

Whole Farm Revenue Protection & Micro Farm Crop Insurance Programs: A Case Study of a Texas Diversified Fruit & Vegetable Farm

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Table of Contents

1.0 Executive Summary	3
2.0 Farmer J Overview	5
3.0 Disaster Overview & Farm Impact	6
4.0 Insurance Status & Barriers	7
5.0 Whole Farm Revenue Protection Program	8
6.0 Hypothetical Impact of WFRP on Farmer J	11
6.1 Disaster impact to Farmer J in 2022	11
6.2 Impact to Farmer J Cash Flow and Operations	12
6.3 Hypothetical insurance financial impact	13
7.0 Conclusion & Recommendations	18
Appendix	20

1.0 Executive Summary

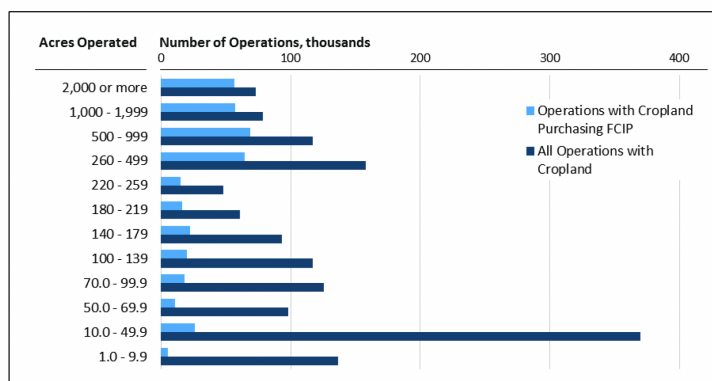
Farms of all types, stripes, and sizes are susceptible to a deluge of risks that put their viability in jeopardy every day. These risks are often out of the control of many farmers: market fluctuations, disease and pest issues, natural disasters, and more. This is why the federal government offers crop insurance programs to farmers, to help mitigate these risks and smooth out these financial fluctuations from year to year.

Small farmers, in particular, are exposed to more significant risks than larger farms, as almost all crop insurance is geared towards commodity production.¹ Larger farms in the conventional grain, livestock, dairy, and commodity sectors have more viable insurance programs available to them.²

Smaller, diversified farms, who might be producing 50+ types of vegetables, producing 5+ species of animals, and rely on agritourism income have only one crop insurance program that could potentially cover them - Whole Farm Revenue Protection Program. This crop insurance program covers an entire farm's revenue losses associated with natural disaster or market fluctuations, regardless of how many crops they produce. To date, this program has had very limited participation from growers.

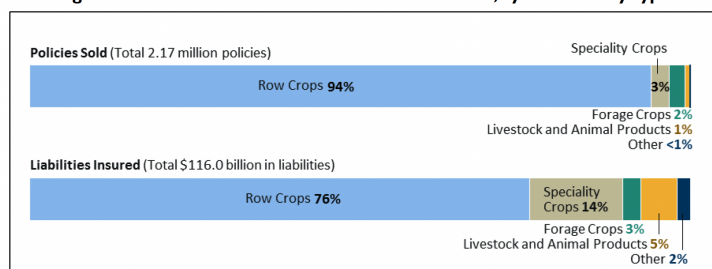
85% of corn, soy, wheat, and cotton are enrolled in a Federal Crop Insurance Program (FCIP).³ 94% of all FCIP policies are sold to row crop farmers (380,236 total farms in the US are enrolled in some sort of FCIP). Less than 2,000 of these policies sold were Whole Farm Revenue Protection Program (WFRP), which is best suited for smaller, diversified farm operations.⁴

Figure 3. All Farms and Farms Purchasing FCIP Policies, by Acres Operated
2017 data



Source: Figure created by CRS using data from USDA, NASS, 2017 Census of Agriculture.

Figure 5. Policies Sold and Liabilities Insured in 2019, by Commodity Type



¹ National Sustainable Agriculture Coalition, *Don't Harm Crop Insurance, Improve It!*, 2023, Jan 19, <https://sustainableagriculture.net/blog/dont-harm-crop-insurance-improve-it/>

² Conservation Finance Network, *The Case for Crop Insurance Reform*, 2020, Apr 8, <https://conservationfinancenetwork.org/2020/04/08/the-case-for-crop-insurance-reform>

³ Congressional Research Service, *Federal Crop Insurance: A Primer*, 2021, Feb 18, <https://crsreports.congress.gov/product/pdf/R/R46686>

⁴ National Sustainable Agriculture Coalition, *Whole-Farm Revenue Protection Analysis: A Few Bad Apples*, 2022, April 22, <https://sustainableagriculture.net/blog/whole-farm-revenue-protection-analysis-a-few-bad-apples/>

Small Texas farmers are particularly susceptible to risks outside of their control. Since 1983, Texas has experienced 149 natural disasters, with 111 of those occurring in the past 20 years. This is more than any other state in the US.⁵ Without viable crop insurance options, the risk to these small farm operations will likely only increase in the coming years as weather becomes increasingly erratic.

This report - commissioned by Sustainable Food Center (SFC) and prepared by Kitchen Table Consultants (KTC) - set out to document one case study that can help illustrate the need for crop insurance for smaller, diversified farms in Texas.

