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Specialty Crop Participation in Federal Risk Management Programs

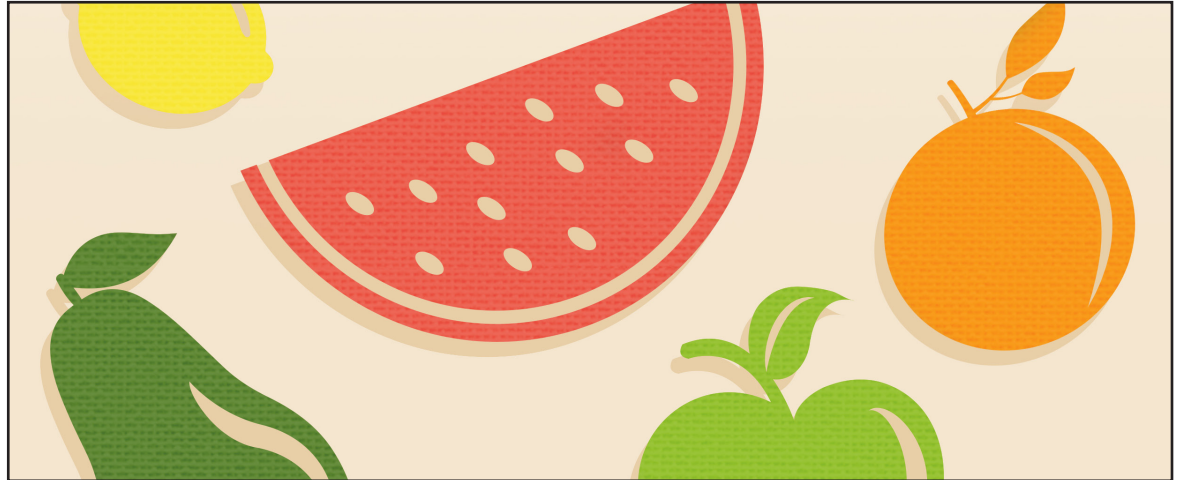
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Specialty Crop Participation in Federal Risk Management Programs

Sharon Raszap Skorbiansky, Gregory Astill, Stephanie Rosch, Elizabeth Higgins, Jennifer Ifft, and Bradley J. Rickard

Abstract

The U.S. Department of Agriculture (USDA) offers various risk management products to farmers through the Federal Crop Insurance Program (FCIP), and for crops in counties where FCIP is not available, through the Noninsured Crop Disaster Assistance Program (NAP). All FCIP insurance products are actuarially sound (total premiums paid are calculated to equal or exceed total claims paid), requiring a substantial amount of data to price. Only some counties generate sufficient data to create products for specialty crops like fruits, vegetables, tree nuts, horticulture, and nursery crops. This study characterizes recent changes in FCIP and NAP use by specialty crop farmers, compares differences among conventional and organic farms, and investigates the reasons some farmers choose whether to participate in these programs. Specialty crop growers increased the value of their crops insured by FCIP products from about \$12 billion in 2011 to about \$21 billion in 2020 (not adjusted for inflation). In 2017, FCIP or NAP covered a significant portion of acreage for many crops.

Keywords: specialty crops, risk management, crop insurance, noninsured crop disaster assistance, organics, Federal Crop Insurance Program, FCIP, Noninsured Crop Disaster Assistance Program, NAP, USDA, Economic Research Service, ERS

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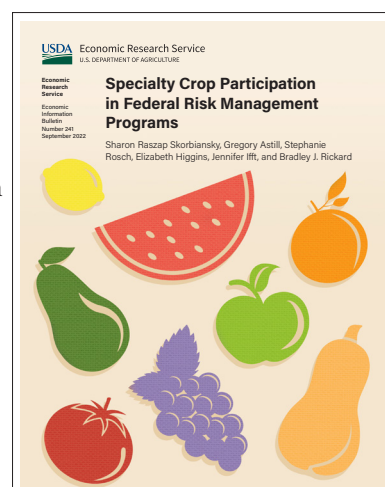
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Specialty Crop Participation in Federal Risk Management Programs

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What Is the Issue?

Specialty crops is a broad term that includes fresh or dried fruits, tree nuts, vegetables, beans (pulses), and horticulture nursery crops. In 2020, these crops accounted for 25 percent of the value of U.S. crop production (USDA, ERS, 2021). Historically, specialty crop growers had fewer tools for managing risk than growers of major field crops like corn and soybeans. However, since 1994, several provisions in successive Farm Bills expanded U.S. Department of Agriculture (USDA) products for specialty crops. Organic specialty crops may be exposed to additional risks due to fewer market participants and poor data availability. Federal Crop Insurance Program (FCIP) products are available for a variety of organic and conventional specialty crops in counties where sufficient data are available for the USDA, Risk Management Agency (RMA) to issue an actuarially sound insurance product. For crops grown in counties with insufficient data to provide FCIP products, coverage is available through the USDA, Farm Service Agency (FSA) Noninsured Crop Disaster Assistance Program (NAP). This study characterizes recent changes in FCIP and NAP use by conventional and organic specialty crop farmers. Using a case study of growers in New York State, which has a high number of NAP applicants and a large and diverse specialty crops sector, this report describes the reasons some farmers choose whether to participate in these programs.



What Did the Study Find?

- The value of specialty crops insured by FCIP (i.e., liabilities) increased from about \$12 billion in 2011 to about \$21 billion in 2020 (not adjusted for inflation). The States with the most policies are top producers of fruits and vegetables—California, Florida, and Washington—and specialty field crops such as dry beans or dry peas—Montana and North Dakota.
- In general, States that have fewer FCIP policies have a higher number of NAP applications. In 2020, the States or U.S. territories with the highest number of conventional specialty crop NAP applications were North Carolina, Puerto Rico, and New York.

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- The number of specialty crop producers who applied for NAP coverage trended up—from about 8,000 in 2015 to over 9,000 in 2020. Changes to NAP, such as the addition of coverage that exceed the minimal level (called buy-up coverage) in 2015, likely made NAP a more attractive risk management tool.
- The number of crop-specific applications for NAP submitted by producers peaked in 2017 at 253,000 applications and then trended down to about 234,000 in 2020.
- In 2017, FCIP or NAP insured a large portion of acreage for some crops: about 93 percent for dry peas, 92 percent for dry beans, 87 percent for plums and cherries, and 83 percent for tomatoes.
- In 2017, FCIP or NAP covered a smaller share of acreage for other crops: about 47 percent for pecans, 39 percent for squash, 13 percent for kiwifruit, 11 percent for strawberries, and less than 1 percent for hazelnuts and lettuce.
- Insurance coverage remained relatively popular between 2015 and 2020. Buy-up coverage was included in about 80 percent of FCIP liabilities for organic specialty crops between 2015 and 2020, while FCIP liabilities with buy-up coverage for conventional specialty crops increased from about 72 percent to about 82 percent.
- The share of NAP applications for which farmers elected buy-up coverage was fairly close between conventional crops and organic crops in 2018, about 40 percent. Low levels of buy-up in conventional crops in 2019 and 2020 were likely related to the timing of the 2018 Farm Act.
- Discussions with nine New York specialty crop farmers revealed that five did not purchase any Federal risk management policy, three purchased FCIP, and one purchased NAP. These farmers generally reported the paperwork and cost associated with Federal risk management programs to be burdensome, especially for small and diversified farms.

How Was the Study Conducted?

This report uses publicly available and non-publicly available data from: RMA on the Federal Crop Insurance Program (FCIP) from 1988 to 2020; FSA on the Noninsured Crop Disaster Assistance Program (NAP) from 2011 to 2020; and National Agricultural Statistics Service (NASS) 2017 Census of Agriculture, Vegetables Summary, Crop Production and Quick Stats for the year 2017. RMA datasets contain the number of conventional and organic FCIP policies, the amount of conventional and organic acres covered, total liabilities, and the total value of farmer-paid premiums. FSA datasets contain the number of conventional and organic farm applicants and applications for NAP, and for 2017, the total amount of acreage covered. The authors also interviewed nine organic specialty crop producers across New York State chosen from the USDA, Agricultural Marketing Service (AMS) National Organic Program (NOP) Organic Integrity Database. The producers were interviewed twice—first between June and August of 2019 and then between May and June of 2021.

Key Acronyms Used in This Report

AGI – Adjusted Gross Income

AGR – Adjusted Gross Revenue

AMS – USDA, Agricultural Marketing Service

APH – Actual Production History

ARH – Actual Revenue History

CAT – Catastrophic level of coverage (yield loss of 50 percent or more)

CSA – Community Supported Agriculture

CCC – Commodity Credit Corporation

DOL – Dollar Amount of Insurance

DHS – Department of Homeland Security

ERS – USDA, Economic Research Service

FCIC – Federal Crop Insurance Corporation

FCIP – Federal Crop Insurance Program

FSA – USDA, Farm Service Agency

HIP-WI – Hurricane Insurance Protection – Wind Index Endorsement

NAP – Noninsured Crop Disaster Assistance Program

NASS – USDA, National Agricultural Statistics Service

NOP – USDA, Agricultural Marketing Service, National Organic Program

RMA – USDA, Risk Management Agency

RP – Revenue Protection

SCO – Supplemental Coverage Option

SOB – Summary of Business

TDO – Tree Based Dollar Amount of Insurance

WFRP – Whole-Farm Revenue Protection Program

Specialty Crop Participation in Federal Risk Management Programs

Introduction

Agriculture is risky by nature; crops are exposed to weather events, price volatility, and pests. Events that affect crop production or marketability can harm the grower's profitability and, in the case of a significant shock, could lead to long-term financial instability. While all crops are prone to risk historically, fewer risk management tools were available to specialty crop producers when compared with producers of major field crops like corn and soybeans. Specialty crops, the commodity group including fruits and vegetables, tree nuts, dried fruits, and horticulture nursery crops, account for at least 12 percent of U.S. farms and 17 percent of the market value of agricultural products sold, according to the 2017 Census of Agriculture (USDA, NASS, 2019).¹ In certain States, specialty crops can comprise a larger share of agricultural production. In California, specialty crops comprise over 62 percent of farms and 69 percent of the market value of agricultural products sold; in New York, over 29 percent of farms grow specialty crops, equaling 22 percent of the market value of agricultural products sold (USDA, NASS, 2019).

Organic specialty crop producers face additional risks compared with conventional specialty crop producers. Both conventional and organic specialty crop markets are considered thin (Rosa and Johnson, 2019), defined by few buyers and sellers and a lack of active cash markets. Additional complications associated with organic production lead to even fewer market participants and fewer risk management tools.² In the United States, there has been significant growth in the specialty crop organic market. As an example, apples comprise one of the largest specialty crop conventional and organic markets, with total organic harvested acreage at 27,311 in 2019 (USDA, NASS, 2020), or 9 percent of U.S. apple bearing acres.

USDA offers a variety of programs to help farmers manage farm financial risk, including the Federal Crop Insurance Program (FCIP), managed by the USDA, Risk Management Agency (RMA), and the Noninsured Crop Disaster Assistance Program (NAP), administered by the USDA, Farm Service Agency (FSA) (see "Key Acronyms Used in This Report"). The purpose of these programs is to help farmers mitigate risks and act as a safety net, providing indemnity payments if insured crops experience losses due to naturally occurring events (such as weather-related conditions) and market conditions. FCIP coverage is available for a variety of organic and conventional crops and livestock in counties where sufficient data are available for RMA to make an actuarially sound insurance product. For crops grown in counties with data insufficient to provide FCIP products, NAP coverage is available.

In 2021, FCIP offered individual specialty crop policies for 76 crops in select counties and States. All crops covered by Federal crop insurance also are assessed for organic price elections. These elections allow growers to insure their crop using either their contract price or the published RMA organic price, which more closely reflects the value of the farmer's crop. As a comparison, in 2018, over 80 percent of insured crops had organic price elections, but less than 60 percent had organic price elections in 2016 and less than 20 percent in 2014 (USDA, RMA, 2018). In addition to crop-specific policies for specialty crops, in all States and counties FCIP

¹ Includes the following categories: vegetables, melons, potatoes and sweet potatoes; fruits, tree nuts, and berries; nursery, greenhouse, floriculture, and sod; and cultivated Christmas trees and short rotation woody crops.

² The National Organic Program in the USDA, Agricultural Marketing Service manages certification of organic commodities under the USDA Organic Seal. There are strict requirements on production methods, on supply chain management to ensure no commingling with non-organic products, and on verification that standards are met.

offers the Whole-Farm Revenue Protection (WFRP) Pilot Program, which provides revenue insurance for all insurable crops and livestock produced by the farm, including most specialty crops.³

This report analyzes how specialty crop growers, including organic specialty crop growers, enroll in FCIP and NAP using RMA and FSA administrative data alongside in-depth producer interviews for nine specialty crop growers in New York State. Because NAP is only available in counties where FCIP is not available for a particular crop, both programs must be examined to understand how growers of different specialty crops manage risk. Authors analyzed the concentration of crop insurance by State and trends in the adoption of crop insurance tools. Because acreage-level data are only available for 2017, that year's NAP and FCIP acreage was analyzed to determine how much specialty crop acreage is covered by the combination of the two programs. The use of coverage level options are also compared. Authors also describe the reasoning behind individual specialty crop growers' choices whether to participate in FCIP or NAP and how these programs fit with their overall risk mitigation strategy.

Recent USDA data found that specialty crop organic producers did not commonly rely on crop insurance for risk management purposes (USDA, NASS, 2020). The lower adoption of crop insurance may be because organic farmers can access alternative risk management strategies, such as using crop rotation to manage yield risk or diversifying sales between spot markets and marketing contracts to manage marketing risk (Hanson et al., 2004). Understanding which specialty crop producers tend to purchase FCIP and NAP coverage and how these programs matter for farms' financial risk management could help policymakers evaluate the effectiveness of farm safety net programs for specialty crop producers, identify risk management needs unmet by current Farm Act policies, and decide how to target future policies.

³ Not all commodities are insurable, including timber, forest, forest products, controlled substances, and commodities not grown in the United States.

What Are Specialty Crops?

The Specialty Crops Competitiveness Act of 2004 defines specialty crops as fruits and vegetables, tree nuts, dried fruits, and horticulture and nursery crops, including floriculture. Because these crops are considered horticultural crops, it raises a question whether other horticultural crops not named also belong under the specialty crop classification (USDA, AMS, 2020). USDA, Agricultural Marketing Service (AMS) regularly updates the list of crops in this category since the agency receives inquiries about program eligibility (see current list provided by AMS in appendix table A1).

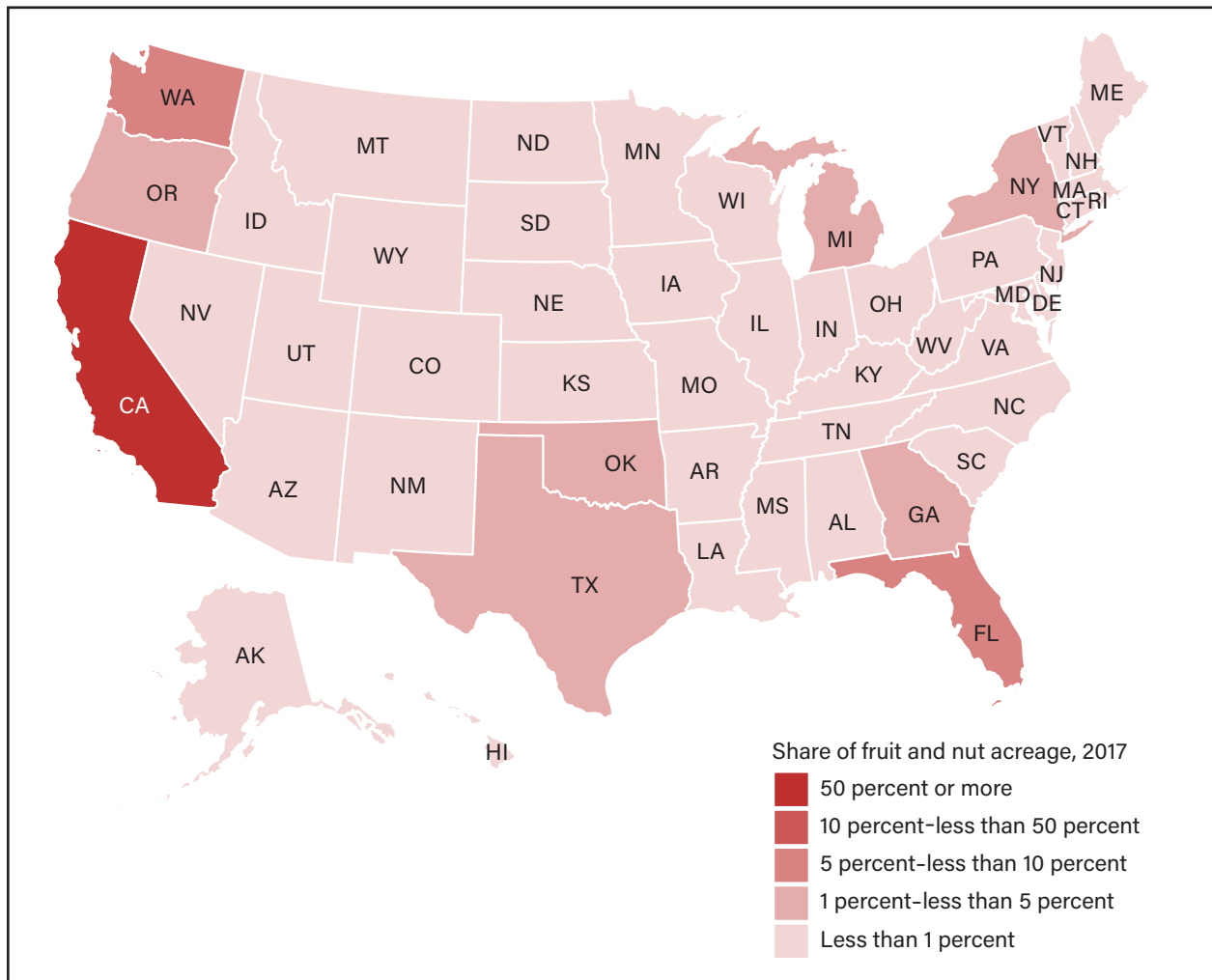
USDA does not consider wild plants specialty crops even though they may be collected and sold for specialty uses (e.g., medicinal uses) (USDA, AMS, 2020). Other examples that are not considered specialty crops include: grains (e.g., barley, corn, rice, and wheat); oilseeds (e.g., canola, flaxseed, safflower, and soybean); bioenergy crops (e.g., sugar cane, miscanthus, and switchgrass); forages (e.g., alfalfa, clover, and hay); nonspecialty field crops (e.g., cotton, peanut, and sugar beet); and drug plants (e.g., cannabis, coca, and opium poppy). While hops is a specialty crop, hemp is explicitly excluded from the AMS specialty crops classification. However, the USDA, National Agricultural Statistics Service (NASS) and RMA categorize hemp as a specialty crop. Hemp belongs to the same botanical family of flowering plants as hops (Johnson, 2017) and suffers from heightened price and yield risks relative to row crops (Raszap Skorbiansky et al., 2021).

