the Schedule F should be sufficient for eligibility purposes. Alternatively, if WFRP were used as a model for a local foods plan of insurance, RMA may be able to cover post-production costs, eliminating the recordkeeping requirement.

To the extent RMA is concerned tax forms might be incorrect, we believe producers are far more likely to be underreporting income and overreporting expenses, because doing so would lessen their tax burden. The result of this would decrease their WFRP insurance guarantee, minimizing the liability RMA is covering. In our view, it is very unlikely that producers would be inflating their revenue and decreasing their expenses for insurance purposes because this would result in a larger tax payment.

Ultimately, the policy would be greatly simplified if RMA only asked producers to submit their IRS Schedule F and note the revenue and expenses that are prohibited. In practice, producers might submit the Schedule F along with a Preliminary, Revised, and Final FOR throughout the year. Forms to remove revenue and expenses should be simplified by only asking for the excludable revenue and expense items without making producers transfer every entry from the Schedule F. For example, RMA could consider streamlining, changing, or eliminating the following forms for local food producers:

- Allowable Expenses and Allowable Revenue Worksheet: allow local food producers to provide a statement or worksheet listing only those expenses or revenue to be removed or adjusted rather than including every expense or revenue line item directly from the IRS Schedule F, even when the expense or revenue is not adjusted. If no adjustments are needed, the form should not be required.
- Expected Value and Yield Sources Document Certification Worksheet: remove as a required form unless the operation is changing, expanding, etc. According to the policy, information in this document should already be included in the FOR.

If during its review of WFRP reporting documentation RMA finds items that are indeed critical for program integrity, we suggest RMA consider accepting records producers are already completing for other purposes in lieu of the current RMA forms. For example, certified organic producers have annual Organic Systems Plans (OSP) that include yields, sales, and expenses. This is the same information RMA requires for WFRP, and we think the OSP requirements outlined under the National Organic Program, established by USDA AMS regulations, should be sufficient. The OSP certification process also covers livestock and nursery production.

Additionally, many of the suburban local food producers we spoke with said they provide cash flows to their lenders that include expected revenue and expenses as well as profit and loss statements. RMA should consider allowing these producers to submit this information rather than requiring WFRP forms, including the FOR. Finally, producers who use various accounting programs that capture revenue and expenses should be allowed to provide reports from those systems without having to provide RMA reports or worksheets. For example, if a producer provides a cash flow statement to a lender that includes revenue and expense

information, the FOR would not need to be completed. Alternatively, if they provide, say, a Quicken Report that contains revenue and expense information, that should also be sufficient.

Accounting for diversification

Many diversified producers said they are dissuaded from purchasing WFRP because the policy does not adequately account for diversification. This suggests additional reviews of the diversification factors for local food producers. RMA could consider allowing producers who sell many commodities to obtain a greater diversification discount, if supported by actuarial analysis. For example, the categories could be expanded to provide additional discounts for producers with diverse operations that are not impacted as much by a single weather event. That said, it is unclear whether such a change would be supported by the data without additional research. For example, one of the expert reviews for WFRP noted that while there should be a discount for diversification (i.e., premium rates decline as more crops are added to the crop mix), the decline flattens after four or five crops. The current WFRP rating process caps the diversification after seven commodities counts, and the "diversity saving" diminishes after three commodity counts. This suggests that expanding the diversification factors are unlikely to reduce WFRP premiums in a substantial way.

Separately, RMA could also consider increasing the coverage level for very diversified local food producers to 95 percent. Diversification already provides a natural risk management tool for local food producers, such that revenue losses on one crop might be counterbalanced by gains on another—that is, it is generally believed that more commodities imply lower revenue variability. This suggests that RMA should, in theory, be comfortable with offering higher levels of coverage to more diversified producers.[67] That said, we recommend RMA exercise caution when adjusting coverage levels because whole-farm policies tend to have a greater risk of moral hazard than individual policies. This is related to the fact that producers who insure crops with different growing seasons are more likely to encounter scenarios in which low revenue on crops harvested early in the tax year significantly increases the chances of an overall loss. From the producer's perspective, such scenarios reduce their incentive to protect against crop losses later in the year.

Before implementing either of these recommendations, we suggest RMA conduct research into the rating implications of such changes. It is worth noting that, on one hand, the cost of a higher coverage level such as 95 percent may be too high for local food producers to afford and it is unclear to us how such a coverage level would be subsidized. On the other hand, without a higher coverage level, WFRP may not be attractive to many local food producers. In listening sessions and interviews, several producers stated that even 85 percent coverage was considered a catastrophic level of loss.

Lack of interest among AIPs in selling WFRP

WFRP will only work for local food producers if there are AIPs interested in, knowledgeable about, and willing to promote the program. This will require sufficient financial incentives for the AIPs. The paperwork and documentation required for traditional crop insurance coverage are widely understood by commodity producers and agents. However, local food producers work with entirely different systems: different crops, infrastructure, seasons, and markets. Many local food producers are growing many specialty commodities, and the paperwork required for them to enroll in WFRP is viewed as burdensome and cost prohibitive or is simply not profitable to AIPs. The well-established tools used with traditional yield-based crop insurance policies for tracking yields and pricing are not easily adapted or even available to local foods producers.

[67] We note that, while this is true in general, revenue variability ultimately depends on the crop-specific price and yield distributions and the correlations between price and yield for each of the crops grown by the farming operation. Thus, it could be the case that diversification causes little, if any, reduction in revenue variability.

Program complexity was a general theme that emerged from the listening sessions and interviews and agents consistently said that WFRP is too complicated and cumbersome. One agent stated that any time a policy has "that many pages," it is a red flag, and he will not sell it. Another agent said that growers want simplicity and that WFRP is not simple. In a separate project we conducted for RMA evaluating the feasibility of a revenue plan for citrus, one agent told us that the underwriting for WFRP is "over-the-top difficult and getting worse…it is the thickest set of provisions, thickest workbook, way more than any other policy." Because every producer is insured on a case-by-case basis, the insurance for each of them is written differently and is unique. There is a big learning curve for agents, AIPs, and their representatives to learn all the moving parts and many simply do not find it to be worth the effort.[68]

Availability of AIPs interested in selling WFRP is a major hurdle. Many AIPs indicated they do not understand WFRP and perceive it as being overly complicated and onerous. Several agents stated that WFRP is not lucrative for them. They cited WFRP as a paperwork-intensive policy, rendering small WFRP policies unprofitable. Several AIPs told us they would need to add the services of a Certified Public Accountant (CPA) to review and audit all WFRP policies sold to obtain Errors and Omissions (E&O) coverage. Most indicated the WFRP commissions were not sufficient to cover their time and certainly not sufficient to cover the cost of having a CPA review each producer's information prior to submitting the application. One AIP told us that each loss is calculated on a case-by-case basis and decisions do not appear to be consistent. The AIP felt this could leave him with very upset customers if their neighbors' loss were handled differently.[69]

It is clear that many AIPs and agents would benefit from additional WFRP educational opportunities. RMA could even consider requiring additional training sessions. Additionally, A&O reimbursement incentives for AIPs selling to small, diversified operations might also be needed to incentivize agents to sell WFRP or even suggest to producers that it is a viable option. We understand this may require legislative changes, along with changes to the Standard Reinsurance Agreement (SRA). But without this change, there will be a natural ceiling on how much RMA can improve participation in WFRP if agents are not incentivized to sell it.

Other suggested changes to the Crop Provisions and Handbook

Other changes RMA should consider to the WFRP Crop Provisions and Handbook include:

- We question the need to include the verification requirement in Section 18 of the Crop Provisions. Section 18 of the WFRP Crop Provisions requires the expected values and yields used on the FOR be based on the information reported by the producer and verified by the AIP at the time the expected values/yields are determined.

  As we mentioned previously, in our view, the verification piece seems to be an excessive step compared to other crop policies that simply allow for producer certification. Expected values and yields are verified by the AIP at the time the expected value is determined. But RMA does not require verification like this with other crop insurance policies. For example, APH policies do not require a producer to bring in 10 years of production history to obtain insurance every year. Those producers can annually certify the most recent crop year's information.

- If RMA is uncomfortable eliminating the verification requirements, we think it should at least consider prohibiting changes to the guarantee at the time of loss adjustment since AIPs should have already verified those values prior to insurance attaching. Related to Section 18, many

[68] Agralytica, "Research of crop insurance policies for citrus", December 2019.
[69] Ibid.

producers we spoke with complained that AIPs accept their FOR, establish their guarantee, and collect premiums for years without any issues. However, if the producer reports a loss, suddenly those records are reviewed and "issues" are noted, the guarantee is lowered, and the loss claim is denied or not sufficient to trigger an indemnity with the lower guarantee. The perception among producers is that AIPs are fine collecting the premium on a higher guarantee but do not question its validity until there is a loss. While we believe verification is an excessive requirement, because Section 18 of the policy currently states the expected values and yields reported must be verified by the AIP, the guarantee should not be lowered once the AIP accepts the form. We discuss this issue further in Section 4.1.2.

- RMA should consider adding a tolerance for a change to revenue or expenses that would require additional documentation—e.g., five percent. RMA currently limits how much producers can account for anticipated expansion to 35 percent and utilizes a factor to account for changes. An expanding operation must provide verifiable records that are subject to AIP approval. In our view, it seems excessive to require verifiable documentation for a minimal expansion or operation change that will simply increase production. Indeed, RMA would not require similar verifiable documentation for a corn APH policy when irrigation is added.

  Moreover, we question whether the 35 percent limit is high enough. It is not uncommon for local food producers to grow rapidly or to add a high-value crop to their acres that easily exceeds the 35 percent threshold. For example, one producer told us he planted five acres of peach trees three years ago and his income more than doubled last year as a result.

  Many local food producers operate a small number of acres and by adding a row of high-value crops they are able to substantially increase their revenue. Thus, RMA should consider allowing more than a 35 percent increase if the changes a producer outlines warrant a higher limit. RMA should require an inspection or other information to justify the higher limit at a certain percentage (e.g., 50%).

- WFRP Handbook, Part 4, Section 1, Paragraph 93: This paragraph discusses how WFRP provides coverage for quality losses by using the actual price received, or the local market value, for unsold damaged commodities. However, we question the need for this level of detail in a policy that is based on IRS Schedule F income and losses that are triggered by a decrease in revenue/profit. If the loss of revenue/profit is due to an insurable cause, this should be sufficient to calculate the indemnity regardless of whether it is a quality, price, or yield loss. We recommend eliminating this paragraph from the Handbook.

- WFRP Handbook, Part 3, Section 1, Paragraph 51 A states: "The AIP must request verifiable records and/or direct marketing sales records to verify the allowable revenue and allowable expenses on the WFHR when the AIP has reason to believe the farm tax form(s) do not provide adequate documentation of revenue or expenses for WFRP purposes. In such cases, the AIP must not accept any WFHR if the allowable revenue for any year cannot be verified through the requested verifiable records and/or direct marketing sales records."

  - For similar reasons we outlined previously, we recommend eliminating this provision from the Handbook.
  - This paragraph also lists IRS tax form 1102S. We were unable to find IRS tax form 1102S on the IRS website, however, there is an IRS form 1120S.

- Part 3, page 32 states: "48 Revised Farm Operation Report (continued)". We believe the reference should be "49".

- Definitions from the WFRP Crop Provisions are included in the Handbook and often the definitions do not match. We question the need to repeat definitions included in the Crop

Provisions and rewording the definition can create conflict between the policy and Handbook. We recommend definitions either be removed from the Handbook or match exactly what appears in the WFRP crop provisions.

4.2. Noninsured Crop Disaster Assistance Program (NAP)

USDA's Farm Service Agency (FSA) administers the Noninsured Crop Disaster Assistance Program (NAP), which provides financial assistance to producers of non-insurable crops to protect against natural disasters that result in lower yields or crop losses or prevents crops from being planted. Like many FCIC crop insurance programs, NAP insures producers against yield losses due to natural causes. NAP is unavailable to producers when a permanent FCIC crop insurance program exists in a county for a given crop and practice. However, NAP is available if the existing FCIC insurance product is a pilot program or if only certain practices or utilizations have existing available coverage. In such cases, producers are prohibited from obtaining duplicate benefits. For example, if a producer obtains hemp coverage under NAP and also obtains an RMA crop insurance policy, the producer cannot obtain a benefit from both programs if he/she suffers a loss. The producer would need to select either the NAP benefit or the crop insurance indemnity but cannot obtain both.

To be eligible for the NAP program, a producer must be a landowner, tenant, or sharecropper who shares in the production risk and is entitled to an ownership share of that crop and his/her average adjusted gross income (AGI) does not exceed $900,000 per year. NAP payments are limited to $125,000 per crop year for those with basic (catastrophic) coverage; for those with buyup coverage, the limit is $300,000.

NAP is available for commercially grown crops produced for the following purposes:

- Crops grown for food;
- Crops planted and grown for livestock consumption, such as grain and forage crops, including native forage;
- Crops grown for fiber, such as cotton and flax (except trees);
- Crops grown in a controlled environment, such as mushrooms and floriculture;
- Specialty crops, such as honey and maple sap;
- Sea oats and sea grass;
- Sweet and biomass sorghum;
- Industrial crops, including crops used in manufacturing or grown as a feedstock for renewable biofuel, renewable electricity, or biobased products;
- Value-loss crops, such as aquaculture, Christmas trees, ginseng, and ornamental nursery and turf-grass sod; and
- Seed crops where the propagation stock is produced for sale as seed stock for other eligible NAP crop production

NAP provides a basic coverage option equivalent to the catastrophic level of coverage in FCIC insurance—i.e., 50 percent of expected production at 55 percent of the average market price for the crop. This translates to coverage of 27.5 percent. Both the 2014 and 2018 Farm Bills authorized FSA to provide higher levels of coverage ranging from 50 to 65 percent of production, in five percent increments, at 100 percent of the average market price. Producers who elect these buyup coverage levels must pay a premium in addition to the service fee at the time of application. For all coverage levels, the NAP service fee is the

lesser of $325 per crop or $825 per producer per administrative county, not to exceed a total of $1,950 for a producer with farming interests in multiple counties. Producers who elect buyup coverage must also pay a premium fee of 5.25 percent of the guarantee or payment limit. The maximum premium is $15,750. Fee waivers for NAP and a premium reduction of 50 percent are provided for beginning, limited resource, socially disadvantaged, and qualifying veteran farmers or ranchers.

Like FCIC crop insurance, producers with NAP coverage are required to timely file acreage and production reports and notices of loss. However, FSA's unit structure differs from FCIC insurance in that a NAP unit includes all the crop acreage in the county by share. FSA uses USDA procedures, including RMA loss adjustment procedures, to adjust loss claims. If no loss adjustment procedure is available for a given crop, FSA's adjuster selects what they deem to be appropriate based on an existing approved loss adjustment procedure in use by RMA.

Information obtained during the listening sessions and interviews indicated either local food producers did not feel the NAP premium was worth the coverage and/or were unhappy with the coverage itself. The coverage, even at a buyup level, was viewed as insufficient to cover local food producers' loss of revenue. Many seemed unaware that NAP buyup options even existed. That said, many local food producers stated their margins are very thin and even with the maximum buyup level of coverage, they are limited to 65 percent of their calculated yield. The 100 percent price election was consistently well below the price they can obtain for their commodities. In short, local food producers did not view the NAP program as a viable insurance option.

Moreover, the local food producers we spoke with who had purchased NAP coverage were universally unhappy with the loss adjustment and claims process. The producers stated their claims were handled inconsistently between counties or when FSA county office personnel and FSA county committee members changed. Documentation requirements for loss adjustment and commodity prices varied widely between FSA county offices. This left local food producers with many complaints, including indemnities that were far below what their loss and coverage level should have produced. Several local food producers indicated they had successfully appealed FSA loss adjustments; however, that was a costly and time-consuming process.

4.3. Other existing plans of insurance

In general, individual crop insurance policies offered by RMA are either yield- or revenue-based. For most yield-based policies, producers receive indemnities if there are yield losses relative to their historical yield. Revenue-based policies protect against crop revenue loss resulting from declines in yield, price, or both. RMA also offers Area Risk Protection Insurance (ARPI) policies that provide coverage based on the experience of an entire area rather than a producer's individual yield or revenue. Finally, Nursery Value Select (NVS) is an asset-based insurance pilot program that allows nursery producers to select the dollar amount of coverage that best fits their risk management needs. We provide an overview of these plans in the following sections.[70]

4.3.1. Yield-based policies

RMA offers three yield-based policies to agricultural producers: 1) Actual Production History (APH) plans; 2) Yield Protection (YP); and 3) Dollar plans. Among the three policy types, APH is the most prominent,

[70] RMA also offers livestock insurance plans and margin protection (for corn, rice, soybeans, and wheat). These plans are not discussed in this report.

accounting for approximately 70 percent of all policies covering specialty crops. Nursery crops tend to be mostly covered through Dollar plans.[71]

Table 4: Crops with yield-based policies

Insurance program	Crops
APH	Almonds, apples, avocados (California and Florida), beans (fresh and processing), blueberries, cabbage, camelina, caneberries (fresh), citrus (Arizona, California, Florida, and Texas), clary sage, cranberries, cultivated wild rice, downed rice, dry peas, Extra Long Staple (ELS) cotton, figs, forage, forage seed, grapes, grass seed, green peas, Hawaii tropical fruit, hemp, macadamia nuts, millet, mint, mustard, olives, onions, peaches, pears, pickling cucumber (machine harvested), pistachios, potatoes (northern, central, southern, and certified seed), prunes, pumpkin (processing), rice, safflower, sesame, silage sorghum, stonefruit, sugar beets, sugarcane, sweet corn (processing), sweet potatoes, table grapes, tobacco, tomatoes (fresh and processing), triticale, and walnuts.
YP	Canola, coarse grains, cotton, dry beans, malting barley, peanuts, popcorn, rice, rapeseed, small grains, sprinkler irrigated rice, and sunflower seed
Dollar	Chile peppers, California citrus trees, Florida citrus, cultivated clams, forage seeding, hybrid seed corn, hybrid seed rice, hybrid sorghum seed, hybrid sweet corn seed, hybrid vegetable seed, nursery plants, peppers (fresh), raisins, sweet corn (fresh), and tomatoes (fresh)

Source: USDA RMA

APH policies insure producers against yield losses due to natural causes such as drought, excessive moisture, hail, wind, frost, insects, and diseases. Indemnities are generally not paid if crop damage is caused by insufficient or improper applications of pest or disease control measures. Producers select the amount of average yield to insure, typically between 50 and 75 percent, though in some areas the coverage level is as high as 85 percent. Producers also have the option to select the percent of the predicted price they want to insure—between 55 and 100 percent of the price established annually by RMA. In practice, most producers select 100 percent of the price level. If the harvested plus any appraised production is less than the yield insured, producers are paid an indemnity based on the difference. Indemnities are calculated by multiplying this difference by the insured percentage of the price selected when crop insurance was purchased and the insured share.

YP policies insure producers in the same manner as APH policies, except a projected price is used to determine insurance coverage. The projected price is determined in accordance with the Commodity Exchange Price Provisions (CEPP) and is based on daily settlement prices for certain futures contracts. For example, for corn and soybeans, the projected price is the average Chicago Mercantile Exchange (CME, formerly Chicago Board of Trade (CBOT)) daily price in February for the December-futures contract of the same year for corn and the November-futures contract for soybeans. The producer selects the percent of the projected price he or she wants to insure, between 55 and 100 percent.

[71] H. Lee, "Crop Insurance for 'Specialty' Crops," presented at the Farm Bill and Western Agriculture workshop, 2013. https://aic.ucdavis.edu/events/FarmBill2013PDF/FarmBillLeeInsurance.pdf

Dollar plans are generally area-based guarantees with individual loss adjustment. However, unlike other yield-based plans, there is no mechanism for incorporating the performance of individual producers into the guarantee in future years. In Dollar plans, the guarantees for individual producers who elect the same coverage level is identical, no matter their production history. Guarantees are determined based on values published in the actuarial documents, known as Reference Maximum Dollar Amounts (RMDA), which generally represent the cost of establishing a crop. Producers are typically given the option of selecting a percent of the RMDA equal to the catastrophic level of coverage (CAT) or purchasing additional coverage levels. Indemnities are triggered when the percent of loss exceeds the deductible. The deductible is determined based on the producer's selected coverage level.

There are five types of Dollar plans: 1) Tree-based plans, which are not required/fixed to a contract; 2) Dollar plans (e.g., tomatoes), which are not required/fixed to a contract; 3) Fixed dollar plans (e.g., chile peppers), which are required/fixed to a contract but do not have a yield component; 4) Yield-based dollar plans (e.g., hybrid crop plans), which are required/fixed to a contract and have a yield component; and 5) Aquaculture dollar plans (e.g., cultivated clams), which are not required/fixed to a contract.

4.3.2. Revenue-based policies

Revenue-based policies are widely available for the major crop programs (e.g., wheat, corn, and soybeans) and protect producers against losses from low yields, price declines, low quality, or any combination of these events. RMA offers two types of revenue-based policies: 1) Revenue Protection (RP) and 2) Actual Revenue History (ARH). RP is the most popular plan among all crop policies offered by RMA, accounting for approximately 70 percent of all insured liability.

Table 5: Crops with revenue-based policies

Insurance program	Crops
RP	Canola, coarse grains, cotton, dry beans, malting barley, peanuts, popcorn, rice, rapeseed, small grains, sprinkler irrigated rice, and sunflower seed
ARH	Citrus, strawberries, sweet cherries, tart cherries (processing)

Source: USDA, RMA

RP policies insure producers against yield losses due to natural causes such as drought, excessive moisture, hail, wind, frost, insects, and disease, and revenue losses caused by a change in the harvest price from the projected price. The guarantee is determined in the same manner as for YP, except for RP, the amount of coverage is based on the greater of the projected or harvest price. For example, the harvest price is the average CME daily price in October for the December-futures contract of the same year for corn and the November-futures contract for soybeans. If the harvested plus any appraised production multiplied by the harvest price is less than the amount of insurance protection, the producer is paid an indemnity based on the difference.

For specialty crops, designing revenue-based insurance products has proved challenging. These crops often lack a centralized price discovery mechanism, such as a futures exchange, for developing price projections prior to planting. They also often lack data on actual harvest-time prices. To address these types of data challenges, ARH insurance plans have been implemented on a pilot basis for certain specialty crops.[72] ARH

[72] Congressional Research Service, "Federal Crop Insurance: Specialty Crops", 2019.

plans have many parallels to the APH, with the primary difference being that instead of insuring historical yield, the plan insures historical revenue. The policy is structured as an endorsement to the Common Crop Insurance Policy Basic Provisions, and indeed restates many of the APH yield procedures to reflect a revenue product. That said, each crop insured under ARH has unique crop provisions. Like current revenue coverage plans, the ARH pilot program protects producers against losses from low yields, low prices, low quality, or any combination of these events.