This report set out to answer the following questions:

1. *Who are the farmers behind these disasters?* Tell the story of a family farm's experience through a recent disaster in Texas.
2. *How did the disaster impact their lives financially?* Analyze the financial impact of the disaster on the farm.
3. *Did they have crop insurance?* Understand why the farm did or did not have crop insurance at the time of the disaster.
4. *How would crop insurance have helped?* If the farm did not have crop insurance, approximate how much the farm would have been financially supported by WFRP as it is currently structured.

Sustainable Food Center was particularly interested in selecting a farm with the following characteristics:

1. Texas-based small to mid-scale farm
2. Diversified production and crops, particularly specialty crops (fruits and vegetables)
3. Diversified market channels

Summary of Findings

A small diversified farm located in Central Texas, was selected for this report. They produce a variety of fruit and vegetable crops which they sell through wholesale, farmers markets, and their on-farm store. To respect this farm's privacy, they have been kept anonymous and will be referred to as "Farmer J" hereafter.

In December 2022, Farmer J experienced a severe and unexpected freeze in December that resulted in \$64,760 in estimated revenue loss. Prior to this crop loss, Farmer J estimated that their projected sales would have been \$223,000. The crop loss due to the disaster represented 29% of their annual income.

Farmer J did not have crop insurance at the time of the disaster, but we modeled what the financial impact of them having WFRP Insurance would have impacted them financially. We

⁵QuoteWizard, *Does Home Insurance Cover Natural Disasters?*, 2023, Mar 20, <https://quotewizard.com/home-insurance/homeowners-insurance-common-natural-disasters#states>

found that at the highest coverage level - after paying insurance premiums - they would have received \$10,360 to help mitigate their loss of \$64,760. 16% of revenue lost due to crop loss would have been recovered. At lower coverage levels, they would have effectively lost cash after their insurance premium payment. In modeling different insurance and crop loss scenarios, we found that WFRP can have a much larger impact on mitigating risk at higher crop loss levels. (see section 7.0 for full details on insurance impact)

Farmer J also shared his personal experience of working through this disaster. Farmer J is an experienced farmer as a 5th generation farmer, operating their farm for close to 30 years. Farmer J was unaware of WFRP prior to this project, and did not have readily available technical assistance or resources to bring this program to his attention. It was also clear that the recordkeeping requirements to even qualify for WFRP - let alone file a claim - would be very onerous for their particular operation. Among the primary recommendations of this report (see section 8.0 for full details on recommendations) is that producers need more resources and technical assistance to understand WFRP technical requirements and benefits, guidance on recordkeeping requirements, and access to insurance agents that have expert understanding of this program.

Without viable crop insurance for diversified farms like Farmer J, these farms will likely continue to weather natural disasters on their own, moving into a more erratic climatic future with increasing uncertainty, utilizing savings or debt to cashflow and cover their losses to weather each subsequent natural disaster. The Whole Farm Revenue Protection Program can be a part of the solution to make small farms more financially resilient and viable.

2.0 Farmer J Overview

Farmer J is a diversified fruit and vegetable farm located in Central Texas between Austin and San Antonio. They are a sole proprietorship, owned and operated by a husband and wife team. They have four children, all of whom have worked on the farm, or are continuing their agricultural education at university. All children have expressed an interest in being a part of the farm in the future. Farmer J generally hires 1 - 2 additional farm hands throughout the year to assist with field and sales activities.

Farmer J is a 5th generation farmer, having grown up on a farm and farming in various capacities throughout his adult life. Farmer J and his father both operated a 3,500 dryland farm growing row crops in Texas, while they both worked off the farm full time. They did this for a number of years until they got tired of “losing their shirts”, as they were subsidizing losses on the farm through their day jobs.

In 1994, they bought the farm that is now Farmer J's. They initially purchased 35 acres, and added on another 15 acres in 2002 for a total of 50 acres. Farmer J initially started selling fruits and vegetables after a neighbor asked them if they were interested in selling at a new farmers' market in their local downtown area. What started as a 100' x 100' market garden has grown

into 30 acres of cultivated annual production, where they grow dozens of different crops, including an annual pumpkin patch that serves as an agritourism attraction annually in the fall (which is unique in Central Texas, where decorative pumpkins are difficult to grow).

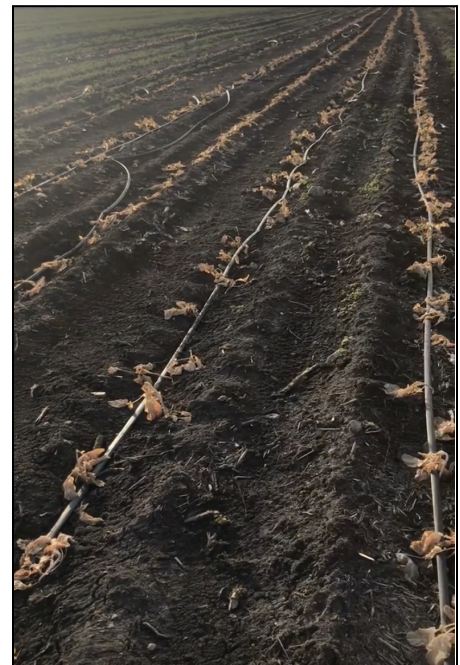
One of Farmer J's slogans is, "The secret's in the soil". Farmer J values and cares for their soil greatly, as it is part of the Blackland Prairie ecoregion in Texas, which is renowned for its rich soil health. It is very clayey and difficult to work, but gives the produce a local terroir flavor that customers can't find anywhere else.