This report mainly concentrates on the subcategories of fruits, nuts, vegetables, and specialty field crops, such as dry beans. Specialty crops are often grown in a few select pockets of the country where soil and weather conditions better suit them (figures 1–3). California grows the largest share of U.S. fruits and nuts and vegetables—61 percent of fruits and nuts acreage and 45 percent of vegetables acreage in 2017. Florida and Washington each grow over 5 percent of total U.S. acreage for fruits and nuts and vegetables. Specialty field crops are grown mainly in Montana (35 percent of total U.S. acres), North Dakota (23 percent), and North Carolina (10 percent).⁴ Cash receipts, (cash income from the sale of agricultural commodities) for specialty crops are the highest in California. In 2020, California held the largest share of fruit and nuts cash receipts (73 percent) and vegetable and melons cash receipts (43 percent).⁵ Florida and Washington both had about 7 percent of vegetables and melons cash receipts in 2020, and 4 and 12 percent of fruit and nuts cash receipts, respectively. Meanwhile, Montana and North Dakota, the States with the largest acreage of specialty field crops, held about 1 percent and 2 percent, respectively, of the total vegetable and melons cash receipts for 2020.

⁴ Acreage for specialty field crops includes the largest planted field crops: dry beans, dry peas, and lentils. Planted acreage for more minor field crops, such as hops, lotus root, maple syrup, and herbs, is not included because USDA, National Agricultural Statistics Service only publishes the area harvested for these crops.

⁵ USDA Economic Research Service Cash Receipt data for vegetables and melons includes specialty crop field crops such as dry beans, dry peas, and lentils.

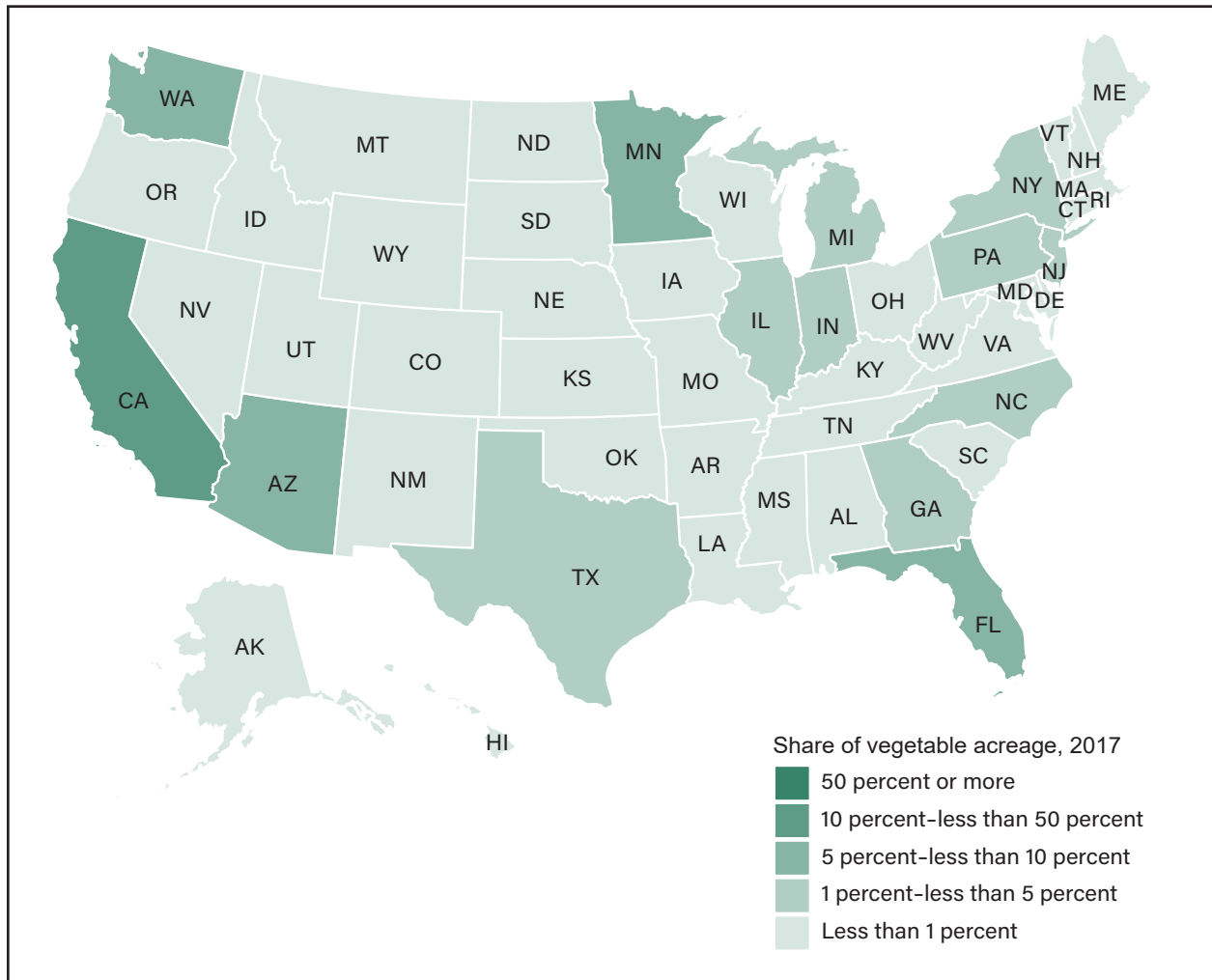
Figure 1
State share of total U.S. bearing fruit and nut acreage, 2017



Notes: Figure 1 illustrates the concentration of fruit and nut bearing acreage in the United States. California has the largest share of U.S. fruits and nuts bearing acreage, followed by Florida and Washington.

Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service Census of Agriculture.

Figure 2
State share of total U.S. planted vegetable acreage, 2017

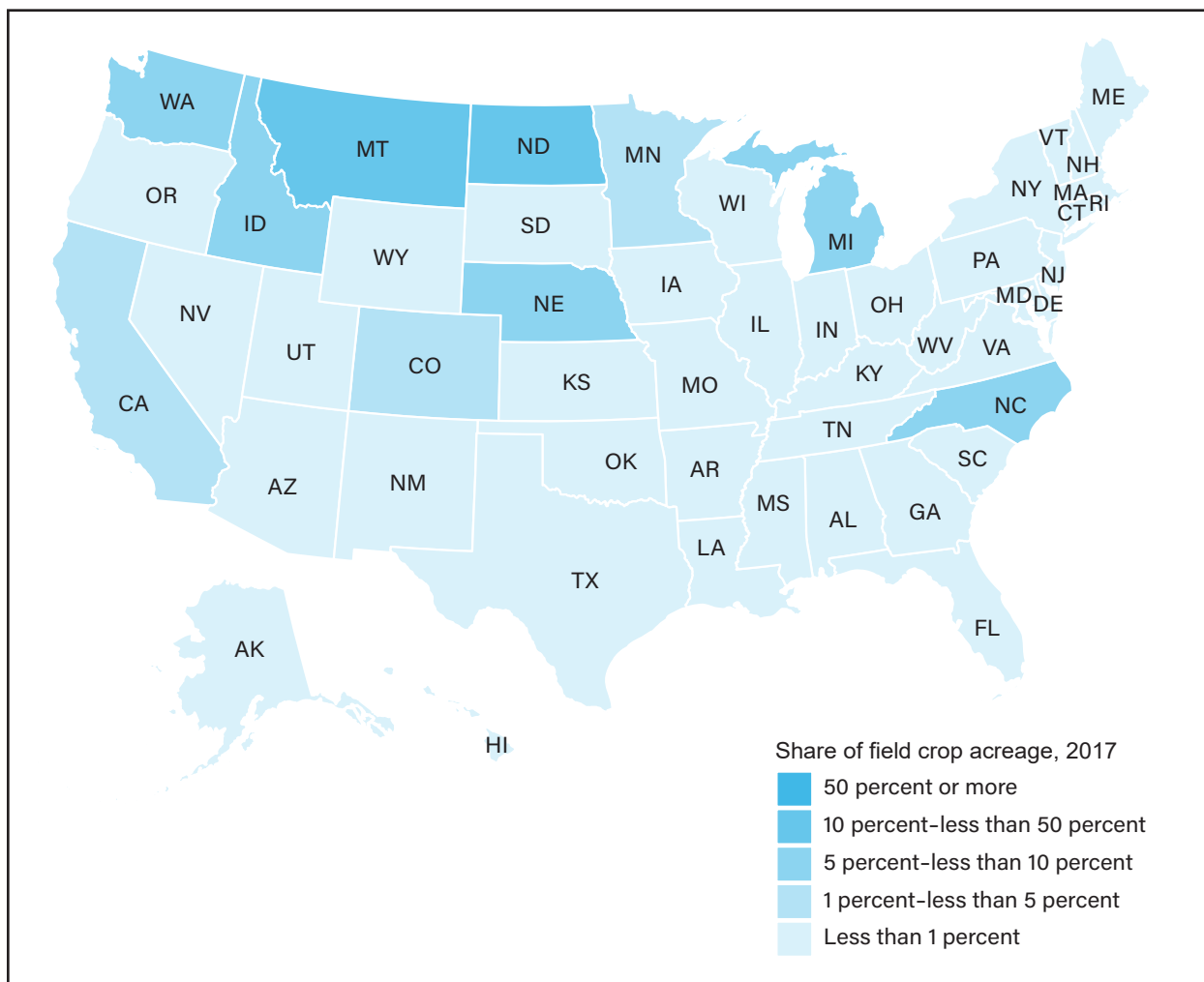


Notes: Figure 2 illustrates the concentration of vegetable planted acreage in the United States. California has the largest share of U.S. vegetable planted acreage, followed by Florida, Minnesota, Washington, and Arizona.

Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service Census of Agriculture.

Figure 3

State share of total U.S. planted specialty field crop acreage, 2017



Notes: Figure 3 illustrates the concentration of specialty field crop planted acreage in the United States. Montana and North Dakota have the largest share of U.S. specialty field crop planted acreage.

Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service Census of Agriculture.

While field crops such as dried beans, peas, lentils, and chickpeas are considered specialty crops, these crops are specifically covered under several Farm Act Title I commodity programs such as the Agriculture Risk Coverage and Price Loss Coverage programs, as well as Marketing Assistance Loans. Also considered specialty crops, nursery crops make up 4 percent of the market value of agricultural products sold in the United States (USDA, NASS, 2019). While not covered in this report, nursery crops historically have been insured at lower rates than other specialty crops, predominantly at the catastrophic level of coverage (Paggi, 2016).

Organic Specialty Crops

The United States in 2019 had approximately 16,585 certified organic farms, operating 5.5 million acres and selling more than \$9.9 billion in agricultural products (USDA, NASS, 2020). These operations included 3,300 farms producing \$2.1 billion of certified organic vegetables, 622 farms producing \$115.9 million of certified organic citrus, 2,325 farms producing \$989.6 million of certified berries and other fruits, and 430 farms producing \$109.8 million in certified organic tree nuts. In 2020, organic packaged salads were the

largest driver of organic sales, followed by apples, carrots, blueberries, bananas, and herbs and spices (OTA, 2020).

The share of fruit, nut, and vegetable acreage devoted to organic is greater than the share of grains and oilseeds devoted to organic. Lower prices of organic grains and oilseeds relative to specialty crops, weed control, and access to storage facilities and transportation (McBride and Greene, 2015), as well as lack of organic grain elevators (Stephenson et al., 2017), are reasons for a lagging transition into organic grains and oilseeds relative to fruits and vegetables.

According to the NASS 2019 Organic Survey, of the 16,585 certified organic farms in the United States, 4,255 farms (26 percent) participated in FCIP in 2019, with more than 75 percent of farms with crop insurance insuring at least 50 percent of their acreage and more than half of farms insuring 100 percent of their acreage. In the survey, the three most common reasons respondents gave for not fully insuring with FCIP were no need or desire for crop insurance (53 percent), unfamiliarity with crop insurance (15 percent), and cost of crop insurance (11 percent).

Risk Faced by Specialty Crops

Agricultural economists generally group farmers' risk into the following categories: price risk (uncertainty about final output price or prices of inputs); market risk (uncertainty about finding a buyer); production or yield risk (uncertainty about factors that affect quantity or quality of final product); institutional risk (uncertainty regarding Government policies affecting the crop); financial risk (uncertainty regarding financial conditions, such as interest rates); and human risk (uncertainty regarding human conditions that may affect the business) (USDA, ERS, 2020b).

All agricultural producers face these risks, but the nature of specialty crop production and marketing may heighten exposure to some of these risks. Specialty crops, especially organic specialty crops, are traded on thinner markets (i.e., a market characterized by few buyers or sellers) and therefore have less informative market prices than data generated through thickly traded markets such as for row crops. Thinner markets can also contribute to market risk by increasing the costs of searching for a new buyer when presented with counterparty risk (e.g., a buyer withdraws from an agreement). Thicker markets can also feature futures markets, which help to manage price risk. For specialty commodities though—except for cacao, coffee, and frozen concentrated orange juice—futures markets are not available, so other tools are needed. (For more information on how farmers use futures contracts, see Prager et al., 2020.)

Specialty crop production often requires labor-intensive harvesting methods. This, along with fewer herbicide and pesticide options available to growers than for row crops (Fennimore and Doohan, 2008), can lead some specialty crops to suffer from heightened production risk. Additionally, organic specialty-crop producers are restricted to use substances listed in the AMS National Organic Program (NOP) National List of Allowed and Prohibited Substances. Annual and perennial specialty crops' production is susceptible to temperature changes. Aside from effects on yield, weather stressors can affect the quality and visual characteristics of specialty crops, reducing desirability of the product (Walthall et al., 2012). For example, apple yields can reach historic levels, but if a pest damages or discolors the skin, the crop may not be marketable or may sell at a discount. This production risk goes hand in hand with price risk and market risk. Specialty crop producers, especially farmers with low acreage and little market power, may experience an inability to market lower quality crops (Zhao and Yue, 2020).

The producer's decision to purchase crop insurance can be linked to the producer's other risk management choices. For example, it is not uncommon for private lenders to require producers to purchase crop insurance

before applying for a loan. DeLay et al. (2022) found that highly leveraged producers are also more likely to purchase crop insurance.

Institutional risk may also affect production decisions. A 1996 survey found that specialty crop producers were relatively more concerned about institutional risk than major field crops growers (Harwood et al., 1999). Because specialty crop production is labor-intensive, institutional risk can arise due to changes to the H-2A Visa Program, which secures migrant workers to fill temporary, seasonal agricultural jobs. In 2019, vegetables and melons employed the greatest number of certified H-2A guest workers (34 percent), followed by fruit and tree nuts (33 percent), field crops (20 percent), nursery and greenhouse (8 percent), and animal products (4 percent) (Castillo et al., 2021). At the onset of the Coronavirus (COVID-19) pandemic, the U.S. Department of Homeland Security (DHS) temporarily amended regulations for H-2A workers to stay in the United States beyond the standard 3-year maximum allowable period (DHS, 2020).

COVID-19 affected all areas of the economy, highlighting how human risk affects food production in general, and specialty crop production in particular. The large outbreaks observed in the meat processing sector due to plant workers being side-by-side raised concerns about the safety of fruit and vegetable farm-workers because of the close quarters common to harvesting and packing operations (Mazzei, 2020; Weersink et al., 2021). Isolating workers may be practically impossible while harvesting some specialty crops, and migrant workers often reside in small quarters and ride full buses from their living quarters to the fields (Mazzei, 2020). Agricultural communities experienced a large number of COVID-19 infections (Mazzei, 2020; Jordan, 2021). The interconnectedness of these risks (e.g., human risk leading to greater production risk) necessitates farmers to use various tools to mitigate risk.

Risk Management Practices for Specialty Crops

Farmers typically engage in a variety of risk mitigating strategies and employ several tools. Examples of some risk management techniques that specialty crop growers may engage in include (see box, “Additional Risk Mitigation for Organic Agriculture”):

- **Diversification of production:** Farmers may diversify their crop portfolio or rely on crop rotation to manage yield risk (Hansen et al., 2004).
- **Cash flow management:** Farmers may save large sums of money and self-insure (Collins, 2012; Richards, 2000).
- **Vertical integration:** Vertical integration can help farmers assure quality control along the supply chain and help farmers establish a brand name. Harwood et al. (1999) found vertical integration was prevalent in potato and vegetable operations, combining the tasks of sorting, assembling, and packaging for retail sales.
- **Forward contracting:** The use of forward contracts can guarantee quantities and the price sold after harvest. While forward contracting helps farmers with price risk, it also introduces counterparty risk—the risk that the buyer may default on the contract. Contracting is often used for specialty crops, which have thinner spot markets relative to row crops (Harwood et al., 1999; MacDonald, 2015). Contracts are more common in processed vegetables and fruit markets as compared with produce sold in fresh markets (Martinez and Reed, 1996; Raszap Skorbiansky and Ellison, 2019).
- **Specialized equipment or structures:** An example of this is the installation of high tunnels, which are unheated plastic-covered structures that provide environmental protection over open-field production (Belasco et al., 2013), or the use of greenhouses.

- Off-farm income: Farm households often diversify with off-farm activities, particularly in smaller farms (Fernandez-Cornejo et al., 2007).
- Crop insurance or disaster assistance: Farmers can cover production or revenue under a Federal risk management program such as FCIP or NAP. Grain growers historically were more likely than specialty crop producers to use crop insurance (Belasco et al., 2013).

Additional Risk Mitigation for Organic Agriculture

Marketing contracts are usually considered less risky than spot market sales, and historically, organic farmers chose to sell through written and verbal marketing contracts (Dimitri et al., 2010). In general, spot markets for organic products are thinly traded and highly localized, which makes market prices harder to predict and more volatile. The terms of the contract—price, quality requirements, delivery, etc.—can vary across commodity types and buyers. Marketing contracts still present some degree of revenue risk—the probability that revenue will fall below its expected level—depending on how contract payments are structured (e.g., indexed to cash prices of the conventionally grown commodity, a fixed futures “basis” level above a market price, payments contingent on delivered quality).

