

ASSESSING THE ECONOMIC AND SOCIAL
VIABILITY OF TRANSITIONING TO WINTER
CSA PRODUCTION AS AN ADAPTATION
STRATEGY TO CLIMATE CHANGE IMPACTS
AT

RED H FARM

RESEARCH MADE POSSIBLE BY



Western
Sustainable Agriculture
Research and Education

TABLE OF CONTENTS

General Overview and Context	2
Research	3
An Overview of the CSA Season	4
Season 1 2022/2023 Research Results	6
Conclusion	15
Resources	16



GENERAL OVERVIEW + CONTEXT

Founded by Caitlin Hachmyer in 2009, Red H Farm is a 0.6 acre, no-till, agroecological vegetable farm located on the unceded territory of the Coast Miwok people, outside of the town of Sebastopol, California. Red H Farm is grounded in the agroecological ethics of growing soil, conserving water, fostering biodiversity, cultivating community and building equity.

In recent years, Northern California has grappled with catastrophic drought, fierce wildfires, flooding and rising temperatures. Farming has become increasingly challenging for farmers and farmworkers who work on the front lines of climate change. Pushing herself to the physical limit at Red H Farm, Caitlin began to see the resulting negative health and emotional impacts of farming in these conditions mounting. Her ability to continue doing hand-scale labor during the summer months dropped precipitously and she began deeply questioning how farming was impacting her overall health and well-being. She watched attrition rates climb as her friends and colleagues walked away from the fields - and after more than a decade of tending land she contemplated walking away, herself. It became clear that in order to continue farming her production model needed to change.

Caitlin began considering what it would look like to shift her focus from succession crops sold through farmers markets and restaurants for ten months out of the year to a winter CSA model focused more on long season and storeable crops, an idea originally conceived by her farm assistant Alana Stewart. She was also acutely aware that winter is a critical period of rest for farmers. She did not want to create a model that necessitated her presence at the farm 52 weeks out of the year. She realized that because many of the crops distributed throughout the winter months are storage crops, a winter CSA could feasibly be less frequent than a traditional CSA, loading members up with a month's worth of produce rather than a week's at a time. And the monthly winter CSA model was born. It is worth noting that Red H Farm is located in lowlands that get very wet and cold in the winter, and are not optimal growing landscapes for winter crops.

Caitlin hosted a mini trial season in the winter of 2021/2022 but the catastrophic drought of 2021 thwarted her efforts to fully launch. With support from Western Sustainable Agriculture Research and Education, Caitlin formally launched the winter CSA in 2022/2023 and began the research project investigating whether or not it was a viable adaptation strategy to climate change.

RESEARCH

Research objectives

1. Determining the economic viability of diversified, long-season storage and dried crop production on small-scale, high labor, diversified farms as an adaptation strategy to climate extremes and the untenable work conditions they create.
2. Determining if there is a market for winter CSAs in the greater Bay Area, California and if there is a gap in the market to be filled.
3. A look into farmer well-being - determining if a shift in crop focus to long-season storage and dried crops in a diversified system truly facilitates a reduction in fieldwork hours. Is this a viable system for farmers facing climate extremes and weather changes that mean where they farm today is a much different climate than when they initially began this work? Do these labor patterns feel more manageable, thus reducing farmer attrition as climate extremes worsen?

Research methodology

Mixed methods analysis were used including enterprise analysis, literature review, recordkeeping and trend analysis via google spreadsheets, comparative analysis with historical farm records, qualitative field notes, and surveys.

Variables that make it hard to compare

In addition to adding the winter CSA to the production model, two big additional variables make season 1 2022/2023 of the Winter CSA a challenge to directly compare to previous seasons:

1. After thirteen years of farming on two parcels, one of which had no irrigation and was dry farmed, a well was installed so that both parcels were irrigated. This means the land under active management for the entire season grew in 2022.
2. In 2022 Caitlin farmed collaboratively with another grower and thus had twice the labor as previous seasons, making factors such as hours worked and vacation time difficult to directly compare.

AN OVERVIEW OF THE CSA SEASON

Overarching goal: Begin the transition of the farm to full focus on the Winter CSA. Season One the land was split between crops grown for the CSA and crops grown for the farmers market.

Crops

Spring planted, long season storage crops for Winter CSA: onions, winter squash, shallots, potatoes, tomatoes, chilis, dry beans, dry corn, herbs + succession crops for market.

Summer + Fall planted, fresh crops for CSA: Brussel Sprouts, carrots, beets, broccoli, cauliflower, cabbage, chard, collards, kale, leeks, celery, rutabaga, parsley, chicory. Garlic planted for following season. Greens and broccoli harvested for market as well.

Quick Fall + Winter planted hoophouse crops for CSA: arugula, lettuce, turnips, radishes, mustards.

Activities by month

The goal for the flow of the CSA season includes a busy spring, milder summer, busy fall, and a balanced and restful winter. See Figure 1.

Figure 1. Seasonal farm tasks during season one 2022/2023.

Season	General Activity Level
Early Spring	Calm: primarily greenhouse work, some land prep
Spring	Busy: land prep and transplanting through early summer
Summer	Calm: primarily tending, herb harvesting, some summer transplants, no bed flipping
Fall	Busy: harvest and winter crop planting
Winter	Calm: one week per month allocated to harvest + distribution, some direct seeding, rest.

Because season one was a transition, and still included growing for market, the labor breakdown was more complex than in a model solely focused on Winter CSA. See Figure 2. Tasks listed in bold are relevant to the Winter CSA.

AN OVERVIEW OF THE CSA SEASON

Figure 2. Monthly farm tasks during season one 2022/2023. Total hours listed are a sum of hours worked by the two full-time farmers.