Farmer J sells their products through a variety of sales channels:

- 2 area farmers' markets
- On-farm retail store
- Online farm store, with direct home delivery
- Community Support Agriculture (CSA) Program
- B2B restaurant and small wholesale accounts
- On-farm agritourism

Farmer J is a unique farm in their region. The few specialty crop farms in the area have largely been purchased and developed in recent years. Farmer J estimates that 15,000 homes have been built in a three mile radius from his farm in the past three years alone - unprecedented growth. As a result, Farmer J is uniquely positioned to offer their customers truly local, fresh fruits and vegetables from their farm to the local region, and also opens their farm up to visitors to create direct relationships with their customers.

Farmer J self-reported that their annual sales are \$200,000 - \$250,000 in recent years.⁶ They are generally profitable, "or else they would have sold the farm and done something else." Over the past 20 years, Farmer J and their family have built the farm from the ground up with no debt. Everything has been financed by them personally.



Crop damage at Farmer J after the December 2022 freeze.

3.0 Disaster Overview & Farm Impact

In mid-December 2022, Farmer J became aware that a serious cold front was moving into Central Texas. In December, it's standard for diversified produce farms to have significant plantings in the field including broccoli, cauliflower,

⁶ The authors of this report were unable to secure Schedule F tax filings to substantiate income or any other financial information. All financial information in this report is self-reported from the farmers.

carrots, various greens, and many other cold hardy crops.⁷ Some farms will grow in high tunnels, but it is more common for commercial diversified operations to grow directly in their fields, unprotected from significant weather events. These crops tend to mature in the months of January - March, and provide significant revenue during these late winter and early spring months.

Farmer J was aware of the impending freeze coming their way, and did what they could to prepare. They considered using Remay, which is a fabric row cover that can help protect crops from freezing temperatures. But, with winds forecasted at 40 - 45 MPH, this would have blown off the crops quickly. They opted to make sure that their crops were well irrigated, which gives them maximal health to help them weather the freezing temperatures. Additionally, they utilized overhead irrigation to create an insulating layer of ice over the plants, which actually serves as a way to keep crop heat in.

Despite this, the temperatures were too cold for too long, and Farmer J lost a significant portion of their winter crop. Freezing temperatures began on the evening of December 22nd, and persisted through December 25th, with a low of 16 degrees. With wind chills, temperatures were even lower. Temperatures prior to this freezing event were roughly 40 - 60 degrees, and the abrupt change in temperature likely shocked, and contributed to, killing off crops. High winds and low humidity also did not help.

An estimated total of \$64,760 in revenue was lost. This represented roughly ~29% of total annual sales - a significant blow to their business for the year. This does not include costs from irrigation damage, or the cost of Owner and staff labor in repairing and cleaning damages from fields. From January to March 2023, all sales from Farmer J were put on hold, including all farmers' markets, online market, CSA, and wholesale sales.

Freeze Loss Estimates	
Average Annual Sales	\$225,000
Crop Damage Revenue Loss	-\$64,760
Expected Annual Sales, Post Loss	\$160,240
% Annual Revenue Loss	-28.78%

4.0 Insurance Status & Barriers

Farmer J is truly diversified - both in production and sales channels. One reason for this diversity of crops is to help mitigate risk, as Farmer J explains, "If I lose a handful of crops over here, well then I'd probably have a handful of crops over there I could still sell". But Farmer J

⁷ Texas A&M Agrilife Extension, *Vegetable Garden Planting Guide*, 2015, Jan, <https://travis-tx.tamu.edu/files/2020/06/Vegetable-Planting-Calendar-Travis-2015.pdf>

acknowledges that a viable insurance program would “help us, and other small farms just like us too.”

Farmer J is no stranger to crop insurance. When he was dry cropping grains on 3,500 acres in the 90’s, he had crop insurance coverage and worked regularly with a crop insurance agent. When he started his diversified produce farm, he spoke to his insurance agent about covering his new crops. It became quickly evident that it would not be cost effective to do so. In order to get crop insurance at that time, each individual crop would require its own independent crop insurance plan. Since Farmer J grows 50+ fruit and vegetable crops per year in smaller batches than any larger farm would, the recordkeeping requirements and resulting premiums rendered this option unviable. As a result, Farmer J lost access to other USDA programs that require crop insurance to enroll. For example, USDA offers an Emergency Relief Program in 2023, but in order to access these funds, farmers must have crop insurance.⁸

Farmer J was unaware of the Whole Farm Revenue Protection crop insurance program when interviewed for this report, and some of the changes that have been made to it in recent years to make it more accessible to farms like his. They do not work with the Farm Service Agency (FSA), other government offices, or crop insurance agents who might have made him aware of this program and how it functions. Farmer J participated in this case study partly to learn more about how this program might have helped them through past disasters, and how it might be accessible to them in the future.

So, at the time of the 2022 winter freeze, Farmer J did not have crop insurance, like the vast majority of small diversified farms (see section 1 of this report). Farmer J is no stranger to disasters, having experienced crop damage during Winter Storm Uri⁹, a fire that burned down a Christmas tree crop, and the floods and droughts that regularly damage crops in Central Texas. Since becoming a fresh produce farm, they have never received any funding from public sources including at the federal, state, or local level.

They have adapted to these risks by relying on their own business and personal savings to cash flow them through these disasters. When asked if they’d ever received support from their local community for disaster relief - such as a private fundraiser or crowdfunding event for their farm - Farmer J said, “We learned early on that we better save and be prepared... for the worst. We just absorb them and keep going.”