Contamination of products is a particular risk for organic specialty crop producers. To prevent contamination, organic producers can install barriers to reduce the possibility of accidental flow of unwanted chemicals or seeds. Organic farmers can use buffer areas such as a road, ditch, or an uncultivated land strip to separate from conventional fields or can sell crops grown adjacent to conventional crops as conventional and forgo the organic premium. Organic producers are also unable to use many common chemical products to mitigate production risks, as farmers are constrained on which pesticides and herbicides are used as part of the production process. Aside from the use of approved chemicals, organic producers rely on methods such as crop rotation, optimal-time planting and harvesting, mechanical cultivation, and the development of beneficial insect populations (Hansen et al., 2004).

Historically, organic producers did not rely on crop insurance for risk management purposes (Singer et al., 2012). The reason for the lower adoption of crop insurance could be a demand or a supply issue. On the demand side, organic specialty crop farmers may already employ alternative risk management strategies such as crop rotation to manage yield risk or diversifying sales between spot markets and marketing contracts to manage marketing risk (Hanson et al., 2004). On the supply side, some coverage is available for all types of specialty crops through either the Federal Crop Insurance Program or the Noninsured Crop Disaster Assistance Program. However, the coverage offered may not be suitable for the risk management needs of certain farm businesses. Lack of awareness and experience with crop insurance may also play a part. In a University of Maryland survey of organic producers, most organic specialty crop producers showed little knowledge of crop insurance. Furthermore, small fruit and vegetable operations were skeptical of the usefulness of crop insurance when hearing more information about it (Hansen et al., 2004).

Federal Agricultural Risk Management Programs for Specialty Crops

The Federal Government provides subsidized multiperil crop insurance coverage through FCIP or disaster assistance through NAP to farmers to protect against an event that can cause losses (e.g., yield losses due to weather or revenue falling below a specified threshold). A significant motivation for the creation of Federal crop insurance and disaster assistance was to remove the need for ad hoc disaster relief (Goodwin and Smith, 1995).⁶ The coverage provided by Federal programs helps farmers maintain stable farm income after eligible natural disasters, prevents bankruptcies, and in turn, leads to fewer disruptions to the domestic food supply chain.

Federal Crop Insurance Program

For many commodities in many counties, the RMA Federal Crop Insurance Program (FCIP) offers a selection of policies, allowing farmers to choose the crop insurance type that best aligns with their needs and production practices (see box, “Legislative History of the Federal Crop Insurance Program”).⁷ Eligible perils covered under FCIP include adverse weather conditions (e.g., hail, frost, freeze, wind, drought, and excess precipitation), earthquake, failure of the irrigation water supply (if caused by an insured peril), fire, insects, and plant disease (except for the insufficient or improper application of pest or disease control measures), wildfire, and volcanic eruption. Crop insurance does not cover damage or loss of production due to the inability to market for any reason other than actual physical damage for an insurable cause of loss. For policies insuring against revenue losses, a change in the harvest price from the projected price is also an eligible cause unless the Federal Crop Insurance Corporation (FCIC) determines the price change resulted from an uninsured cause of loss.

All policies require the farmer to select a level of coverage. The level of coverage is the percentage of the expected value of the covered commodity and the loss the farmer must incur before payments are triggered. The catastrophic level of coverage (referred to as CAT) is the minimum coverage level and makes indemnity payments when the farmer loses 50 percent or more of the yield. CAT indemnifies yield losses at 55 percent of the insured price. Additional coverage, called buy-up, can be purchased in 5-point increments, although the highest available level varies by crop, location, and plan. All buy-up level options are higher than CAT, typically ranging between 50 to 85 percent. The producer selects a portion of the price to insure, typically between 60 and 100 percent. CAT coverage is unavailable for some policies offered through FCIP.

In the past 5 years, the types of FCIP plans used to cover specialty crops were:

- Yield-based policies—including Actual Production History (APH) and Yield Protection (YP): APH is the most purchased plan for specialty crops. Under the APH plan, the producer selects the amount of yield to insure and the percent of the predicted price as established annually by RMA. YP is similar to APH but uses projected prices based on daily settlement prices for certain futures or other marketing contracts. For specialty crops, YP is used for dry beans and peas. A producer selects the percent yield to insure based on the producer’s yield history—typically from 50 to 85 percent, although limited to 75 percent in some areas—and the percent of the RMA price—typically between 55 and 100 percent.
- Revenue-based policies—including Actual Revenue History (ARH) and Revenue Protection (RP): ARH is similar to APH but uses historical revenues instead of historical yields. Crops insured under

⁶ Ad hoc programs, programs that are not part of a permanent safety net, still play a role in farm policy. Both the Wildfire and Hurricane Indemnity Program-Plus and the Emergency Relief Program, which provided relief from natural disasters for specific years, used NAP or FCIP data as a basis to calculate payments.

⁷ For a comprehensive primer on FCIP, see Rosch (2021) and Rosa and Johnson (2019).

ARH have crop-specific provisions to protect growers against any combination of low yields, prices, or quality. RP policies protect against yield from insurable causes and revenue losses from a change in the harvest price from the projected price based on daily settlement prices for certain futures or other marketing contracts. The producer insures the average revenue from 50 to 85 percent. The projected price and harvest price are set at 100 percent.

- Dollar plans—including Dollar Amount of Insurance (DOL), Fixed DOL, and Tree Based Dollar Amount of Insurance (TDO): Dollar plan policy guarantees are typically based on the cost of establishing the crop. The lowest amount of coverage available equates to a catastrophic level of coverage, and growers can purchase additional coverage.
- Whole-Farm Revenue Protection (WFRP)—WFRP Program policies insure revenue for the entire farm under one policy and cover losses of farm revenue from natural causes and declines in market prices. WFRP is a crop insurance pilot and the successor of the Adjusted Gross Revenue (AGR) Program. WFRP is the first RMA program to be available in every county. Because WFRP is a pilot program, producers can enroll in both NAP and WFRP.

Legislative History of the Federal Crop Insurance Program, the Non-Insured Crop Disaster Assistance Program, and Specialty Crops

Federally supported crop insurance began with the passage of the Federal Crop Insurance Act (FCIA) in 1938. Initially covering only wheat, over the next few decades the program expanded to cover or experimentally cover a variety of major field crops and specialty crops (Kramer, 1983). The Federal Crop Insurance Reform and Department of Agriculture Reauthorization Act of 1994 required a timetable on further expansion of crop insurance to specialty crops. Subsequent Farm Acts expanded the provisions related to specialty crops:

- The Federal Agricultural Improvement and Reform Act of 1996 (Public Law 1996 104–127) established the Noninsured Crop Disaster Assistance Program (NAP) to provide risk management to crops in counties not covered by the Federal Crop Insurance Program (FCIP) due to insufficient data. Originally, NAP provided one coverage option: 50 percent of the crop loss at 55 percent of the value of the crop.
- The Specialty Crops Competitiveness Act of 2004 (Public Law 108–465) was created to enhance the competitiveness of specialty crops. It made grants available from 2005 to 2009 by State departments of agriculture, provided technical assistance, and reduced backlogs of export petitions.
- The Food, Conservation, and Energy Act of 2008, or 2008 Farm Act, amended the National Agricultural Research, Extension, and Teaching Policy Act of 1977 to include:
 - (a) Analysis of changes in economic conditions and policies on specialty crop production and consumption, focusing on the effect of changes on the financial stability of producers.
 - (b) Development of data to provide useful information to specialty crop producers.
 - (c) Development of data to provide useful information at the regional and national level to benefit growers, associations, and interested beneficiaries (Section 7103).
- The 2008 Farm Act amended the Federal Crop Insurance Act to include crop insurance coverage for organic crops and amended the Federal Crop Insurance Act to carry out a pilot program where the insurable unit is the whole farm.

- The Agricultural Act of 2014, or 2014 Farm Act, authorized the Whole-Farm Revenue Protection (WFRP) Program for all counties and expanded NAP to include additional coverage levels (over the “basic” coverage) for crops otherwise not covered under Federal crop insurance.
- The Agriculture Improvement Act of 2018, or 2018 Farm Act, increased coverage levels from the 2014 Farm Act permanently and increased the payment limit for buy-up coverage.

Some specialty crops growers purchase endorsements that complement these standard policies. Supplemental Coverage Option (SCO) policies can be purchased as an endorsement to YP, RP, and RP with the Harvest Price Exclusion policies, or APH for crops without revenue protection available, though sign up rates for SCO are low. Unlike the underlying policies, SCO policies trigger when a county average falls below the expected level, providing additional coverage for a producer’s underlying crop insurance. The SCO plans were authorized by the 2014 Farm Act and are extended to many specialty crops but not all. The Hurricane Insurance Protection-Wind Index (HIP-WI) Endorsement, available since the 2020 crop year, covers a portion of the deductible of a crop insurance policy when a county or adjacent county falls within an area of sustained hurricane-force winds from a named hurricane.

FCIP policies are priced on an actuarially sound basis, and so the premium paid by the producer depends on several factors, such as the type of policy chosen, the coverage level, commodity, practices (such as irrigation or organic), geographic location, and more. Excluding administrative and operating costs, the policy premium is set to on average equal or exceed the expected value of losses. After setting the premium, RMA then subsidizes a portion of it. Shi et al. (2019) cite the large body of economic literature exploring how FCIP design impacts producer behavior in general before examining the specialty crops case in particular, as do Yu et al. (2021).

As of 2021, RMA had 76 individual crop insurance policies for specialty crops. Most such policies are available in the primary areas where the crop is grown. For example, mint is insurable under APH for select counties in California, Idaho, Indiana, Michigan, Missouri, Oregon, Washington, and Wisconsin. Crop insurance coverage can be obtained through a “written agreement” process in counties where permanent insurance coverage is not otherwise available, however it is a more time-intensive process.

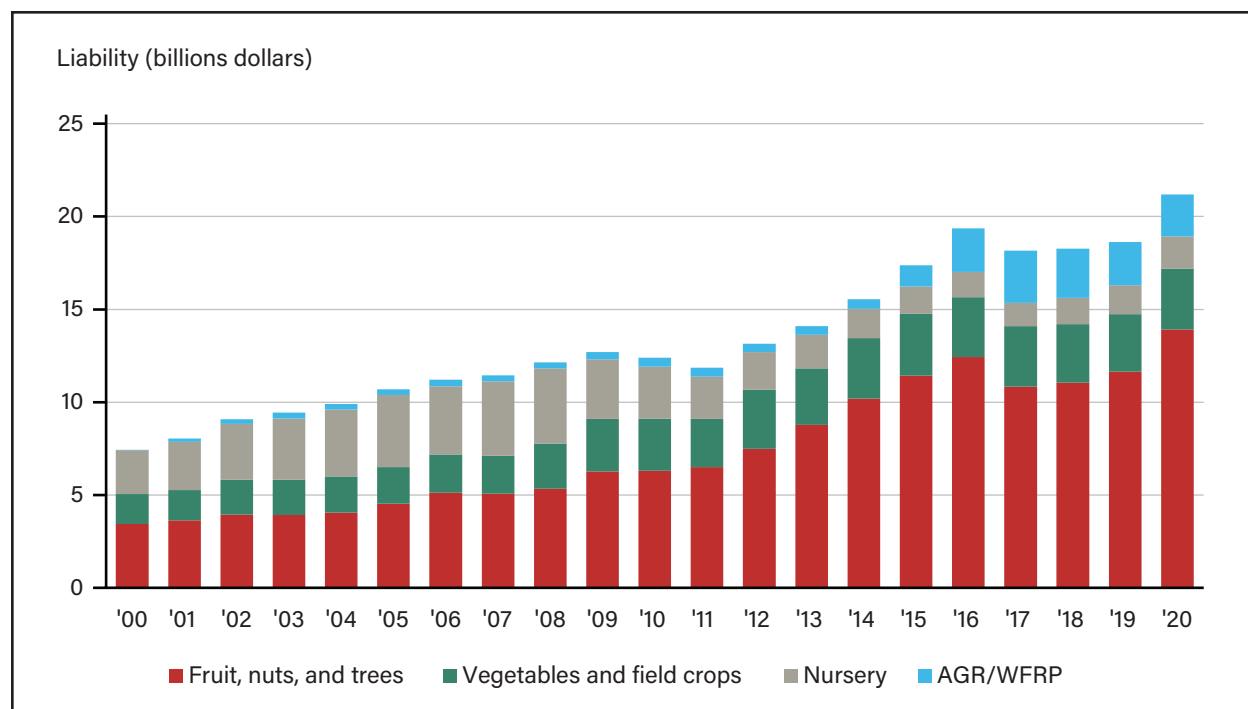
Organic commodities generally command a premium over their conventional counterparts. Eligible organic growers may also choose separate (higher) organic price elections to determine the premium and indemnity under their policy. As of 2020, RMA evaluated all crops covered under FCIP for organic coverage and approved most for organic price election (USDA, RMA 2020b).⁸ Organic growers may also choose the “Contract Price Addendum” endorsement that gives farmers the option to use their contract price for the crop in lieu of the price established by RMA, thus insuring their crop at the market value established in the contract.

Total specialty crop liabilities—the value covered by crop insurance—under FCIP grew over the past two decades (figure 4), from about \$7 billion in 2000 to \$21 billion in 2020 (not adjusted for inflation), driven by large increases to the fruit, nuts, and trees category. Liabilities under WFRP were over \$2 billion starting

⁸ Only policies for all other citrus trees, carambola trees, chile peppers, lemon trees, lime trees, limes, macadamia trees, mango trees, peppers, processing apricots, processing freestone peaches, and tangors do not have a distinct organic price election because either there is no known organic production in insured areas, there is limited production leading to insufficient data, or the crop does not receive an organic premium (USDA, RMA 2020b).

in 2016, some of which may reflect additional coverage purchased by diverse specialty crop farms. Growers using this policy tend to have a mix of crops, which could be specialty crops or not. As WFRP is not attached to any particular crop, but to overall farm-expected revenue, it is not possible to incorporate WFRP policies in the analysis of crop-related trends (e.g., when analyzing tomato acreage insured, there is no way to identify the amount of tomato acreage covered by WFRP).

Figure 4
Specialty crop FCIP and WFRP liabilities



FCIP = Federal Crop Insurance Program. AGR/WFRP = Adjusted Gross Revenue Program/Whole-Farm Revenue Protection Program. Notes: The USDA, Risk Management Agency Adjusted Gross Revenue (AGR) Program was the pilot program that preceded the agency's Whole-Farm Revenue Protection (WFRP) Program. Specialty crop liabilities have trended upward in the past two decades, largely driven by increased liabilities in the fruit, nuts, and trees category. Source: USDA, Economic Research Service using information from the USDA, Risk Management Agency Summary of Business Report, 2021.

Noninsured Crop Disaster Assistance Program

FSA administers the Noninsured Crop Disaster Assistance Program (NAP) for the Commodity Credit Corporation (CCC) under the authority provided by the Federal Agriculture Improvement and Reform Act of 1996. NAP is designed to provide financial assistance to producers that do not have Federal Crop Insurance Program (FCIP) policies for their commodity in their county. NAP coverage is available in all counties and States for crops commercially produced for food and fiber or other specific crops (e.g., Christmas trees or industrial crops grown expressly for producing feedstock for renewable biofuel). NAP reduces financial losses from eligible natural disasters that lead to decreases in production or prevented planting. Eligible causes of loss include damaging weather (e.g., drought, hail, excessive moisture, freeze, hurricane), adverse

natural occurrences (e.g., flood, earthquake, volcanic eruption), and conditions related to damaging weather or adverse natural occurrences (e.g., heat, insect infestation, plant disease).⁹

Before 2014, NAP only offered one level of coverage. Equivalent to FCIP's catastrophic coverage, basic coverage is based on losses that exceed 50 percent of expected production at 55 percent of the crop's average market price. This coverage option results in a maximum indemnity payment of 27.5 percent of expected revenue. The 2014 Farm Act introduced the option to elect additional coverage (i.e., buy-up) for crop years 2015 to 2018. NAP buy-up coverage starts at the 50-percent yield level and can be purchased in 5-point increments up to 65 percent. All buy-up coverage levels cover price at 100 percent. Buy-up coverage was made permanent in the 2018 Farm Act for crop years 2019 and later. However, USDA limits buy-up coverage to producers who have successfully produced a crop in a prior year. Successful production is defined as the ability to produce at least 50 percent of the county's expected yield of the crop, unless the producer's crop suffered a loss due to an eligible cause (USDA, CCC, 2020).

The average market price used to calculate NAP payments is on a harvested basis and does not include transportation, storage, processing, packing, marketing, or any other post-harvest expenses. Typically, it is based on historical average market prices or other premium price information. The approved yield is the actual production history yield approved by CCC. In cases of insufficient approved yield data, the approved yield is based on a percentage of the county-expected yield, established by the respective FSA State committee or, in some cases, in line with a yield established for the crop under FCIP. FSA establishes an average market price for all organic producers of a specific commodity in a State, and growers can establish their own organic yield to reflect differences between organic and conventional varieties. Crops transitioning to organic are considered conventionally grown until organic certification is received. Organic average market prices may be based on the RMA organic price for the crop (if available), 145 percent of the average market price, or other acceptable organic price data sources (USDA, FSA, 2021). However, if a producer elects the organic option and FSA does not already approve an organic average market price, the producer may receive the conventional average market price.

Producers pay a service fee—the lesser of \$325 per crop or \$825 per producer per administrative county, not to exceed \$1,950 for producers farming in several counties—plus a premium for buy-up coverage based on the producer's share of the crop, acreage, an approved yield, coverage level, and the average market price. For a single farmer, the premium maximum is \$15,750 for a basic level of coverage. For a joint operation, the maximum premium is based on the number of persons or legal entities. The differences in eligible producers, fees, premium, and coverage between FCIP and NAP are highlighted in table 1.

⁹ While NAP can be combined with pilot insurance programs, weather-indexed coverage, and whole-farm plans, producers must choose whether to receive a pilot program benefit or payments under NAP, except in the case of the Apiculture Pilot, WFRP, or weather-based insurance (USDA, FSA, 2021).