Basing the guarantee on producers' historical revenue, as is done in the ARH, assumes that historical prices provide a reasonable estimate of expected future prices. This assumption is deemed viable for perishable crops, such as most fruit and vegetables, but is probably less tenable with storable crops where stock carryover from the previous year can affect current market-year prices.[73]

4.3.3. Area-based insurance

Area Risk Protection Insurance (ARPI) is an area-based insurance plan that provides coverage based on the experience of an entire area, generally a county. ARPI provides protection against widespread loss of yield or revenue in a county through the Area Yield Protection (AYP) and Area Revenue Protection (ARP) options. Individual farm revenues and yields are not considered under ARPI and it is possible that producers' individual farms may experience reduced revenue or yield and not receive an indemnity. Currently, ARPI policies exist for barley, corn, cotton, grain sorghum, popcorn, rice, soybeans, wheat, and forage.

The main underwriting advantage of area-based plans is that they minimize the potential for adverse selection and moral hazard because individual producers possess no better information about expected county yields or revenues than do insurers. Likewise, the behavior of individual producers typically cannot significantly influence realized county-average yields or revenues.[74]

Despite these attractive features, ARPI policies command a relatively small share of the U.S. crop insurance market, accounting for approximately one percent of all insured acres. In part, this is because ARPI policies are subject to basis risk—the risk that farm-level values will differ from those at the county level. This risk arises because farm yields and revenues are not perfectly correlated with those at the county level.[75] Basis risk can result in situations where insureds receive indemnities that either exceed or fail to sufficiently cover the loss incurred. In extreme cases, producers can receive indemnities without incurring any loss or vice versa.[76] One study of area-based insurance in China found that basis risk significantly affects demand and minimizing the risk requires areas that are small and homogenous.[77] These are generally not characteristics of local food producers. Another study of cotton farmers in Mali found that basis risk significantly discourages demand for area-based insurance.[78] Despite this shortcoming, research also suggests that area-based insurance can improve farmers welfare—even, in some cases, more than farm-level insurance.[79]

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[73] FCIC, "Report to Congress: Specialty Crop Report", 2010.
[74] Miranda, M.J. "Area-Yield Crop Insurance Reconsidered." *American Journal of Agricultural Economics* 73(1991): 233-242.
[75] Skees, J.R., R. Black, and B.J. Barnett. "Designing and Rating an Area Yield Crop Insurance Contract." *American Journal of Agricultural Economics* 79(1997): 430-438.
[76] Ibid.
[77] Shen, Z., and M. Odening. "Coping with Systemic Risk in Index-Based Crop Insurance." *Agricultural Economics* 44(2013): 1-13.
[78] Elabed, G., M.F. Bellemare, M.R. Carter, and C. Guirkinger. "Managing Basis Risk with Multiscale Index Insurance." *Agricultural Economics* 44(2013): 419-431.
[79] Barnett, B.J., J.R. Black, Y. Hu, and J.R. Skees. "Is Area Yield Insurance Competitive with Farm Yield Insurance?" *Journal of Agricultural and Resource Economics* 30(2005): 285-301.

4.3.4. Nursery Value Select (NVS)

Nursery Value Select (NVS) is a pilot program that allows nursery producers to select the dollar amount of coverage that best fits their risk management needs. NVS, which is an asset-based form of insurance, runs concurrently with the existing nursery program and covers similar causes of loss. NVS is currently available in select counties in Alabama, Colorado, Florida, Michigan, New Jersey, Oregon, Tennessee, Texas, and Washington.

The insurable causes of loss in NVS are based on natural causes and the coverage levels permitted are 50-75 percent. Because NVS is a pilot program, the insured is only allowed coverage by basic units; optional units are not permitted. NVS also includes an additional level of coverage that allows for an Occurrence Loss Option (OLO). The guarantee for OLO is calculated the same as the base policy, but OLO allows for indemnities to be paid on smaller losses by eliminating the unit deductible.

NVS was developed to address concerns AIPs and nursery growers expressed about the original nursery crop insurance program. The number of policies sold was declining due to burdensome paperwork requirements and the need for producers to maintain materials to support underwriting. NVS simplifies the application and renewal process, allows nursery producers to select the amount of coverage that best fits their risk management needs, and eliminates the need for producers to provide a plant list based on third-party software. Instead, there is greater reliance on producers' inventory records and plant category naming conventions more familiar to the nursery industry. The loss adjustment process uses the producer's actual sales receipts and inventory records.

4.3.5. Rainfall index (RI)

Rainfall Index (RI) is based on weather data collected and maintained by the National Oceanic and Atmospheric Administration's (NOAA) Climate Prediction Center. The index reflects how much precipitation is received relative to the long-term average for a specified area (Grid) and timeframe (index interval). RI currently covers three crops: 1) annual forage; 2) apiculture; and 3) pasture, rangeland, and forage (PRF).

Each grid is a square, 0.25 degree in latitude and longitude, which translates to approximately 17 by 17 miles at the equator. The index intervals are any two months in a calendar year. The insured can generally select the amount of liability for each index interval. For the PRF, the liability is established using the County Base Values (CBV) provided by RMA. The CBVs differ whether the land is used for grazing or to grow forage. RI plans have been increasingly popular over time. The following table shows the insured liability for each year.

Table 6: Insured liability for RI policies (in millions of dollars)

Crop Year	Annual Forage	Apiculture	Pasture, Rangeland, Forage	Total
2007			387	387
2008			378	378
2009		9	524	533
2010		8	409	417
2011		7	517	524
2012		14	791	804

Crop Year	Annual Forage	Apiculture	Pasture, Rangeland, Forage	Total
2013		34	981	1,014
2014	23	77	974	1,075
2015	37	101	1,046	1,184
2016	38	118	1,391	1,547
2017	134	116	1,745	1,994
2018	151	166	2,367	2,685
2019	171	223	2,626	3,021
2020	224	251	2,991	3,466

Source: USDA RMA

RI plans are relatively simple from both the insured's and agent's perspective. Producers select the interval index amounts and the amount of liability based on the CBVs. If the policy is triggered, they receive an indemnity. There is no loss adjustment. The major issues are the basis risk, setting the CBVs, and determining the rainfall in the grid.

5. FEASIBILITY AND EFFECTIVITY OF MODIFYING EXISTING PLANS TO PROVIDE BETTER INSURANCE COVERAGE FOR LOCAL FOOD PRODUCERS

In general, we think program modification is the simplest and quickest way to improve access to coverage. That said, the feasibility and effectivity of such modifications would have various impacts on different groups of producers depending on where they grew their crop, their marketing strategies, and their production systems. These changes would also impact the premiums of existing policies, how local food producers should be covered, and the reporting and paperwork requirements. We have already made several recommendations regarding how the Whole-Farm Revenue Protection (WFRP) program materials could be adjusted to provide better coverage for local food producers (see Section 4.1). This section provides additional recommendations on how WFRP and other plans of insurance could be modified to better meet the needs of local food producers.

5.1. Small-scale production in urban, suburban, and rural areas

Modifying existing plans of insurance would have various impacts on small-scale producers in urban, suburban, and rural areas. Additional details are provided below.

WFRP

Small-scale suburban producers tend to be very diversified operations, often growing 25 or more crops each year, and this diversification serves as their main risk management strategy. Suburban producers are generally full-time producers who sell their produce/crops to restaurants, Community Sponsored Agriculture (CSAs), institutions, farmers' markets, and roadside stands, and often have stores on their property. These producers also market their produce to local grocery stores throughout the growing season and market the farm experience by having pick-your-own operations, pumpkin patches, hayrides, corn mazes, etc.

Suburban producers did express a desire for crop insurance, though the WFRP policy in its current form is not popular with these producers. Like most local food producers, they noted the program complexity and recordkeeping requirements of WFRP are too cumbersome. They also noted it would be highly unlikely they would trigger an indemnity due to their diversification. We recommended several ways RMA could improve WFRP in Section 4.1 and believe adopting such changes would encourage more suburban producers to seek out coverage.

The WFRP policy is also not popular among small-scale urban producers for several reasons, including:

- Urban producers have inconsistent access to land each year and in many cases depend on others for land. These producers often grow commodities on vacant lots provided by cities or schools on an annual basis;
- Small urban producers are generally not full-time and tend to view their operations as a community project. Urban producers often plant community gardens with neighbors and other community groups. They often provide food to local food banks, neighborhoods, or their own homes. They are typically not financially dependent on farm income for their well-being; and
- In listening sessions and interviews, urban producers expressed interest in grants to promote and provide local foods to the community but did not express interest in crop insurance.

It is unclear whether small urban producers would be interested in WFRP, regardless of changes. Most of these producers indicated in interviews they were not interested in insurance for their local food production at any cost. Likely a few larger operations might be interested if a WFRP policy were available that was streamlined, provided a higher coverage level, and was affordable.

Yield-based policies

For yield-based policies, because the guarantee is based on the producer's individual crop yields—or in the case of the Dollar plan, the cost of producing a crop in a growing area—and the same prices are applicable to all insureds, we see no fundamental disadvantage these plans pose to small-scale rural producers. Assuming 7 U.S Code section 1508(a)(2) is still binding, yield-based policies might be seen relatively advantageous for smaller producers than larger ones because the former tends to have higher average post-production costs. This means that if a small-scale producer grows in a region dominated by larger farms, the post-production costs RMA subtracts from the crop's established/projected price—or in the case of the Dollar plan, the RMDA itself—are likely to be less than the costs incurred on a smaller farm. This is simply due to economies of scale since agriculture production is generally associated with average cost curves that decrease as production grows.[80]

This advantage to small-scale rural producers exists because of the way RMA determines the costs it subtracts from the established/projected prices. Post-production costs, particularly for specialty crops, are often estimates based on studies conducted by agricultural economists at land grant universities. These estimates are unlikely to be statistically representative examples of actual costs. They are mostly prospective budgets that are prepared as a planning tool for growers in the state or region. They are typically based on interviews of representative commercial farmers, and sometimes on data collected through farm management services in which farmers may voluntarily participate. So, they tend to represent costs of the larger scale, better managed, commercial farming operations.[81] Of course, if yield-based policies were used as a model for a local foods plan of insurance, RMA may be able to cover post-production costs, making this point moot.

While it is generally true that small-scale farms have higher production costs than their larger counterparts, this assumption only holds when comparing producers who grow in the same type of production area; it is less true when comparing producers across different production areas. For example, small-scale urban agriculture can be notoriously expensive, in large part due to the high costs of land and labor in urban settings. In fact, a study published by the National Academy of Sciences found that the mean financial value of production costs per kilogram of produce harvested by small-scale urban farms was just $28.53. This figure exceeded the average cost per kilogram of purchasing the product at local stores for 53 of the 62 varieties of produce harvested on the farms.[82]

Beyond differences in production cost, yields on urban and suburban farms often surpass those of their rural cousins, which could have implications for insurance when determining T-yields. This is true for a couple of reasons. First, urban farmers face far less insect pressure, and damage from rodents or other animals is rare. This is because most urban farms are located on previously vacant, underused, or otherwise undeveloped lots in the middle of cities. Second, the plot size of urban and suburban farms tends to be significantly smaller than in rural areas, allowing producers to walk their plots quickly, address problems as they arise, and more easily harvest crops at their peak. Urban and suburban farmers can also plant more densely because they harvest by hand, nourish their soil more often, and micromanage applications of water and fertilizer.[83] While these higher yields would ultimately be reflected in urban producers' yield histories,

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[80] M. Duffy, "Economies of Size in Production Agriculture", *Journal of Hunger & Environmental Nutrition*, 2009.
[81] Agralytica, "Final Issues Evaluation Report of the Onions Crop Insurance Program", 2019.
[82] McDougall, R., Kristiansen, P., and Rader, R. "Small-scale urban agriculture results in high yields but requires judicious management of inputs to achieve sustainability." *Proceedings of the National Academy of Sciences*, Jan 2019, 116(1): 129-134.
[83] https://ensia.com/features/urban-agriculture-is-booming-but-what-does-it-really-yield/

for new farmers and those who do not have a documented history, T-yield adjustments would probably be needed to incentivize urban and suburban producers to take insurance.

Revenue and area-based policies

Revenue-based policies could also be appealing to small-scale producers for similar reasons to those outlined above. Indeed, determining the price guarantee in a Revenue Protection (RP) policy is no different than what is done for Yield Protection (YP). The challenge would be in determining harvest prices, though this is not a problem unique to small-scale producers. We often heard small-scale producers vaguely express a desire for an ARH-type policy because the guarantee would be based on their own revenue (price and yield) history. In theory, such a policy would compensate those who received higher prices for their crops. That said, interest in the ARH typically fades once producers understand the recordkeeping requirements needed to substantiate the revenue history, which are more onerous and demanding than for yield-based policies. We consider these implications in Section 5.1.6.

We suspect most small-scale producers would shy away from area-based insurance designs, even though they tend to be cheaper than farm-based schemes due to the lack of adverse selection and moral hazard. The presence of basis risk in area-based insurance plans is already a major hurdle for row crop producers, and their plantings tend to be far more homogeneous than their relatively smaller, more diversified counterparts. There is also the practical matter of RMA determining the expected and actual average county yield for all crops sold locally in a growing region and, in the case of Area Revenue Protection (ARP), identifying a price, probably by method of sale. In theory, RMA could consider grouping crops into different categories and providing coverage on a clustered basis, minimizing the number of yields and prices that needed to be identified. But in practice, it seems this would likely involve having to identify the yields and prices of the individual crops anyway to determine both the insurance "trigger" and realized revenue for an insured for all crops in a given category.

Nursery Value Select (NVS)

A local foods insurance plan developed based on the NVS concept could allow a local food producer to insure the group of commodities most important to their operation. We see little disadvantage to small-scale producers since they would be able to select the dollar amount of coverage that best fits their risk management needs. We think this concept would also be responsive to many of the suburban local food producers who indicated little interest in paying premium for some categories of their smaller value commodities but were interested in risk management coverage for their higher value groupings, such as fruit trees and berry production.

Conceptually, insuring production at a price closer to what local food producers realize would be possible under this type of plan. The challenge would be in determining post-production costs, assuming section 1508(a)(2) of the Federal Crop Insurance Act were still binding. That said, the NVS policy would need to be substantially rewritten to address local food producers' needs and operations. For example, criteria for nursery producers would not apply to local food producers (e.g., price catalogues do not exist). New crop categories would be needed, perhaps by fruit type, vegetables, tree nuts, livestock, floriculture, etc. RMA would also need to determine how to rate a new program based on NVS for local food producers, which could be a challenge.

5.2. Marketing strategies

Whether existing crop policies can be modified to better reflect producers' marketing strategies depends primarily on the ability to capture differences in prices by sales method. For most crop insurance policies, these prices determine the value of the guarantee, and for ARH policies, the annual price if there are no

sales on the insured's policy or all the sales are considered unreasonable. Assuming section 1508(a)(2) of the Federal Crop Insurance Act is still binding, there is also the issue of identifying post-production costs, which could vary substantially by method of sale. We discuss these issues, and others, in the following sections.

WFRP

The producers who market direct to consumer (DTC) have a variety of systems to capture and document sales. These producers are motivated to sell the commodities they grow using various marketing strategies. Sales records vary depending on method of sale.

Local food producers selling through farmers' markets generally use a cash box/cash only or register receipts that likely do not contain details such as unit sold or even the commodity sold. Farmers' markets usually require fast cash transactions to keep the lines moving. Tracking the type and weight/unit of commodity sold is not practical. Producers selling produce through farmers' markets generally track only daily revenue.

Producers who market farm-to-institution generally bill the institution and the billing information typically contains the commodity and quantity delivered/purchased. These producers likely could provide commodity disposition in a manner that complies with the current WFRP policy and procedure.

Like the local food producers who market farm-to-institution, producers who market through CSAs often provide invoices or lists to customers that outline what the box contains, such as number and type of commodity. However, some CSAs provide a monthly or weekly box to customers and do not always detail what is in the box. These producers would likely have records for their total revenue but not all would have yield/quantity amounts. Because CSAs are often subscription based, the CSA itself would not have an insurable interest and thus not be eligible for WFRP. Only the local food producers who are members would have an insurable interest and be eligible for WFRP.

Yield- and area-based policies

In yield- and area-based policies, the price used to value the guarantee is the same for all producers in a growing region and this would likely need to be modified to reflect method of sale to convince local food producers to sign-up for insurance. As they currently stand, such policies implicitly underinsure producers who grow relatively higher quality crops or can command higher price points than their neighbors, since the established/projected price is intended to be an average. Some yield-based policies try to address these issues by offering quality options, which insure producers against quality losses, and in some cases adjust the indemnity calculation to make it easier to trigger a loss. Producers pay a higher premium for such options and RMA may demand additional records from those who elect this coverage, records that local food producers would likely struggle to provide.

In the local food context, producers often sell their products through multiple channels with price points that tend to be higher than the established/projected prices offered by RMA. In some cases, the differences can be substantial. For example, in a separate project evaluating the APH apple policy, producers who direct market their crop told us they received prices three to four times higher than RMA's established prices for certain apple varieties. The reasons for this vary somewhat based on the type of policy. We elaborate on this issue in the following sections.

Price discovery in YP, APH, and area-based policies

For YP and area-based policies, RMA's pricing methodology typically relies on the existence of a commodity exchange for the crop. This is the case for barley, canola (including rapeseed), corn, cotton, grain sorghum,

popcorn, rice, soybeans, sunflowers, and wheat. For crops without an exchange price, RMA uses alternative methods to arrive at projected prices. For example, for dry peas, RMA relies on the offer prices from three or more buyers for a given type of dry pea. Commodity exchange prices do not differentiate by marketing strategy.

For APH policies, RMA's pricing methodology generally relies on information from USDA's National Agricultural Statistics Service (NASS) or Agricultural Marketing Service (AMS). When determining the established price, RMA typically uses the NASS or AMS average price estimate as a base, and in some cases considers the level of stocks and/or anticipated supply and demand (both foreign and domestic) for the crop. This data is sometimes supplemented with other data sources—e.g., the onions policy relies on data from the Center for Agribusiness Excellence (CAE) at Tarleton State University in Texas. Depending on the crop, RMA may review preliminary price estimates with industry observers and participants as well as other USDA economists.

While the prices received by local food producers are technically captured by each of these pricing methodologies, they are unlikely to reflect what local food producers can receive in different marketing channels. In large part, this is because commercial growers—i.e., those who sell to packhouses, processors, and other distributors—are usually much more prevalent and tend to receive lower prices for their crops, dominating the average price. This price differential is complicated further because RMA currently reduces the identified projected/established price to account for any post-production costs associated with selling or marketing the crop. Thus, there is a gap between the prices used to value local food producers' guarantees and the higher prices they receive by selling through local market channels. The result is that many local food producers tend to see existing YP and APH policies as providing insufficient coverage.

Assuming section 1508(a)(2) of the Federal Crop Insurance Act were still binding, RMA could address the pricing issue by developing different projected/established prices for crops by method of sale. However, NASS surveys do not ask producers to report information by marketing channel—though some surveys ask whether the crop was sold fresh or processed—and at any rate, there may not be enough local food producers in a growing region to establish an appropriate representative price. Moreover, there are several crops for which NASS does not report statistics at all; indeed, the availability of reliable pricing data is one of the main constraints to developing an APH policy for a crop. AMS publishes limited data for some crops sold to local markets, but it is unclear whether this will be continued or how frequently the information will be updated. Data sets for some crops in certain growing regions already appear to have been discontinued. There is also the administrative burden associated with RMA developing established prices for all crops sold through local market channels, potentially accounting for variations in utilization (fresh vs. processing) and variety.

We considered whether RMA should simply ask NASS to include survey questions asking producers to report the prices they received by marketing channel. Ultimately, we decided against this recommendation because we question whether using existing NASS data will be viable in the long-term (see Section 7.3). That said, if RMA were interested in establishing prices for various crops by method of sale, one solution may be for it to develop a price collection tool and capture price data directly from producers, similar to the way AMS captures organic prices through its Market News tool. The tool could potentially complement RMA data when determining established prices for local food producers and provide RMA with access to data on different selling methods. However, due to the diverse nature of local food production, collecting this data from local food producers—especially those who do not already purchase insurance—is unlikely to be an easy task. In practice, this could be a project led by RMA's Regional Offices, but the scale of the project may require RMA to hire a third party to undertake the effort. The study would also likely need to be conducted on an annual basis and OMB approval may be required to gather data on crops that do not currently have insurance policies.

CSAs pose an additional problem for identifying the prices of individual crops by sales method because of how different CSAs are structured. Typically, customers purchase shares or subscribe to CSAs and in return receive a diverse selection of crops delivered to them regularly during the harvest period, usually at designated pickup sites. CSAs are themselves a risk management strategy that shifts some of the financial risk producers face at harvest onto customers. For example, because shares/subscriptions are sold well in advance of harvest, it is possible for producers to suffer damage to their high-value crops and have little or none of them to provide customers. In such cases, other crops or farm products could be used as a substitute, but the financial risk to the producer was already minimized because he/she had already been paid for the crops in advance. Thus, if the CSA can sell enough shares/subscriptions to cover its costs, the main crop risk it faces is a total loss. This suggests a whole-farm or revenue-based insurance solution would be more appropriate.

Assuming section 1508(a)(2) of the Federal Crop Insurance Act is still binding, in the YP/APH context, identifying prices for crops by market channel is a necessary but not sufficient condition for determining projected/established prices for local food producers. RMA would also need to determine the post-production costs so that producers were only insured for the on-tree/on-field value of their crop. Given that most local food producers grow a diversity of crops, determining post-production costs by sales method on an individual crop basis would be a monumental effort. Indeed, most local food producers we spoke to for this and other projects said they do not, and probably cannot, determine these costs on a crop-by-crop basis.

RMA could consider conducting research to determine average post-production costs for all crops sold through local market channels in a growing region, then subtract that value from producers' guarantee. Alternatively, this might be determined for a group of crops with similar costs. This would mean the resulting projected/established prices would be somewhat different than what individual producers actually experience because the average post-production cost would not always match those of individual crops grown by different producers. But we suspect this would be acceptable to RMA if the variance in post-production costs among crops, or a group of crops, was not too large. Anecdotally, NASS is attempting to obtain post-production cost data through its Local Foods Marketing Practices (LFMP) survey, the results of which are expected to be published in 2021.