5.0 Whole Farm Revenue Protection Program

Whole Farm Revenue Protection Program History and Background

The Whole Farm Revenue Protection program was first available in 2015, as a risk

⁸ USDA FSA, *Emergency Relief*, <https://www.fsa.usda.gov/programs-and-services/emergency-relief/index>

⁹ New York Times, *Texas Farmers Tally Up the Damage From a Winter Storm ‘Massacre’*, 2021, Mar 5, <https://www.nytimes.com/2021/03/04/dining/texas-farms-storm-damage.html>

management response to the growing trend of highly diversified farms, many of which sell specialty crops directly to consumers, locally or regionally. It was intended to serve producers who were left out of traditional crop insurance policies, and to cover commodities for which no commercial crop insurance existed (such as apples). The program insures up to \$17 million in allowable revenue.

WFRP is administered by the Risk Management Agency (RMA) and is intended to provide risk management for all farm commodities under one policy, as opposed to buying individual crop policies for each crop grown.

Coverage

WFRP covers the entire revenue of the farm against insurable loss, even for crops where individual policies are not available on the insurance marketplace. This is different from traditional single crop insurance, which insures the yield. It is intended to mitigate financial risk of diversified farming operations, and take into account the complexity of the revenue of diversified farming operations¹⁰, including coverage for livestock and value-added product revenue.

Covered revenue is determined as either the lower of the current year expected revenue or 5-year historical average revenue, adjusted for growth¹¹. It is available in all 50 states and covers all crops and animals, up to \$17million in sales (as of 2023). A farm may have more than \$20M in sales, but coverage is only available up to the 85% threshold (\$17M being 85% of \$20M).

Drew Smythe - Crop Insurance representative with Wraithe, Scarlett, & Randolph interviewed for this report - summarized, that is why this coverage “is very appealing to people, especially producers that would qualify for Micro Farm... it offers insurance for commodities that are otherwise uninsurable and it is designed for diversified farms like this one (*Farmer J*). So where they can't get insurance elsewhere for a lot of those commodities, Whole Farm or Micro Farm is the only place they would be able to get it.”

Premiums

The annual premiums are set and heavily subsidized by the RMA. The total premium cost varies depending on the state and county of the farming operation, and what commodities are covered. Subsidies are up to 85% of total premium cost (as of 2023). 2 crops are the minimum diversification that qualifies a grower for a premium subsidy up to 80%. Beginning farmers and ranchers can qualify for up to an additional 10% premium discounts. Additionally, increased diversification (from 3 to 7 crops) can qualify a grower for extra premium subsidies.

¹⁰ The RMA considers sales of at least 2 commodities to qualify as a diversified operation.

¹¹ USDA RMA. *Frequently Asked Questions Whole Farm Revenue Protection Program*. 2022, August 31.
<https://www.rma.usda.gov/en/News-Room/Frequently-Asked-Questions/Whole-Farm-Revenue-Protection-Plan-2023>

Policies are written by independent insurance agents and companies and there is no competitive premium pricing between agents, since rates are set by the RMA. Income thresholds, premium subsidies, and payouts may change each year determined by the RMA.

WFRP Current Trends

As of 2022, WFRP adoption rates were low, as are enrollment outlook trends. According to the National Sustainable Agriculture Coalition, “Just 1,934 policies were sold to farmers in 2023, down by roughly 32 percent from the program’s height in 2017.”¹²

This trend is nuanced, with some individual states enrollment numbers climbing compared to others, and loss ratios varied among states. Data for loss claims paid out are on an annual lag, due to the policies not being paid out until after taxes are filed.

While the WFRP is well intentioned to serve diversified farms, these enrollment trends may not be surprising. The complexity of crop insurance programs, time-demanding reporting requirements, and their history of underserving many groups of producers has set a challenging bar for WFRP to overcome and reach new producers. Many producers may simply not know WFRP and Micro Farm programs exist and more outreach and education is needed.

Micro Farm

Micro Farm was launched in 2022 as an offshoot of WFRP geared toward smaller producers, with simplified reporting requirements compared to WFRP. Micro Farm insurance also “can include post-production costs activities as revenue, such as washing and packaging commodities or value-added products like jam.”¹³

Since Micro Farm is a very new insurance program, eligibility thresholds for farm revenue, application requirements, and covered revenue thresholds have changed from 2022 to 2023, in response to feedback from stakeholders. For example, the producer approved revenue ceiling was upped to \$350,000 from \$100,000 in 2022. Premiums have changed slightly from year to year, though coverage levels have stayed the same.

Required Documents to Apply for WFRP and Micro Farm

- i. A Whole-Farm History Report with a minimum of 3 consecutive years of Schedule F or other farm tax forms (it must be possible to complete a Substitute Schedule F form if you filed farm tax forms other than Schedule F). For the 2023 policy year, tax forms from 2020-2022 are required.
- ii. If you have not yet filed taxes for the most recent tax year, a Substitute Schedule F must be submitted for that year.¹⁴

¹² National Sustainable Agriculture Coalition. *Whole-Farm Revenue Protection Analysis: A Few Bad Apples*. 2022, April 20. <https://sustainableagriculture.net/blog/whole-farm-revenue-protection-analysis-a-few-bad-apples/> Retrieved 2023, June 19.

¹³ USDA RMA. *Product Management Bulletin: PM-21-069*. (2021, November, 29). <https://www.rma.usda.gov/en/Policy-and-Procedure/Bulletins-and-Memos/2021/PM-21-069#:~:text=This%20includes%3A,to%20producers%20using%20Micro%20Farm>. Retrieved 2023, July 14.