Table 1

Differences between the Federal Crop Insurance Program and Noninsured Crop Disaster Assistance Program

Program	Federal Crop Insurance Program (FCIP)	Noninsured Crop Disaster Assistance Program (NAP)
Who can purchase?	Producers with the program available for their crop and county of production	Producers without FCIP available for their crop and county of production
Income limitations	None	Adjusted gross income cannot exceed \$900,000
Signup or service fee	Signup fee of \$655 per crop per county for catastrophic, \$30 administrative fee for buy-up (generally per crop per county but varies depending on the crop policy and endorsements elected)	All producers pay a service fee equal to the lesser of \$325 per crop or \$825 per producer per county, not to exceed \$1,950 for a producer with farming interests in multiple counties
Catastrophic or basic coverage	Payments for catastrophic coverage are triggered when losses are greater than 50 percent of expected yield at 55 percent of market price	Payments for basic coverage are triggered when losses are greater than 50 percent of expected yield at 55 percent of market price
Types of buy-up coverage	Yield-triggered and/or revenue-triggered coverage, depending on the crop	Yield-triggered
Buy-up coverage levels	Buy-up coverage on an individual basis starting at 50 percent and reaching 85 percent (in 5-percent increments), and on an area basis starting at 60 percent up to 95 percent (in 5-percent increments), depending on the crop, county, and policy type. Supplemental coverage options are available that allow additional coverage up to 95 percent of the expected crop value	Buy-up coverage starts at 50 percent of expected yield and at 100 percent of market price. Coverage increases at 5 percent increments, with a maximum of 65 percent
Buy-up premium	The Federal Government subsidizes a portion of the premium and qualifying producers are eligible for a fee waiver	The total premium is equal to 5.25 percent times the producer's share of the crop, the eligible acres, the approved yield per acre, the coverage level, and the average market price
Premium/payment caps	None	A \$15,750 premium cap for a single producer. Payments are limited to \$125,000 per crop year per individual or entity for basis, or \$300,000 for buy-up coverage
Fee and premium waivers	The Federal Government subsidizes a portion of the premium	Qualifying producers are eligible for a service fee waiver or premium reduction. Producers must qualify as a beginning farmer, a limited resource farmer, a socially disadvantaged farmer, or a veteran farmer, as defined by USDA, Farm Service Agency

Sources: USDA, Economic Research Service using information from the USDA, Risk Management Agency, National Fact Sheets, 2020c and USDA, Farm Service Agency, Noninsured Crop Disaster Assistance Program Fact Sheet, 2020.

Participation in Federal Risk Management Programs

Participation in FCIP and NAP is assessed based on policy and application data from RMA and FSA, respectively (see box, “Data Sources”). The focus is on the use of crop insurance by State, then trends in adoption are reviewed for each program separately. Finally, how the pieces fit together in 2017 is studied for acreage covered by the combination of FCIP and NAP. Crops with significant acreage covered under NAP can be an indicator of farmer demand for crop insurance in areas where FCIP is not available. Whole-Farm Revenue Protection (WFRP) policies are reported separately.

Data Sources

USDA, Farm Service Agency (FSA); USDA, National Agricultural Statistics Service (NASS); and USDA, Risk Management Agency (RMA) provided the public and nonpublic data for analysis. The 2017 NASS Census of Agriculture contains the most comprehensive data on planted acreage by crop. For other years, planted acreage data from NASS annual surveys were used.

The RMA, Summary of Business (SOB) Report database publishes aggregate information about insurance policies sold each year. The SOB Report is available starting in 1988 and includes the number of policies, net acres insured, liabilities, subsidies, indemnities, and loss ratios by crop, county, and State.¹⁰ The SOB Report database does not include information about practice type (e.g., organic, irrigated). RMA publishes a separate SOB Report on Type/Practice/Unit Structure, which includes organic election. While the report includes acreage information, it does not include number of policies. RMA also publishes a SOB Report for Organic Production that provides an overview of all the insurance for commodities grown and insured under organic production practices, including statistics such as the acreage for organic crops with the highest amount of organic liability. The authors also received data from RMA on the number of organic policies with premiums.

The authors obtained the National Summary Report Applications for Coverage from FSA, which shows NAP applications at the operation level by crop, county, and State. Each application contains information on State, county, crop name, crop type, intended use, and planting period. Data are available from 2011 to 2020. Data for farmers' selection of the organic option are available from 2015 to 2020. The authors received data on acreage covered under NAP by crop for 2017, without a distinction of a conventional versus organic election.

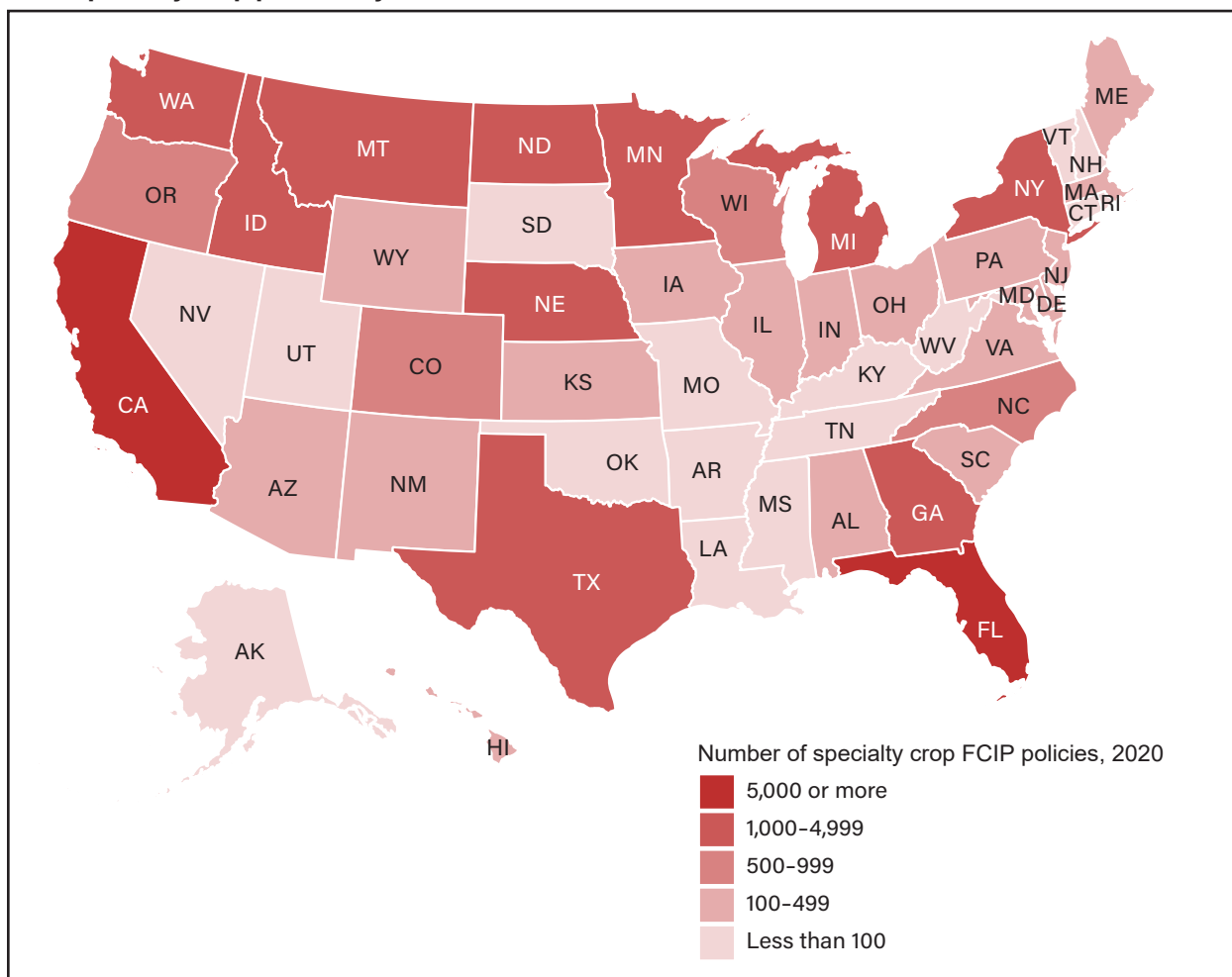
¹⁰ RMA reports policies sold (a standing option to purchase annual coverage for a specific crop) and policies earning premium (an exercised option to purchase coverage for a specific crop in the current year). After approval of the original application, a policy is sold as an option to use in any future crop year until canceled by the insured or terminated by the Approved Insurance Provider. Therefore, data on policies sold show farmer intent to use crop insurance if the crop is planted, but if the growers decide to not plant any acres, they do not pay the annual premium. There are a variety of reasons why farmers may choose to not plant a certain crop in a given year. Every year, North Dakota has about 20,000 policies sold that do not earn premium, which may be due to farmers rotating between dry beans and other crops from 1 year to the next. Another reason is that farmers may be required to purchase crop insurance as a condition of credit (Rosch, 2021), or the farmers had intended to grow the crop when they applied for crop insurance but later decided to fallow or plant a different crop. For the remainder of this analysis, authors refer to “policies earning premium” simply as “policies.”

FCIP and NAP Use by State

The data required to create an actuarially sound insurance product are most often available for counties that are major producers of the crop. Unsurprisingly, the number of Federal Crop Insurance Program (FCIP) policies sold for specialty crops is higher in States with higher concentrations of specialty crop production.

As shown in figure 5, California was by far the State with the most policies in 2020 (19,433), followed by Florida (5,060), Washington (4,233), North Dakota (3,860), and Minnesota (2,526). The States with most policies coincide with the States that produce the most fruits and vegetables (California, Florida, and Washington) and specialty field crops (North Dakota and Minnesota). Most North Dakota policies cover field crops—dry beans (2,336), followed by dry peas (1,318). California’s policies reflect the variety of specialty crops produced in the State, headed by almonds (4,491), grapes (3,906), oranges (1,723), walnuts (1,424), and raisins (865). Policies under the Whole-Farm Revenue Protection (WFRP) Program are also in the main specialty crop-producing States; Washington led with the most policies in 2020 (721), followed by Idaho and Florida.

Figure 5
FCIP specialty crop policies by State, 2020



FCIP = Federal Crop Insurance Program.

Notes: California was the State with the most FCIP policies in 2020, followed by Florida. States with most policies coincide with the States that produce the most fruits and vegetables (California, Florida, and Washington) and specialty field crops (North Dakota and Minnesota).

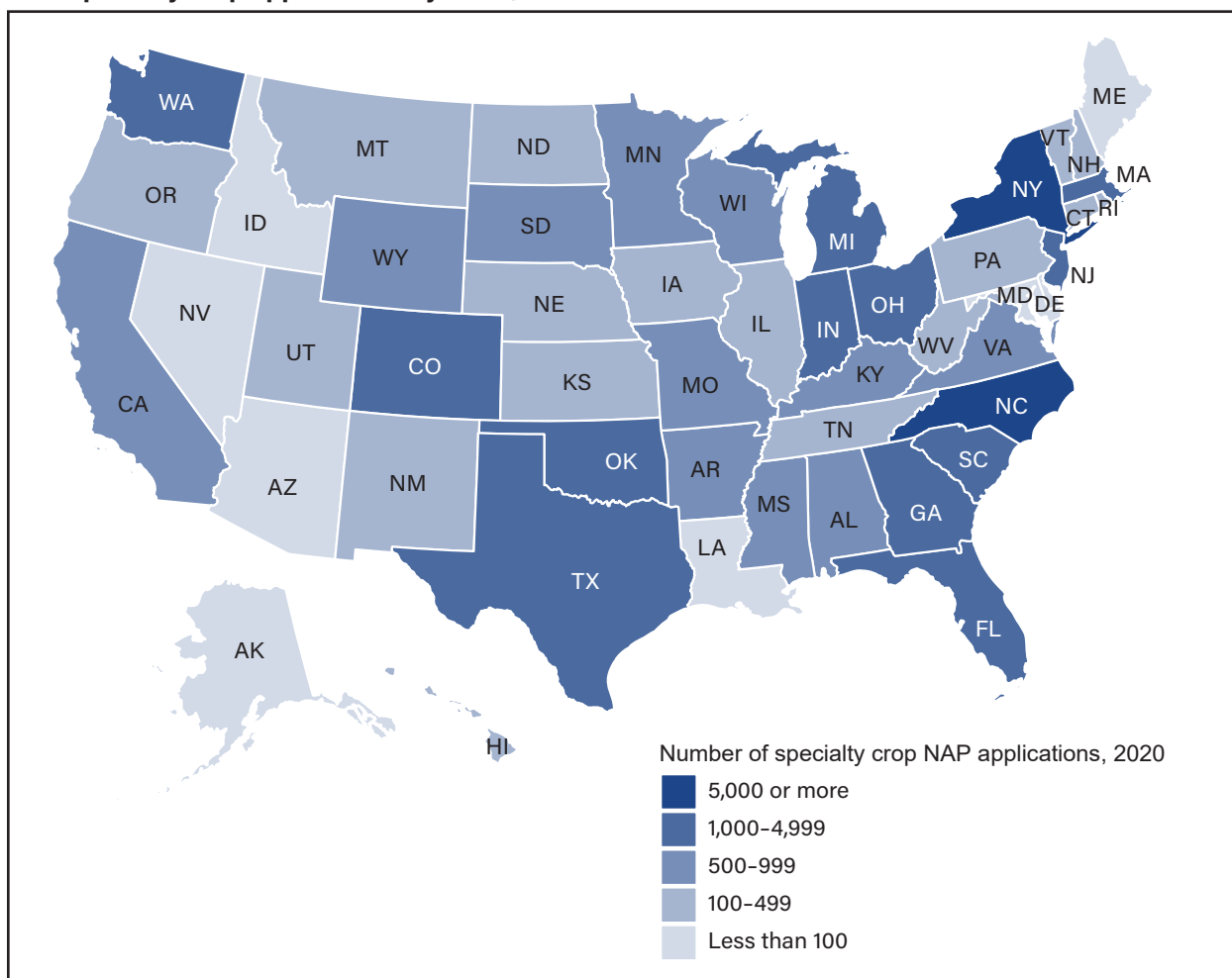
Source: USDA, Economic Research Service using information from the USDA Risk Management Agency, Summary of Business Report, 2021.

States with the most FCIP specialty crop policies also coincide with the States with the most specialty crop insured liabilities. In 2020, California had the highest number of specialty crop liabilities, followed by Florida and Washington State. North Dakota and Minnesota, the States with the fourth and fifth highest number of specialty crop policies, were the sixth and twelfth States with the highest specialty crop liabilities in 2020.

Organic crops are often grown in similar geographic areas as their conventional counterparts, as conditions—be it weather or markets—are most favorable for the commodity. Data on the number of organic specialty crop policies are not available, but the organic liabilities and acreage as reported by the 2020 Summary of Business (SOB) Report for Organic Production indicate that the five States with the highest organic specialty crop liabilities are Washington, California, Texas, Nebraska, and Iowa. The five States with the highest insured organic specialty crop acreage are Texas, Nebraska, California, Minnesota, and Iowa (USDA, RMA, 2021). RMA cites data availability and data quality as the largest constraint in the development of organic price elections (USDA, RMA, 2020a).

As the purpose of the Noninsured Crop Disaster Assistance Program (NAP) is to serve as a safety net where FCIP is not available, the number of applications for NAP insurance are highest in areas that are not top FCIP consumers (figure 6). In 2020, the States with the most conventional specialty crop NAP applications were North Carolina and New York, each with over 5,000 applications. NAP is also in demand in U.S. territories like Puerto Rico, which had over 5,000 applications. States with the highest number of organic specialty crop applications in 2020 were North Carolina and New York, with over 500 applications each.

Figure 6
NAP specialty crop applications by State, 2020



NAP = Noninsured Crop Disaster Assistance Program.

Notes: In 2020, the States with the most specialty crop (conventional and organic) NAP applications were North Carolina and New York, each with over 5,000 applications. NAP is also in demand in U.S. territories like Puerto Rico, which had over 5,000 applications. Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

Though NAP applications covered a large variety of specialty crops, 147 categories in 2020, farmers in about 40 percent of U.S. counties did not submit specialty crop NAP applications from 2015 to 2020. However, when examining specialty crop applications, farmers from all counties in New Hampshire submitted NAP applications in the same period, and farmers in more than 90 percent of counties in New Jersey, North Carolina, Oklahoma, and Vermont submitted applications. Meanwhile, less than 35 percent of counties in Alaska, Kansas, and Nevada submitted NAP applications. Generally, in States with fewer farmers who submitted FCIP policies, farmers submitted more NAP applications. Arizona, Idaho, and Nevada are the only three States with few policies under FCIP and also few NAP applications. However, these States do not produce a significant share of specialty crops, and thus demand for specialty crop risk management is low.

Long-Term Trends in FCIP Participation

The number of specialty crop policies under FCIP trended downward from 2016 to 2019 (table 2), though it increased in 2020 (figure 7). However, total acres insured under all policies expanded over this period (Rosch, 2021). Multiple reasons may explain why the number of FCIP policies decreased, such as producers consolidating into fewer policies while still insuring their crops, or an increase in the average size farm.

Producers could also be substituting FCIP with other risk management tools. One possible reason is the move toward the cultivation of fewer types of crops. Except for WFRP, producers submit individual forms for each crop covered under FCIP. The additional time required to submit multiple applications may disincentivize insuring multiple crops.

The United States experienced continued consolidation of cropland from midsize to large operations with 2,000 or more acres in crops (MacDonald, 2020). Consolidation occurred across most crops, including specialty crops. Increasingly, farms specialize in growing only two or three crops (MacDonald et al., 2018). Larger farms with fewer crops could require fewer crop insurance policies. RMA data shows the number of distinct specialty crops insured under FCIP policies peaked in 2009 and decreased since then. The number of WFRP policies fell from 2017 to 2020. The complexity of WFRP, and accompanying paperwork burden, is an impediment for higher farmer participation (Morris et al., 2019). In 2021, RMA introduced a new product, Micro Farm policy, meant to simplify record keeping for operations earning revenues up to \$100,000. Under Micro Farm, all commodities are included under a single code, removing the need for producers to report individual commodity expenses, values, and yields.

Table 2
Number of FCIP policies, 2015–20

Year	Total	Organic	Organic share percent of total	Specialty crop	Specialty crop share percent of total	Organic specialty crop	Organic specialty crop share percent of total	WFRP
2015	1,204,968	6,827	0.6	56,842	4.7	1,789	3.2	1,122
2016	1,160,447	7,936	0.7	57,165	4.9	1,922	3.4	2,204
2017	1,125,182	8,442	0.8	53,725	4.8	1,984	3.7	2,722
2018	1,108,181	9,161	0.8	51,151	4.6	2,213	4.3	2,490
2019	1,106,407	9,815	0.9	50,836	4.6	2,429	4.8	2,156
2020	1,112,079	10,763	1.0	51,989	4.7	2,608	5.0	2,029

FCIP = Federal Crop Insurance Program. WFRP = Whole-Farm Revenue Protection Program.