Finally, even if RMA could determine a projected/established price by market channel that accounted for post-production costs, it is unclear whether the resulting prices would be attractive to local food producers. The one exception would be if yield-based policies were used as a model for a local foods plan of insurance, RMA may be able to cover post-production costs. But as it currently stands, RMA is legislatively bound to only insure the on-field/on-tree value of the crop, and while there may be a premium associated with selling through local market channels, it may not be significantly large once all the post-production costs are subtracted out. This suggests that projected/established prices by marketing channel may not be all that different from those RMA already offers for crops with current policies, prices that local market producers already say is too low.

Price discovery in Dollar plans

In most cases, the basis of the RMDA in Dollar plans is the production costs associated with growing a particular crop. It is already challenging to isolate and quantify these costs at the unit level with existing Dollar plans because disinterested third-party data is difficult to locate or nonexistent. We struggle to see how identifying such data by method of sale would be any easier, though it is possible the NASS LFMP survey could shed some light on these costs in future years.

That said, we considered whether it would be worthwhile for RMA to research the possibility of capturing production costs by crop category—e.g., fruits, vegetables, tree nuts, etc.—and method of sale to determine suitable RMDA's for local food producers, but ultimately decided against this. Even if RMA could obtain such

estimates, additional structural problems with Dollar plans make them unstable in the long-term. For example, in 2016, RMA commissioned a review of the Dollar plans for fresh market sweet corn, peppers, and tomatoes, and while several suggestions were made about how these programs could be improved, the overriding recommendation was that the insurance plans for these crops should be converted to an individual plan of coverage like the APH or ARH.[84]

Revenue-based policies

Price discovery for RP is identical to that of YP, subjecting it to similar difficulties identified earlier when accounting for differences in marketing strategy. Complicating matters further, RP policies also require the identification of a harvest price. But ARH policies obviate such issues because the prices producers receive for their crops are implicitly captured in their revenue history. In theory, this means there is no need to establish separate prices by method of sale. The challenge to modifying ARH policies to account for various marketing strategies is that doing so would exacerbate the issues ARH plan designs already face—namely, identifying an annual price when there are no sales on the insured's policy, establishing a revenue history, and determining the unharvested production adjustment.

In general, an annual price in an ARH policy only needs to be determined to value a loss. If there are sales from the insured's unit, the annual price can simply be backed out from those sales to value the loss. In theory, one can do this and also account for sales by different marketing channels as RMA does with the Production and Revenue History (PRH) program, though we question whether local food producers would have the records to substantiate such prices. That said, producers may be able to provide records by marketing channel on a crop category or whole-farm basis.

If there are no sales on the insured's policy, or all the sales are considered unreasonable, then some other method must be used to determine the annual price. Current ARH policies typically use the NASS average price when no other price is available. However, as we mentioned earlier, NASS does not publish crop prices by method of sale beyond fresh vs. processing, and in some cases, the prices in the NASS reports are for the previous calendar year so would not reflect sales from marketings in the year of publication. In our evaluation of the sweet cherry ARH (2012), we recommended an alternative to the NASS average price based on revenue history, which could potentially be a solution for local food producers. But at the time, this recommendation was rejected because, we were told, the price must be based on the market conditions within the current season.

Beyond the annual price, there are also issues in establishing the revenue guarantee. The guarantee in an ARH crop insurance plan is based on an individual producer's historical revenue. The AIP, working with the producer, uses certified documentation on the annual acreage, production, and crop sales as identified in the Crop Insurance Handbook to support the revenue history. The assembly of a price history might be necessary to develop the history, which could be problematic for many local food producers. Based on feedback we received in listening sessions and interviews, obtaining revenue records by commodity or even by unit would probably not be feasible for most local food producers. An alternative method would be to insure all revenue on the farm and only require producers for revenue documentation on a whole-farm basis.

Finally, when determining an indemnity in an ARH plan, revenue to count is the amount the producer actually receives, plus an assessment for harvest costs not incurred in the event of a production loss. This so-called unharvested production adjustment (UPA) has often raised substantial issues in current ARH

[84] https://www.rma.usda.gov/-/media/RMAweb/Publications/Dollar-Insurance-Recommended-Modifications-Report.ashx?la=en

policies because there is an imperfect correlation between harvest costs in a given year and the approved yield, the latter being the threshold that determines if the UPA is a charge on the crop and not an incomplete harvest. In theory, local food producers, who tend to be diversified operations, would need to account for the harvest costs for each of the crops grown in a unit, though we would suggest a modification similar to the one RMA recently made to the 2021 WFRP program that allows producers to group the reporting of their direct marketed commodities. The name of the adjustment is also problematic and the links it suggests to unharvested production and not to the approved yield.

Interestingly, the ARH pilot endorsement makes no mention of the UPA and the concept appears to have been carried forward from the pilot cherry ARH to the citrus and strawberry ARH plans. In these examples, the insurance standards state specifically that the UPA procedure is to ensure "producers are not compensated for harvest costs which they did not incur in the insurance year. Historical harvest costs are implicitly included in the revenue guarantee because the price valuation point is the point of first delivery."

We have suggested two modifications to the UPA in previous evaluations of the citrus (2014) and sweet cherry (2012) ARH programs that we think would be relevant to local food producers, should they be eligible for an ARH plan of insurance. First, renaming the adjustment (we suggested "implicit yield guarantee adjustment", "approved yield trigger adjustment", or "approved yield threshold adjustment") and second, only applying it in situations when the unit has not been fully harvested. Neither of these suggested modifications were accepted by RMA and the UPA remains part of both plans, but these recommendations could be reconsidered for local food producers to encourage them to sign-up for insurance.

If the UPA is part of an ARH plan to insure local food producers, it is logical that the value be based on some measure of post-production cost. We suggested a couple of methods earlier in this report as to how RMA might gather such data for locally produced food, including conducting research to determine average post-production costs for all crops sold through local market channels in a growing region or waiting to see if the results of the NASS LFMP survey would suffice. Ultimately, the values obtained should be representative of the cost savings if the actual yield in any year is less than the approved yield. If the ARH were used as a model for a local foods plan of insurance, RMA may be able to cover post-production costs, and the issue surrounding the UPA would be moot.

NVS

Local food producers sell their products through multiple channels with price points that are higher than RMA established prices. The NVS policy sets the price based on the producer's catalogue or price list. Using the NVS concept could allow local food producers to establish a price based on their historical average or provide documentation outlining the prices they plan to use for the upcoming season. This would result in coverage for local food producers at the higher price points they receive. However, assuming section 1508(a)(2) were still binding, producers would also need to document post-production revenue and expenses to assure these were not included in the guarantee.

5.3. Alternative production systems

We discuss local food producers' use of alternative production systems in Section 3.4.1. The key issues relating to crop insurance are primarily influenced by the production system, even though some crops are more suitable for some systems than others. Many alternative production systems mitigate losses from natural causes and should generate a practice with a lower rate. Other systems require a high level of care that likely mitigate many, but not all, losses from natural events. Naturally occurring perils that are mitigated due to alternative production systems should be reviewed to determine if rates in all existing RMA insurance plans should be lowered. Additionally, there may be a need to consider the effect on rates

of covering new perils not traditionally covered by RMA. We discuss some of these issues in the section below.

Naturally occurring perils specific to production grown in alternative systems

High tunnels, greenhouses, and vertical farms all attempt to produce crops in controlled environments. Controlled Environment Agriculture (CEA), which is also used in nursery production, ideally allows for the near complete nullification of the kinds of natural perils that crop insurance is designed to cover. Crops grown in these systems are completely removed from most adverse weather or environmental damage that may occur. To the extent that there are naturally occurring perils facing CEA production systems, they largely involve extreme weather events or failure of the mechanical systems for an extended period. A recent example of this is the derecho that passed through Iowa in August 2020. The storm, which at its strongest was the equivalent of a hurricane, did significant damage to high tunnels in the state, often destroying the crops that the structures housed. Catastrophic weather events certainly have the capability of doing sustained damage to crops produced in these systems, but the more typical weather events—e.g., excessive rain, hail, moisture, etc.—have little to no effect.

A potentially major cause of loss for alternative production systems is the failure of electrical supply. In the case of vertical farms, almost all are reliant on hydroponic systems running consistently. A long-term power outage would result in crops not being exposed to the nutrient rich solutions, potentially damaging the crops. For greenhouses and climate controlled high tunnels, the failure of the climate control mechanism could leave cold-sensitive crops exposed to low temperatures for extended periods. Failure of irrigation systems would have a similar effect, though it would likely need to be for a longer period than climate control mechanisms.

RMA's individual crop policies were designed with conventional crop production systems in mind, and many of the causes of loss that are covered under those policies are not significant perils to alternative production systems. By contrast, by its very nature, the NVS program recognizes these differences. Much of the technology used by nurseries is also used in alternative production systems. However, RMA was instructed by Congress to consider "other causes of loss applicable to a controlled environment" when it developed the NVS policy. It is unclear to us whether these provisions can be applied to other crop insurance policies more broadly. The one potential exception would be if RMA were to develop a local foods plan of insurance.

The primary difference between the perils covered under NVS and other crop policies is failure of the production system. Section 10(b) of the NVS Crop Provisions outlines that, in addition to the traditional naturally occurring perils covered under crop insurance, the policy also covers failure of irrigation or power supply that is the result of a naturally occurring peril (e.g., a storm causes a power outage).[85]

5.4. Premiums

When considering the rating for the available insurance programs, it is important to keep in mind the amount of credible actuarial data for these programs is thin. Currently, a robust data source to build a fully credible actuarial rating model for the commodities that many local food producers grow does not exist. A detailed review of WFRP is outside the scope of this project, but we note that WFRP groups commodities with similar risk characteristics together and publishes rates for these groups. While RMA captures the "intended yield" for each commodity, it does not capture the actual production history or resulting actual yield. Therefore, WFRP data captured by RMA for specific commodities is insufficient to independently calculate rates. Further, the resulting grouped commodities' data (actual historical yields) is not captured.

[85] A list of the naturally occurring perils that apply is available in the NVS Crop provisions in Section 10(a)

That said, we did review the commodities insured under WFRP. We received WFRP data from RMA covering crop years 2015 through 2019. From this data we summarized the "Intended Expected Revenue" by commodity. The following table displays these amounts.

Table 7: WFRP intended expected revenue by commodity

Commodity	Intended Expected Revenue (millions)	Percent of Total
Apples	$4,229	25%
Corn	$1,218	7%
Potatoes	$997	6%
Sweet Cherries	$852	5%
Wheat	$847	5%
Alfalfa	$710	4%
Soybeans	$586	3%
Pears	$515	3%
Almonds	$416	2%
Cotton	$360	2%
Sweet Potatoes	$356	2%
Watermelons	$264	2%
Walnuts	$250	1%
Blueberries	$220	1%
Pistachios	$195	1%
Sugar Beets	$188	1%
Tobacco	$175	1%
Other Crops	$4,546	27%
Total	$16,921	100%

All the commodities in the preceding table, other than watermelons, have at least one policy available from RMA. We note that WFRP is primarily popular with fruit and nut growers as many of these commodities are offered no other policy that covers price risk. The "Other Crops" category contains over 300 commodities, many of which are grown by local food producers.

To gain a better understanding of how local food producers may view their insurance options from a cost perspective, we compared the relationships between coverages and rates across existing policies. In making these comparisons, we constructed a hypothetical local foods producer and compared the premium paid in 12 sample counties under three existing insurance plans: WFRP, NVS, and NAP. Although NVS is not currently

available to direct marketers, it could be a potential solution for local food producers. We selected our 12 sample counties with this in mind; that is, many of these counties are NVS pilot counties.

Importantly, there is an unlimited number of commodity combinations we could use for these comparisons. To make comparisons, we used the following set of sample commodities and value assumptions for WFRP:

Table 8: Sample commodity and value assumptions for WFRP

Sample Commodity	Total Value
Beans, Fresh Market	$7,000
Broccoli	$5,000
Eggplant	$2,000
Kale	$4,000
Squash, Summer	$7,000
Sweet Corn - Fresh market	$15,000

In some sample counties, the sample commodity was not listed under WFRP, so we excluded these commodities within our comparisons. Also, some of these sample commodities (e.g., fresh market beans and sweet corn) have yield-based policies available. We assumed the farmer did not purchase the available yield-based policy.

We also compared the rating for the NVS program, using the "Annual-Container" type, and NAP. The NVS Annual-Container type generally had the highest rate compared to other NVS types. If an insurance plan like NVS were designed to cover local food producers, new rating types and practices would need to be developed. The rates were derived using the USDA-RMA cost estimator. "Premium Rate" is the unsubsidized rate while "Farmers Rate" is the amount the farmer would pay after the subsidy.

In WFRP, the farmer subsidy is 80 percent if there are at least two qualifying commodity counts. For NVS, the farmer subsidy is 59 percent at the 65 percent coverage level. NAP charges a flat 5.25 percent for any buyup policy up to the 65 percent coverage level. NAP is not explicitly subsidized, nor did we research this in more detail for this report. A flat percentage rate for all crops in all counties would not be considered actuarially sound since not all insureds face the same risks. Additional discounts are available for beginner or veteran farmers among other incentives for all insurance programs. These discounts were not considered in this review. The following table displays the results of comparing the premium rates among NVS, WFRP and NAP at the 65 percent coverage level.

Table 9: Comparison of premium rates at a 65 percent coverage level

	Premium Rate at 65%			Farmers' Rate at 65%		
County, State	NVS	WFRP		NVS	WFRP	NAP
Mobile, AL	0.058	0.070		0.024	0.014	0.0525
Larimer, CO	0.021	0.128		0.009	0.026	0.0525
Miami-Dade, FL	0.081	0.045		0.033	0.009	0.0525
Kent, MI	0.018	0.066		0.007	0.013	0.0525
Cumberland, NJ	0.022	0.075		0.009	0.015	0.0525
Marion, OR	0.021	0.046		0.009	0.009	0.0525

	Premium Rate at 65%			Farmers' Rate at 65%		
Warren, TN	0.025	0.052		0.010	0.010	0.0525
Harris, TX	0.058	0.062		0.024	0.017	0.0525
Grant, WA	0.018	0.043		0.007	0.009	0.0525
Kern, CA	N/A	0.136		N/A	0.027	0.0525
Henderson, NC	N/A	0.071		N/A	0.014	0.0525
Dane, WI	N/A	0.064		N/A	0.013	0.0525

The WFRP rates are generally higher than NVS, which may be expected since WFRP also covers price risks. The rates for NVS are significantly higher in Miami-Dade County, possibly due to the hurricane exposure. However, after consideration of the subsidy the rates are closer in most counties. NAP rates are considerably higher than either NVS or WFRP. We note that the coverage and loss adjustment procedures vary between these insurance plans. This comparison also does not account for differences in coverage levels.

We also performed the same comparison at the 75 percent coverage level. NAP is limited to 65 percent coverage, so we did not include it in the following table. The NVS rates increase more than the WFRP rates at this coverage level. Additionally, the NVS subsidy rate drops to 55 percent at the 75 percent coverage level while the WFRP subsidy stays the same. Therefore, WFRP may be more attractive from a farmer premium standpoint at the 75 percent coverage level.

Table 10: Comparison of premium rates at a 75 percent coverage level

	Premium Rate at 75%			Farmers' Rate at 75%	
County, State	NVS	WFRP		NVS	WFRP
Mobile, AL	0.102	0.091		0.046	0.018
Larimer, CO	0.029	0.158		0.013	0.032
Miami-Dade, FL	0.143	0.058		0.064	0.012
Kent, MI	0.025	0.084		0.011	0.017
Cumberland, NJ	0.034	0.098		0.015	0.020
Marion, OR	0.029	0.063		0.013	0.013
Warren, TN	0.035	0.067		0.016	0.013
Harris, TX	0.102	0.080		0.046	0.021
Grant, WA	0.025	0.061		0.011	0.012
Kern, CA	NA	0.167		NA	0.033
Henderson, NC	NA	0.094		NA	0.019
Dane, WI	NA	0.082		NA	0.016

WFRP also offers 80 percent and 85 percent coverage levels if the insured has three qualifying commodity counts. The 80 and 85 percent WFRP subsidy is reduced to 71 percent and 56 percent, respectively. NVS does not currently offer coverage levels above 75 percent so we could not make these comparisons. While the inclusion of price risk within WFRP may seem more attractive as an overall risk management tool, the recordkeeping burdens may limit the demand for this product.

Additional details related to the premium effects of adjusting current plans of insurance to better meet the needs of local food producers is contained in the following sections.

WFRP

Currently RMA offers a diversification discount for producers who are diversified and grow several crops. The discount level is for seven or more commodities. As we discussed in Section 4.1.1, this is not adequate when many of these producers grow 25 to 50 commodities. RMA's Product Management (PM) Bulletin 20-059 states the new combined direct marketing commodity code provides a diversification factor equivalent to two commodities. This is likely not sufficient if a producer has more than two commodities included in the direct marketing commodity code. If RMA determines it to be actuarially sound, it should consider changing the diversification discount to allow for a higher discount for producers who grow many crops. This could decrease their premium. Alternatively, RMA could explore ways to increase the subsidy for local food producers. While this would have a similar effect, we suspect this would require legislative action.

Consideration should also be given to a higher coverage level such as 95 percent for producers who grow many crops. While this would increase the premium, it would provide more meaningful coverage for those seeking it. A full actuarial study will need to be performed if additional commodity counts to increase the diversification credit were considered or if higher coverage levels were available for local food producers.

Yield, revenue, and area-based insurance

It is unclear how modifying existing individual crop insurance policies to provide better insurance coverage for local food producers would affect producer premiums. Historical county loss costs (indemnities/liabilities) represent the primary calculation driving crop insurance premium rating, which are calculated for specific county production characteristics (e.g., the crop grown, irrigated/non-irrigated, etc.). The question is whether modifying current crop insurance options to make them more appealing to local food producers would result in a significant change in the lost cost—for example, by potentially encouraging a relatively riskier group of producers to sign up for coverage. Here, the evidence is mixed.

Since local food producers tend to be relatively small operations compared to those who sell commercially, we questioned whether smaller producers are inherently riskier than their larger more commercially oriented counterparts. Some studies indicate that larger farms are a less risky population of the insurance pool, such that if smaller farms were added, premiums would likely increase.[86] Other studies dispute this result, noting that their findings may be more robust because they account for the net return from crop insurance across several years rather than focusing on only indemnities for one year.[87] Notably, neither of these studies investigated the experience of specialty crop producers or those who grew several crops on their farm.

Local food producers tend to be diversified operations, which in theory makes them a relatively less risky sub-population of insureds compared to those currently covered by crop insurance. By producing multiple crops, local food producers are at less risk of having years of low revenue since revenues from all crops grown on the farm are unlikely to be perfectly correlated. In some years, low revenues from one or more crops may be counterbalanced by relatively higher revenues from others. Of course, for insurance purposes, diversification is only more advantageous if the crops are insured together or in groups rather than separately. That said, most local food producers, because of their size, are probably less able to adjust the

[86] Coble, K.H., and Williams, B. 2019. "Are Large Farms Less Risky to Insure than Small Farms?" *Choices: The Magazine of Food, Farm, and Resource Issues*, Agricultural and Applied Economics Association, vol. 33(4).
[87] Walters, C., and Sharma, S. "The Role of Farm Size in Crop Insurance." *Cornhusker Economics*, September 17, 2019.

financial structure of their farms—the mix of debt and equity capital—or hedge by purchasing futures contracts. Such diversification strategies are often only available to the larger producers.

Ultimately, we were unable to determine the effect on premiums of modifying current insurance structures to be more palatable to local food producers. The overarching question has to do with the riskiness of local food producers relative to the current pool of insureds, and on this point, the evidence cuts both ways. Moreover, how RMA chooses to offer coverage—i.e., various crops under one policy or one policy per crop—would affect the resulting premium. We discuss these implications in Section 5.1.5.

NVS

Under a NVS concept, a local food producer would have the option of only insuring the commodity groups that were critical to their operation (e.g., a local food producer does not wish to insure their vegetable commodities but does wish to insure tree fruit and berries). By allowing local food producers to insure by category, they could target their important revenue sources and limit the premium they would need to pay.

Since local food producers tend to be small operations compared to wholesale nursery and row crop farmers who sell commercially, we tend to see local producers as less risky. They closely manage their crops and can substitute annual crops quickly if a crop fails. Any development would need to focus on minimizing the premium rates for these local food producers.

Rainfall index

The rates for RI have already been established. No adjustment would be needed if the grids and index intervals remained the same. If the RI were expanded to include excess rainfall, rates could be easily calculated using a similar process as the current methodology.

5.5. Coverage

When modifying existing plans to provide better insurance coverage for local food producers, one question is whether it would be better to insure various types of crops under one policy or insure one crop per policy. While there are pros and cons to both options, on balance we think it is probably best to either insure all crops on the farm collectively, or at the very least categories of crops, under one policy rather than each crop individually.

The main disadvantage of multi-crop policies is that they tend to be operationally complex and are more prone to moral hazard than individual crop policies. Indeed, program complexity is one of the main complaints we heard from producers about WFRP. Regarding moral hazard, crop seasons for different crops vary, and it may be challenging to identify evidence of losses on an early crop several months after the loss occurred, though this could potentially be remedied with loss adjustment spot checks. Moreover, as one expert reviewer for the WFRP program noted, producers who insure crops with different growing seasons are more likely to encounter scenarios in which low revenue on crops harvested early in the tax year significantly increases the chances of an overall loss. This reduces the producer's economic incentive to protect against losses on crops produced and harvested later in the year. Of course, such issues could be mitigated if RMA were to provide coverage for groups of crops with similar growing seasons.[88]

[88] Knight, T.O., K.H. Coble, C.J. Nixon, J.D. Anderson, R.M. Rejesus, B.K. Goodwin, and D. Sheldon. *Adjusted Gross Revenue Evaluation: Final Report*. Washington, DC: U.S. Department of Agriculture, Risk Management Agency, 2006.

Adverse selection may also be more problematic for multi-crop policies because of the need to understand the price-yield interactions for all crops grown on a particular farm, significantly complicating development of the insurance product, and likely resulting in inaccurate rating assumptions.[89] A producer who receives coverage for, say, 10 crops with a multi-crop revenue policy has 20 random variables—10 yield and 10 price variables. An appropriate rating model would need to somehow reflect a 10-by-10 correlation matrix, and the absence of sufficient data for some of those variables would surely prevent the accurate estimation of such correlations at the farm level.[90] In theory, RMA could attempt to address issues of asymmetric information in the actuarials—for example, by offering lower coverage levels than what exists for individual crop policies. But we suspect this would be unpopular among local food producers who consistently say that current WFRP coverage is insufficient.