¹⁴ USDA RMA. *Micro Farm Program Risk Management Agency Fact Sheet, Revised August 2022*. (2022, August) <https://www.rma.usda.gov/en/Fact-Sheets/National-Fact-Sheets/Micro-Farm-Program>. Retrieved 2023, July 14.

The Whole-Farm History Report is an in depth report of all of an operation's financial, yield and planting records. The more detailed for the historical years required, the better and smoother the application process can be.

6.0 Hypothetical Impact of WFRP on Farmer J

6.1 Disaster impact to Farmer J in 2022

With the help of KTC, Farmer J estimated his total loss of revenue from the 2022 freeze was \$64,760. This loss estimation was created in June 2023, with Farmer J's best memory of his plantings of what was lost.

This calculation is illustrated below using Broccoli as an example. The pink cells are inputs from Farmer J's best estimations, and the gray cells are calculated. The percent estimated yield is the percent of a crop that is planted that makes it to sale in an average crop, using Farmer J's best estimate from decades of farming experience growing these crops.

Expected Revenue - Broccoli						
Beds Planted - Annual	Units per Bed	Total Units Produced	Estimated % Yield Harvested & Sold	Units Sold, Projected	\$Sales per Unit	Total Expected Revenue for 2022 crops
6	1,500	9,000	80%	7,200	\$2.00	\$14,400

Estimated Loss - Broccoli						
Beds Planted - Lost	Units per Bed	Total Units Lost	Estimated % Yield Harvested & Sold	Units Lost	\$Sales per Unit	Total Loss
3	1,500	4,500	80%	3,600	\$2.00	\$7,200

The total estimated revenue lost during the 2022 freeze for Farmer J was \$64,760. The table shows the total estimated revenue losses by crops for Farmer J in the 2022 freeze:

Farmer J Full December 2022 Crop Loss Summary	
Item	Total Loss
Broccoli	-\$7,200
Cauliflower	-\$6,750

Brussel Sprouts	-\$15,000
Carrots	-\$3,900
Radish	-\$2,250
Beets	-\$8,250
Turnips	-\$750
Arugula	-\$0
Cabbage	-\$3,000
Sweet Peas	-\$3,000
Green Onions	-\$6,000
Celery	-\$500
Kale	-\$3,000
Collards	-\$3,000
Winter squash in storage	-\$2,160
Total estimated loss	-\$64,760

It is important to note that for this case study, we attributed all revenue lost during the 2022 disaster to 2022 revenue. Drew Smythe confirmed this is the standard for crop insurance to report revenue for the “crop year.”

Applying for an actual WFRP or Micro Farm policy would require reporting of accounts payable, accounts receivable, and inventory value to determine the annual revenue. Depending on the type of operation, and whether value-added products, livestock, and/or inventory are included, this process can add a layer of complexity in determining the annual revenue. During the policy application process, a knowledgeable crop insurance agent would help determine if any revenue should be applied to the following crop year.

6.2 Impact to Farmer J Cash Flow and Operations

This \$64,760 loss significantly impacted cash flow for Farmer J. Since Farmer J had no other crop insurance at the time of the disaster, there were no insurance proceeds to help buffer the lost revenue. Farmer J relied on their personal savings to absorb the cost of this disaster, and did not take out any emergency loans. Farmer J described their personal philosophy of financial self-reliance that got them through the 2022 freeze:

“People have asked if we had wanted to start a Go Fund Me or things like that. But (we) aren’t going to ask for handouts. We learned early on we had better save, we had better be prepared for something like that. That one there just happened to be the worst. There’s been other small ones along the way, but we just absorb them

and keep going.... We feel we are willing, we are able, let's go replant and get back on our feet. That's how we are."

The disaster did impact Farmer J operationally. While they still attended markets with the limited crops they had, Farmer J estimated \$44,000 of lost income at farmers markets, which would have significantly increased the farm's expense to income ratio for attending markets. They also had to temporarily shut down their CSA, all the online farmers markets, and all of the chef deliveries. "3 months, a quarter of the year, was gone," according to Farmer J. As many direct to consumer farmers have experienced, turning away customers due to being unable to meet their demand (even temporarily) can mean those customers seek out other sources.

6.3 Hypothetical insurance financial impact

What would the financial implications be if Farmer J had been enrolled in the Whole Farm Revenue Protection program when the 2022 freeze occurred?

Since Farmer J's annual revenue is below the \$350,000 allowable revenue threshold (2023 level), they would likely be eligible for a Micro Farm insurance policy in 2023 and in future years. This case study used the RMA Estimator Tool to produce a "what if" policy quote for if Farmer J had a Micro Farm policy in 2022 and 2023 for comparison.

Table 1 below shows the RMA estimator results using the following inputs:

Item	2020 Revenue	2021 Revenue	2022 Expected Revenue	
Total Acres Planted	35.5	35.5	35.5	3 year average 35.5 acres planted
Total Revenue (self-reported)	\$247,000	\$217,000	\$223,000	3 year average \$229,000 revenue expected value \$6,451 per acre acres planted in 35.5 loss year Expected \$229,000 revenue

\$229,000 was the Total Expected Revenue used for the RMA Estimator, which was calculated as the three year revenue average for the farm. We were not able to obtain tax records during the course of this case study, so this average was calculated based on self-reported revenue from Farmer J, not Schedule F reported revenue.