Source: USDA, Economic Research Service using data from the USDA, Risk Management Agency (RMA), Summary of Business (SOB) Report; USDA, RMA SOB Report for Organic Production; and USDA, RMA data on organic specialty crops.

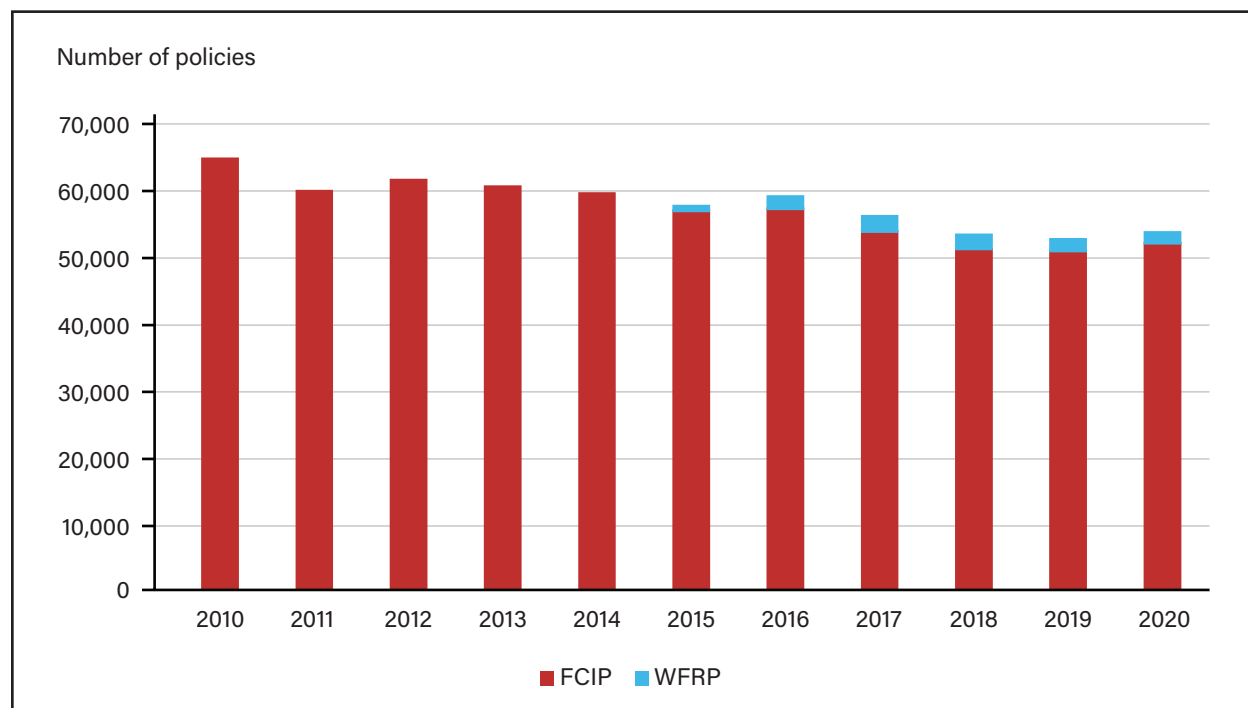
The number of organic policies and organic specialty crop policies increased every year from 2015 to 2020 while the total number of specialty crop policies declined over this period. Hence, organic specialty crop policies increased as a proportion of all specialty crop policies. For example, in 2020, 5 percent of all specialty crop policies were organic, as compared with 3.2 percent in 2015. From 2015 to 2020, RMA increased the number of crops covered under FCIP and assessed all covered crops for organic price elections. These actions by RMA may have contributed to the increased number of organic policies.

In the United States, relative to conventional agriculture, high-value crops such as fruits and vegetables make up a larger share of total cropland. Reasons for the lagging transition of grain crops and oilseeds into organic—relative to the same transition for fruits and vegetables—include: lower prices of organic grains and oilseeds relative to specialty crops; weed control and access to storage facilities and transportation (McBride et al., 2015); and lack of organic grain elevators (Stephenson et al., 2017). The continued transition into organic farming for specialty crops could contribute to the trend toward more organic specialty crop policies. At the same time, increased availability of RMA organic price elections and increases in organic policies go hand

in hand. As more policies are available and more crops are covered, growers of these newly covered crops can purchase crop insurance.

Figure 7

Number of specialty crop Federal Crop Insurance Program and Whole-Farm Revenue Protection Program policies, 2010-20



FCIP = Federal Crop Insurance Program. WFRP = Whole-Farm Revenue Protection Program.

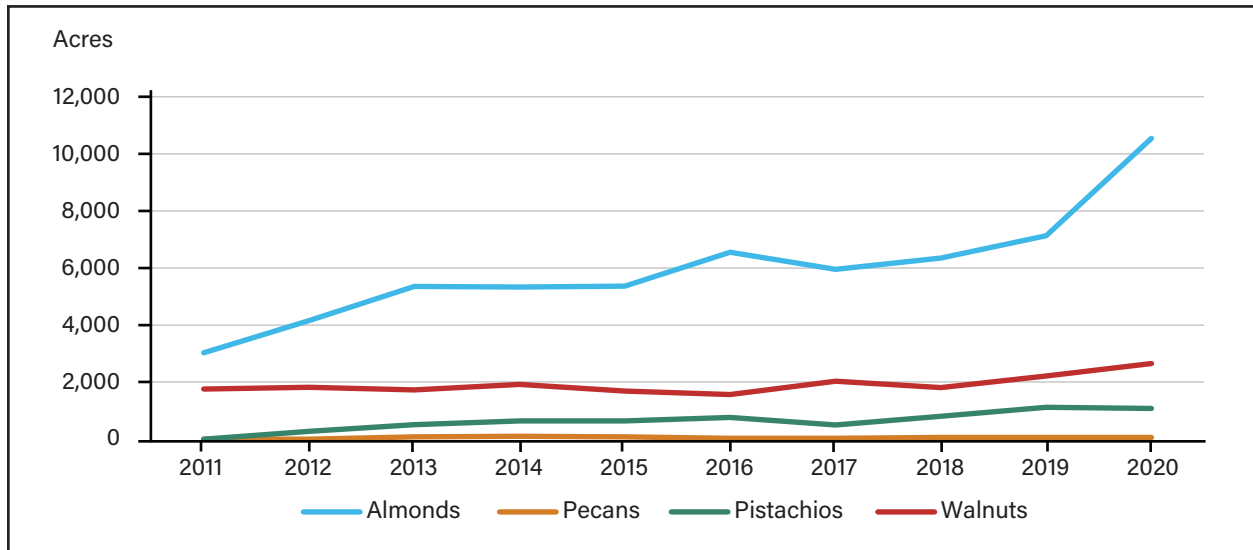
Notes: The WFRP program insures the farm as a unit. It is separated in the figure as it may include nonspecialty crops. The number of specialty crop policies under FCIP trended downward from 2016 to 2019, though increased in 2020. The number of WFRP policies fell every year from 2017 to 2020.

Source: USDA, Economic Research Service using data from the USDA, Risk Management Agency (RMA), Summary of Business (SOB) Report and USDA, RMA, SOB Report for Organic Production, 2021.

Figures 8–11 show changes in organic acreage enrolled in FCIP from 2011 to 2020.¹¹ The amount of organic acreage insured increased over this period for almost all of the high-acreage nut, fruit, vegetable, and field crops grown in the United States. Once RMA introduces and tests a policy for a particular crop, the agency can more easily expand the policy to other counties or States. From 2011 to 2020, acreage expanded most significantly for almonds from about 3,000 acres to about 11,000 acres (figure 8); blueberries from about 500 acres to about 2,600 acres (figure 9); oranges from zero acres to about 3,300 acres (figure 9); apples from about 12,000 acres to about 23,000 acres (figure 9); tomatoes from zero acres to about 12,000 acres (figure 10); potatoes from about 4,000 acres to 13,000 acres (figure 10); sweet corn from about 4,000 acres to about 9,000 acres (figure 10); dry beans from about 10,000 acres to about 28,000 acres (figure 11); and dry peas from zero acres to about 40,000 acres (figure 11).

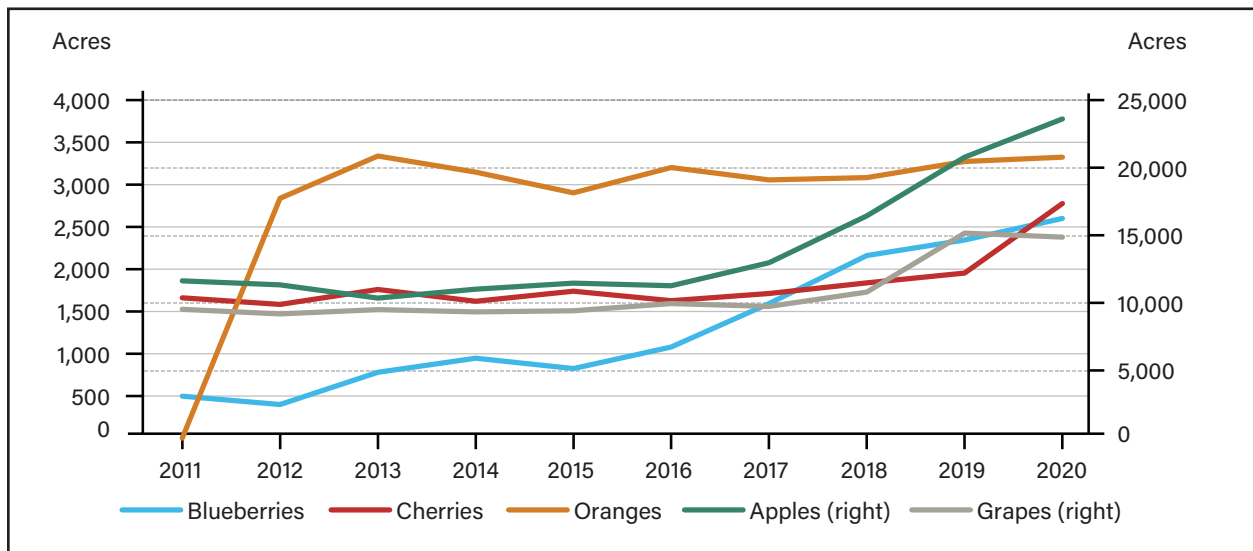
¹¹ One issue to note is that Dollar Amount of Insurance-type policies for trees report quantity as the number of trees and not acreage, and so this data will not be counted in acreage numbers. For example, there were over 54 million orange trees covered under the Tree Based Dollar Amount of Insurance (TDO) in 2020. Trees with TDO insurance in 2020 were avocado, banana, carambola, coffee, grapefruit, lemon, lime, macadamia, mango, orange, papaya, pecan, tangerine, and the category “All Other Citrus Trees.”

Figure 8
Federal Crop Insurance Program acreage for selected organic nuts



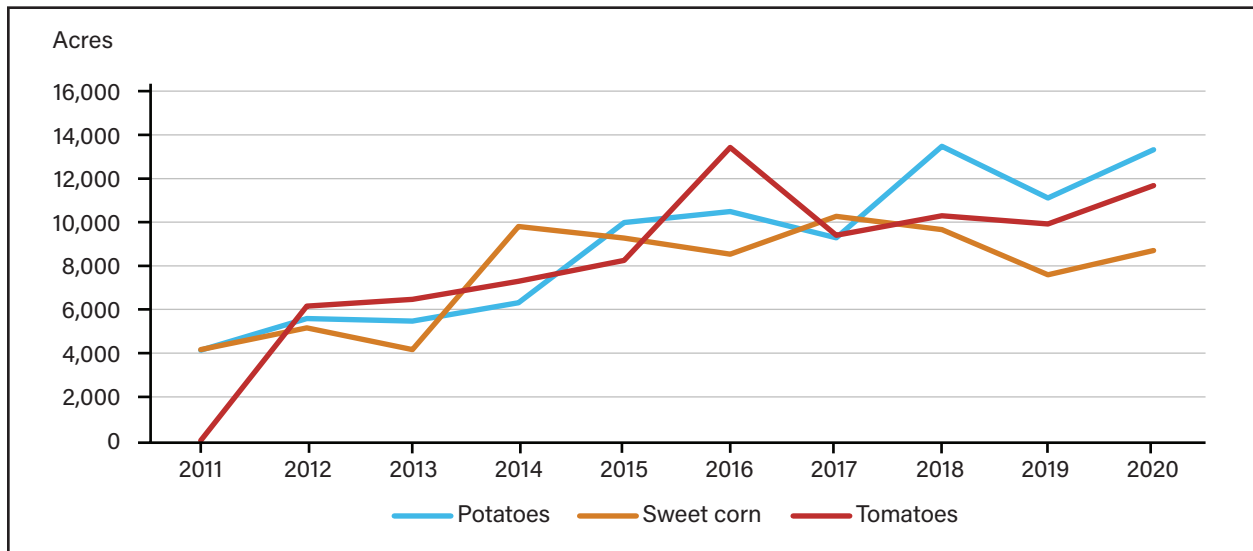
Notes: Figure 8 shows changes in selected organic nut acreage enrolled in the Federal Crop Insurance Program from 2011 to 2020. Almond, pistachio, and walnut acreage have mostly trended upward during the last decade. U.S. nut farmers are primarily located in California.
 Source: USDA, Economic Research Service using information from the USDA, Risk Management Agency, Summary of Business Report for State, county, crop, coverage type, practice, and unit.

Figure 9
Federal Crop Insurance Program acreage for selected organic fruits



Notes: Figure 9 shows changes in selected organic fruit acreage enrolled in the Federal Crop Insurance Program (FCIP) from 2011 to 2020. Acreage under FCIP expanded for all selected fruits during the period of observation. In 2020, the majority of the apple, blueberry, and cherry organic acres insured by farmers were in Washington State. The majority of grape and orange organic acreage insured by farmers were in California.
 Source: USDA, Economic Research Service using information from the USDA, Risk Management Agency, Summary of Business Report for State, county, crop, coverage type, practice, unit.

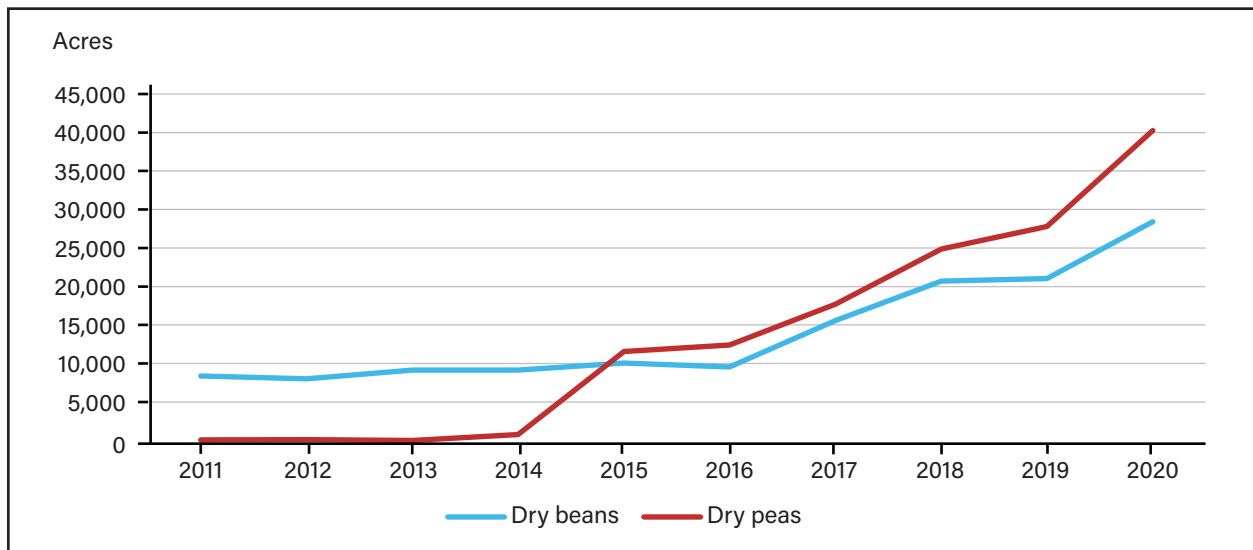
Figure 10
Federal Crop Insurance Program acreage for selected organic vegetables



Notes: Figure 10 shows changes in selected organic vegetable acreage enrolled in the Federal Crop Insurance Program (FCIP) from 2011 to 2020. Acreage under FCIP expanded for potatoes, sweet corn, and tomatoes during the period of observation. In 2020, the majority of organic potato acreage insured by farmers were in Colorado, organic tomato acreage in California, and organic sweet corn acreage in Washington State.

Source: USDA, Economic Research Service using information from the USDA, Risk Management Agency, Summary of Business Report for State, county, crop, coverage type, practice, and unit.

Figure 11
Federal Crop Insurance Program acreage for selected organic field crops



Notes: Figure 11 shows changes in selected organic specialty crop field crop acreage enrolled in the Federal Crop Insurance Program (FCIP) from 2011 to 2020. Acreage under FCIP expanded for dry beans and dry peas during the period of observation. In 2020, the majority of dry beans organic acreage insured by farmers were in Michigan, and organic dry peas acreage insured by farmers in Montana.

Source: USDA, Economic Research Service using information from the USDA, Risk Management Agency, Summary of Business Report for State, county, crop, coverage type, practice, unit.

Long-Term Trends in NAP Participation

The number of NAP applicants—individual FSA consumers who may submit multiple crop-specific applications—increased from about 50,000 in 2015 to about 62,000 in 2020 (table 3). NAP is most often used by nonspecialty crop growers, although specialty crop growers consistently comprise between 15.0 and 16.5 percent of NAP applicants. In fact, grasses intended for grazing comprise the majority of the acreage under NAP. The 10 crops with the most cumulative organic specialty crop applications for NAP protection from 2015 to 2020 were squash, peppers, greens, watermelon, peas, beans, pumpkins, tomatoes, cucumbers, and potatoes.¹² The share of specialty crop NAP applicants that selected the organic option rose from 0.6 percent in 2015 to 3.6 percent in 2020. As with FCIP, the organic option became more prevalent among specialty crop applicants. However, as of 2020, organic comprised less than 1 percent of total NAP applicants.