That said, the whole-farm or multi-crop approach has the advantage of pooling the yield, and in some cases price, risks the producer faces into a single insurance policy. Because yields and prices for different crops are less than perfectly correlated, multi-crop policies can benefit from diversification effects, resulting in lower premiums than insuring each commodity separately.[91] This is important because cost is one of the main constraints local food producers face when choosing whether to take up insurance.

For example, while researching the "fair value" of whole-farm and crop-specific revenue insurance, one study found that contracts covering multiple crops are more efficient at managing risk than portfolios of crop-specific contracts.[92] Other studies have found that multi-crop insurance policies can achieve reductions in actuarially fair premiums of 15-20 percent compared to crop-specific policies and significantly reduce premium subsidies without diminishing risk-reduction effects.[93] One study even found that the government could provide a particularly designed whole-farm insurance product free of charge for less than the value of the transfers of the federal crop insurance program.[94]

Beyond premium costs, multi-crop plans are less likely to distort markets because they are less likely to influence farmers' planting and other management decisions compared to other types of insurance.[95] There is also the potential to limit the recordkeeping burden on insureds since, in theory, much of the documentation could be reported for all crops combined rather than on a crop-by-crop basis.

Finally, there is the practical matter for local food producers in having a multi-crop policy rather than individual crop policies. There continue to be several crops without individual FCIC insurance options, in some cases because RMA has determined that individual policies for such crops are not feasible. Moreover, local food producers tend to be very diversified operations, in many cases with more than 25 crops grown on the farm. We think it is impractical to ask such producers to purchase individual crop policies for each of their crops. We suggest the multi-crop or whole-farm method.

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[89] Dismukes, R., and K.H. Coble. "Managing Risk and Revenue Insurance." *Amber Waves* 4(2006): 22-27.
[90] Chalise, L., Coble, K.H., Barnett, B.J., and Miller, J.C. "Developing Area-Triggered Whole-Farm Revenue Insurance." *Journal of Agricultural and Resource Economics* 42(1):27-44. January 2017.
[91] Ibid.
[92] Hennessy, D.A., A.E. Saak, and B.A. Babcock. "Fair Value of Whole-Farm and Crop-Specific Revenue Insurance." Paper presented at the annual meeting of the American Agricultural Economics Association, July 27-30, *American Agricultural Economics Association*, Montreal, 2003.
[93] Bielza, M., and Garrido, A. "Evaluating the Potential of Whole-Farm Insurance Over Crop-Specific Insurance Policies." *Spanish Journal of Agricultural Research* 7(25421). January 2006.
[94] Hart, C.E., D.J. Hayes, and B.A. Babcock. "Insuring Eggs in Baskets: Should the Government Insure Individual Risks?" *Canadian Journal of Agricultural Economics* 54(2006): 121-137.
[95] Makki, S.S., and A. Somwaru. "Farmers' Participation in Crop Insurance Markets: Creating the Right Incentives." *American Journal of Agricultural Economics*83(2001): 662-667.

Rainfall index (RI)

An alternative to whole-farm or multi-crop designs is RI. Many direct marketers with pick-your-own operations say that wet weather on weekends can cause a significant decline in sales. While an RI plan already exists for some crops, the concept would need to be adjusted for local food producers. Using the current RI concept, local food producers would likely be insured for too little rainfall. RI could also be modified rather easily to cover excess rainfall.

The upside to RI policies is their simplicity, agents are already familiar with these policies, and there is no loss adjustment required. However, there may be substantial basis risk. For example, if it only rains on weekends but the overall rainfall is normal, there would be no indemnification. If the current RI grids and index intervals remained the same, the major modification would need to be establishing the liability. For local food producers, CBV could be established, although this may be challenging based on limited available data. Another option would be to set the insured's liability as a percentage of their gross sales from prior years. While there is potential the insured may be over- or underinsured using these methods, this may already be true for the other RI policies.

If changes were made to the size of the grids or length of the index intervals, additional work would be needed to establish the rates. If the RI also covered excess rainfall, the current rating methodology could be used with adjustments. If the RI were modified to cover just weekends for pick-your-own producers, the underlying data and methodology would need to be extensively modified from the current policy.

5.6. Reporting and paperwork requirements

WFRP

The WFRP policy reporting and record requirements are substantially different from other policies. Yield-based policies, which we discuss below, generally require a producer to provide an annual acreage report to detail the planted acreage and a production report that collects the actual production. The producer merely certifies the information by signing the acreage report and production report form. Yield-based revenue plans, such as RP, do not require a producer to report their revenue, instead these policies use an RMA ending price. If audited, producers with an APH policy need to provide supporting documentation, such as elevator settlement sheets. ARH policies require certification like APH policies. This compares to the WFRP program, which requires substantial information just to obtain a policy. The result is both AIPs and producers view the WFRP policy negatively. The cumbersome reporting requirements were consistently cited by agents, AIPs, and producers as the largest deterrent to this policy.

To increase local food producer's interest in a WFRP, which was intended to meet the needs of these producers, RMA should consider streamlining the reporting requirements to increase producer participation and crop insurance agent interest in marketing the program. Additional recordkeeping recommendations related to WFRP are discussed in section 4.1.

Yield- and area-based policies

Yield-based policies are relatively popular among producers because they tend to be simpler and the record-keeping demands are minor, at least compared to other types of insurance programs RMA offers. Record requirements include the acreage and production reports and, in some cases, a Producer's Pre-Acceptance Worksheet (PAW). Individual crop policies may have additional requirements.

The acreage report, which details the acreage insured by the producer under the policy, is submitted on or before the crop's Acreage Reporting Deadline contained in the actuarial documents. All crops with yield-based plans of insurance are also required to submit an annual production report that collects the prior

crop year(s)' production for each crop practice and type.[96] This information is used to establish the approved APH yield. Many crop policies, including all Category C (perennial) and some Category B (annual) policies, require producers to have acceptable production evidence to support the information on their production report, though this is not collected at the time of application unless requested by the AIP or RMA. Evidence of production can be supported in several ways, including:

- Records of production commercially sold to or stored by a disinterested third party;
- FSA or CCC verified documents;
- AIP or FSA appraisal of unharvested acreage;
- AIP or FSA measurement of farm stored production; and
- Pre-harvest appraisals, pick or machine harvest records, and/or daily sales records.

Production summaries or estimates of production are not considered acceptable records regardless of who provides the summary or estimate. For most Category B crops, farm management records are considered acceptable records of production.

In addition to the acreage and production reports, producers of Category C crops and Florida citrus must submit a PAW on or before the Production Reporting Date for the crop. The PAW is the producer's self-certification of the planting and other conditions of the crop; it is used by AIPs to determine insurability and other policy requirements.

Like yield-based policies, acreage and production reporting are required for area-based policies, though different rules apply to when producers can revise acreage reports. In area-based policies, production reporting is required by crop/county rather than by unit and are generally due at the end of the growing season to close out the policy crop year. Production reports must also be supported by acceptable records as described above.

In our conversations with producers, very few raised issues with these reporting requirements, though some took issue with the need to provide evidence of production. That said, as far as yield-based policies are concerned, RMA's documentation demands of producers are probably the minimum required for underwriting purposes: the acreage the producer wishes to insure, evidence the producer has grown the crop in previous years, and in some cases, certification of the planting and other conditions of the crop.

ARH

In general, ARH plans require revenue reports that contain insurable acreage amounts, production, appraised production, and revenue and these must be separated in the appropriate manner to support the insurance guarantee. All information in the revenue reports typically must be substantiated by verifiable records—e.g., AIP loss records, settlement sheets, or appraisals. For those ARH programs that cover direct marketers, appraisals are often required for direct marketing acreage and must also be accompanied by sales records. AIP appraisal of unharvested marketable production may be used in the annual revenue determination. Such requirements are generally seen as more onerous among producers because sales records often must detail things like the price, quantity sold, and sometimes the varieties and grades depending on the crop. But such records are necessary to determine the insurance guarantee.

[96] For Dollar plans, production records are not required to establish the insurance guarantee, but they may be necessary for loss purposes.

For some existing ARH programs, harvestable marketable production that is rejected by the buyer can be included in the annual revenue determination and is valued using the annual price procedure. But as we discussed in Section 5.1.2, determining this for local food producers could be challenging. Moreover, such production typically must be accompanied by acceptable supporting records, which might include items such as gross production, percent of the crop that was damaged, grade, and evidence of the condition of the damaged crop. These are records local food producers are unlikely to have.

RMA could consider an ARH concept for local food producers where the guarantee was based on the total revenue produced on the farm. In theory, this would eliminate the need to report revenue by crop. The challenge would be on the loss adjustment side and, assuming section 1508(a)(2) were still binding, identifying appropriate post-production costs to subtract from the guarantee. As we suggested earlier, this would likely require separate guarantees by method of sale. We also question how many local food producers would be able to provide the records needed to substantiate the guarantee. Ultimately, we think simplifying the recordkeeping requirements in WFRP would be a better and easier solution for local food producers.

NVS

A plan developed based on the NVS concept could allow a local food producer to insure the group of commodities most important to their operation. Conceptually, categories could include vegetables, berries, fruit trees, tree nuts, livestock, etc. with producers insuring only the categories they determine are most critical to their operation or they may wish to insure all categories. Reporting requirements would need to be contemplated and consider the types of records these producers maintain.

Rainfall index

Reporting requirements for a RI policy could be very simple. The insured would need to qualify as a local food producer and some documentation would need to occur to ensure the insured was growing crops in the insured year. Additional records may be required such as type of commodity and acreage. Gross historical sales may also be used. Regardless, the amount of reporting would be much lower than other types of policies. There also would be no loss adjustment or requiring the AIP to review records after a loss occurred.

6. LISTENING SESSIONS AND INTERVIEWS

To obtain detailed feedback regarding issues related to insuring local foods, we reached out to stakeholder groups (including growers, AIPs, RMA staff, and others), held 17 virtual listening sessions, interviewed more than thirty individuals, and fielded calls from additional parties. We also received written materials with suggestions from some individuals.

6.1. Listening sessions

The proposed listening session plan was for six in-person sessions (two in California), plus a virtual session for each of the seven Census of Agriculture regions. Covid-19 pandemic restrictions, as well as concerns about in-person attendance, necessitated a change in the original plan.

The modified plan initially included 16 virtual listening sessions (VLS), covering the seven Census of Agriculture regions, but adding other geographies, specific audiences, and/or producer categories.

We coordinated internally, with our SME, and with RMA to identify target audience coverage as well as the best places and times for listening sessions in major growing regions. Our SME, Dr. Becca Jablonski, emailed approximately 30 contacts requesting feedback on the best timing for the sessions. Feedback on time of day suggested that lunchtime was the best time for the sessions, so they were scheduled for lunch where possible.

We prepared a listening session announcement covering all the sessions that was shared with RMA.

Dr. Jablonski initially sent the announcement out to approximately 100 people across the country. These included faculty at land grant universities across the U.S. with extension responsibilities, some national organizations (including National Young Farmers Coalition, National Farmers Market Coalition, the Wallace Center, American Farmland Trust, National Farm to School Network, National Sustainable Agriculture Coalition (NSAC), and others), plus some State Department of Agriculture listservs. She also asked that the announcement be posted on Comfood, which includes thousands of individuals, including many farmers/ranchers that sell through local food markets.

Additionally:

- USDA AMS sent out the announcement through GovDelivery, which has an extensive list including thousands of farmers/ranchers selling through local food markets;
- The Farm Credit Council sent it out through its national network;
- The National Center for Appropriate Technology (NCAT) requested a link to RMA's page and pushed the announcement out in NCAT's ATTRA Sustainable Agriculture Weekly Harvest newsletter; and
- The announcement and session details were placed on RMA's Specialty Crops page.

Finally, we also reached out to National Crop Insurance Services (NCIS), which circulates such announcements to the industry.

VLSs were arranged for the following groups:

- Region 1 (AZ, CA, CO, HI, NV, NM, UT): Producers (August 17, 2020)
- California: Producers (August 18)
- Region 3 (AK, ID, MT, OR, WA, WY): Producers (August 19)

- West Coast - Insurance: AIPs / Adjusters / Agents (August 19)
- Direct: Farmers marketers / CSA operators / Roadside stands / others (August 20)
- Other (intermediated) direct marketers: retailers, schools, institutions, others (August 20)
- Region 4 (IA, KS, MN, MO, NE, ND, SD): Producers (August 24)
- Region 7 (IL, IN, MI, OH, WI): Producers (August 25)
- Region 5 (AR, LA, MS, OK, TX): Producers (August 26)
- Livestock: Producers / agents / others (August 27)
- Midwest / Central / South - Insurance: AIPs / Adjusters / Agents (August 27)
- Urban farms: Producers /agents others (August 28)
- Region 6 (FL, GA, AL*, KY, NC, SC, TN, VA, WV): Producers (August 31)
- Region 2 (CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT): Producers (September 1)
- East Coast - Insurance: AIPs / Adjusters / Agents (September 2)
- Floriculture: Producers / agents / others (September 3)

*Alabama was moved from Region 5 to Region 6 by request

Participation in the VLSs totaled approximately 400, for an average of two dozen participants per session. Total participants in each session typically ranged from 15 to 45 people. On average, half the participants were either from the study team or RMA.

Attendance and participation at the sessions was mixed. Typically, two to five producers attended each session targeted at producers, plus a variety of regional extension specialists and/or staff of organizations supporting local producers. More than 90 percent of participants joined via Zoom; a few occasionally joined by phone only.

Poor attendance at the California session and at the Other (intermediated) direct marketers' session led us to offer a make-up session on the evening of September 30, 2020. Dr. Jablonski emailed more than 130 colleagues, primarily in the Western U.S., and confirmed that 6pm PST would be the best time. An announcement for this meeting was circulated to RMA, NCIS, and again directly by Dr. Jablonski.

6.2. One-on-one interviews

We supplemented the listening sessions with more than 30 interviews to obtain feedback relating to the possibility of insuring local food production. The roles and locations of the individuals we spoke with included:

- Producers (13 total) in the West (4), Midwest (6), and East (3);
- AIPs / agents / adjusters (4);
- Extension experts (5);
- National (3) and regional (2) organizations supporting farmers, plus a consultant (1); and
- RMA staff from Regional Offices (4).

These additional interviews are reflected in the table below:

Table 11: One-on-one interviews

Role	
Producers	13
Insurance (AIPs / agents / adjusters)	4
Association / University / Extension	5
National/regional organizations supporting farmers	5
RMA	4
Other	1
Total	32

Feedback from these interviews has been included in the Appendices.

6.3. Emails and calls

We also received detailed written submissions from:

- A farmer;
- The Center for Rural Affairs;
- A coalition of extension groups from New England; and
- Feedback previously provided to RMA by the New England coalition and by NSAC.

We also fielded half a dozen extended calls. The conversations were with individuals from NRCS and NSAC, two insurance agents, and two other parties.

6.4. Summary of sources of feedback

The following table summarizes the sources of feedback for this project. Participant counts listed for each session are our best approximation, based on snapshots captured for most of the sessions, plus notes.

Table 12: Sources for data collection

Event / source	Participants / details	Total
Listening sessions		
Region 1 - West/Southwest, HI - Producers	15 plus study team (6), RMA (8)	29
California - Producers	2 plus study team (7), RMA (6)	16
Region 3 - West/PNW, AK - Producers	2 plus study team (3), RMA (4)	9
West Coast - Insurance	19 plus study team (7), RMA (4)	30
Direct: Farmers markets / CSA / stands / others	12 plus study team (5), RMA (9)	26
Intermediated direct marketers	1 plus study team (5), RMA (4)	10
Region 4 - Midwest - Producers	17 plus study team (4), RMA (10)	31
Region 7 - Midwest/East - Producers	9 plus study team (3), RMA (2*)	~14
Region 5 - South	6 plus study team (3), RMA (6*)	~15
Livestock	7 plus study team (3), RMA (11)	21

Event / source	Participants / details	Total
Midwest - Insurance	17 plus study team (4), RMA (13)	34
Urban farms	14 plus study team (3), RMA (4)	21
Region 6 - Southeast	11 plus study team (3), RMA (10)	24
Region 2 - Mid-Atlantic, Northeast	29 plus study team (3), RMA (11)	43
East Coast - Insurance	12 plus study team (3), RMA (8)	23
Floriculture	8 plus study team (3), RMA (10)	21
Make-up session	16 plus study team (3), RMA (4)	23
Written submissions	Written input received from 3 groups; Previously submitted input from two parties	
One-on-one interviews / other calls	33 scheduled interviews, 13 with growers; the rest were AIPs, Associations, Extension, and RMA. 6 additional phone conferences/calls	

*Estimated

6.5. Summary of feedback

There was substantial interest in improving coverage for local food production. Many topics and areas of concern were covered during the 17 listening sessions and more than three dozen telephone conversations. The subsections that follow summarize the feedback received.

Summaries of the feedback provided, and topics covered during the listening sessions as well as detailed interview write-ups, are provided in the Appendices.

6.5.1. The big picture

Given the less-than-ideal fit between existing crop insurance programs and suppliers of local foods, many local foods producers have deliberately sought other ways of managing their risks. The most prominent of these methods is commodity diversification. Many of the participants in the sessions and the interviewees have highly diversified operations—not only in terms of products grown, but also in terms of marketing channels.

Moreover, for many, other aspects of their business also help them manage risk. Some produce in structures with some degree of protection from the elements (greenhouses, hoop houses, high tunnels, etc.); others lock-in their revenue up front through Community Supported Agriculture (CSAs).

Another point made by several observers is that the primary risks faced by local food producers are obstacles other than crop insurance risks, e.g., land affordability, lack of water, financial support, and technical assistance.

Of the local food suppliers who participated in listening sessions or interviews, the Noninsured Disaster Assistance Program (NAP), managed by the United States Department of Agriculture's (USDA) Farm Service Agency (FSA), was most often cited as being purchased. However, much of the discussion and conversations revolved around Whole-Farm Revenue Protection (WFRP). Many producers indicated having some knowledge of WFRP, having explored the possibility, but that they did not use it for a variety of reasons.

Recordkeeping requirements and insufficient price were overwhelmingly cited as the primary obstacles keeping local foods producers from using existing crop insurance programs.

6.5.2. Knowledge of WFRP, other FCIC insurance programs, **and FSA's NAP** program

Many participants had some exposure to WFRP, and the challenges local diversified producers have using it. Given WFRP's recordkeeping requirements, they noted that the more crops are grown, the more complex WFRP is. As one interviewee put it, "diversity is there to mitigate losses, but WFRP penalizes it." Another challenge cited related to WFRP was its "high cost."

Several individuals working at organizations supporting farmers noted that there was often a lack of agents trained in WFRP and/or an unwillingness on the part of the agents to sell the product.

Some producers were familiar with (and sometimes took out) some of the more common yield-based policies on their principal crops. However, they noted that the prices they are guaranteed are inadequate relative to the prices they can receive in the market. Other interviewees cited the inadequate coverage for organic crops, for the same reason: they considered the price guarantee for their organic crop(s) inadequate.

Several of the producers interviewed had direct experience insuring under the NAP program. Several also related bad experiences with NAP, specifically FSA's definition of "disaster", which growers claimed led to far smaller indemnities than they expected. Another sore spot was challenges around yield issues: "FSA is unwillingness to certify yields." As one interviewee put it, "acceptable, verifiable yields is an impossible requirement." A couple of different producers indicated that for production records, they have pick records signed in front of a notary. At least a couple of interviewees had filed appeals related to NAP claims.

In other instances, many producers noted that they were unaware of the NAP buyup option.

Finally, some producers had gone through the written agreement process but were either turned down or decided that the paperwork was too burdensome to pursue a policy.

6.5.3. Recommended improvements to WFRP

Listening session participants and interviewees offered many suggestions on how to improve WFRP. The following list includes the most significant and commonly cited points:

- Reduce recordkeeping requirements. Specifically, many lamented the need to keep track of sales volumes and expenses by crop.
- Train agents better, provide them with better incentives, and make it easier to find them.
- Allow products to be grouped (e.g., fruits, vegetables) rather than require they be tracked separately (note: RMA is introducing a direct marketing commodity code in the 2021 WFRP Crop Provisions).

Several observers noted that WFRP, though created to support specialty producers, has morphed into something that provides cheaper rates for traditional producers.

6.5.4. Current and future industry challenges

The response to COVID-19 has led to challenges for local foods producers. Some of the most disruptive aspects were the almost complete elimination of certain sales channels and the diminishing of others. Local food producers often have agreements to sell to local buyers, and in the case of restaurants or schools, for

instance, many of these buyers ceased operations when the pandemic began. Many growers also reported a slowdown at farmers' markets or in other direct marketing channels where people shop in-person.

That said, the news has not been all bad. Many local foods producers have pivoted and built other channels for direct sales. Some have begun using or expanding online sales. Sales through CSAs and direct-to-consumer (DTC) are doing better, particularly on-farm sales. Some even report doing more business now than before, though this was generally the exception. However, overall, observers indicated that the market for local foods has been resilient, as consumers seek to support local businesses.

Those working with livestock repeatedly cited slaughter availability as a major problem for the foreseeable future. Some noted that local facilities are booked out one to two years in advance, making it difficult for small local producers to plan for slaughter of their animals. This phenomenon, they explained, will mean that they must spend extra, inefficiently, to maintain the animals well past their ideal slaughter point.

6.5.5. Marketing strategies

Participants cited selling through multiple channels, ranging from intermediated sales to wholesale, schools, and restaurants, to direct sales through pick-your-own, CSAs, roadside stands, farmers' markets, and other venues.

Many producers and industry supporters and observers cited a diversification of sales channels as a significant marketing and risk mitigation strategy.

6.5.6. Recordkeeping practices (production and revenue)

Local food producers keep records in many ways. Those supplying wholesale were most likely to have the records necessary for insurance. Those selling at farmers' markets and/or roadside stands were far less likely to have good records.

Producers interviewed mentioned keeping revenue records by crop, though generally not by variety. For yields, they mentioned having pick records. Most of the producers reported filing a Schedule F. Producers engaged in organic farming kept very detailed records to meet requirements. Others mentioned following organic practices generally, but not keeping records as they considered the benefits not worth the additional effort.

Some producers, particularly those selling at more sophisticated food hubs, as well as younger farmers, have gradually been adopting technologies that allow them to track sales with greater granularity. One venue reportedly requires that its suppliers track everything and insure their crop with WFRP. The market response to COVID-19 has had the effect of accelerating this recordkeeping trend/transition, as more sales have shifted online and through CSAs or on-farm direct sales (and away from farmers' markets).