Table 2 below shows the RMA Estimator results, given the inputs in Table 1.

coverage level --->	85%	80%	75%	70%	65%	60%	55%	50%
Liability Amount	\$192,562	\$181,235	\$169,908	\$158,581	\$147,254	\$135,926	\$124,599	\$113,272
Producer Premium	\$17,962	\$10,512	\$6,558	\$5,963	\$5,389	\$4,812	\$4,286	\$3,761
Subsidy Amount	\$22,861	\$25,735	\$26,234	\$23,850	\$21,558	\$19,247	\$17,145	\$15,042
Total Premium Amount	\$40,823	\$36,247	\$32,792	\$29,813	\$26,947	\$24,059	\$21,431	\$18,803

assumed insurance proceeds	\$28,322	\$16,995	\$5,668	\$0	\$0	\$0	\$0	\$0
Proceeds less producer premium	\$10,360	\$6,483	-\$890	-\$5,963	-\$5,389	-\$4,812	-\$4,286	-\$3,761
% of loss recovered	16%	10%						

Total expected revenue in 2022	\$229,000		
Total estimated loss in 2022	\$64,760	28.3%	% of expected revenue lost
2022 revenue	\$164,240		

Definitions for Table #2	
Term	Definition
Liability amount	Revenue amount covered.
Producer Premium	Annual amount paid by producer for coverage.
Subsidy Amount	Annual premium covered by government subsidy of total premium.
Total Premium	Full cost of the premium (subsidy + producer portion).
Assumed Insurance Proceeds	Dollar amount that is estimated would have been paid given the revenue losses incurred.
Proceeds less producer premium	Benefit/cost to producer where positive is net financial gain, negative is net cost to producer, given the coverage levels.

Financial Impact Summary

This hypothetical example reveals that if Farmer J had a Micro Farm insurance policy in place, with an 85% or 80% coverage level, at the time of disaster, they would have come out ahead financially.

- At the 85% level, they would have received an estimated \$10,360 more in insurance proceeds than the producer premium cost. This is 16% of the loss recovered.
- At the 80% level, loss recovered would be an estimated at \$6,483, and 10% of the loss recovered.
- If they had 75% coverage, the net cost would have been estimated at \$890 (cost to Farmer J).
- For coverage levels of 70% to 50%, they would have not received any insurance proceeds, since the liability amount was less than total revenue for the year, after taking the loss into account. Since there would have been no proceeds to help offset the cost of the premium, the net cost to Farmer J would be the annual producer premium.
- Using the same data, run through the RMA estimator for 2023, resulted in the same hypothetical insurance proceeds, though the premium total cost including the subsidy and producer portion increased by 2.99% over 2022 rates.

Premiums as a % of Revenue

Table 3 below shows premiums as a % of total expected revenue and total actual revenue, using data in table 2 from the Farmer J case.

Table 3

Producer premiums as a % of total expected revenue	7.8%	4.6%	2.9%	2.6%	2.4%	2.1%	1.9%	1.6%
Producer premiums as a % of total actual revenue (after loss)	10.9%	6.4%	4.0%	3.6%	3.3%	2.9%	2.6%	2.3%

The producer premiums can be a significant expense to a producer. In the case of Farmer J, the hypothetical premiums would have ranged from 7.8% of expected revenue for an 85% coverage policy, to 1.6% of expected revenue for a 50% coverage policy. These percentage ratios naturally increase as revenue declines due to a disaster.

Calculating this percent of revenue ratio can help individual producers make their own determination if this is affordable based on their operating budget, overall financial picture, and risk appetite. It can be assumed that the producer premium as a percent of expected revenue ratio would be similar, if not steady, as revenue grows, since WFRP and Micro Farm insure revenue. The percent of actual revenue after a loss is what would fluctuate on a case by case basis, depending on the scale of the loss.

Proceeds Less Premium as a % of Revenue

Table 4 below shows premiums less proceeds as a % of total expected revenue and total actual revenue, using data in table 2 from the Farmer J case.

Table 4

Proceeds less premium as a % of total expected revenue	4.5%	2.8%	-0.4%	-2.6%	-2.4%	-2.1%	-1.9%	-1.6%
Proceeds less premium as a % of total actual revenue (after loss)	6.3%	3.9%	-0.5%	-3.6%	-3.3%	-2.9%	-2.6%	-2.3%

Effectively, Farmer J could have recovered 6.3% of their actual 2022 revenue at the 85% coverage level and 3.9% of their revenue at the 80% level after paying their portion of the premium. 75% to 50% coverage levels would have no recovered revenue.

What level of disaster makes having insurance “worth it”?

Below are 50% and 75% revenue loss model summaries, using Farmer J’s financial information as baseline data. This models how insurance proceeds would be impacted if crop losses were more severe. 50% of losses would mean that half of Farmer J’s crop revenue was lost, equivalent to \$114,500. 75% of losses would mean that three quarters of Farmer J’s’ crop revenue was lost, equivalent to \$171,750.

Financial Impact Summary						
% Loss vs. Expected Revenue	28.28%		50%		75%	
	Coverage Level	Proceeds less Producer Premium	Coverage Level	Proceeds less Producer Premium	Coverage Level	Proceeds less Producer Premium
	85%	\$10,106	85%	\$60,100	85%	\$117,350
	80%	\$6,273	80%	\$56,223	80%	\$113,473
	75%	-\$992	75%	\$48,850	75%	\$106,100
	70%	-\$6,058	70%	\$38,118	70%	\$95,368
	65%	-\$5,537	65%	\$27,365	65%	\$84,615
	60%	-\$5,002	60%	\$16,614	60%	\$73,864
	55%	-\$4,486	55%	\$5,813	55%	\$63,063
	50%	-\$3,987	50%	-\$3,761	50%	\$52,261

As crop losses increase, the value of the insurance policy increases significantly. At about 50% crop loss, the insurance premium becomes a net benefit across all coverage levels, with the exception of the 50% coverage level. The more catastrophic the loss, the more the insurance coverage mitigates losses. Please see the Appendix for full details of each scenario.