Table 3
Noninsured Crop Disaster Assistance Program applicants, 2015-19

Program year	Total	Organic	Organic share (percent)	Specialty crop	Specialty crop share (percent)	Organic specialty crop	Organic specialty crop share (percent)
2015	50,492	91	0.2	8,321	16.5	50	0.6
2016	54,866	289	0.5	8,856	16.1	176	2.0
2017	57,322	382	0.7	8,992	15.7	252	2.8
2018	60,437	509	0.8	8,884	14.7	345	3.9
2019	63,595	472	0.7	9,573	15.1	323	3.4
2020	62,286	507	0.8	9,332	15.0	335	3.6

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

The number of total specialty crop applications increased from about 225,000 to about 234,000 from 2015 to 2019 (table 4). In general, crops with high or increasing acreage under FCIP show low or decreasing NAP applications for crops such as almonds (figure 12); apples, blueberries, and cherries (figure 13); potatoes, sweet corn, tomatoes (figure 14); and dry beans and dry peas (figure 15). These trends in NAP applicants may be reflected in changes in the data related to introducing FCIP for certain commodities in certain counties. For example, total pistachio acreage in FCIP steadily rose from less than 90,000 acres in 2012 to almost 180,000 acres in 2020. Meanwhile, in 2013, applications from pistachio growers for NAP plummeted to zero, and there were no applications since. These two trends in the pistachio category indicate that FCIP expanded to areas where previously only NAP was available.

¹² In 2017, FSA discovered that a large number of applications were filed for squash with no intent of harvesting.

Table 4

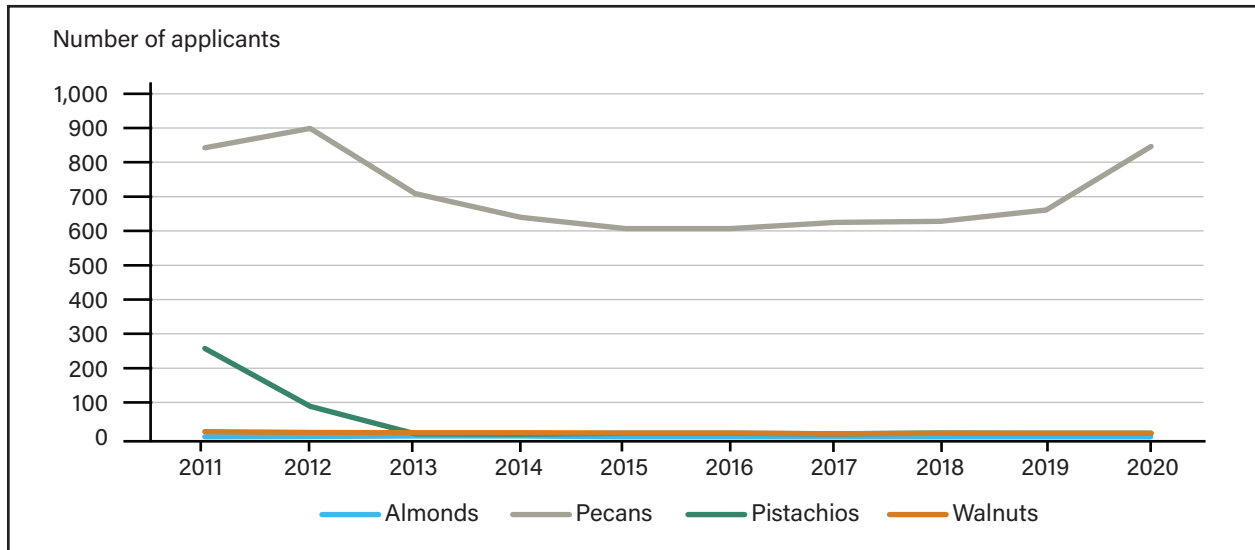
Noninsured Crop Disaster Assistance Program applications, 2015-19

Program year	Total	Organic	Organic share (percent)	Specialty crop	Specialty crop share (percent)	Organic specialty crop	Organic specialty crop share (percent)
2015	224,737	1,264	0.6	78,335	35	1,189	1.5
2016	241,337	3,128	1.3	87,860	36	2,874	3.3
2017	253,246	3,386	1.3	95,129	38	3,121	3.3
2018	242,713	2,879	1.2	70,780	29	2,491	3.5
2019	243,419	3,391	1.4	64,014	26	2,955	4.6
2020	233,875	3,187	1.4	57,325	25	2,690	4.7

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

Figure 12

Number of NAP applicants for selected nuts

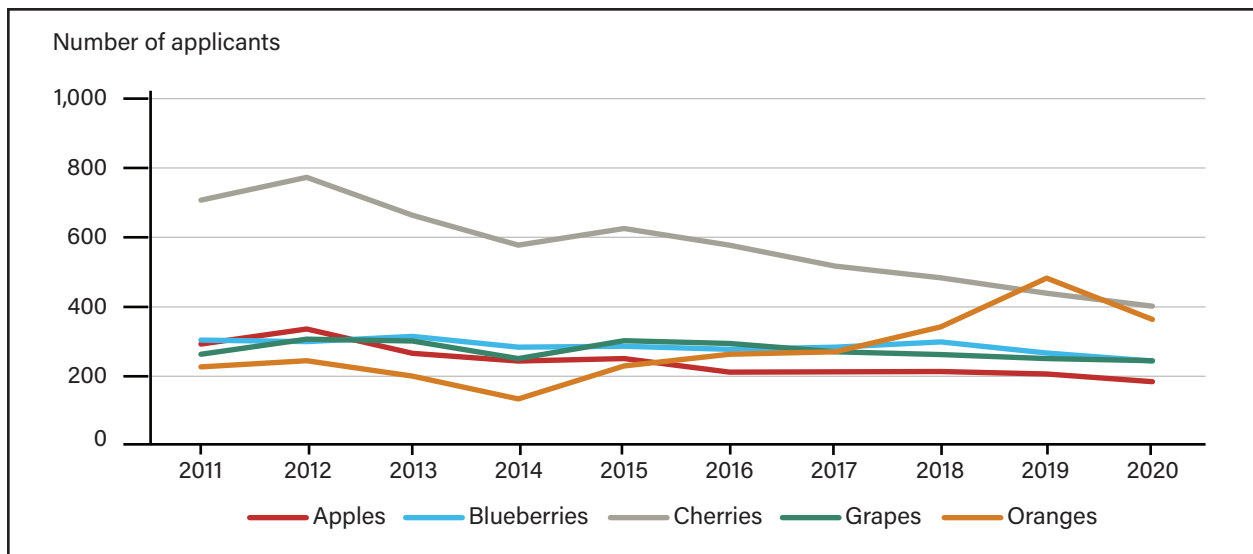


NAP = Noninsured Crop Disaster Assistance Program.

Notes: Crops with high or increasing acreage under the Federal Crop Insurance Program (FCIP) show low or decreasing NAP applicants, as observed in the number of NAP applicants for almonds and pistachios coverage. The number of pecan farmer applicants dropped from 2012 to 2015 but returned to 2011 numbers by 2020.

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

Figure 13
Number of NAP applicants for selected fruits

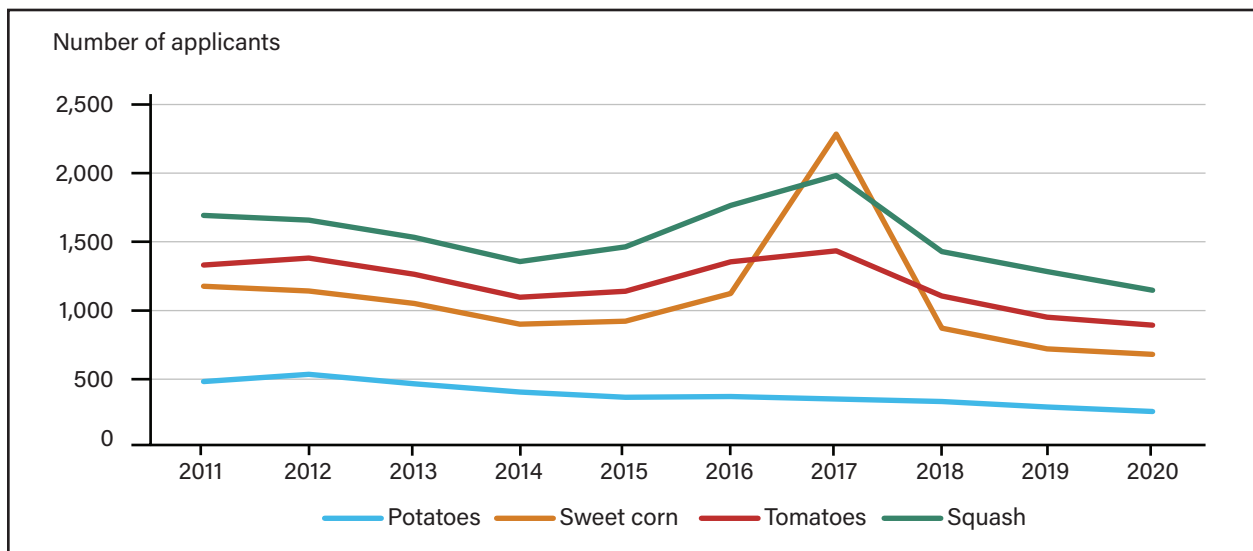


NAP = Noninsured Crop Disaster Assistance Program.

Notes: Crops with high or increasing acreage under the Federal Crop Insurance Program (FCIP) show low or decreasing NAP applicants, as seen for crops such as apples, blueberries, and cherries. The number of orange producer applicants increased from 2011 to 2020.

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

Figure 14
Number of NAP applicants for vegetables

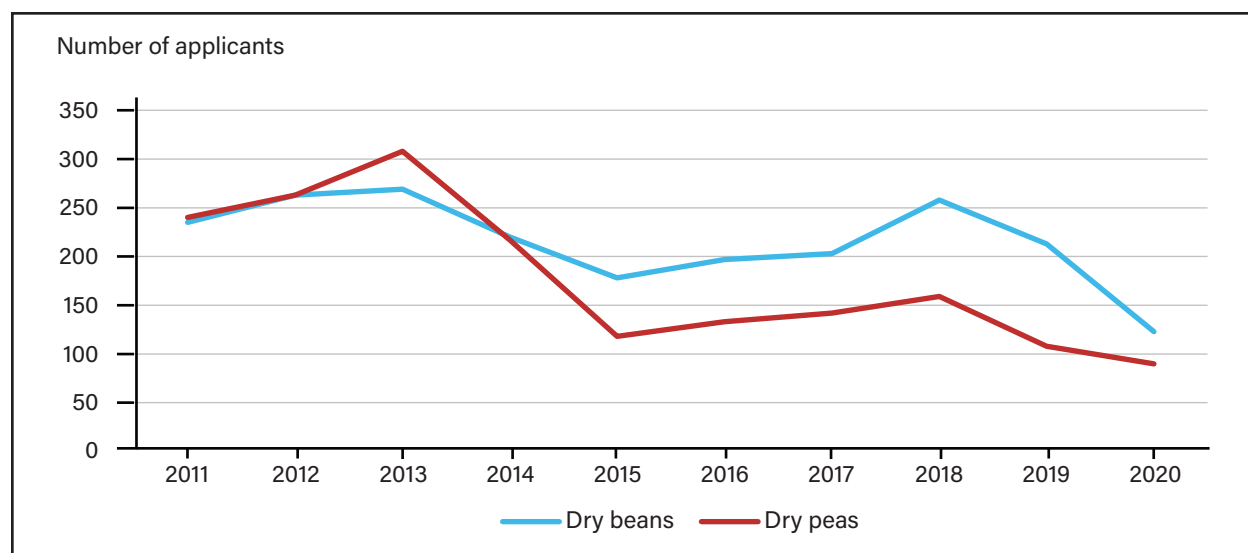


NAP = Noninsured Crop Disaster Assistance Program.

Notes: Crops with high or increasing acreage under the Federal Crop Insurance Program (FCIP) show low or decreasing NAP applicants, as seen for crops such as potatoes, sweet corn, and tomatoes. The spike in squash applications in 2016 and 2017 was connected to fraudulent activity in which squash was planted with the intention to not harvest the crop and then claim disaster assistance. In 2018, squash applications returned to normal. USDA, Farm Service Agency (FSA) did not find any other crop involved in the scam.

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

Figure 15
Number of NAP applicants for field crops



NAP = Noninsured Crop Disaster Assistance Program.

Notes: Crops with high or increasing acreage under the Federal Crop Insurance Program (FCIP) show low or decreasing NAP applicants, as seen for crops such as dry beans and dry peas.

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

Division of Acreage Between FCIP and NAP

Data for acreage covered under the Federal Crop Insurance Program (FCIP) are publicly available, but data for acres covered under the Noninsured Crop Disaster Assistance Program (NAP) are not available to the public. FSA provided data for acreage covered under NAP for 2017. The lack of data created a gap in understanding how NAP might address lack of availability of FCIP for specialty crops. With the exception of pilots, whole-farm, or weather-index products, producers do not have the choice to purchase either an FCIP policy or NAP, since NAP is only available when a crop is uninsurable. Tables 5 and 6 show total planted acreage in 2017 as reported by NASS, and the share of acreage covered under the combination of FCIP and NAP for selected high-acreage fruits, nuts, field crops, and vegetable crops. Nonbearing trees are not eligible for crop insurance, and so for fruits, the share of covered acres is the share of covered bearing acres, not total acres.

When ranking fruits and nuts by total bearing acreage, plums, cherries, cranberries, oranges, lemons, almonds, apples, macadamia nuts, pears, grapes, pistachios, olives, avocados, blueberries, and grapefruits had over 50 percent of the acreage covered under FCIP or NAP (table 5). When ranking vegetables by total acreage, dry peas, dry beans, tomatoes, potatoes, onions and sweet potatoes had over 50 percent of acreage covered by FCIP or NAP (table 6). For some crops, Federal agricultural risk management programs covered a small portion of acres. Kiwifruit and strawberries had less than 15 percent of acres covered by either FCIP or NAP while hazelnuts and lettuce had less than 1 percent.

Table 5

Acres covered under FCIP and NAP for selected specialty crops, 2017

Crop	NASS bearing acreage	Percent share of total acres bearing fruit	Percent share of bearing acres covered (FCIP or NAP)
Almonds	1,058,244	83.6	71.6
Apples	329,932	86.4	68.9
Avocados	58,104	90.2	58.9
Blueberries	118,443	77.3	58.9
Cherries	129,810	85.2	86.7
Cranberries	41,432	94.3	78.3
Grapefruits	64,790	94.7	57.1
Grapes	1,055,484	92.9	61.9
Hazelnuts	43,965	62.7	0.7
Kiwifruit	3,707	85.1	13.3
Lemons	59,001	88.7	74.6
Macadamia nuts	17,587	95.6	68.2
Olives	40,915	80.4	59.6
Oranges	567,237	94.1	77.4
Peaches	94,836	84.0	35.5
Pears	51,435	90.7	65.7
Pecans	461,890	83.5	46.6
Pistachios	247,872	71.9	60.0
Plums and prunes	61,273	88.1	87.2
Strawberries	58,117	96.60	10.8
Walnuts	345,019	82.20	45.67

FCIP = Federal Crop Insurance Program. NAP = Noninsured Crop Disaster Assistance Program.

Notes: Only bearing acreage is eligible for crop insurance. In 2017, about 460,000 avocado trees, 12,000 macadamia trees, and 47 million orange trees were covered under FCIP.

Source: USDA, Economic Research Service using information from the USDA, National Agricultural Statistics Service (NASS), 2017 Census of Agriculture; USDA, Risk Management Agency, Summary of Business Report; and USDA, Farm Service Agency.

Table 6

Acres covered under FCIP and NAP for selected field and vegetables crops, 2017

Crop	NASS acreage	Percent shares of acres covered (FCIP + NAP)
Cabbage	62,900	34.5
Peppers	60,600	36.0
Cucumbers	119,100	38.6
Dry beans	1,470,136	91.9
Dry peas	2,857,500	92.6
Lettuce	220,800	0.3
Onions	154,700	67.3
Potatoes	1,052,600	69.5
Pumpkins	77,200	43.8
Squash	47,300	39.1
Sweet corn	484,800	43.8
Sweet potatoes	161,600	53.3
Tomatoes	320,900	82.8
Watermelons	115,000	45.8

FCIP = Federal Crop Insurance Program. NAP = Noninsured Crop Disaster Assistance Program.

Notes: Dry peas include dry chickpeas and lentils. Squash numbers exclude applicants flagged for fraudulent activity.

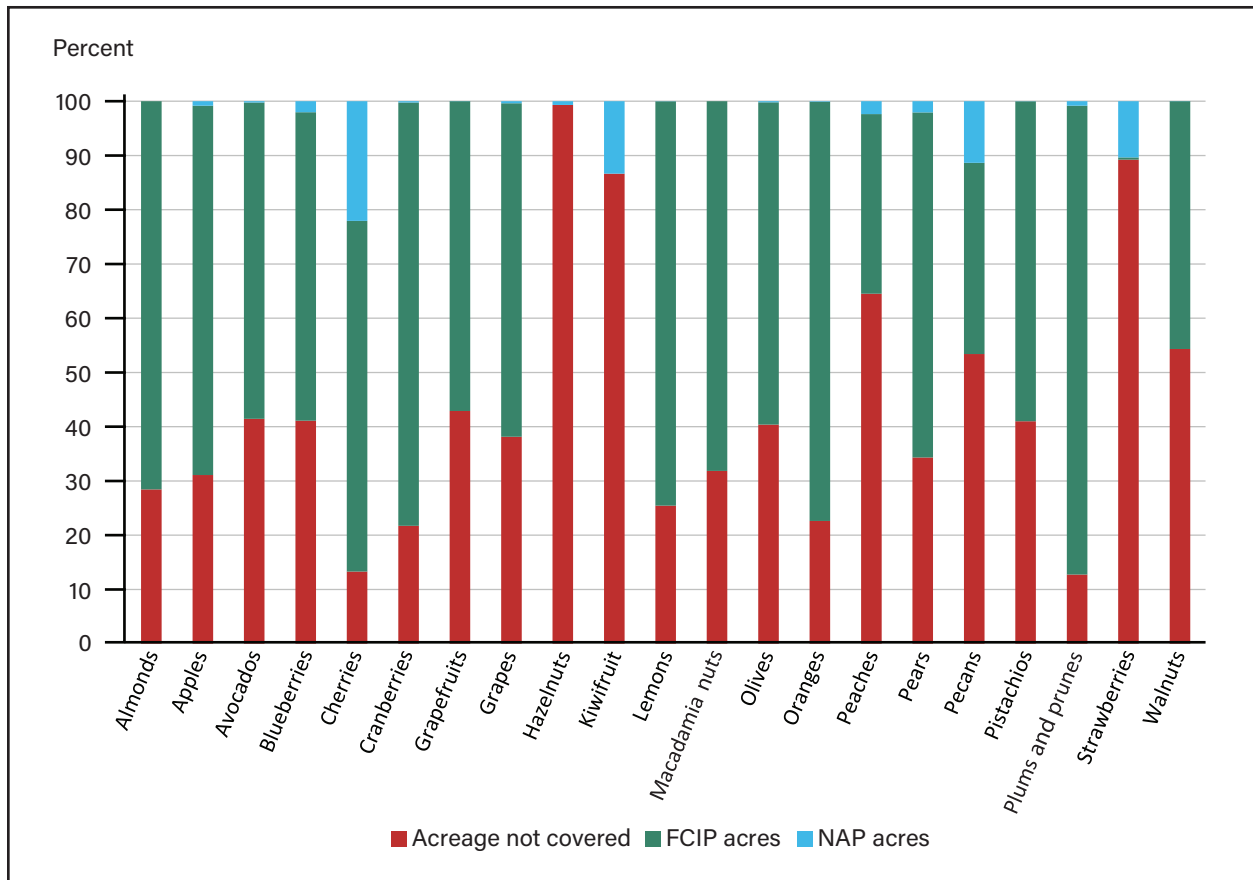
Source: USDA, Economic Research Service using information from the USDA, National Agricultural Statistics Service (NASS), 2017 Census of Agriculture; USDA, NASS, Vegetables 2019 Summary; USDA, NASS, Crop Production; USDA, Risk Management Agency, Summary of Business Report; and USDA, Farm Service Agency.