RMA Regional Office (RO) staff reported producer challenges with recordkeeping, as well as loss adjusters' observations about producers' lack of good records. RO staff reported that producers kept decent production records but that cash sales often would not get tracked, and if they did, the records would likely fall short of what was needed. They mentioned producer reluctance to share records as an obstacle as well.

Insurance representatives noted that there was a spectrum when it came to recordkeeping, with some producers keeping very good records, while others do not. Moreover, some producers do not keep their records for three to five years but indicated they may be willing to if they needed them for insurance purposes.

Several individuals suggested allowing producers to use their FSMA and organic certification paperwork as part of their crop insurance recordkeeping requirements, where possible.

6.5.7. **Definition of "local"**

"Local" was defined in many ways by producers and others. Ranges cited included sales within 25-50, 50-100, 100, 100-200, 250, or 400 miles. However, the most common response, by far—particularly from producers themselves—was "the distance a producer would drive to sell their products."

A few other definitions were sometimes cited, such as "in the same county, or county-adjacent"; "within the metropolitan region"; "whatever is determined at the county level"; and "in-state."

6.5.8. Producer interest in a modified current RMA program or a potential new program

Most often, concepts that participants and interviewees were most interested in, and voiced, were ones that would cover producer revenues at prices close to what they could receive in the market. There was general agreement, most of the time, that insuring production, given the substantial diversification of most local food producers, would be overly complicated.

An exception to this was the Northeast of the country, where multiple individuals noted that many production-based policies available elsewhere could be, but have not been, made available in the region.

Finally, multiple people shared the following opinion, in one form or another: what producers want is insurance against weather perils, at low cost.

Expectations regarding program administration

Simplicity was the primary feature requested related to administration. Tracking sales by crop, much less variety, is a challenge for many local food producers.

The other aspect of program administration requested was to make it easier to locate trained agents in their region.

6.5.9. Producer interest in asset-based coverage via a Dollar plan

Though the dollar plan was included in the session slides for discussion purposes, only a couple of individuals voiced consideration that a dollar plan might work. Where made, these suggestions did not gather much traction with the broader group.

Expectations regarding program administration

As noted above, with a couple of brief exceptions, dollar plans were not seriously discussed in the listening sessions and interviews. There are a couple of key reasons for this. First, dollar plan guarantees generally represent the cost of establishing a crop, which falls far short of the prices most local foods producers can get for their crops, hence it is unlikely the guarantees provided under a dollar plan would meet their needs. Second, several people, usually from the insurance industry, voiced their opinion that RMA was not interested in providing new dollar plans, which appears to be the case. Finally, the diversity of crops grown by local foods producers likely makes the establishment of guarantees impossible.

6.5.10. Viability and marketability of a potential new insurance program

One of the main reasons many attended the listening sessions was to be a part of a conversation about potential new programs. There is clearly significant appetite for a program, or current program changes, that provide better coverage for producers supplying local foods throughout the country. This was particularly true in the Midwest and the Northeast, with their large numbers of small, diversified local foods suppliers and more sharply defined growing and marketing windows.

Feedback repeatedly posited that any program change or new policy introduced, with a goal of drawing more local foods producers into crop insurance, must insure a significant share of the revenue they expect to receive.

It was also made clear that complexity in recordkeeping is a major obstacle to insuring local foods producers, for two major reasons: first, the recordkeeping comes at very high cost, and second, the related underwriting creates so much work for agents that they have little interest in writing policies.

Although some expressed skepticism about small local farmers being willing to pay for insurance at all, in general, producers cited a willingness to pay ranging from two to five percent of revenue, with about a four percent average. In terms of a percentage of the guarantee, the figure cited was generally in the range of five to ten percent.

Assuming a premium subsidy of 75 percent or so, it is unlikely that unwillingness to pay would be a deal-breaking hurdle for a policy targeting local food producers.

6.5.11. Challenges for developing and implementing a policy for local food producers

The most significant challenges cited by producers who had investigated but dismissed insurance options, and by insurance agents and other observers, focused on recordkeeping requirements and the lack of incentives for insurance agents.

Frequent advice for a new policy included making coverage simple, e.g., by simply using the schedule F without all the additional requirements, and by allowing producers to use categories/"buckets" (e.g., fruits, vegetables) rather than have to track crop-by-crop.

7. INSURING LOCAL FOOD PRODUCTION

Crop insurance helps insulate producers from the risks that lead to farms' overall low survival rate (only 56% of farms reported having positive income in both 2007 and 2012). However, small farms, particularly those that are highly diversified, have limited options for crop insurance. For those that are not highly diversified, standard crop insurance policies often fail to insure production at prices commensurate with what is received through direct marketing since policies can only insure on-field value. For those that are highly diversified, Whole-Farm Revenue Protection (WFRP) exists, but program paperwork requirements are too burdensome for there to be widespread adoption (see Section 4.1.).

Those who sell wholesale are more easily able to participate in crop insurance programs, which were designed with conventional production in mind, and are insured much closer to the actual value they receive for the crop. We discuss the risks local food producers face, the legal constraints confronting RMA in covering those risks, and other issues related to insuring local food production in the following sections.

7.1. The risks

There are many financial risks associated with local food production, several of which vary significantly by production system (i.e., conventional versus alternative). For this report we have considered both risks to an individual farm and the local food system more broadly. An individual producer is exposed to both sets of risks.

Table 13: Local food system risks

<table>
<tr><th colspan="2">Individual risk</th><th>Local food system risk</th></tr>
<tr><td>Conventional</td><td>Alternative production system</td><td>All production systems</td></tr>
<tr><td colspan="2">Price basis risk (for area-based policies)</td><td>Price decline due to overproduction</td></tr>
<tr><td colspan="2">Buyer/contractor insolvency (for those who sell to institutions)</td><td>Price decline due to closure of market (pandemics, weather, etc.)</td></tr>
<tr><td colspan="2">Catastrophic weather events</td><td>Increase in labor/marketing costs</td></tr>
<tr><td rowspan="3">Typical MPCI pest, disease, and weather-related events (e.g., excessive rain, moisture, drought, hail, etc.)</td><td>Property damage causing damage/death to inventory</td><td>Bad weekend weather</td></tr>
<tr><td>Localized plant disease causing mortality, reduced efficiency, or making inventory unmarketable</td><td>Demand reduction and price decline due to negative news scare (e.g., E. coli outbreaks on vegetables)</td></tr>
<tr><td>Failure of electrical supply</td><td>Exit of farms due to lack of profitability (especially for CSAs)</td></tr>
</table>

According to research and evidence from our listening sessions and interviews, the COVID-19 outbreak has had a substantial impact on many local food producers. Producers and observers have described both negative and positive results from the reactions to the pandemic. On the negative side, there has been a loss of major customers, a lack of local animal processing due to competition for facilities, much lower traffic at farmers' markets and other local sales hubs, and the evaporation of demand from schools and some restaurants. By contrast, there have been a few reported benefits as well, though not necessarily for

those suffering negative effects. Pluses include strong demand for local food and local delivery generally, particularly through CSAs and on-farm sales and an expansion in online sales. Some growers reported that their businesses have grown.

However, overall, the impact appears to be negative. According to one study, market closures are estimated to have cost small farmers $600 million in lost revenue.[97] For those who grow and sell on a seasonal basis, many producers may limit or stop production until a future expectation of a positive margin appears.

Beyond pandemic effects, weather events affecting a particular growing region are often thought to affect producers of the same crop uniformly, but individual producers using alternative production systems may not be susceptible to such risks and could still market their crops, potentially at higher prices if market supply is limited. Even conventional producers may try to sell more of another crop or value-added product to make up for the lost revenue to a damaged crop. Thus, crop insurance subject to an established/projected price might over-indemnify a local food producer in certain cases.

Additional risks beyond those strictly related to production or price declines relate to the losses associated with continued expenses without offsetting revenue. Coverage for these costs is commonly referred to as Business Interruption (BI) insurance in the commercial insurance marketplace. BI insurance can be added to the farmer's property insurance policy or package policy, such as a Business Owner's Policy (BOP) or a Commercial Multi-Peril (CMP) policy. BI provides the following coverages:

- Lost income;
- Fixed costs;
- Employee wages;
- Taxes;
- Loan payments;
- Temporary moving expenses; and
- Extra rental expenses.

BI is typically only triggered when an insured event causes property damage to the place of business. Generally, there is a waiting period and time limit (e.g., one year) for coverage. BI coverages vary significantly depending on the size and complexity of the business. Importantly, BI coverage is unlikely to cover pandemics because standard BI policies only apply when a business sustains direct physical loss or damage.

For local food producers, BI risks exist in the case of catastrophic events—such as the derecho in Iowa that destroyed several high tunnels earlier this year, or the loss of livestock—that significantly reduce producers' ability to supply local food markets. Such events have various effects on local food systems. For example, a catastrophic livestock disease event may result in an overstock of supply initially as local demand for the products decline. Decisions by local farmers would need to be made regarding the current inventory and whether to continue to breed. Projecting future demand several months after the event would be a challenge. The producers would still incur many costs such as feeding if they chose to stop or reduce breeding. Decisions would also need to be made about the sows, which would have a very low value in the marketplace during a low demand period.

[97] https://www.washingtonpost.com/news/voraciously/wp/2020/04/01/facing-devastating-losses-small-farmers-pivot-to-sell-directly-to-consumers/

7.2. Defining the insured

Insurable interest is defined in the U.S. Code of Federal Regulations (Section 7 CFR 400.651) as "the value of the producer's interest in the crop that is at risk from an insurable cause of loss during the insurance period. The maximum indemnity payable to the producer may not exceed the indemnity due on the producer's insurable interest at the time of loss."

In a separate document released in 2012 describing the criteria for feasibility of insurance product development, RMA noted that "the party to be insured must have an 'insurable interest' in the commodity. This means some portion of the commodity at risk must be 'owned' by the insured party. For example: contract growers of livestock often provide labor and housing but have no ownership of the actual animals so do not have an insurable interest."[98]

Such legal constraints have implications for certain types of Community Supported Agriculture (CSA) organizations. For example, we question whether a CSA that sells shares to several farmers in return for a fixed subscription would have an insurable interest in the commodities. However, the farmers who supply the CSA would undoubtedly have an insurable interest.

We discuss local foods or food products that can legally be insured and the definition of "food product" and implications for insurance in the following sections.

7.2.1. Local foods or food products that can legally be insured

RMA's authority to offer insurance is clearly outlined in 7 U.S Code sections 1508 and 1522. In general, insurance cannot extend beyond "the period during which the insured commodity is in the field," except for tobacco, potatoes, sweet potatoes, and hemp. For WFRP purposes, RMA is required to allow "producers (including direct-to-consumer marketers and producers servicing local and regional and farm identity-preserved markets) who produce multiple agricultural commodities, including specialty crops, industrial crops, livestock, and aquaculture products, to participate in the plan (7 U.S. Code §1522)." This appears to cover all raw commodities but not value-added products that require additional processing. That said, RMA can cover market readiness expenses through WFRP. This includes "coverage for the value of any packing, packaging, or any other similar on-farm activity the Corporation determines to be the minimum required in order to remove the commodity from the field (7 U.S. Code §1522)" as directed by Congress through the 2014 Farm Bill.[99]

RMA has historically interpreted the law governing crop insurance as not allowing for coverage of post-production costs, other than those that are defined as "market readiness" and has developed methods for deducting such expenses from the guarantee, depending on the type of insurance plan (see Section 5.1.2). While such provisions are not uniquely applied to local food producers, they do create a gap between the prices used to value these producers' guarantees and the higher prices they receive by selling through local market channels. In part, these higher prices reflect the additional input costs incurred by local food producers, including marketing, transportation, and selling the crop. But even absent these costs, we suspect there would still be a premium associated with selling to local food markets because there are consumers who are willing to pay more for food they know was produced locally (and perhaps organically and sustainably as well). Thus, there likely is a portion of local food producers' prices that RMA could legally

[98] https://legacy.rma.usda.gov/fcic/2013/criteria.pdf
[99] https://www.usda.gov/media/press-releases/2014/05/21/new-pilot-program-offers-coverage-fruits-and-vegetables-organic-and

cover; the challenge is in identifying the magnitude of that price premium and separating it from the associated post-production costs.

Considering crop insurance more holistically, we note that the law as written implicitly incentivizes wholesale distribution channels over the more direct marketing channels local food producers are more likely to use. Based on our reading of 7 U.S Code section 1508(a)(2), Congress expresses little interest in providing insurance coverage for any post-production costs incurred by farms, except in a few limited circumstances. Whether that is appropriate from a crop insurance perspective is a philosophical question we leave to policymakers.

But we would be remiss if we did not note that post-production costs associated with commercial production—where producers sell to wholesalers or other intermediaries—are generally far lower than what local food producers experience. The result is that the insurance coverage RMA is legally able to provide much more closely reflects the prices commercial producers are likely to receive than their direct marketing counterparts. Even if RMA were to develop a mechanism that made it easier for local food producers to identify post-production costs, the resulting insurance guarantee may not provide meaningful coverage.

One way to rectify this imbalance would be for Congress to change the law by adding "local food production" to the list of items exempt from the on-field/on-tree coverage provisions of section 1508(a)(2). In theory, this would eliminate the need for local food producers to document post-production costs. The definition of "local" and other considerations would likely need to be included, but much of that work has already been done by the Food and Drug Administration (FDA) in outlining eligibility for a qualified exemption from the Food Safety and Modernization Act (FSMA). From a practical standpoint, we think such legal changes would have a significant impact on local food producers' participation in crop insurance programs. However, they might also create an additional administrative burden for RMA, which would be responsible for identifying new projected/established prices for a multitude of crops sold in various local food markets.

Alternatively, one might interpret the Food, Conservation, and Energy Act of 2018 (the 2018 Farm Bill) as having already obviated the post-production cost issue by instructing RMA to make a local foods crop insurance policy available "notwithstanding section 1508(a)(2)" if such a policy were viable. While this report does not consider how the 2018 Farm Bill should be interpreted, if post-production costs were insurable, it would certainly improve the feasibility, marketability, and quality of insurance coverage for local food producers.

7.2.2. "Food products" and implications for insurance

We suspect that any insurance policy specifically covering local food production would need to define "food products" independently with respect to floriculture, fruits, vegetables, poultry, or livestock. This is because many food products are value-added products—e.g., jams/jellies, cider, apple pies, etc.—that include inputs unassociated with the crop itself, and it is unclear to us that such inputs are legally insurable, regardless of whether section 1508(a)(2) is still applicable. This is because, "agricultural commodity" appears to be somewhat narrowly defined in section 1518 of the Federal Crop Insurance Act by referring to several crops in their raw forms. However, by their very nature, many food products are transformed from their raw form and thus no longer fit the definition of agricultural commodity. Even if food products could be legally insured, this would significantly complicate the policy design. Thus, we question whether it would be feasible to cover local food products given the rating, pricing, and loss adjustment implications.

7.3. Existence and consistency of pricing data

Pricing data exists in limited fashion for many of the marketing channels that are typically considered local. We discuss the types and availability of local food pricing data in Section 3.11. Broadly, there is a lack of

consistency in the data both among and between marketing channels. Some marketing channels have a standard reporting protocol outlined by the Agricultural Marketing Service (AMS), while others do not, in which case AMS leaves it to individual states to determine what data should be collected. There is also a general lack of participation among states. Only 18 states report any local pricing data, and they do not report it for all marketing channels.

The local food marketing channel with the most pricing data is farmers' markets, where 13 states report data. However, this data is not consistent for the reasons outlined above. Data format, frequency of reporting, and the number and types of farmers' markets that are included vary by state, making it difficult to aggregate or compare data across regions. There are also major local food producing regions that do not report farmers' market prices at all. Of the top five states in terms of direct to consumer (DTC) sales, only Virginia reports on prices.[100] Vermont is the only state from the New England region to report on farmers' market prices, and the data reported is less detailed than other states. The only region with comprehensive reporting of farmers' market prices is the Southeast, except for Florida, and there is no west coast data reported at all. Figure 10 shows states that are reporting pricing data.

There are several local food marketing channels that have no pricing data.[101] The only institutional pricing data available is farm-to-school, and only four states report that data. Prisons, hospitals, and other local food purchasing institutions are not reported. Other DTC marketing channels, such as CSAs, farm stores, roadside stands, online sales, and pick-your-own operations also do not have any pricing data. Retail prices for local food are reported by AMS, but these prices are reported at the national level, and cannot be segmented to capture regional differences.

Not only is local food data imperfect, but it is also unclear whether funding for data collection will continue moving forward. Funding for such efforts has already begun to decrease and it seems states are unlikely to continue the effort without adequate funding from AMS. This is true of price collection efforts in general. The National Agricultural Statistics Service (NASS), the primary collector of agricultural pricing data in the U.S., has seen its funding decrease, causing it to scale back collection of price data on several specialty crops. For example, NASS stopped reporting data for most types of Arizona citrus about a decade ago. More recently, NASS has stopped reporting some citrus data sets in California and Texas—most notably price breakouts by utilization—for several crops, to avoid disclosing data for individual operations. According to USDA's Office of Budget and Program Analysis (OBPA), NASS funding for agricultural estimates was $114 million in 2009 and $118 million in 2020. In real terms, funding has declined by $18 million since 2009.

[100] According to the LFMP survey, the top five states in terms of local DTC sales were California, New York, Pennsylvania, Virginia, and Massachusetts.
[101] A full discussion on the types of local food marketing channels is available in section 3.8.

Figure 10: States reporting on farmers' market price data

Source: AMS Local & Regional Food Market News

The data currently available for local food prices provides important information regarding the different prices local producers can receive, compared with those producing for wholesale markets. However, the data is not representative of the entire local food universe, as several important marketing channels and regions are not currently reported. Additionally, the data that is available is inconsistent. Unfortunately, it appears that the data will become less robust over time. Should RMA find itself in need of local food pricing data for the purposes of insurance, it would likely need to undergo its own collection efforts to have viable data.

7.4. Defining the guarantee and trigger for a loss

Most insurance policy language includes a trigger or cause of loss that needs to occur during the insurance period before any indemnity is made. For example, the causes of loss listed under WFRP, which was developed with local food producers in mind, are as follows:

1) Adverse weather conditions;
2) Fire;
3) Insects, but not damage due to insufficient or improper application of pest control measures;
4) Plant or animal disease, but not damage due to insufficient or improper application of disease control measures;
5) Earthquake;
6) Volcanic eruption;
7) Failure of the irrigation water supply, if caused by an insured peril that occurs during the insurance period;
8) Wildlife, unless control measures have not been taken; and
9) A decline in market price

In WFRP, the trigger is simply whether revenue to count is less than the insurance guarantee. Both values are clearly defined in the WFRP Crop Provisions. It is an important insurance principle to have clear triggers to avoid disputes between the insurer and insured. Therefore, if a new insurance program were to be

developed specifically to cover local food producers, it should have clear causes of loss. Clear definitions would need to be made in the policy.

For those using alternative production systems, one approach to improving coverage could be to add an endorsement for specific causes of loss (e.g., failure of electrical supply). Endorsements typically add coverage to the existing policy. There could also be an endorsement that limits the WFRP indemnity to just a failure of electrical supply. An indemnity would only be paid in the event of an electrical supply failure and the producer had a demonstrated production loss. The endorsement would need to be carefully worded to ensure understanding of the terms for both the insured and insurer. That said, it is unclear to us whether RMA has the legal authority to provide coverage for electrical supply failures outside the Nursery Value Select (NVS) policy.

Many local food producers would likely find coverage of their post-production costs attractive, but as discussed in Section 7.2, RMA is prohibited from insuring such costs in most situations, so an endorsement with additional coverage for these expenses should not be provided absent legislative changes. However, if a local foods policy were developed, RMA could potentially cover post-production costs. This is a question we leave for RMA's legal team.

7.5. Implications or difficulties of offering insurance to local food producers

Because local food producers tend to be very diversified operations, we think insuring or developing programs for individual crops is unlikely to be a useful exercise. This suggests a whole-farm design. But as we discuss in Sections 4.1 and 5, WFRP is operationally complex, dissuading producers and agents alike from participating in the program.

The attractiveness of the whole-farm design for local food production is that it provides more efficient risk protection than insuring crops individually. We suspect this is the reason why RMA has already used the concept as a framework for a program to cover local food producers. The challenge is in limiting the recordkeeping burden required of producers to simply be eligible for coverage while also maintaining underwriting integrity. In theory, rating a whole-farm product requires knowledge of the yield and price distributions among all crops grown on a given farm and the covariances among those variables. But in practice, this information is often unavailable. In our experience, many producers often find it difficult to even provide evidence of a yield history to purchase an APH policy.

The other major hurdle relates to producers' willingness and ability to pay. We discuss this issue in the following section.

7.6. Producer willingness and ability to pay

A key component to any insurance program is both the ability and willingness of producers to pay the premium. It is difficult to assess this aspect when producers do not currently have insurance. However, based on our conversations during the listening sessions and interviews, there were many issues that limited the participation in available insurance plans, including willingness and ability to pay. One producer summarized the sentiment expressed by many when they mentioned they "barely have a margin and buying WFRP at 75 percent would not help. The premium at higher coverage levels is too high." Many producers also noted that NAP was too expensive. This is supported by our own analysis comparing the rates of WFRP, NVS, and NAP (see Section 5.1.4). While the premium for NAP buyup coverage is only 5.25 percent of the guarantee, producers do not receive subsidies for such premiums like they do for FCIC crop insurance programs, making the coverage largely unaffordable for many producers.

In conversations with producers and agents for this and other crop insurance projects, we were often told that up to ten percent of the guarantee might be an appropriate premium. For example, a producer with $100,000 in approved revenue under WFRP who elects the 65 percent coverage level would find a $6,500 premium to be worth the coverage, provided it were subsidized. In practice, the amount the producer would pay would be much lower, because a percentage of FCIC insurance premiums are covered by the government as shown in the following table:

Table 14: WFRP Subsidy - percentage of total premium paid by government

Coverage level	50%	55%	60%	65%	70%	75%	80%	85%
Basic subsidy (qualifying commodity count: 1)	67%	64%	64%	59%	59%	55%	N/A	N/A
Whole-farm subsidy (qualifying commodity count: 2)	80%	80%	80%	80%	80%	80%	N/A	N/A
Whole-farm subsidy (qualifying commodity count: 3+)	80%	80%	80%	80%	80%	80%	71%	56%

Source: USDA RMA

Assuming the producer was insuring a diversified farming operation, he/she would pay $1,300 of the $6,500 premium (0.2 * $6,500), which amounts to two percent of the guarantee. Examining the premium rates from Table 8 in Section 5.1.4 reveals that most WFRP insureds pay less than two percent, though there are some exceptions. In the listening sessions and interviews, the figures quoted for acceptable insurance costs generally ranged from two to four percent of revenues out of pocket and a five to ten percent of premium relative to the guarantee.