Each individual producer needs to weigh all variables of a WFRP or Micro Farm policy to decide if crop insurance is worth it for them. They must ultimately consider:

- How frequent disasters or other insurable losses are expected to be in the future?
- What financial scale disasters or insurable losses could be in the future?
- What is their appetite for risk?
- How would a disaster impact cash flow if they did not have insurance policies in place?
- How would the cost of insurance premiums impact their budget?

Qualitative Impact summary

“To have a little help from the government would be nice, it’s just never been there.... That’s one reason I’m willing to participate in this because I know it will help us and help other small farms just like us.”

- Farmer J

It is easy to review Farmer J’s 2022 disaster and answer “what if we had insurance.” We can look back and determine which level of coverage would have been best, given the known scale of the disaster and see the financial impact at each coverage level. What is not as easy is to determine what financial scale disasters could be in the future, and if having WFRP or Micro Farm insurance in the event of a future disaster would result in a financial upside, given the unpredictability of disasters.

That is the basic premise of insurance - it is there when you need it, to smooth out the swings, but hopefully you never have to use it. According to Drew Smythe, with Whole Farm and Micro Farm, “it’s the most diversified or risk averse program out there. It’s definitely not going to pay every year, obviously, but it really helps smooth out those poor years that help insure that your farm keeps going.” In this sense, the premium cost can be viewed as protection, rather than solely an operational expense with no value. Each individual producer needs to determine their own comfort level with risk, evaluate the benefits and drawbacks of any insurance policy and consider how premium costs impact their operational budget and cashflow.

Drew Smythe identified another benefit of having WFRP or Micro Farm insurance in place - it would help a producer apply and qualify for disaster relief programs, such as FSA’s Non-insured Crop Disaster Assistance Program (NAP) or other disaster payments. “Some of those disaster programs or payments require that you carry insurance on certain commodities for however many years...Whole Farm would satisfy that requirement.”

In Farmer J's case, since WFRP and Micro Farm insure revenue, if they had other insurable losses during the year, such as market price changes, plus the freeze loss, Farmer J may have been able to report higher losses and received higher proceeds than this case study estimates.

7.0 Conclusion & Recommendations

The risk management protection offered by WFRP and Micro Farm are appealing to diversified farmers since they offer revenue based protection for insured losses. Both programs have been designed to take into account operations that have multiple types of crops and revenue streams. Micro Farm specifically aims to reach small scale diversified farmers - a group that has never had subsidized crop insurance policies available to them.

Though WFRP and Micro Farm offer risk management for producers that may be financially beneficial in the long-run, there are some challenges to be overcome to make them more effective in practice, more broadly accepted by producers, and ultimately could increase program enrollment:

- **Farmer awareness of Micro Farm Insurance needs to increase:** Micro Farm is very new, only in its second year of operation, so general producer awareness of the program, its impact, and eligibility requirements may still be minimal. USDA's Risk Management Agency should consider expanding technical assistance and education regarding the Whole Farm Revenue Protection program and the Micro Farm Insurance program.
- **Small producer relationships with FSA and knowledgeable technical assistance is key:** Not all small producers utilize FSA or other technical assistance providers, leading to a knowledge and awareness gap for these producers of crop insurance options. If diversified agricultural producers do not have a relationship with FSA, they should consider reaching out to them to formally enroll in their system.
- **Recordkeeping Requirements can be challenging for small producers:** Recordkeeping requirements of WFRP can be onerous for small producers. Until a producer starts working with an insurance agent on a policy quote, record requirements can be vague. Micro Farm recordkeeping requirements are intentionally more simple and streamlined. Further simplifying record requirements would make these programs more accessible.
 - If producers are not aware of these programs in general, they may not be aware of what data or records they should be keeping.
 - 3 years of records needed minimum for Micro Farm, and 5 years for WFRP, so there may be a time lag between when producers start keeping records and when they are able to utilize these programs. (Note: there are some exceptions for beginning farmers and ranchers and other underserved groups.)

- Not all farmers, ranchers, and producers keep organized, detailed, or thorough records, and many times they keep no records at all. There is significant outreach and education needed to small-scale producers, so they can start keeping effective records if they have none and prepare for eligibility.
- **A question of cost effectiveness:** Depending on coverage level, insurable losses must be significant in order for Micro Farm claims to pay out proceeds. This may cause producers to question its cost effectiveness. Additionally, premiums for small producers can be a significant portion of their total revenue, so scale of the business can be an important deciding factor of whether WFRP or Micro Farm premiums are financially affordable.
- **Finding knowledgeable insurance agents on Micro Farm & WFRP can be difficult:** It may be difficult for producers to find crop insurance agents that have expert knowledge of the WFRP program, and more specifically, Micro Farm due to it being a new program. Both WFRP and Microfarm are growing areas of interest that the crop insurance industry is continually improving education and outreach among agents. These insurance programs could be improved by providing Approved Insurance Providers education and training on these programs.