The share of acreage insured under FCIP and NAP varies from crop to crop (figures 16 and 17). For crops with Federal crop insurance, the share of acres covered by NAP is usually lower than the share of acres covered by FCIP—exceptions are sweet potatoes, pumpkins, and peppers. However, for growers operating in counties where FCIP is not available, NAP often provides multiperil protection for a significant portion of growers (Hungerford et al., 2017). For example, FCIP is available for cherry growers who operate in counties with a high number of cherry acres; about 65 percent of cherry acres are covered by FCIP (figure 14). Cherry growers outside of those counties purchased enough NAP policies to cover about 20 percent of all cherry acres, leaving only 15 percent of acres not covered by any risk management program. Pecans exhibit a similar trend. About 35 percent of pecan acres are covered by FCIP, about 10 percent by NAP, and about 55 percent are not covered.

RMA does not offer policies for hazelnuts, kiwifruit, lettuce, squash, watermelons, and most leafy greens/herbs/spices/root crops. Some specialty crops not covered under FCIP are highly dependent on NAP. These crops include watermelons and squash, both with slightly lower than 50 percent of acreage enrolled. Kiwifruit and lemons enrolled between 10 and 20 percent of planted acreage. Producers of hazelnuts and lettuce, two crops with no FCIP availability, do not enroll acreage into NAP and have most acreage uninsured. NAP provides protection against production losses due to natural disasters, not revenue losses, which may make the product less attractive to growers of crops that face relatively lower weather risks.

Figure 16

Share of fruits and nuts acreage not covered, covered under FCIP, or covered under NAP, 2017



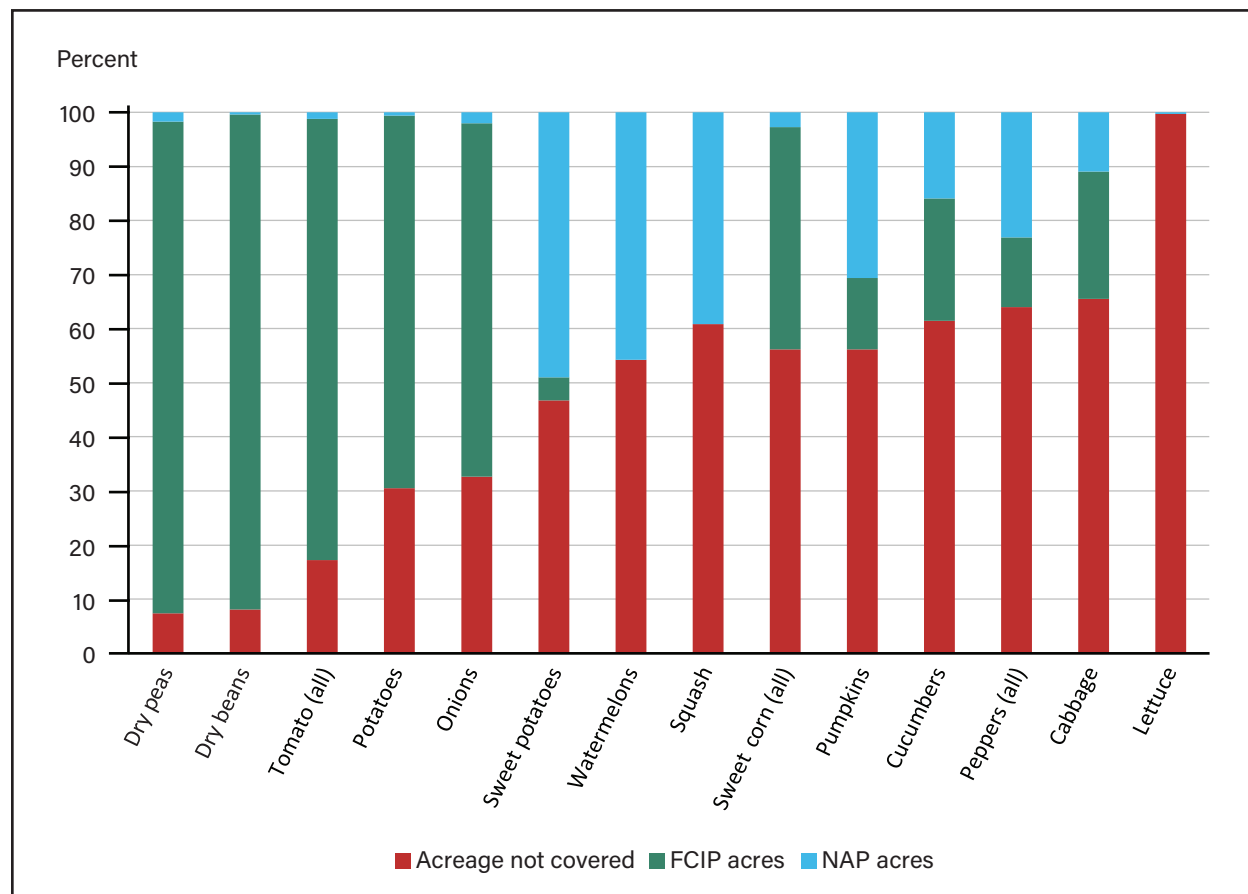
FCIP = Federal Crop Insurance Program. NAP = Noninsured Crop Disaster Assistance Program.

Notes: The share of fruit and nut acreage under FCIP and NAP varies greatly from crop to crop. There are many reasons for low coverage, including lack of FCIP availability or relatively lower production risks.

Source: USDA, Economic Research Service using information from the USDA, National Agricultural Statistics Service, 2017 Census of Agriculture; USDA, Risk Management Agency, Summary of Business Report; and USDA, Farm Service Agency.

Figure 17

Share of vegetable acreage not covered, covered under FCIP, or covered under NAP, 2017



FCIP = Federal Crop Insurance Program. NAP = Noninsured Crop Disaster Assistance Program.

Notes: The share of vegetable acreage under FCIP and NAP varies greatly from crop to crop. There are many reasons for low coverage, including lack of FCIP availability or relatively lower production risks.

Source: USDA, Economic Research Service using information from the USDA, National Agricultural Statistics Service, 2017 Census of Agriculture and Crop Production Report; USDA, Risk Management Agency, Summary of Business Report; and USDA, Farm Service Agency.

Coverage Levels Under FCIP and NAP

Before 2014, NAP offered only catastrophic coverage. The 2014 Farm Act introduced the option for producers to elect additional buy-up coverage for crop years 2015 to 2018. A study by Hungerford et al. (2017) examined the impact of the expanded NAP coverage on expected payments and producers' risk, enrollment for three crops, and outlays for 2014 and 2015, the year after buy-up coverage was made available for NAP. The study found that NAP buy-up could mitigate more risk than NAP basic coverage and increase a producer's average revenue net premium costs. Additionally, the study found that, on average, 30 percent of cherries, pecans, and squash applications were for buy-up coverage.

Table 7 displays the share of FCIP specialty crop liabilities and acreage with buy-up coverage for 2015–20. More than 70 percent of specialty crop FCIP liabilities and acreage were connected to policies with buy-up coverage each year, with a slightly higher percentage of buy-up coverage for organic specialty crops. The share of conventional FCIP liabilities with buy-up generally increased over the period—from 72.3 percent in 2015 to 81.8 percent in 2020—while the share of organic FCIP liabilities with buy-up remained fairly constant—79.7 percent in 2015 to 81.6 percent in 2020. Examining acreage with buy-up coverage tells a

similar story. Every year, about 80 percent of acreage had buy-up coverage for both conventional and organic, though in 2020 organic specialty acreage with buy-up acreage increased to almost 85 percent.

Using a different measure, table 8 shows the share of conventional and organic NAP applications with buy-up coverage. Note that FCIP data are not directly comparable with NAP data because FCIP data are calculated based on the share of liabilities or acres insured, whereas NAP data are based on applications received. The percentage of total NAP specialty crop applications with buy-up coverage was highly variable for both conventional and organic crops. The share of NAP applications with buy-up started higher for organic crops than for conventional crops in 2015—53.5 percent for organic versus 27.2 percent for conventional. By 2017, the levels reversed—35.6 percent for organic versus 52.8 percent for conventional, after which levels reversed again by 2020—46.0 percent for organic versus 31.9 percent for conventional.

Table 7
Share of FCIP specialty crop liabilities and acres with buy-up coverage

Year	Percent of FCIP liabilities		Percent of FCIP acres	
	Conventional	Organic	Conventional	Organic
2015	72.3	79.7	75.6	78.6
2016	75.9	82.3	79.2	81.7
2017	78.0	79.3	79.6	81.8
2018	75.1	81.1	79.5	83.4
2019	75.1	79.3	79.4	81.1
2020	81.8	81.6	83.4	84.7

FCIP = Federal Crop Insurance Program.

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency and USDA, Risk Management Agency, Summary of Business Report on Type/Practice/Unit Structure.

Table 8
Share of NAP specialty crop applications with buy-up coverage

Year	Percent of NAP applications	
	Conventional	Organic
2015	27.2	53.5
2016	40.8	42.9
2017	52.8	35.6
2018	39.5	38.1
2019	22.9	42.6
2020	31.9	46.0

NAP = Noninsured Crop Disaster Assistance Program.

Source: USDA, Economic Research Service using information from the USDA, Farm Service Agency.

The exceptionally low share of NAP buy-up for conventional specialty crops in 2019 may be related to the timing of the passage of the 2018 Farm Act. The 2014 Farm Act temporarily introduced buy-up coverage, but it was made permanent under the 2018 Farm Act. Because the 2018 Farm Act did not pass in time to reinstate the option during sign up, only the catastrophic level was available until May 2019 for crop years 2019 and 2020. After the 2018 Farm Act passed, FSA allowed producers to retroactively obtain buy-up coverage.

However, by that time, many growers already knew whether they would suffer a loss for the 2019 crop year, so some may have chosen to not purchase additional coverage.

Catastrophic crop insurance carries low premiums and aids growers in the case of a major disaster. However, buy-up coverage is more expensive but can cover larger liabilities from higher coverage levels on yield and/or price. The higher the crop value, the higher the incentive to purchase additional crop insurance to cover losses. NAP specialty crop applications cluster at the extremes. From 2015 to 2019 of the NAP applications that were not basic (as reported on table 7), between 94 and 99 percent chose the maximum coverage (65 percent of the approved yield and 100 percent of the average market price). The cherries, pecans, and squash buy-up election remained above 30 percent since 2015. Squash and pecan applications with buy-up election trended upward since the introduction of the coverage, with squash peaking at 60 percent in 2017.

Farmer Interviews on Risk and Risk Management

To gain additional perspective on specialty crop farmers' risk management needs and the use of crop insurance, authors interviewed nine organic farmers and one conventional farmer dispersed across New York State. The purpose of the interviews was to learn about the risks specialty crop producers face and the strategies used to manage risk. All other analysis in the study relies on administrative records from management programs; because a large portion of specialty crop producers are nonparticipants, administrative data do not capture them. A single State—New York—served as the primary focus to minimize variation in weather and climate risks across the interviews and to isolate market conditions' effects on risk management decision making. New York was also chosen due to the diversity of specialty crops grown in the State and the wide variation in market access experienced by producers across the State.

The first interviews were conducted between June and August 2019. The same producers were contacted for follow-up between May and June 2021. Therefore, information was gathered on how these producers thought about risk, risk management, and crop insurance before and after the onset of the COVID-19 pandemic. Table A2 presents a summary of the discussions with farmers about the most significant risks faced, their thoughts on crop insurance, alternative methods used to manage risk, and changes in their perception of crop insurance, risks, or their operation in general due to the pandemic. Two of the farms in the study are highly specialized, each growing only one crop—apples or onions. In addition, two farms grew apples and a mix of other fruits and vegetables. Five farms grew a variety of mixed specialty crops. The smallest farm operated on 5 acres and the largest on 500 acres. The farms were dispersed geographically across New York State.

Of the nine farms, five did not purchase any Federal risk management policy, and four opted for catastrophic coverage (CAT) (table 9). Among farms that purchased CAT (three from FCIP, one from NAP), all chose to cover only the highest value crop (apples or onions). The only farm that purchased buy-up coverage in the past specialized in onions. Therefore, from the group interviewed, crop insurance was used only by farms specializing in at least one high-value crop. One producer purchasing CAT for apples said that insuring vegetables would not be worth it because a loss would not be devastating, whereas losses in apples would cause a large financial burden. One producer mentioned that apple industry lenders required crop insurance as a prerequisite for a loan. The farmer who no longer purchases buy-up coverage believed that crop insurance is an important tool, but that it is not adequate for specialty crop producers because consecutive disaster years decreases actual production history, which in turn lowers the threshold for losses that would result in payment. However, this is a concern that may be held by both specialty crop and nonspecialty crop producers.

Table 9

Summary of interviews with nine New York specialty crop farmers

	Acres	Organic	Crops	Crop insurance
Farm 1	5	Yes	Apples,* beans, fruits, and mixed vegetables	NAP, CAT
Farm 2	25	Yes	Apples*	FCIP, CAT
Farm 3	112	Yes	Mixed vegetables and field crops	None
Farm 4	56	Yes	Mixed vegetables	None
Farm 5	130	Yes	Mixed vegetables	None
Farm 6	70	Yes	Mixed vegetables	None
Farm 7	45	Yes	Mixed vegetables and hemp	None
Farm 8	500	No	Apples,* mixed fruits, and mixed vegetables	FCIP, CAT
Farm 9	54	Yes	Onions*	FCIP, CAT

*Covered by a Federal risk management program. NAP = Noninsured Crop Disaster Assistance Program. CAT = catastrophic coverage. FCIP = Federal Crop Insurance Program.

Source: USDA, Economic Research Service interviews (full data in appendix table A2).

Several producers said they believe the cost of crop insurance is too high, or that purchasing crop insurance would not be worth it for the scale of their farm. Producers also noted high transaction costs as a large barrier to purchasing crop insurance. One producer expressed that a large barrier to applying for crop insurance is how cumbersome it would be to track yields and acreage for each crop. Particularly, producers highlighted they were too busy tending to their farms and marketing their crops to spend time applying to Federal risk management programs. Two farms indicated that bundling crop insurance with other insurance products already purchased, such as automobile or homeowners insurance, would decrease the transaction cost and increase their likelihood of purchasing it. Additionally, one producer mentioned that transaction costs would be reduced for the farm if RMA or FSA agents would complete all paperwork, as done by homeowners or automobile insurance agents. While crop insurance agents generally help producers with paperwork, some information can only be provided by the producers themselves. All producers not using crop insurance said their opinions are not based on discussions with FSA or RMA agents or prior use of the products. Most of the producers were unaware of Whole-Farm Revenue Protection (WFRP), and one believed they did not qualify for the program. However, producers interviewed reported feeling confident in their ability to manage risks through personal effort and believed that USDA programs target and mostly benefit larger farms.

Most producers selected weather volatility and climate change, unpredictability of yields, and labor shortages as the biggest risks their farms face. Growers not using crop insurance emphasized they would prefer to do anything possible to not suffer a loss rather than purchase crop insurance. Farm operators interviewed used a large number of risk-mitigating techniques, such as purchasing high quality crops; installing irrigation, high tunnels and fences; and diversifying crops and markets. None of the farms had traditional marketing or production contracts; however, several were part of a Community Supported Agriculture (CSA). A CSA is a partnership between consumers and farmers: Consumers “contract” a share of the upcoming harvest, essentially sharing the risk with farmers.

During post-COVID-19 pandemic interviews, all farmers said their views on crop insurance were unchanged by the pandemic, though their views on risks did change. While one farmer chose to not purchase CAT due to a transition from monocropping to diversification, the farmer is looking to purchase CAT again in the future. Climate change and weather events were still a large worry but concerns about labor shortages—especially post-COVID-19—and market access were larger. One farmer decided to stop farming and take an off-farm job due to CSA sites closing. Conversely, other farms dealt with market access and loss of restaurant clients by selling wholesale, further diversifying by forming a CSA, opening farm stands, and selling at farmers’ markets. Producers dealt with labor shortages by increasing pay and further mechanizing their

farms. Several farmers mentioned that the flexibility afforded to them by being small enabled them to adapt their farms to the pandemic and do well. One such transition was adopting new technology, such as Venmo (a mobile payment service), or allowing customers to make online purchases for delivery or farm pick-up.

Discussion

Drivers of Participation in FCIP and NAP

Results from administrative data and interviews with farmers showed distinct differences between specialty crops that may influence growers' decisions to purchase crop insurance or disaster assistance. Only four of the nine growers enrolled in a Federal risk management program, and three elected catastrophic coverage. These growers purchased crop insurance or NAP for apples and onions. The discussion indicated that losses in these crops could be a significant financial burden, and thus required insurance. On the other hand, producers may believe that crops with low yield risk or crops grown on a small scale may not be worth the transaction or financial costs of crop insurance. Except for WFRP, producers complete individual forms for each crop covered under FCIP, but most of the growers were not aware of WFRP availability in their area.

The results from the interviews align with results in figures 16 and 17. Crops with a high value of production (USDA, ERS, 2020a) consistently show high acreage covered by crop insurance, such as almonds, apples, and oranges. Crops with relatively lower production values, such as hazelnuts or kiwifruit, have lower amounts of acreage insured.