We can think of two possible explanations for this apparent inconsistency, both relating to the value proposition facing producers when buying WFRP insurance. The first has to do with value for money, that is, whether the cost of insurance is worth the coverage. In Section 7.2.1 and elsewhere in this report, we noted that local food producers generally find insurance options offered by RMA to be insufficient because they do not reflect the prices these producers receive from selling their products. Thus, while the premium may technically be affordable, the revenue the premium covers is likely too low to make such an investment worthwhile. Then there is the matter of the recordkeeping burden, which makes the value proposition even worse—not only are producers being asked to pay for insurance they do not find meaningful, they are then required to provide documentation justifying an already inadequate insurance guarantee. Most producers simply do not bother.

7.7. Outline of potential plan designs

There are many different possible elements of a new plan design for local food producers. Among other things, it should consider the following:

- Defining "local food production" for the purposes of eligibility;
- Defining the guarantee for farm operations that are typically very diversified;
- Accounting for the perils faced by producers using alternative production systems;
- Defining buyup coverage levels and any catastrophic coverage element;
- Defining the trigger for an indemnity and the period of coverage;
- Defining when the coverage must be purchased;

- Determining how loss adjustment should occur; and
- Developing actuarially sound rates

Here, we simply define basic programs for purposes of developing estimates of potential liability, indemnities, and cost to the government. In general, the feedback we received from listening sessions and interviews envisioned insurance options for local food producers that were either based on the whole-farm concept or a rainfall index.

For whole-farm designs, there are various ways to determine the guarantee. We received several ideas, including one from an RMA regional office, of how this could be done. We also developed our own concept, which we elaborate on below. In all cases, the challenge is in how to do loss adjustment in a way that is meaningful while minimizing the recordkeeping burden on producers. While we provide some ideas below, ultimately, we think modifying WFRP would be the best and simplest way to improve crop insurance options for local food producers.

7.7.1. Whole-farm design option 1: Tier Revenue

The basic policy concept for insuring local food producers is that the guarantee would be selected from value tiers loosely linked to revenue, but loss adjustment would be tied to production. A producer would be eligible to elect a guarantee that covers 75 percent of a tier for which they are eligible. Moreover, producers who are qualified exempt under FSMA could self-certify.

As an example, a grower with a sales average of $51,000 per year could elect the $50,000 tier, which has a $37,500 ($50,000 x 0.75) guarantee. In the event of a 40 percent crop loss, they would receive $15,000 (i.e., 40% x $37,500). We provide additional details in the following sections.

Eligibility

The eligibility requirements would be the same as those for entities that are qualified exempt under FSMA.[102] A farm is eligible for a qualified exemption, and therefore would be eligible for Local Food Insurance, in a calendar year if:

1) During the previous 3-year period preceding the applicable calendar year, the average monetary value of the food the farm sold directly to qualified end-users exceeded the average annual monetary value of the food the farm sold to all other buyers (i.e., local foods are over 50 percent of sales). Qualified end-users are the consumers of the commodities (where the term consumer does not include a business) or a restaurant or retail food establishment that is located either: 1) In the same State or Indian reservation as the farm that produced the food; or 2) Not more than 275 miles from such farm; and
2) The average annual monetary value of all food the farm sold during the 3-year period preceding the applicable calendar year was less than $500,000, adjusted for inflation. The baseline year for calculating the adjustment for inflation is 2011.

[102] https://www.federalregister.gov/documents/2015/11/27/2015-28159/standards-for-the-growing-harvesting-packing-and-holding-of-produce-for-human-consumption#p-2072

Guarantee

Instead of having a guarantee that is directly tied to the producer's history, as is done with WFRP, a tier would be selected, not to exceed the producer's trailing 3-year average revenue of raw agricultural commodities sold. At lower values, the tiers could be in multiples of $5,000; the tiers would be farther apart at higher revenue levels (e.g., $10,000 increments up to $100,000, then $25,000 increments to $250,000, and $50,000 increments up to the cap). This might be supported by certain records (see below). For example, a producer with an $85,000 trailing average could select the tiers in the $30,000 to $80,000 range, but not $90,000. A 25 percent deduction factor would be applied to the selected tier to determine the value of the guarantee. For example, an $80,000 tier selection would provide the producer with a $60,000 policy (i.e., it would pay $60,000 if the producer suffered a total loss).

Table 15: Tiers and guarantees

Average commodity revenues	Max tier eligible	Guarantee (tier x 75%)
$90k < revenues <=$100k	$90,000	$67,500
$80k < revenues <= $90k	$80,000	$60,000
$70k < revenues <= $80k	$70,000	$52,500
$60k < revenues <= $70k	$60,000	$45,000
$50k < revenues <= $60k	$50,000	$37,500
$45k < revenues <= $50k	$45,000	$33,750
$40k < revenues <= $45k	$40,000	$30,000
$35k < revenues <= $40k	$35,000	$26,250
$30k < revenues <= $35k	$30,000	$22,500
$25k < revenues <= $30k	$25,000	$18,750
$20k < revenues <= $25k	$20,000	$15,000

By using tiers, a producer need not provide revenue records to prove eligibility. However, they would need to prove eligibility retroactively in the event of a loss. During loss adjustment, should a producer be unable to substantiate eligibility for the selected tier, they would be automatically "downgraded" to a tier for which they proved eligible. This would then be subject to the 25 percent deduction factor to determine the producer's actual guarantee. Tiering also links the guarantee, indirectly, only to revenues the producer has declared.

The 25 percent deduction factor could be thought of not only as representing a form of cost sharing, but also loosely reflecting the post-production costs not incurred in the event of a production loss, assuming such costs are uninsurable. Using a deduction factor helps eliminate most of the recordkeeping and dramatically simplifies the indemnity calculation.

Using a deduction factor as opposed to the producer's actual history also helps satisfy the legislative constraint that RMA cannot insure a product beyond the field/tree, except in limited circumstances for certain crops, assuming section 1508(a)(2) of the Federal Crop Insurance Act is still binding. In our view, separating the guarantee from the producer's revenue history makes it so that RMA need not explicitly calculate and deduct these costs. Of course, in practice, post-production costs when expressed as a percentage of revenues will vary dramatically, depending on producer circumstances, especially their distribution channels and region. That said, this is certainly something RMA's legal team should review.

Should RMA desire greater precision, it could conduct additional research to develop different percentages, e.g., to distinguish between those selling through intermediated channels from those selling DTC, perhaps even generating percentages on a regional basis.

Records

If a farm is eligible for a FSMA qualified exemption, it must:

1) Establish and keep adequate records necessary to demonstrate that the farm satisfies the aforementioned criteria for a FSMA qualified exemption; and
2) Include a written record reflecting that the producer has performed an annual review and verification of the farm's continued eligibility for the FSMA qualified exemption.

These records must be reviewed, dated, and signed, within a reasonable time after the records are made, by a supervisor or responsible party. The signature/initial would not be required on sales receipts kept in the normal course of business, but they would need to be dated.

Producers would need to have all required records available and accessible for the previous 3-year period preceding the applicable calendar year for inspection and copying by RMA or the insurer upon oral or written request. Producers would have 24 hours to obtain records they kept offsite and would need to make them available and accessible to RMA or the insurer for inspection and copying.

Loss adjustment

Loss adjustment is the major hurdle with this concept. There are various issues, including whether loss adjustment should be based on a percentage of physical production, and if so, how that could be determined if there were, say, a dozen crops on a few acres, especially if some of the crops had no established loss adjustment procedures. The other major hurdle has to do with the fact that various crops can have very different values, but a production loss would treat low- and high-value losses the same.

In general, we suspect appraisals would be requested by producers and completed timely by loss adjusters on all crops that would not be taken to harvest due to an eligible cause of loss. Representative sample areas would be established according to RMA specific crop LASH. Similar to how loss adjustment is done for the NAP program, if an appraisal is required for a crop for which loss adjustment manual procedure is unavailable, the adjuster would complete the loss adjustment by identifying the affected acreage and documenting the method used to determine the production to count. Loss adjusters would follow established loss adjustment appraisal procedures when making loss adjustments.

We recognize such procedures would be problematic on several fronts. There is the question as to what could be done for farms where multiple crops were grown on the same acre or in a tight space for which existing loss appraisal methods are unworkable. There are also concerns related to how to deal with the seasonality effects raised in the previous section. One solution could be to offer insurance by season, but growing seasons often are not simple and clean for local producers. Another would be to have growers track their revenue history by season, so that a percentage of damage would apply to each season's history and added and combined at the end of the year to determine whether and how large an indemnity is due.

Another approach to loss adjustment would rely on tiers/bands. One example is provided in the following table:

Table 16: Tiers/bands

Percent damage	Indemnity
Less than 10%	No indemnity
11-30%	20% of guarantee
31-50%	40% of guarantee
51-70%	60% of guarantee
71-90%	80% of guarantee
91%+	100% of guarantee

For example, consider a producer who averaged $78,000 in eligible crop sales over the past three to five years. They then opt for the $70,000 tier from Table 15, which has a guarantee of $52,500. The farm suffers hail damage, and the adjuster identifies that 45 percent of the crop(s) were damaged. This would translate to a 40 percent indemnity on the policy (i.e., 0.4 * $52,500 = $21,000). In this example, the producer would be expected to sell the remaining (marketable) 55 percent of their crop, which is worth approximately $42,900 (0.55 * $78,000). Adding the value of the indemnity and sales would result in $63,900 in revenue for the year. For sales history purposes, the producer would use the $42,900 figure, which would likely lower their average and tier/guarantee availability in future years. This would limit moral hazard effects.

A final consideration for loss adjustment could be to have the producer certify a loss and estimate the damage. Subsequently, a loss adjuster would be asked to make their own estimate. If the producer's and adjuster's estimates were within a certain threshold, say 15 percent, the loss would be equal to the average of the two estimates. If the estimates were more than 15 percent apart, then a third-party arbitrator would make the final determination. Producers would have little motivation to inflate losses because an arbitrator would be more likely to agree with another adjuster than the producer. The producer also would not want to inflate losses because it would (indirectly) lower their revenue history for future years. Insurance indemnities would not be counted in their history. After the year's revenues are reported, the sum of the indemnity paid, and their revenues would not be allowed to exceed their selected tier.

Summary

In summary, this plan design attempts to use:

- self-certification and revenue to determine eligibility;
- a guarantee that more closely approximates producers' revenue rather than field value; and
- FSMA exemption and implicit record requirements.

Records would need to be retroactively produced and would need to be consistent with reported income in the event of a loss. Producers would need to show their trailing three- or five-year average in commodity sales exceeding the value of the policy guarantee. Loss adjustment would be based on the percentage of production loss but would effectively pay out a proportion of a standard sales tier rather than field values.

7.7.2. Whole-farm design option 2: Revenue Lite

Another whole-farm concept was presented to us by RMA's Raleigh regional office. We summarize this approach below.

Eligibility

To be eligible for insurance, producers would need to have been selling local food in their area or region for at least three of the last five years, filed at least three IRS Schedule Fs in the past five years, and had farm income (from livestock, produce, grains, and other farm products) that totaled at least $1,000 in each of the three years. If producers also expected to receive $1,000 or more in farm income in the upcoming growing season and had a price list that showed all the commodities they intended to sell (and a price list for each of the three years in their historic experience), they would qualify for insurance.

Basic underwriting rules

At application time, insureds would need to submit their Schedule F for three of the previous five years, showing a minimum of $1,000 in total sales of livestock, produce, grains, and other products raised, and these same products purchased for resale. Carryover insureds would submit their most recent year Schedule F by the Production Reporting Date (PRD). Either at the time of application for new insureds or at the PRD for carryover insureds, producers would submit a completed Farm Operation Report (see figure 12 on the following page) and expected revenue for each commodity to be grown. Producers would also submit a yearly price list showing the prices for all commodities to be sold to consumers. We note that producers selling DTC are unlikely to have such a price list.

Insurance would be limited to no more than 110 percent of the producer's highest Schedule F farm income using the three most recent Schedule F filings. The allowed 10 percent expansion would only be allowed for policyholders who increased their Schedule F agricultural products earnings at least 10 percent in at least one of the last three Schedule F filings. The amount of insurance would be based on IRS income brackets. These values could be restructured into the income brackets used by ERS (see figure 13). Since most small farms have operating profit margins that are at higher risk of financial problems, the policy would consider actual income from the products grown or purchased for resale rather than net farm income. Many local food producers will often report a negative net farm income on their Schedule F, which in WFRP would make them ineligible for insurance.

Coverage levels ranging from 50-75 percent would be available and standard subsidies would apply. New and beginning farmers would be eligible to participate if under the guidance or mentorship of a farmer with at least five years of production experience (a signed mentorship form would need to be signed by all parties). Written agreements, determined yields, and revenue exclusions would not be allowed. Crop/farm growing season inspections may be required.

Rating

The assigned rate would be the rate for the amount of coverage selected by the insured based upon the insureds' Schedule F earnings.

Agralytica comments

RMA presented us with this concept on September 10, 2020. We applaud the creativity of the approach to insuring local food producers. However, as with our own concept, the difficulty is in determining how to make loss adjustment work. Additional issues include:

- The use of ERS income brackets. Most local food sales occur in urban areas, so even if a producer is in a rural county, they are unlikely selling their product there. Thus, revenue projections are unlikely to reflect where producers are actually located.

- Local food markets. It may be better to consider a variety of markets. Current participation by local food producers is dependent on scale. Also, many local food producers are unlikely to have price lists and other documentation required by the policy.
- Loss adjustment. This is perhaps the biggest concern. How would loss adjustment work for such a policy? What records would be required for loss adjustment purposes? Are producers likely to have those records?

Figure 11: Intended farm operation report completed by production reporting date

Insurance Year	Producer Information	Agency Information	State/County	Other Insurance
Intended Local Food Production				
Commodity	**Planting Method**		**Number of Plantings**	**Total Expected Revenue from all Plantings**
Name: Example Carrots	In ground		3	$6000.00
	In container			
	Hoop House			
	Greenhouse			
	Other:			
Name:	In ground			
	In container			
	Hoop House			
	Greenhouse			
	Other			
Name:	In ground			
	In container			
	Hoop House			
	Greenhouse			
	Other			

Figure 12: North Carolina Summary by market value of agricultural products sold: 2017[103]

Food Marketing Practice	All farms	$1Mil+	$500K-$999K	$250K-$499K	$100K-$249K	$50K-$99k	$25K-$49K	$10K-$24K	$5K-$9K	$2.5K-$4.9K	$1K-2.4K	Less than $1K
Food sold directly to - Consumers	4,058	66	48	81	127	233	313	677	677	627	701	508
farms $1,000	69,968	26,133	7,517	5,771	8,879	6,154	5,636	5,102	2,388	1,346	741	248
Retail markets, institutions, and food hubs for local or regionally branded products (see text)	925	53	23	45	60	115	120	159	110	101	108	31
Farms $1,000	175,736	148,352	7,922	7,903	4,816	2,942	1,956	1,012	491	196	131	15

Source: 2017 Census of Agriculture North Carolina State and County data

[103] Table from page 102 of the following source: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/North_Carolina/ncv1.pdf

7.7.3. Impact analysis

A new plan of insurance based on a whole-farm design—or if WFRP can modified to be more palatable to local food producers—is likely to have a similar overall impact regardless of the option analyzed. The new plan would be offered to the same producers and would likely offer the same subsidies that are currently included under WFRP. Also, there is some available data on the size of the local food production universe. This allowed us to determine a rough estimate of the potential costs of a new program.

Best estimates place the value of local food production at roughly $11.8 billion in 2017, the most recent year with data available. This figure included both value-added products (which we believe RMA cannot legally cover) and raw commodities. It was estimated in the 2015 LFMP survey that raw commodities comprised 55 percent of all local food sales. Under WFRP, RMA does not cover the value of value-added products, but it does cover the value of the raw commodities used in those products. For this exercise, we attempted to remove the sales associated with value-added products by assuming a simple average of the total value of local food sales and the total value of raw commodity sales. The table below provides a rough estimate of the impact of a new or reformed whole farm program.

Table 17: Impact analysis for whole-farm plan designs

Categories	Values
Estimate of liability	
Total value of local food production (2017)	$9.2 billion
Coverage level	75%
Participation rate	25%
Insured value	$1.72 billion
Estimate of premium	
Premium rate (assumed)	10%
Annual premium	$172 million
Estimate of indemnity	
Current WFRP loss ratio	89.5%
Local Foods Insurance indemnity	$154 million
Estimated government costs	
Premium subsidy @80%	$138 million
A&O subsidy (21.9% for WFRP)	$38 million
Total subsidy costs	$176 million

The premium rate is assumed to be 10 percent, which would result in total annual premiums of $172 million per year. WFRP currently has a subsidy factor of 80 percent for producers with two or more crops, and under the 2021 crop provisions direct marketers (DM) would automatically receive the 80 percent subsidy if they took advantage of the new DM commodity code. Assuming the same subsidy would be allowed under a new whole-farm based plan of insurance, the total premium paid by producers is estimated to be approximately $34 million ($172 * 0.2 = $34).

It is difficult to determine the risk profile of local food producers relative to the average agricultural producer in the U.S. The literature on the risk profile of local food producers is mixed, and it is unclear how risky local food producing operations are relative to producers who use conventional marketing channels (see Section 5.1.4.). For the sake of this exercise, we assume that local food producers present the same amount of risk as other types of operations. The overall WFRP loss ratio since the program was introduced in 2015 is approximately 89.5 percent according to RMA Summary of Business data. Assuming the same overall loss ratio would be experienced by local food producers, this suggests annual indemnities would be valued at $154 million. This would be a two percent increase in overall indemnities for all crop insurance programs, based on 2020 RMA Summary of Business data.

Given that there were approximately 159,000 farming operations that reported local sales in 2017, a 25 percent participation rate suggests just under 40,000 producers would enroll in the program. On average, the producer-paid premium would be approximately $865 per producer, not much higher than the $655 fee RMA currently charges producers for catastrophic (CAT) coverage on individual policies, and significantly lower than the average producer paid premium currently paid under WFRP of $18,000 per policy. The significant difference in premium compared WFRP arises because most farms producing for local systems have relatively low sales, with 85 percent having gross cash farm sales of less than $75,000 per year; just five percent have gross cash farm income exceeding $350,000 per year.

As with all crop insurance products currently administered by RMA, the federal government would be expected to subsidize a new plan of insurance. We assume the subsidies would be similar to that of WFRP. Given that producers would pay 20 percent of the premium under this structure, the government would be responsible for the other 80 percent, with the value of the premium subsidy in total being $138 million. Additionally, the government would also pay the Administrative and Overhead (A&O) subsidy to the administering AIPs. Currently, A&O reimbursement rates for WFRP are set at 21.9 percent. Assuming the same reimbursement for a new program, this would result in the overall A&O subsidy being valued at $38 million. The total subsidy cost for a new program would be significant, totaling approximately $176 million. For context, RMA paid $3.8 billion in subsidies for all crop insurance policies in 2020.

7.7.4. AIP acceptance of a local foods insurance policy

AIPs and agents were vocal in listening sessions and interviews about the need for either simplifying WFRP or developing a new policy that they felt was worth selling. Both options we proposed in Sections 7.7.1-7.7.2 were geared towards minimizing the paperwork and reporting requirements for both producers and AIPs. Assuming the A&O subsidy would be similar to the WFRP policy, we believe AIPs would be interested in providing this coverage.

7.7.5. Additional considerations for the potential plan designs

Viability and marketability

Whole-farm design option 1, and we presume option 2 as well, was designed specifically with viability and marketability in mind. In particular, both options would conform to RMA's enabling legislation, regulations, and procedures and we believe local food producers would be willing to pay the appropriate premium for the insurance, especially given the decrease in recordkeeping burden. Moreover, the plans would provide coverage that was effective, meaningful, and reflected the actual risks local food producers faced. Insurable perils would be like those currently covered under WFRP, possibly with an endorsement option for farmers using alternative production systems, as discussed in Section 7.4. We suspect such plans would be ratable and could operate in an actuarially sound manner, though if RMA were interested in pursuing one of these options, additional analysis would need to be conducted to confirm.

Our listening sessions and interviews verified there is significant interest among local food producers in a whole-farm plan that minimizes paperwork requirements, and we believe the interest is strong enough that the risk would likely be spread over an acceptable pool of insureds. Customers would not be able to select insurance only when conditions were adverse and moral hazards would be controllable in the same way WFRP currently controls them. We see no scenarios in which these plans would result in a change of beneficial gain or alter or distort markets.

A policy with reduced recordkeeping requirements would also be more attractive from the agents' perspective. Currently, agents are largely under-incentivized and uninterested in selling WFRP.

Special considerations, such as regional differences in markets

In Section 3, we note that local food production across the country has its own unique qualities depending on the growing region. Meaningful differences arise between the growing regions based on what is being produced, how the production is utilized, method of sale, production practices, and risk exposure. In general, these differences are neither advantages nor disadvantages to the proposed plan designs.

How and when different local food products are sold and to whom

In Section 3.12, we note that the universe of local food production in the U.S. is almost as broad as the general agricultural food production universe, as almost everything that can be grown and sold as food can also be sold through local channels. How local food is marketed, when it is marketed, and to whom largely depends on what is being produced and the intended method of sale. Farms that contract with retailers and institutions will have defined dates when products need to be delivered, and many retailers and institutions will work out ahead of time what products will be delivered at certain points during the year. DTC sales are much less defined, and marketing strategies will vary significantly depending on several factors. Both proposed options account for these dynamics.

Accounting for other features of local food production

Both whole-farm options were written with local food producers in mind. Below we discuss some features of local food production that will need to be accounted for if a new plan of insurance is to be considered a viable option for local food producers.

Semi-storability and climate

Many of the ways WFRP accounts for issues like the storability/semi-storability of commodities could be used for either of these whole-farm concepts. Also, assuming there will be no changes to the states where WFRP is currently offered, there should be no issues with climate under either of the proposed options.