While WFRP and Micro Farm may not be appealing to all small scale, diversified agricultural producers, for those that identify that these programs may benefit them, these programs can offer significant risk management. In a world with more severe, unpredictable, and widespread weather disasters occurring every day, this risk management could be critical to whether a diversified farm can weather the financial storm that follows an actual disaster and stay in business.

Appendix

Below are two additional insurance payout scenarios with Farmer J as baseline data.

50% revenue loss modeling

coverage level	85%	80%	75%	70%	65%	60%	55%	50%
Liability Amount	\$192,562	\$181,235	\$169,908	\$158,581	\$147,254	\$135,926	\$124,599	\$113,272
Producer Premium	\$17,962	\$10,512	\$6,558	\$5,963	\$5,389	\$4,812	\$4,286	\$3,761
Subsidy Amount	\$22,861	\$25,735	\$26,234	\$23,850	\$21,558	\$19,247	\$17,145	\$15,042
Total Premium Amount	\$40,823	\$36,247	\$32,792	\$29,813	\$26,947	\$24,059	\$21,431	\$18,803
assumed insurance proceeds	\$78,062	\$66,735	\$55,408	\$44,081	\$32,754	\$21,426	\$10,099	\$0
Proceeds less producer premium	\$60,100	\$56,223	\$48,850	\$38,118	\$27,365	\$16,614	\$5,813	-\$3,761
% of loss recovered	52%	49%	43%	33%	24%	15%	5%	3%

Total expected revenue in 2022	\$229,000	
Total estimated loss in 2022	\$114,500	50% % Loss Driver
2022 revenue	\$114,500	

Producer premiums as a % of total expected revenue	7.8%	4.6%	2.9%	2.6%	2.4%	2.1%	1.9%	1.6%
Producer premiums as a % of total actual revenue (after loss)	15.7%	9.2%	5.7%	5.2%	4.7%	4.2%	3.7%	3.3%
Proceeds less premium as a % of total expected revenue	26.2%	24.6%	21.3%	16.6%	11.9%	7.3%	2.5%	-1.6%
Proceeds less premium as a % of total actual revenue (after loss)	52.5%	49.1%	42.7%	33.3%	23.9%	14.5%	5.1%	-3.3%

75% revenue loss modeling

coverage level	85%	80%	75%	70%	65%	60%	55%	50%
Liability Amount	\$192,562	\$181,235	\$169,908	\$158,581	\$147,254	\$135,926	\$124,599	\$113,272
Producer Premium	\$17,962	\$10,512	\$6,558	\$5,963	\$5,389	\$4,812	\$4,286	\$3,761
Subsidy Amount	\$22,861	\$25,735	\$26,234	\$23,850	\$21,558	\$19,247	\$17,145	\$15,042
Total Premium Amount	\$40,823	\$36,247	\$32,792	\$29,813	\$26,947	\$24,059	\$21,431	\$18,803
assumed insurance proceeds	\$135,312	\$123,985	\$112,658	\$101,331	\$90,004	\$78,676	\$67,349	\$56,022
Proceeds less producer premium	\$117,350	\$113,473	\$106,100	\$95,368	\$84,615	\$73,864	\$63,063	\$52,261
% of loss recovered	68%	66%	62%	56%	49%	43%	37%	30%

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Total expected revenue in 2022	\$229,000							
Total estimated loss in 2022	\$171,750							
2022 revenue	\$57,250							

75% % Loss Driver

Producer premiums as a % of total expected revenue	7.8%	4.6%	2.9%	2.6%	2.4%	2.1%	1.9%	1.6%
Producer premiums as a % of total actual revenue (after loss)	31.4%	18.4%	11.5%	10.4%	9.4%	8.4%	7.5%	6.6%
Proceeds less premium as a % of total expected revenue	51.2%	49.6%	46.3%	41.6%	36.9%	32.3%	27.5%	22.8%
Proceeds less premium as a % of total actual revenue (after loss)	205.0%	198.2%	185.3%	166.6%	147.8%	129.0%	110.2%	91.3%

Disaster Loss Data

The below data was built with Farmer J to estimate all crops lost and their associated sales value during the winter freeze of 2022. This was used as baseline data for all the insurance scenarios modeled in this report.

Disaster Loss							
Item	Beds Planted - Lost	Units per Bed	Total Units Lost	Estimated % Yield Harvested & Sold	Units Lost	\$Sales per Unit	Total Loss
Broccoli	3	1,500	4,500	80%	3,600	\$2.00	\$7,200
Cauliflower	2	1,500	3,000	75%	2,250	\$3.00	\$6,750
Brussel Sprouts	1	250	250	75%	188		\$15,000
Carrots	2	10,000	20,000	65%	13,000	\$0.30	\$3,900
Radish	3	10,000	30,000	75%	22,500	\$0.10	\$2,250
Beets	2	10,000	20,000	75%	15,000	\$0.55	\$8,250
Turnips	1	5,000	5,000	75%	3,750	\$0.20	\$750
Arugula			0		0		\$0
Cabbage	2	1,000	2,000	75%	1,500	\$2.00	\$3,000
Sweet Peas	1	20,000	20,000	75%	15,000	\$0.20	\$3,000
Green Onions	1	32,000	32,000	75%	24,000	\$0.25	\$6,000
Celery	1	1,000	1,000	50%	500	\$1.00	\$500
Kale	1	500	500	75%	375		\$3,000
Collards	1	250	250	75%	188		\$3,000
Winter squash in storage	1	800	800	90%	720	\$3.00	\$2,160
						Total estimated loss	\$64,760