Another factor impeding producer adoption of NAP could be payment limitations and eligibility criteria. To be eligible for NAP, a producer's average adjusted gross income (AGI) cannot exceed \$900,000. NAP payments are also limited to \$125,000 per individual or entity per crop year for catastrophic coverage, and \$300,000 per individual or entity per crop year for buy-up coverage. Almost 57 percent of specialty crops produced in 2020—including fruits, vegetables, tree nuts, nursery, and greenhouse crops—were produced by farms with gross cash farm incomes of \$1,000,000 or more (Whitt et al., 2021). As a result, some of these farms could be ineligible to participate in NAP due to the limitations on AGI.

However, the extent to which AGI and payment limits impact participation in NAP could be different depending on how participation is measured. Examining participation in terms of the share of total specialty crop farms could yield different results from examining participation in terms of specialty crop acreage harvested. Farms with more than 1,000 acres accounted for over 50 percent of harvested acreage devoted to growing vegetables for sale in 2017 (USDA, NASS, 2019). However, over 80 percent of farms producing vegetables harvested for sale operated with less than 25 acres. Thus, a smaller share of total specialty crop acreage participating in NAP may not equate to an equivalently small share of total specialty crop farms participating in NAP.

Drivers of FCIP and NAP Coverage Level Elections

Specialty crop producers purchasing FCIP choose high coverage levels on average (tables 7). One factor that could influence a producer's decision to purchase higher coverage levels is the farmer-paid premium for higher coverage levels. Farmer-paid premiums for all NAP buy-up coverage levels are calculated as 5.25 percent of the insured liability (i.e., coverage level times approved yield times average market price times producer's share of crop). Farmer-paid premiums for FCIP buy-up coverage are calculated according to actuarially sound rates based on the underlying crop and market risks and subsidized at higher rates for lower coverage levels. As such, the premiums for FCIP buy-up coverage may not equate to 5.25 percent of the insured liability. For example, of the 2020 FCIP policies sold at 75-percent coverage levels, the coverage level with the most policies for the top 10 specialty crops, farmer paid premiums equated to less than 5.25 percent of the insured liability for 4 of the 10 crops (table 10).

Table 10

2020 FCIP policies purchased at 75 percent coverage level for the 10 most purchased specialty crops

Commodity	Number of policies	Total liabilities insured, in millions of dollars	Total farmer paid premiums, in millions of dollars	Total farmer paid premiums as a percent share of total liabilities
Almonds	1,302	585.8	26.6	4.54
Apples	217	91.4	13.8	15.11
Cherries	980	215.2	32.6	15.15
Dry beans	2,324	285.4	46.1	16.14
Dry peas	1,203	57.5	11.4	19.84
Grapes	1,177	382.4	17.3	4.53
Orange trees	40	20.1	0.4	1.86
Oranges	328	83.0	4.6	5.56
Potatoes	276	162.4	16.2	9.97
Walnuts	283	45.5	1.7	3.72

Note: Oranges includes oranges and orange tree policies.

Source: USDA, Economic Research Service using data from USDA, Risk Management Agency, Summary of Business Report, 2020.

Conclusions

Farming is risky, and few risk management tools historically were available to specialty crop producers in the United States. Growers of conventional and organic specialty crops—like fruits, vegetables, tree nuts, and nursery and greenhouse crops—typically operate in thin markets, which can suffer from high price volatility. Additionally, specialty crops can face additional sources of production risk compared with row crops. Specialty crop growers often require labor-intensive harvesting methods that may subject growers to labor market volatility. Fewer herbicide and pesticide options are available to many specialty crop commodities when compared with row crops, especially for organic specialty crops. Federally subsidized FCIP crop insurance and NAP disaster assistance programs can help producers stabilize farm income by mitigating the risks of revenue and production losses.

A large share of several specialty crops is covered under FCIP or NAP. Specifically, more than 75 percent of acres for plums, cherries, tomatoes, dry peas, cranberries, and oranges are covered by these programs. On the other hand, less than 15 percent of the acreage for lettuce, hazelnuts, kiwifruit, and strawberries is covered by FCIP and NAP. Some of the differences could be due to the value of production, as growers may feel more need to cover production and yield losses for high-value crops.

The data required to create an actuarially sound insurance product are most often available for counties that are major producers for certain specialty crops; therefore, FCIP insurance is offered and used more often in States with the most acres grown. Consistent with NAP availability for growers in counties only with insufficient data to administer FCIP products, NAP is a highly used safety net in States with lower total specialty crop production. States with the highest number of NAP applications included New York and North Carolina. Puerto Rico also had a significant number of NAP applications.

Discussions with nine specialty crop farmers showed that producers knew little about FCIP—including WFRP—and NAP. These farmers reported the most significant barriers to purchasing crop insurance were the application process and limited time available due to farming and marketing commitments. As shown in the RMA and FSA data, farmer discussions also revealed that certain specialty crops like apples and onions are more likely to be covered by the combination of Federal risk management programs. However, further outreach could be beneficial for growers of lower value crops or for highly diversified farms.

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Appendix

Table A1

Plants commonly considered specialty crops

Category	Specialty crop name
Fruit and tree nuts	Almond, apple, apricot, aronia berry, avocado, banana, blackberry, blueberry, breadfruit, cacao, cashew, citrus, cherimoya, cherry, chestnut (for nuts), coconut, coffee, cranberry, currant, date, feijoa, fig, filbert (hazelnut), gooseberry, grape (including raisin), guava, kiwi, litchi, macadamia, mango, nectarine, olive, papaya, passion fruit, peach, pear, pecan, persimmon, pineapple, pistachio, plum (including prune), pomegranate, quince, raspberry, strawberry, Suriname cherry, and walnut.
Vegetables	Artichoke, asparagus, beans (snap or green, lima, or dry edible), beet (table), broccoli (including broccoli raab), Brussels sprouts, cabbage (including Chinese), carrot, cauliflower, celeriac, celery, chickpeas, chive, collards (including kale), cucumber, edamame, eggplant, endive, garlic, horseradish, kohlrabi, leek, lentils, lettuce, melon (all types), mushroom (cultivated), mustard and other greens, okra, onion, opuntia, parsley, parsnip, peas (dry edible garden, English, or pod) pepper, potato, pumpkin, radish (all types), rhubarb, rutabaga, salsify, spinach, squash (summer and winter), sweet corn, sweet potato, Swiss chard, taro, tomato (including tomatillo), turnip, and watermelon.
Culinary herbs and spices	Ajwain, allspice, angelica, anise, annatto, artemisia (all types), asafetida, basil (all types), bay (cultivated), bladder wrack (seaweed), Bolivian coriander, borage, calendula, chamomile, candle nut, caper, caraway, cardamom, cassia, catnip, chervil, chicory, cicely, cilantro, cinnamon, clary, cloves, comfrey, common rue, coriander, cress, cumin, curry, dill, fennel, fenugreek, filé (cultivated), fingerroot, French sorrel, galangal, ginger, hops, horehound, hyssop, lavender, lemon balm, lemon thyme, lovage, mace, mahlab, malabathrum, marjoram, mint (all types), nutmeg, oregano, orris root, paprika, parsley, pepper, rocket (arugula), rosemary, rue, saffron, sage (all types), savory (all types), tarragon, thyme, turmeric, vanilla, wasabi, and watercress.
Medicinal herbs	Artemisia, arum, astragalus, boldo, Cananga, comfrey, coneflower, fenugreek, feverfew, foxglove, ginkgo biloba, ginseng, goat's rue, goldenseal, gypsywort, horehound, horsetail, lavender, liquorice, marshmallow, mullein, passionflower, patchouli, pennyroyal, poke-weed, St. John's wort, senna, skullcap, Sonchus, sorrel, stevia, tansy, urtica, witch hazel, wood betony, wormwood, yarrow, and yerba buena.
Horticulture	Honey, hops, maple syrup, tea leaves, and turfgrass.
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<p>Nursery and greenhouse plants</p>	<p>Annual bedding plants: begonia, coleus, dahlia, geranium, impatiens, marigold, pansy, petunia, snapdragon, and vegetable transplants.</p> <p>Broadleaf evergreens: azalea, boxwood, cotoneaster, euonymus, holly, pieris, rhododendron, and viburnum.</p> <p>Christmas trees: balsam fir, blue spruce, Douglas fir, Fraser fir, living Christmas tree, noble fir, Scots pine, and white pine.</p> <p>Cut cultivated greens: asparagus fern, holly, coniferous evergreens, leatherleaf fern, eucalyptus, and pittosporum.</p> <p>Cut flowers: carnation, chrysanthemum, delphinium, gladiolus, Iris, lily, orchid, rose, snapdragon, and tulip.</p> <p>Deciduous flowering trees: crabapple, crepe myrtle, flowering dogwood, flowering cherry, flowering pear, flowering plum, hawthorn, magnolia, redbud, and service berry.</p> <p>Deciduous shade trees: ash, elm, honey locust, linden, maple, oak, poplar, sweetgum, and sycamore.</p> <p>Deciduous shrubs: barberry, bubbleia, hibiscus, hydrangea, rose, spirea, viburnum, weigela.</p> <p>Foliage plants: anthurium, bromeliad, cacti, dieffenbachia, dracaena, fern, ficus, ivy, palm, philodendron, and spathiphyllum.</p> <p>Fruit and nut plants: berry plants, citrus trees, deciduous fruit and nut trees, grapevines.</p> <p>Landscape conifers: aborvitae, chamaecyparis, fir, hemlock, juniper, pine, spruce, and yew.</p> <p>Potted flowering plants: African violet, azalea, florist chrysanthemum, flowering bulbs, Hydrangea, lily, orchid, poinsettia, and rose.</p> <p>Potted herbaceous perennials: astilbe, columbine, coreopsis, daylily, delphinium, dianthus, garden chrysanthemum, heuchera, hosta, ivy, ornamental grasses, peony, phlox, rudbeckia, salvia, and vinca.</p> <p>Propagative materials: bare-root divisions, cuttings, plug seedlings, tissue-cultured plantlets, and prefinished plants.</p>
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Note: While it would not be possible to list all specialty crops, USDA, Agricultural Marketing Service (AMS) regularly updates the list of crops considered specialty crops, as it receives inquiries about their eligibility.

Source: USDA, Economic Research Service using information from USDA, AMS.

Table A2

Notes from authors' interviews with nine farmers in New York State

Farm	Acreage	Crops grown	Has crop insurance?	Biggest risks perceived pre-COVID-19	Pre-COVID-19 comments on crop insurance	Alternative methods of managing risk	Effect of COVID-19
1	5	Organic apples; mix of beans, fruits, and vegetables	Yes NAP, CAT, but only for highest value crop (apples)	1. Weather volatility 2. Drift from conventional farms 3. Unpredictable yields	1. Never claimed or applied for higher coverage 2. Paperwork for additional coverage is too overwhelming 3. Unaware of WFRP 4. NAP payments are due early in the season when cash flow is an issue	1. Cover crops and control of soil pH levels 2. High tunnels 3. Market diversification	1. Closing markets at beginning of COVID-19 disrupted business 2. Did not apply for disaster assistance and did not perceive COVID-19 as a big risk to their operation after diversifying outlets (e.g., farmers market, farm stand, CSA) 3. Stopped taking new CSA customers; could not meet demand
2	25	Organic apples	Yes FCIP CAT	1. Climate change 2. Unpredictable yields 3. Fire blight	1. Never investigated buy-up coverage 2. Applying requires too much paperwork and is not worth it 3. Designed for larger farms 4. Would have to be priced low to be of real value	1. Diseases-resistant trees 2. Irrigation for dry spells 3. 10-year business plan 4. Take on debt 5. Some contracting (for cider, not apples)	1. COVID-19 added market uncertainty 2. Lost restaurant sales, but diversified by doing outdoor and online sales, and events 3. COVID-19 brought community closer, increasing sales 4. Did not apply for Coronavirus Food Assistance Program (CFAP) as they assumed the process would be too cumbersome
3	112	Organic mixed vegetables and field crops	No	1. Access to markets 2. Climate change and yield volatility 3. Financial risk (e.g., not selling all produce) 4. Lack of consumer knowledge about costs of farming	1. Only knows one producer with crop insurance 2. Cost is too high 3. More effective for larger farms 4. Paperwork and documentation are a barrier 5. Other types of insurance, like automobile insurance, provide full service, including taking care of all paperwork	1. Soil improvement, mulching, weed control, and composting 2. Rainwater collection 3. Frost cloth or plastic for environment control and protection from weather events	1. COVID-19 changed access to consumers due to social distancing 2. Slower USDA inspections 3. Applied for disaster assistance, including Paycheck Protection Program with the help of Small Business Development Center 4. CFAP 1 was too complicated and did not apply for CFAP 2 5. Moved sales to on-farm pickups and online pre-ordering system

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Farm	Acreage	Crops grown	Has crop insurance?	Biggest risks perceived pre-COVID-19	Pre-COVID-19 comments on crop insurance	Alternative methods of managing risk	Effect of COVID-19
4	56	Organic mixed vegetables	No	<ol style="list-style-type: none"> 1. Labor shortages 2. Yield volatility 3. Organic fraud 4. Loss of wildlife 	<ol style="list-style-type: none"> 1. Applying is too complicated 2. Not inclined to buy any kind of insurance unless required or clear benefits 	<ol style="list-style-type: none"> 1. Purchase high quality and high yielding crops 2. Plant on raise beds 3. Irrigation and drip 4. Metal fences for deer 5. Crop and market diversification 	<ol style="list-style-type: none"> 1. Switched from restaurants to home/retail 2. Large labor shortages in 2020 3. Received CFAP 2, which helped replace lost income 4. Online marketing and home delivery did not fully replace loss of sales from restaurants closing
5	130	Organic mixed vegetables	No	<ol style="list-style-type: none"> 1. Weather and environmental changes 2. Pests and insects 3. Financial viability 4. Cost of inputs such as plastic, steel, and labor 	<ol style="list-style-type: none"> 1. Futile for their small farm size 2. Too cumbersome to track planting and yield 3. Unaware of WFRP 	<ol style="list-style-type: none"> 1. Irrigation for drought 2. Raised beds 3. Good draining 4. Part of a CSA 	<ol style="list-style-type: none"> 1. Stopped farming 2. During COVID-19 most CSA sites closed, which was primary source of revenue 3. COVID-19 made one of the worst sources of risk (financial viability) worse 4. Took off-farm jobs and down-sized farm
6	70	Organic mixed vegetables	No	<ol style="list-style-type: none"> 1. Market access 2. Yield losses 	<ol style="list-style-type: none"> 1. Crop insurance is important, but no good tools available 2. NAP does not work well with CSA shares 3. Looked into WFRP but was told it does not work for CSA farmers 	<ol style="list-style-type: none"> 1. Part of a CSA 2. CSA provides a contract, but agreements became shorter and less detailed over the years 	<ol style="list-style-type: none"> 1. Labor shortages

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Farm	Acreage	Crops grown	Has crop insurance?	Biggest risks perceived pre-COVID-19	Pre-COVID-19 comments on crop insurance	Alternative methods of managing risk	Effect of COVID-19
7	45	Organic mixed vegetables and hemp	No	<ol style="list-style-type: none"> 1. Climate change and weather 2. Labor shortages and labor availability 3. Lack of available pesticides for hemp 4. Strict quality required for hemp 	<ol style="list-style-type: none"> 1. Not cost effective and does not seem worth it 2. Has not paid close attention to crop insurance 3. Likelier to purchase insurance if it were bundled with other products, such as homeowners insurance 4. Crop insurance would need to have low transaction costs to be of interest 	<ol style="list-style-type: none"> 1. Sell wholesale and choose trustworthy customers 2. Part of a CSA 3. Good management practices, crop diversification 4. Effective marketing 5. Off-farm work 6. Weather protection, including extensive use of season extension, netting, irrigation 7. Mechanization where possible to reduce reliance on labor 	<ol style="list-style-type: none"> 1. Changed to selling mostly wholesale 2. Now believes supply chain issues are biggest risk 3. Labor shortages are a concern, with workers getting sick and more opportunities available 4. Relying even more on mechanization to minimize labor 5. Now plan more due to supply chain issues, more organized 6. Tightened up food safety and expanded to taking electronic payments
8	500	Apples, mixed fruits and vegetables	Yes FCIP CAT, but only for highest value crop (apples)	<ol style="list-style-type: none"> 1. Weather issues, frost, and hail 2. Pests and disease 3. Labor 	<ol style="list-style-type: none"> 1. Has crop insurance because risk of frost or hail affecting crops is too high 2. Apple industry loans require crop insurance 3. Applying for coverage is complicated 4. Payment for next year due before current claim is received 5. Interest in buy-up coverage, but CAT is sufficient and affordable 6. Crop insurance is stressful but has been useful in bad years 7. Crop insurance is not worth purchasing for vegetables because losses would not be devastating 	<ol style="list-style-type: none"> 1. Methods like high tunnels, input control are preferred for vegetables 2. Hail netting for apples 3. Considering different planting systems and mechanization 4. Turn low-grade apples into cider 	<ol style="list-style-type: none"> 1. Labor now the biggest risk. Harder to find local employees, even with higher pay 2. Supply chain issues and price of inputs (wood, packing materials, etc.) have increased 3. Harder to set up trucking 4. COVID-19 led them to re-analyze inefficient parts of the operation—less effort into farm stand and more on wholesale 5. Looking into a harvesting platform to increase efficiency 7. Thoughts on insurance not changed, but looking more seriously into other methods such as drape netting for hail

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Farm	Acreage	Crops grown	Has crop insurance?	Biggest risks perceived pre-COVID-19	Pre-COVID-19 comments on crop insurance	Alternative methods of managing risk	Effect of COVID-19
9	54	Organic onions	Yes FCIP CAT	1. Yield volatility 2. Weather risk 3. Labor shortages 4. Price risk, lack of transparency in pricing; pricing too low to be profitable	1. Previously purchased buy-up coverage, but stopped buying it many years ago 2. Several disaster years in a row lowers a farmer's APH and the real level of their losses in the future; often cannot make back premium; this is why specialty crop farmers do not participate in program 3. It is an important tool for specialty crop farmers, especially those farmers mono-cropping, but it is inadequate	1. Choose high quality varieties with maximum yield potential	1. Crop diversification to higher priced vegetables 2. Off-farm income 3. Selling direct to consumers 4. No longer purchasing CAT but will likely purchase next year

APH = Actual Production History. CAT = catastrophic level of coverage. CFAP = Coronavirus Food Assistance Program. CSA = Community Supported Agriculture. FCIP = Federal Crop Insurance Program. NHP = Noninsured Crop Disaster Assistance Program. WFRP = Whole-Farm Revenue Protection.
Source: USDA, Economic Research Service.