Seasonal changes in commodity diversification

One potential issue we have not discussed has to do with seasonality. For example, for whole-farm design option 1, if a producer typically has two growing seasons, with each representing 50 percent of his/her total revenue, a ten percent production loss in the field would be given a ten percent indemnity based on the tier closest to their revenue. However, in practice, it should be closer to five percent since there would be a spring crop planted on the same acreage that is not impacted by the peril. Such a policy would need to be carefully adapted to individuals with multiple growing periods during a single year. It would also need to consider that many local food producers will also have perennial crops on the same farming operation.

Grading systems

Foods marketed through local channels are not graded in the traditional sense. Standards and factors that can determine the marketability of local food products vary depending on the method of sale and the consumer. DTC sales will have little to no regulation, with quality ultimately being a judgment call on the part of the consumer. In fact, many producers note that a benefit of direct sales is the ability to move product that would be considered second tier by retailers. Sales to retailers and intermediary businesses are much more likely to be regulated, in part because they occur on a much larger scale than DTC sales, and their customers have different expectations.

Producer behavior

In practice, local foods are frequently defined by market channel. Yet there are significant differences across types of local food markets, which have been shown to impact producer profitability. For example, producers who sell DTC, especially through farmers' markets, have been shown to have higher per unit post-farmgate variable expenses, particularly in terms of labor.[104] By contrast, producers who sell to local institutions are more likely to have contracts and have better visibility into future cash flow. Such attributes have the potential to impact the type of insurance that is most appropriate for the producer.

Producer preference

Any program developed for local food producers will need to consider the willingness of producers to pay for the coverage. As such, we are confident the success of a new program will depend upon its cost. Currently, many local food producers say that the premiums for WFRP are too expensive, in part because the value proposition is damaged by insufficient coverage options and excessive recordkeeping requirements. Both proposed plan designs rectify these issues.

Price data availability

Pricing data exists in limited fashion for many of the marketing channels that are typically considered local. However, both proposed plan designs rely on the producer's own history.

Risk exposure

There are many financial risks associated with local food production, several of which vary significantly by production system (i.e., conventional versus alternative). For these plan designs, we considered both risks to an individual farm and the local food system more broadly. An individual producer is exposed to both sets of risks.

Potential impacts on local food producers, taxpayers, and the market

We think local food producers would greatly benefit from a whole-farm program that minimized the recordkeeping burden and provided more meaningful coverage. As we discuss in Section 7.7.3, we estimate the total cost to the government would be $176 million, assuming a 25 percent participation rate. As long as these whole-farm design concepts do not suffer from underwriting vulnerabilities or actuarial problems, we see no reason why they would adversely affect the market for covered commodities. However, if these were not avoided, the programs could lead to an over-production of many crops, which could have an adverse impact on local food market prices.

The availability of accessible insurance for local foods producers is likely to further support the growing demand for DTC agriculture by supporting and encouraging these operations.

[104] Hardesty, S.D.; Leff, P. Determining marketing costs and returns in alternative marketing channels. Renewable Agriculture and Food Systems 2010, 25, 24-34, doi:10.1017/S1742170509990196.

Affordability while maintaining actuarial soundness

We discuss affordability issues associated with WFRP in Section 7.5.1. Upon initial review, there does not appear to be an obvious mismatch between the stated willingness to pay and the likely cost of the producer portion of the insurance premium. In general, we think either of these whole-farm concepts would be affordable for local food producers.

Risk of program fraud, abuse, and moral hazard

If RMA intends on applying the same procedures used for, say, the APH to combat fraud, waste, and moral hazard to a new whole-farm plan of insurance, we think that is probably adequate in mitigating such risks. While these risks are always a concern with whole-farm insurance products, we see no reason why the proposed options pose any greater risk of program fraud, abuse, and moral hazard than WFRP.

Challenges associated with development

While there are several clever ways to determine the insurance guarantee for local food producers that minimizes the recordkeeping burden, the biggest challenge associated with developing a new program is loss adjustment. We highlighted several of these issues in Section 7.7.1.

For design option 2, we question whether many local food producers would have the records needed to be eligible for insurance.

Areas, commodities, or varieties that may not be insurable

We believe all areas, commodities, or varieties would be insurable. However, value-added products would likely continue to be uninsurable.

8. CONCLUSIONS AND RECOMMENDATIONS

The United States Department of Agriculture's (USDA) Risk Management Agency (RMA) currently offers a variety of crop insurance programs to farmers and ranchers, including the Whole-Farm Revenue Protection (WFRP) program, which was specifically developed with local food producers in mind. Other existing plans of insurance offered by RMA include yield, revenue, and area-based policies for individual crops; Nursery Value Select (NVS); and Rainfall Index (RI), among others. USDA's Farm Service Agency (FSA) also administers the Noninsured Crop Disaster Assistance Program (NAP). Each of these plan designs presents a unique approach to crop insurance and many could, in theory, be modified to provide better insurance coverage for local food producers. Alternatively, or in addition, RMA might consider a new plan of insurance.

Our overarching recommendation is that, in the immediate term, modifying WFRP would be the simplest and quickest way to improve access to coverage for local food producers. Grower organizations and local food producers repeatedly stated in listening sessions and interviews that recordkeeping and reporting requirements in WFRP were too onerous and excessive. Agents are reluctant to sell the policy and producers are frustrated with the paperwork, which far exceeds what RMA asks of producers in other policies. Local food production is often a different farming model compared to conventional commodity production, and AIPs are generally unfamiliar with local food operations. Simultaneously, local food producers do not know much about WFRP.

Looking beyond modifications to WFRP and considering crop insurance more holistically, we question whether the law governing the provision of crop insurance implicitly incentivizes commercial production—the selling of food or food products to wholesalers or other intermediaries—over marketing channels local food producers are more likely to use. RMA's authority to offer insurance is outlined in 7 U.S Code section 1508. Specifically, section 1508(a)(2) notes that insurance cannot extend beyond "the period during which the insured commodity is in the field", except for tobacco, potatoes, sweet potatoes, and hemp, though WFRP is able to cover "market readiness" expenses. RMA has historically interpreted this to mean that it cannot cover post-production costs. Whether this is appropriate from a public policy perspective is a normative question we do not attempt to answer.

But we would be remiss if we did not note that the post-production costs associated with commercial production are generally far less than what local food producers experience. The result is that the insurance coverage RMA has been legally able to provide much more closely reflects the prices commercial producers receive than their direct marketing counterparts. Even if RMA could make it easier for local food producers to account for post-production costs, the resulting insurance guarantee may not provide meaningful coverage.

One way to rectify this imbalance would be for Congress to change the law by adding "local food production" to the list of items exempt from the on-field/on-tree coverage provisions of section 1508(a)(2). In theory, this would eliminate the need for local food producers to document post-production costs. The definition of "local" and other considerations would likely need to be included, but much of that work has already been done by the Food and Drug Administration (FDA) in outlining eligibility for a qualified exemption from the Food Safety and Modernization Act (FSMA). From a practical standpoint, we think such legal changes would have a significant impact on local food producers' participation in crop insurance programs. However, they might also create an additional administrative burden for RMA, which would be responsible for identifying new projected/established prices for a multitude of crops sold in various local food markets.

Alternatively, one might interpret the Food, Conservation, and Energy Act of 2018 (the 2018 Farm Bill) as having already obviated the post-production cost issue by instructing RMA to make a local foods crop insurance policy available "notwithstanding section 1508(a)(2)" if such a policy were viable. In that case,

one solution would be to use WFRP as a model for a new plan of insurance that allowed local food producers to cover their post-production costs. In practice, such a policy would operate similarly to the current WFRP program but provide coverage at a higher price guarantee and significantly reduce the paperwork and reporting requirements local food producers currently find so burdensome. Other options include developing a plan based on the NVS model or considering a new plan concept entirely. Thus, while this report does not consider how the 2018 Farm Bill should be interpreted, if post-production costs were insurable, it would certainly improve the feasibility, marketability, and quality of insurance coverage for local food producers.

Regardless of whether Congressional action is necessary to address the post-production cost issue, there are several ways RMA could improve crop insurance options for local food producers, either by modifying existing plans of insurance or considering the development of a new plan. We discuss our recommendations along these lines in the following sections.

8.1. Recommended improvements to WFRP for local food producers

WFRP was specifically developed for producers who sell to direct, local, regional, and farm-identity preserved markets and who produce specialty crops, animals, and animal products. However, a very limited number of local food producers currently purchase WFRP. This is not surprising considering the policy requirements—particularly the recordkeeping requirements—the general lack of willingness among AIPs to sell WFRP, and the policy's inability to provide meaningful coverage to local food producers. We discuss our recommendations in the following sections.

Minimize the recordkeeping burden

We recommend RMA review all WFRP record requirements, including all forms producers are required to submit when applying for WFRP insurance, and eliminate any extra documentation or entries, especially those that duplicate information or are not needed to remove prohibited revenue or expenses. RMA should critically review what is required from a producer to obtain insurance rather than records needed for loss adjustment. This would bring RMA in line with what it requires from producers in other crop insurance programs.

To the extent RMA is concerned tax forms might be incorrect, we think producers are far more likely to be underreporting income and overreporting expenses, because doing so would lessen their tax burden. The result of this would decrease their WFRP insurance guarantee, minimizing the liability RMA is covering. We think it is unlikely producers would be inflating their revenue and/or decreasing their expenses for insurance purposes because this would result in a larger tax payment.

Ultimately, WFRP would be greatly simplified if RMA only asked producers to submit their IRS Schedule F and noted the revenue and expenses that were prohibited. In practice, producers might submit the Schedule F along with a Preliminary, Revised, and Final Farm Operation Report (FOR) throughout the year. Forms to remove revenue and expenses should be simplified by only asking for the excludable revenue and expense items without making producers transfer every entry from the Schedule F. While carryover inventory would need to be obtained, this is rare for most local food producers due to the perishable nature of their crops.

If during its review of WFRP reporting documentation RMA finds items that are indeed critical for program integrity, we suggest RMA consider accepting reports producers are already completing for other purposes in lieu of the current RMA forms, such as Organic Systems Plans (OSP). Many of the suburban local food producers we spoke with said they provide financial statements to their lenders that include expected revenue and expenses and profit and loss statements. RMA should consider allowing these producers to submit this information rather than requiring WFRP forms, including the FOR. Finally, producers who use

various accounting programs to capture revenue and expenses should be allowed to provide reports from those systems without having to provide RMA reports or worksheets.

Better account for diversification

Many diversified producers said they are dissuaded from purchasing WFRP because the policy does not adequately account for diversification. This suggests modifications to the diversification factors and/or coverage levels. RMA could consider allowing producers who sell many commodities to obtain a greater diversification discount, if supported by actuarial analysis. For example, the categories could be expanded to provide additional discounts for producers with seven to ten commodities, 11-20, 21-30, and 30+. That said, it is unclear whether such a change would be supported or justified by the data.

Separately, RMA could also consider increasing the coverage level for very diversified local food producers to 95 percent. However, we recommend RMA exercise caution when adjusting coverage levels because whole-farm policies tend to have a greater risk of moral hazard than individual policies. This is related to the fact that producers who insure crops with different growing seasons are more likely to encounter scenarios in which low revenue on crops harvested early in the tax year significantly increases the chances of an overall loss. From the producer's perspective, such scenarios reduce their incentive to protect against crop losses later in the year. Thus, before implementing either of these recommendations, we suggest RMA conduct additional research into the rating implications of such changes.

Improve training options and financial incentives for AIPs

Many AIPs and agents would benefit from additional WFRP educational opportunities. RMA could even consider requiring additional training sessions. Additional A&O reimbursement incentives for AIPs selling to small, diversified operations might also be needed to incentivize agents to sell WFRP or even suggest to producers that it is a viable option. We understand this may require legislative changes, along with changes to the Standard Reinsurance Agreement (SRA). But without this change, there will be a natural ceiling on how much RMA can improve participation in WFRP if agents are not incentivized to sell it.

Additional recommendations

Other changes RMA should consider to WFRP include:

- Eliminate Section 18 of the Crop Provisions requiring Schedule F verification;
  - If RMA is uncomfortable eliminating the verification requirements, we think it should at least consider prohibiting changes to the guarantee at the time of loss adjustment since AIPs should have already verified those values prior to insurance attaching;
- Consider adding a tolerance for a change to revenue or expenses that would require additional documentation—e.g., five percent;
- Eliminate Paragraph 93 from the WFRP Handbook, Part 4, Section 1; and
- Eliminate Paragraph 51A from the WFRP Handbook, Part 3, Section 1.

8.2. Recommended improvements to other existing RMA crop insurance programs for local food producers

In general, we think program modification is the simplest and quickest way to improve access to coverage. That said, the feasibility and effectivity of such modifications would have various impacts on different groups of producers depending on where they grew their crop, their marketing strategies, and their

production systems. These changes would also impact the premiums of existing policies, how local food producers should be covered, and the reporting and paperwork requirements.

For yield-based policies, we suggest RMA conduct additional research to determine T-yields for producers who use alternative production systems, where yields are often much higher. More broadly, it may also be worth considering whether Controlled Environment Agriculture (CEA)—such as high tunnels, greenhouses, and vertical farms that produce crops in controlled environments—should be eligible for premium reductions, given that they are generally not subject to the same perils as conventional producers. Adding a policy endorsement for failure of electrical supply—or offering an option where an indemnity would only be paid in the event of an electrical supply failure—for these producers could also be considered.

Regarding the price gap we mentioned in the introduction to this section, RMA could, in theory, address this issue by developing different projected/established prices for crops by method of sale. One approach would be to develop a price collection tool and capture price data directly from producers. However, collecting this data from local food producers—especially those who do not already purchase insurance—is unlikely to be an easy task. In practice, this could be a project led by RMA's Regional Offices, but the scale of the project may require RMA to hire a third party to undertake the effort.

Assuming section 1508(a)(2) of the Federal Crop Insurance Act is still binding, in the YP/APH context, identifying prices for crops by market channel is a necessary but not sufficient condition for determining projected/established prices for local food producers. RMA would also need to determine the post-production costs so that producers were only insured for the on-tree/on-field value of their crop. Given that most local food producers grow a diversity of crops, determining post-production costs by sales method on an individual crop basis would be a monumental effort. Indeed, most local food producers we spoke to for this and other projects said they do not, and probably cannot, determine these costs on a crop-by-crop basis.

RMA could consider conducting research to determine average post-production costs for all crops sold through local market channels in a growing region, then subtract that value from producers' guarantee. Alternatively, this might be determined for a group of crops with similar costs. This would mean the resulting projected/established prices would be somewhat different than what individual producers actually experience because the average post-production cost would not always match those of individual crops grown by different producers. But we suspect this would be acceptable to RMA if the variance in post-production costs among crops, or a group of crops, was not too large. Anecdotally, NASS is attempting to obtain post-production cost data through its Local Foods Marketing Practices (LFMP) survey, the results of which are expected to be published in 2021.

8.3. Considering NVS as an insurance model for local food producers

Conceptually, the NVS policy could be a model for creating a local food producer plan of insurance. For example, the current NVS practice and commodity types could be adjusted for local food producers (e.g., field grown (practice) peaches (commodity type) or high tunnel (practice) tomatoes (commodity type)). To simplify a local food production policy, commodity types could be broadly categorized into vegetable, berries, tree nuts, and fruit trees. However, rating a new product for local foods would require exploration if a program were developed. The NVS program uses the current Nursery Crop insurance program for rates. Unless WFRP data or FSA's NAP data could be used, we suspect information to establish rates for a Local Foods Program to draw from would be a major challenge.

Allowing local food producers to insure commodities grown that they consider critical to their operation would be desirable to them (e.g., insure only fruit commodities and not vegetables). Reporting acres by,

say, berries or fruit trees as well as the producer's historic market value would provide a method of underwriting. The price producers obtain from their commodity sales would likely be well above current RMA prices. Pre-inspection appraisals could be part of the underwriting if the developer deems it necessary. As with NVS, at loss adjustment, local food producers would need to provide evidence of their acres and historic revenue from the categories insured. If they overstated, they would pay the premium based on their higher value and the indemnity would be based on the value determined. RMA may want to include requirements to assure only local food producers are eligible for any developed policy using the NVS concept such as a percentage of income must come from local food sales.

That said, we also see some potential issues with the NVS model. For example, NVS currently defines verifiable sales records as follows:

> Records that show the sales of specific plants to disinterested third party purchasers during a period specified in these Crop Provisions containing: (a) the name and address of the purchaser; (b) the date of sale; and (c) the complete botanical or common name of the specific plant(s) sold, number of each specific plant(s) sold, and the actual wholesale price (excluding all discounts and shipping charges as well as any other similar amounts that do not directly relate to the wholesale value of the specific plants) received for each specific plant.

We question whether such provisions would work for local food producers because, we suspect, direct marketers would have issues providing such records, especially (a) and (b).

Ultimately, we think NVS could serve as a model for a new program for local food producers. RMA should determine how well NVS performs and whether producers and AIPs are satisfied with it. Sufficient RMA data is not yet available to evaluate the NVS program's performance. The NVS concept has some merit but would need to be adapted to fit the needs of local producers. Rating a concept proposal for local food producers would require some study and would likely need to be revisited after program data is obtained.

8.4. Conclusions on feasibility of developing a new insurance plan for local food producers

There are many different possible elements of a new plan design for local food producers. Among other things, it should consider the following:

- Defining "local food production" for the purposes of eligibility;
- Defining the guarantee for farm operations that are typically very diversified;
- Accounting for the perils faced by producers, including those using alternative production systems;
- Defining buyup coverage levels and any catastrophic coverage element;
- Defining the trigger for an indemnity and the period of coverage;
- Defining when the coverage must be purchased;
- Determining how loss adjustment should occur; and
- Developing actuarially sound rates

For this report, we simply defined basic programs for purposes of developing estimates of potential liability, indemnities, and cost to the government. In general, the feedback we received from listening sessions and

interviews envisioned insurance options for local food producers that were either based on the whole-farm concept or a rainfall index (RI). We considered ways to modify RI in Section 5.

For whole-farm designs, there are various ways to determine the guarantee, which we discuss in Section 7. We received several ideas, including one from an RMA regional office, of how this could be done. We also developed our own concept, both of which we elaborate on in the report. In all cases, the challenge is in how to do loss adjustment in a way that is meaningful while minimizing the recordkeeping burden on producers.

APPENDIX

Appendix A Listening session summaries

A total of 17 listening sessions were scheduled. Average attendance was a dozen participants plus another dozen individuals from the study team and RMA. Most listening sessions included at least one producer (typically 2-3), an agent or two (during sessions for producers), and five or more individuals from organizations supporting regional producers.

The vast majority of participants connected through the Zoom platform. A few dialed in by phone, an average of approximately one person per session, though some sessions had more.

One of the sessions (#2, California) ended up with only one participant, so the conversation was rescheduled to be held by phone.

Session #1 - Region 1 - West Coast (AZ, CA, CO, HI, NV, NM, UT)

Attendance at this session included 15 people plus another 14 individuals from the study team and RMA. There was strong representation by individuals representing organizations in Colorado.

Distribution channels mentioned by participants included farmers selling directly through farmers markets, CSAs, to food service, and to upscale retail, among others.

Participants indicated that there was a significant amount of seasonality in local foods provision. In Colorado, almost everybody has a season. Seasonality is heavily impacted by the fact that most products are sold fresh. One participant noted that there is a significant seasonality to the winery business as well, as it was heavily dependent on tourism. Some people can sell value added meat through the winter.

One problem specific to ranchers is the challenge in finding affordable processing. Specifics given included the facts that there is no USDA plant in Wyoming and a major shortage of plants in New Mexico. In addition, they face the challenge that most restaurants are not interested in breaking down a whole beef or pork.

Broadly speaking, fruit producers generally do have insurance; by contrast, diversified vegetable growers go uninsured.

A participant noted that for most direct marketers and local producers, recordkeeping is not the barrier; rather, it is the fact that insurance is built for commodity businesses, i.e., insurance products work mostly if one is a producer selling wholesale and getting wholesale prices. That is not necessarily the case if operating at a smaller scale.

With regard to WFRP, a participant observed that another problem is that agents are not well versed enough as to how losses should be calculated.

A consultant to producers noted that it is difficult to develop a risk profile for small, local producers of specialty crops. Unable to obtain insurance, they turn to technological solutions to lower their risk. One potential solution would be to accelerate the availability of mitigation discounts.

Finally, another observation was that insurance (price) coverage for organic products is too low when it is available at all. Another participant noted that it is better to use conventional over organic because county yields are much higher for conventional production.

Session #2 - California

Attendance at this session was minimal: aside from the study team and RMA staff, the only attendee who remained after the first few minutes was from the National Center for Appropriate Technology. Rather than conduct a full session, the conversation with the participant was rescheduled for the following week.

Session #3 - Region 3 - West / PNW (AK, ID, MT, OR, WA, WY)

This session had two attendees plus another 7 individuals from the study team and RMA. One of the attendees was a berry producer in the Pacific Northwest; The other worked for nonprofit supporting farmers marketing direct.

The berry producer had a highly seasonal business, running from Memorial Day through Labor Day. The person supporting producers noted that livestock and dairy operations are year-round, but that otherwise production was heavily seasonal with the exception of crops that could be stored, such as potatoes, onions, squash, and dried flours, greens, and beans.

The producer noted that for crops sent to processing, records are broken out, but otherwise they are aggregated. The person supporting producers noted that record keeping is a mixed bag: farmers with a longer history usually have better records. They noted that the time requirements of keeping records can be daunting for smaller farmers.

Neither participant noted having much experience with crop insurance.

Session #4 -West Coast Insurance

This session was attended by 19 individuals plus 11 from the study team and RMA.

Insurance industry participants representing the Pacific Northwest noted that only a very small proportion of their current insureds are direct marketers. Most producers are either vertically integrated or packhouse growers.

For farmers/producers who do sell direct, when they are told about the records requirements for WFRP or even some of the APH programs - specifically the requirement to keep third-party verifiable (as opposed to farm management) records - they are deterred from signing up. "If we allow contemporaneous records it would go a long way," a participant said.

As one person explained, in Washington, a lot of these direct marketers might have a main economic crop that they can qualify for crop insurance, but then a lot of other crops that they would like to protect, but for which they don't have records. Or at claim time, everything would unravel. "So, they go without risk management on those crops."

Regarding WFRP, it was noted that some potential changes for direct marketing appeared to be in the works. Traditionally, RMA has required three years of records by individual commodity, which was overwhelming for a producer – in many cases not possible – and very burdensome for the agent. At any rate, this expected change would allow for some aggregation, which is good.

One of the challenges related to the use of APH by growers is that records for perennials (apples, pears) are difficult for APH purposes because, for example, apples do not get packed prior to the production reporting deadline. So, insureds have to guess as to their production amounts, or to avoid the assigned

yields, have to use a specific yield that skips that year, then have to remember to certify it later when hard copy records are available.

Another challenge to the development of a new policy, participants noted, is that it is difficult to get insurance products through FCIC without lots of data. One good source of potential data suggested would be FSA, which collects data for NAP.

A participant noted that if a new policy could be created to insure direct marketing revenue, that would be ideal. Although lack of such a policy is currently not a significant problem in the Pacific Northwest, it might still be of interest to producers there.

Session #5 - Direct marketers - Farmers markets, CSAs, etc.

This session was attended by a dozen participants plus 14 individuals from the study team and RMA.

Most of the attendees were not producers, but rather individuals in extension or working with organizations supporting producers. Participants were geographically diverse, covering Hawaii, California, Wyoming, Minnesota, Pennsylvania, Kentucky, North Carolina, and Alabama.

Broadly speaking, they represented organizations supporting direct marketers selling through farmers markets, CSAs, restaurants, and other channels. Production in their regions varies from part-time to full-time operations, to those selling through a variety of sales outlets.

For the most part, as reported, direct marketers have highly seasonal operations. A couple of participants noted that high tunnels were beginning to reduce seasonality, as were other passive protected agricultural structures (not greenhouse / controlled environment). Another noted that some produce farmers are doing some season extension, and that livestock farmers sometimes sell year-round.

As far as recordkeeping goes, the diversified farms that tend to keep better records are those that need to do so due to requirements from the National Organic Program. The Produce Safety Rule also has significant requirements. Aside from those willing to keep records for these two programs, however, growers are not particularly excited or willing to spend time on records. Most participants agreed with this assessment. Other observations on records were that GAP-certified / organic growers have great record keeping systems; that large scale growers that have been through a FSMA inspection have good records; but that small scale (under $25,000) producers have less robust record keeping.

The primary risk identified by session participants was weather.

Many growers do not have the records to qualify for WFRP and are growing crops that are currently uninsurable. One participant noted that established produce farmers in their region recently wiped out by hailstorms were using GoFundMes as their insurance.

A participant explained that growers had reported that NAP would not have been helpful for them because although organic price for them is 1.5 times the pricing of conventional products on the CBOT, this is only 1/4 to 1/3 of the price that is actually achieved by the farmer. In which case a 100% insurance loss might at best cover part of the production costs. That, however, would be offset by the paperwork nightmare that is required. Also, they are often told by agents not to bother submitting a claim.

Another grower noted that, "We had NAP for a few years, but their pricing structure was so much lower than ours, that the payouts were a modest percentage of our actual prices. And the paperwork was a

terrible two days each year - and we are good at paperwork. When WFRP came out we studied it, but the outcomes looked similar."

Another challenge with WFRP, was that when they had previously reviewed it, it did not appear to cover farms that are growing quickly very well. Since the insurance is not all that cheap, the combination of cost and lack of potential benefit made it something that did not pencil out. This had been reported by other farmers as well. The person noted that the WFRP program may have evolved to better account for expanding businesses, but if so, this information had not propagated sufficiently.

One suggestion for a new program was "perhaps something closer to the pasture and hay programs that are based on records from NOAA. That seemed fairly easy to set up. The grower can see based on the weather pattern from previous years and make an informed risk management decision to invest in that."

Session #6 - Direct marketers - intermediated

Just one person, aside from the nine from the study team and RMA, appeared for this session. The person was from one of the insurance firms and it was decided to cancel the session, as someone from his staff was already scheduled to attend another upcoming session.

Session #7 - Region 4 - Midwest Producers (IA, KS, MN, MO, NE, ND, SD)

This session was attended by 17 participants, plus 14 from the study team and RMA. Several were producers; most of the rest were from extension and other supporting organizations, including a couple of organizations each of which represents more than a thousand farms. Although participants noted that some of their organizations' members sell to wholesale, they represented very large numbers of growers selling direct.

When asked about the prevalence of growers purchasing from others for resale, the response that this was a fairly common practice.

One participant reported having looked into WFRP, but that they determined that it did not fit their operation's needs. A primary objection reported was recordkeeping requirements. The tradeoff was characterized as follows: "Diversity premium reductions only go up to a certain point, and we have growers who produce more than a dozen crops. The premium discounts [on WFRP] are not enough to outweigh the paperwork burden or compensate for those additional crops." The expense of the premium was also cited as an obstacle, along with the long delay in being able to wait to submit claims. Finally, lack of support regarding the policy was also cited as an obstacle to its use.

A comment regarding NAP noted that the pricing/valuation for vegetables through NAP was substantially lower than prices received for locally marketed (wholesale) certified organic produce. "Our prices are 3x to 4x higher…for the record, ours our not retail prices. Probably 50%-60% of the retail price you would find in the co-op."

One risk producers face that had not been mentioned in other sessions was the loss of organic certification due to spray drift from other farms.

One grower indicated that it would be ideal to have a policy that includes the "real price for what I get, not what the USDA would believe is a good 'price' for me should anything happen."

Another participant added that one idea would be a lower-cost CAT policy for diverse growers, based on historic sales record, which should count as the value of one's crops.

Session #8 - Region 4 - Midwest/East Producers (IL, IN, MI, OH, WI)

This session was attended by 9 participants plus at least 5 members of the study team and RMA. Several producers were present, as well as folks in extension and other supporting organizations. Michigan and Illinois were particularly well represented.

Demand for local foods in the region was said to be very strong, and the region was reported to have many small producers (10 acres or less) supplying markets directly. Michigan alone has over 300 farmers markets and 5,000-7,000 farmers selling directly. Markets tend to be seasonal, but 10%-15% operate year-round.

The Covid-19 pandemic was reported to have changed the way that many farmers track their sales, because many of them had to shift a significant portion of their business online. Reportedly, first generation farmers and farmers under 40 find it easier to use apps that can track sales. Another participant noted that apps like Ag Squared are quite complex and can be overwhelming, particularly for farmers who do not speak English as a first language.

A participant noted the challenge for a grower farming 30 different crops on five acres of land to have to keep track of sales by crop. Radishes were noted as a 21-day crop.

Farmers who are GAP certified are required to keep records for traceability reasons. For them, it may make sense. Specifically, it was noted that once an operation gets to that level, needing to meet extensive food safety requirements or GAP audits, such situations may require a dedicated employee and perhaps at that stage meeting insurance recordkeeping needs would be feasible. However, only 30 out of 3,000 farms in Minnesota have USDA GAP audits. For the majority of small farms, the paperwork for insurance and the potential payout is not worth it, given the effort required.

One agent whose agency writes a lot of WFRP policies in the region noted the primary obstacles to uptake of WFRP: 1) adequate records, 2) covered perils, and 3) price. The issue with covered perils is that traditional covered perils do not meet the needs of a hoop house grower. For example, some of the biggest risks are contract failure with a primary buyer, or a rainstorm during key weeks during u-pick / sales seasons. WFRP is popular with medium to large farms with at least 3-4 crops, but there is very limited use by small vegetable and diversified farmers using a CSA or market stand.

Comments on other plans of insurance were that APR and ARH don't exist for many crops; that NAP isn't used much by the local foods' producers; and that Nursery and NVS have limited uptake, as most nurseries in the region are under glass.

Suggestions on the parameters of a new policy should include an approachable application process, scale-appropriate solutions, and a tangible ROI and that it should accommodate a high degree of diversity in both production and marketing. One participant noted that customers have requested a group risk scenario such as a rainfall index or something for which they don't need to provide a lot of paperwork – just proof of operation.

Session #9 - Region 5 - South - Producers (AR, LA, MS, OK, TX)

This session was attended by six participants plus at least 9 individuals from the study team and RMA. Participants included staff working for groups supporting many farm operations in the South, as well as individuals at organizations supporting local food programs. Two producers also joined, including one who was also an agent.

One of the participants noted the difficulty of obtaining insurance for farmers who grow throughout the year. As another participant put it, "A lot of our growers are growing year-round, huge diversity of crops, and really are continuously planting…as much as can be done to keep the recordkeeping requirements as simple as possible, that would be very helpful."

A primary challenge mentioned is finding agents who will work with the farmers. One person's perception was that many agents do not want to write WFRP policies. In some cases, agents were quoted as saying "there's no insurance for diversified farms."

One particularly stark example was quoted by the participating agent:

It is so much easier to sell a 2,000-acre corn policy, and the paperwork is about one-fifth the effort. I do believe it is an AIP issue. I have a CSA that I wrote, 36 crops, 45-page doc with all the additional paperwork so that if there is a claim scenario, all the paperwork is there. The guarantee is $100k and I made $90 on the policy that took me a week to underwrite. By comparison, I wrote a 700-acre corn policy for $350 commission in far fewer hours. Obviously, that will fluctuate based on coverage level, but that said, there really is not much incentive to underwrite the WFRP policies unless you really want to help people.

Session #10 - Livestock - Producers

This session attracted seven participants, in addition to 14 people from the study team and RMA. Three were livestock producers, two of whom had diversified farms with specialty crops. Others were with groups supporting farmers.

One of the producers lost a lot of their restaurant business this year. The producers mentioned diversifying their operations as a means of managing their risk. Another mentioned that operating an organic farm makes the system more resilient to drought. Producers mentioned that getting support and working with conservation programs (e.g., the Conservation Stewardship Program) helps both the environment and the bottom line.

One of the participants mentioned knowing two farmers that took a large loss due to hail using GoFundMEe accounts.

The producers observed that it was not the paperwork that made WFRP unattractive for them – the policy just seemed to not fit their operation. One of the primary shortcomings was the prices it would guarantee: "they're just not high enough. Organic is always penalized in insurance plans." Another producer suggested that "maybe the best thing USDA could do is cut back on commodity insurance, so we have a level playing ground."

A participant representing a large group of farmers noted that producers lack familiarity with the programs, while agents may not understand all the options available to producers. Programs not only need to be attractive to producers, but they also need to be attractive to agents as well. One person said that they heard of agents talking a couple of $100k farmers out of taking WFRP. Another said that producers tend to stick with an insurance agent they already know, meaning that if that agent does not understand or has little interest in WFRP, then it is unlikely the farmer will be given the opportunity to enroll. A producer confirmed that their agent talked them out of WFRP – they would have had to do a lot more work because they do not work with a lot of WFRP policies.

The "insurance landscape is dominated by insuring corn and soybeans."

Session #11 - Midwest / Central / South - Insurance

This session had 17 visiting participants plus 17 from the study team and RMA.

The participants work with local foods growers ranging from those selling wholesale to grocery stores to those selling direct.

One participant that writes many WFRP policies noted that once a grower gets over the initial hurdle of reaching out to explore a WFRP policy, the biggest obstacle is paperwork. Getting to the grower's revenue is usually not the stumbling block, but tying that back to the raw product, to individual crop lines, is difficult, especially when the producer has value-added products as well. A lot of records are "blended," for example, when products are sold at a roadside stand without UPCs. "When my paperwork is iffy, I usually find it with hoop house and four-season vegetable growers, and to a lesser extent, my vegetable growers." They noted that it is generally when claim time comes that problems surface, as growers feel they are not adequately compensated when post-production costs are backed out.

To minimize this type of experience, the agency now works to ask relevant questions and back out all the relevant costs so that they do not overinsure. They also try to "make sure there are no surprise crops."

Additional challenges were noted:

Especially with concepts like CSAs and farmers markets, multiple types of crop sold under the same UPC, then add on to the fact that they're purchasing product from other types of places that they don't produce, and trying to separate all that out into individual crops so that we're reporting on that farm operation report true expectations of revenue and can back that up… when all those lines start to get braided, it becomes a monumental task to undo it.

A participant also observed that many producers selling direct to grocery stores but growing in hoop houses, producing microgreens, or engaged in apiculture were more concerned about contract losses [i.e., "failure to market"] than other perils. Likewise, u-pick farmers count on 6-7 good weeks of foot traffic. So, perils such as coronavirus or too much rain are the bigger threats for them.

Session #12 - Urban farms

This session was attended by 14 individuals, plus 7 from the study team and RMA. Several urban producers participated, along with individuals from organizations working with urban producers.

The two participating producers that shared information have year-round urban farms. One also has a commercial kitchen and produces and markets value-added products.

One noted risk that appear to be significant for urban farms, such as theft, vandalism, animals and neighbors, flash floods (due to a lot of impervious surfaces), and even rezoning.

By contrast, urban farms are generally more insulated from frost than other farms. Also, one grower mentioned selling 60% of the crop as part of a CSA program, where payments are collected up front.

Another participant mentioned the risk of loss of contract, for those supplying significant customers.

One of them expressed the need to engage in better recordkeeping; the other noted that they had sales by channel (CSA, wholesale, farmers markets) but not by product. One of the farms uses full organic methods but has not sought the certification because of the recordkeeping and additional labor required.

As for WFRP, one of the producers said that "My view is that for the diversity of crops, recordkeeping, and valuation of crops it didn't seem like it was equitable or appropriate for us."

One aspect that would be nice to get coverage for would be the ability to insure the more valuable crops, along with those with a longer growing season (which cannot be replanted). Also, educating growers would be a significant component of marketing a new policy.

Session #13 - Region 6 - Southeast Producers (FL, GA, AL*, KY, NC, SC, TN, VA, WV)

There were 11 attendees, plus 13 people from the study team and RMA. Several of the participants were producers (from South Carolina and Florida).

The producers noted that they grew vegetables, grains, and other produce, and sell through farmers markets and roadside stands, with some products going to wholesale as well.

One of the growers has rain and hail through the NAP program and has WFRP for the rest. The grower noted that NAP does not cover wildlife damage, which is a peril in their area. The other grower does not have insurance. One of the extension experts noted the challenges with recordkeeping.

One insurance representative noted that many agents either do not want to sell WFRP, or the agents do not know enough to sell it, so they keep asking for more and more records. "Recordkeeping becomes a moving target." In North Carolina, participation in WFRP has gone down; one of the main issues is that there has been a pattern where growers sign up for insurance in the spring, but when they file a claim, the agent goes back through their whole policy and questions all the underlying numbers (the price does not hold up, the yield is down, etc.) until there is no payout. Growers felt like they bought something they do not actually benefit from. "This ensures that they will not ever take WFRP again and they will tell their friends not to take it either."

Documentation of price is sometimes challenging. Strawberries can be sold through pick-your-own, pre-pick, wholesale, and processing going into ice cream or something; it is not unusual for a local producer to sell into all four of those. They have radically different price points. Also, "having to keep records on all the costs is a huge burden."

A participant whose organization oversees a major local food market requires WFRP as a precondition for selling at the market. They indicated that they require it in case someone gets sick or something like that; to them, it demonstrates that the producer is willing to go through the detail. It is also the case that Kentucky state guidance suggests WFRP for producers selling at farmers markets. They noted that for recordkeeping, a lot of producers use Square. They also acknowledged that these details/hurdles do "box out some of the smaller producers."

Session #14 - Region 2 - Mid-Atlantic / Northeast Producers (CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT)

This session was attended by 29 individuals, plus 14 from the study team and RMA. Participants included several producers including a couple of organic farmers; a few individuals from the insurance industry; and many in extension and agriculture- and local-food supporting organizations.

Marketing channels reported by participants included u-pick, farm stands, retail and wholesale markets. Seasonality description was primarily May-November, although some CSA shares are sold year-round.

One person noted that most of the local foods' sales hubs use software to track sales and even predict product demand and communicate demand to farmers. One session participant noted that even though some growers may be moving to technologies allowing them to track every sale, there are many who cannot, thus any plan should be designed to also cater to growers using traditional sales methods.

Recordkeeping, as reported elsewhere, is not at the level required by RMA. It was noted as a problem, particularly with regard to WFRP. One person noted that detailed records for individual crop expenses and yields to satisfy RMA/AIP requirements are too onerous for highly diversified farms.

One grower noted that there ought to be provisions to reduce premiums for farmers who invest in risk mitigation technologies such as irrigation and hail netting.

Multiple participants contributed that there is a general lack of available policies in the region (including a lack of policies offered elsewhere). Specifically, many fruits and vegetables do not have APH policies available in Massachusetts. One person noted that the only available vegetable policy in their region was for processing. Other specific crops which were noted as not having policies that work locally included tomatoes, watermelons, highbush blueberries, and oysters. One individual noted that in some cases, policies might need very simple changes, such as plant and harvest dates, which would make them appropriate for the Northeast.

Covid-19 has driven an increase in CSA volumes and more traffic to on-farm sales. There has been shift from grocery stores to on-farm purchases.

A participant said that USDA's programs in general are intimidating to small farmers and that the paperwork and records needed are overwhelming. They also suggested that an online tool be developed that allows them to put in their circumstances and see what programs they qualify for and how.

An extension educator noted that aside from WFRP, FSA NAP is the only option for many crops and that in the Northeast, only a handful of crops are covered by crop insurance. If a grower wants coverage and WFRP is too onerous, their only option is to go to FSA, and they generally take the CAT coverage. One grower reported trying FSA NAP, which did not work out for them; they are now going without insurance. WFRP reportedly does not work well for small scale (0.75-4 acre) vegetable farmers. One major problem with WFRP is difficulty in finding an agent willing to write a policy. It was noted that the "find an agent" function on RMA's website does not yield sufficient trained agents from the region. Finally, one person noted that RMA's interpretation of Good Farming Practices was too severe; that there are many practices that can be used "outside corn and soybeans."

Another grower who had NAP in the past indicated interest in seeing how the new direct marketing code under WFRP will work. The NAP adjuster reportedly used the WFRP manual. A participant noted that the biggest problem with NAP is consistency throughout the region.

One policy idea suggested – which has been previously proposed to RMA – is the notion of a weather-related policy, similar to PRF but covering drought and excess moisture. Such a policy would not require producer records. Others seconded this concept, as a significant risk factor in the northeast is the fungal/bacterial consequences of excess moisture.

Session #15 - Insurance - East Coast

This session was attended by 12 individuals, plus 11 from the study team and RMA.

The session focused on the recordkeeping requirements in WFRP. A participant noted that the insurance companies will not accept tax records as sufficient for establishing the revenue guarantee; an industry claims supervisor responded that they aren't allowed to - that they have to have sales receipts when determining production and revenue to count.

There was agreement that the requirements were simply too onerous for most. "Once people who believe they have good records are told precisely what they will need, they give up." It is very difficult to get records for roadside stands, to get daily sales broken down by commodity.

Session #16 - Floriculture

This session was attended by 8 individuals, plus 13 from the study team and RMA. Participants were primarily representatives from organizations supporting regional agriculture.

Participants noted that some policies are available - Nursery and now NVS. Some agents noted that the nursery policy added onerous reporting and records (software) requirements which ruined the nursery policy for growers. The growers are said to have "good tracking systems, just ones that are different from what was being required by RMA." Some who still take the policy only do so because they are required to by lenders.

A couple of shortcomings noted with NVS were the timing of its introduction, and its lack of a "peak endorsement."

WFRP was said to have limits that are too low for most Florida commercial nurseries.

One participant noted that there would be interest locally in a policy for cut flowers, particularly because cut flower sales are growing. They are sold through CSAs, farmers markets, and stands. People buy them in bunches, single stem, and bouquets. A lot of farms are offering cut flowers. They suggested that perhaps a dollar policy might work.

Session #17 - Make-up session

This session was attended by 16 individuals, plus 7 from the study team and RMA. The range of participants was broad: a small family farmer, a livestock producer, a host of individuals in supporting organizations, and insurance agents. Geographies cited include the PNW/Oregon, California, Arizona, Minnesota, the Midwest, Wisconsin, and Connecticut.

Participants noted the challenges of small, diversified farmers being able to obtain insurance that covers the revenue they get for their crops. Even those who sell wholesale have guarantees far lower than the prices their receive. One participant described it as follows: "It's not going to cover me anyway, and the paperwork is a challenge."

One observer mentioned that growers they are involved with have tried NAP but found that the payout was not worth the effort. This was echoed by others.

A participant asked whether crop insurance could incentivize better production practices, e.g., those that improve soil quality.

A final topic of discussion was the need for better pricing data, to both provide and improve coverage.

Appendix B: Written submissions (Redacted)

Appendix C: Interviews (Redacted)

APPENDIX D: 508 DATA

These are the data for figure 1: Number of farm operations selling through local food markets, by primary commodity:

Ag type	Commodity type	Number of operations that sell direct
Animal ag	Cattle	52,766
Plant ag	Fruit and Tree nut	46,130
Plant ag	Vegetables	46,029
Animal ag	Poultry	32,332
Animal ag	Ruminants	15,078
Plant ag	Field crops	14,805
Animal ag	Specialty animals	12,295
Animal ag	Hogs	9,692
Animal ag	Dairy	8,750
Plant ag	Food crops	8,058
Plant ag	Grain	7,923
Animal ag	Aquaculture	2,258

These are the data for Figure 7: Local food sales by marketing channel (billions of 2015 dollars):

Type of buyer	$ Billion
Direct to Consumer	$ 3.0
Retailer	$ 2.4
Institution and local intermediary business	$ 3.4

These are the data for Figure 8: Number of Farms utilizing direct-to-consumer practices, 2015:

Direct Sales to consumers by Marketing practice and number of Farms	Number of farms
On-farm store	51,422
Farmers market	41,156
Other (U-pick, mobile market, etc.)	39,765
Roadside stand away from farm	14,959
Community-supported agriculture	7,398
Online	9,460

These are the data for Figure 9: Number of operations selling to retailer by type (2015):

Marketing channel	Number of operations
Selling directly to Supermarkets or Supercenters	8,479
Selling to restaurants or caterers	10,988
Other direct-to-retail market	4,157
Total	23,624

These are the data for Figure 11: States reporting on farmers market price data:

Alabama	Has data
Georgia	Has data
Illinois	Has data
Kentucky	Has data
Mississippi	Has data
North Carolina	Has data
Oklahoma	Has data
South Carolina	Has data
Tennessee	Has data
Texas	Has data
Vermont	Has data
Virginia	Has data
Wisconsin	Has data

These are the data for Figure 13: North Carolina Summary by market value of agricultural products sold: 2017:

Food Sold directly to		All farms	$1,000,000 or more	$500,000 to 999,999	$250,000 to $499,999	$100,000 to $249,999	$50,000 to $99,999
Consumers	Farms	4,058	66	48	81	127	233
	$1,000	$69,968	$26,133	$7,571	$5,771	$8,879	$6,154
Retail markets, institutions, and food hubs for local or regionally branded products (see text)	Farms	925	53	23	45	60	115
	$1,000	175,736	148,352	7,922	7,903	4,816	2,942