Month	Farm Tasks Season 1 2022/2023
January	Mini CSA harvest and distribution , early seeding, grants. 61 hours
February	Mini CSA harvest and distribution, seeding, bed prep, organizing, transplanting. 187 hours
March	General farm work/land prep, seeding, grant work, market prep/farmers market. 352 hours
April	Farm work, seeding, harvest, market. 276 hours
May	Big month with huge amounts of transplanting, seeding, harvest/market. 288 hours
June	Big month with huge amounts of transplanting, harvest, market, land tending (weeding, weed wacking, mulching). Total hours 445
July	Lighter month, one person can take time off/vacation and/or if solo can hire someone to maintain winter crops and harvest/market. Most transplanting is done. Herb harvesting/drying begins. Total hours 240
August	Potato and allium harvest, herb drying, fall planting. Big month, especially the latter half. Land prep, Harvest, market. Total hours 429
September	Transplanting, herb drying, potato harvest, tomato harvest/freezing. Drying peppers, harvest, market. Total hours 343
October	Lighter month starting second half; one person can take time off and/or if solo can hire someone to maintain winter crops and harvest/market. Seeding. Garlic planting. Total hours - 154
November	Lighter month, planting is done. Hoophouse seeding, harvest, market. Total hours 185
December	Light month...First CSA distribution. Hoophouse seeding. Planning, bookkeeping. Total hours 172

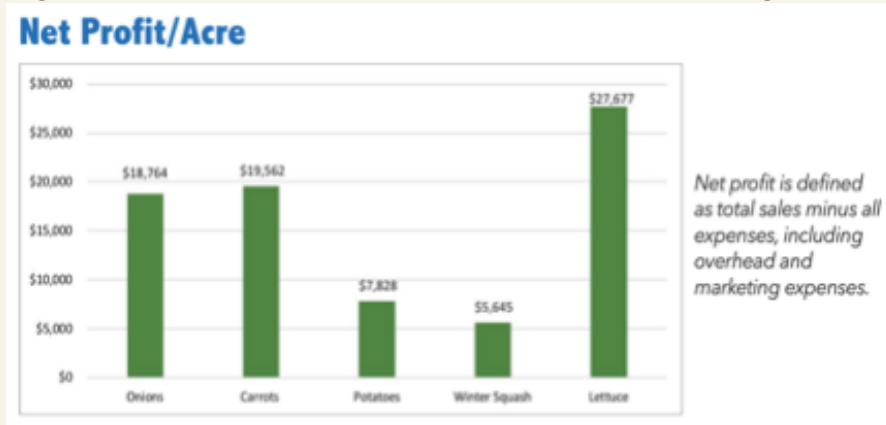
SEASON 1 2022/2023 RESEARCH RESULTS

Economics

The Bigger Economic Context

When farming on a small scale, numerous successions of high value crops like lettuce, arugula, spinach and carrots will generate the most profit per acre. A study conducted by the Northeast Organic Farming Association revealed that lettuce and carrots, two crops that can be succession planted throughout the growing season, have a higher per acre profit than long season crops like onions, potatoes and winter squash. (NOFA, 2016) See Figure 3.

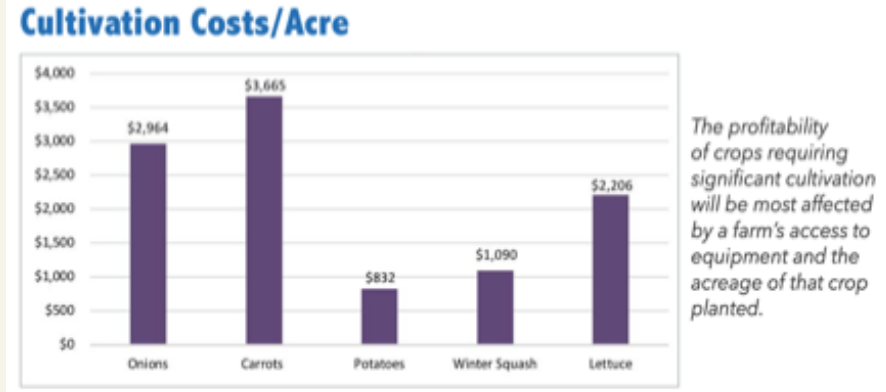
Figure 3. NOFA research results on Profit/Acre among five crops



(NOFA, 2016)

However it is important to note that those high value crops also often require more labor hours for cultivation, harvest, washing and packing. See figures 4 through 6

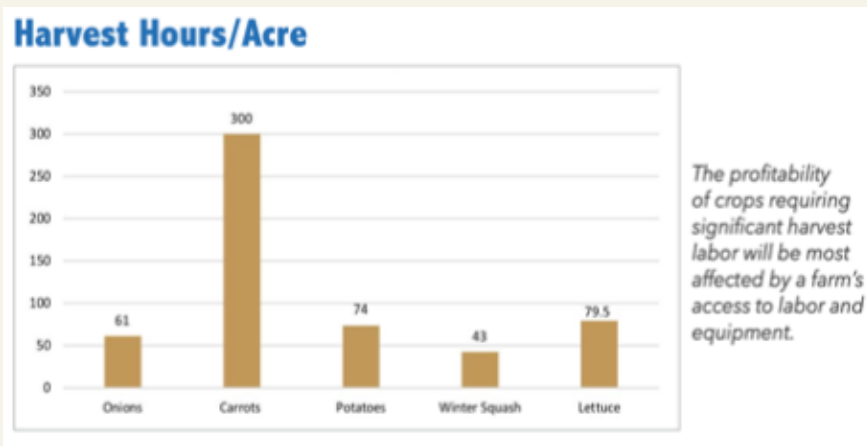
Figure 4. NOFA research results on Cultivation Cost/Acre among five crops



(NOFA, 2016)

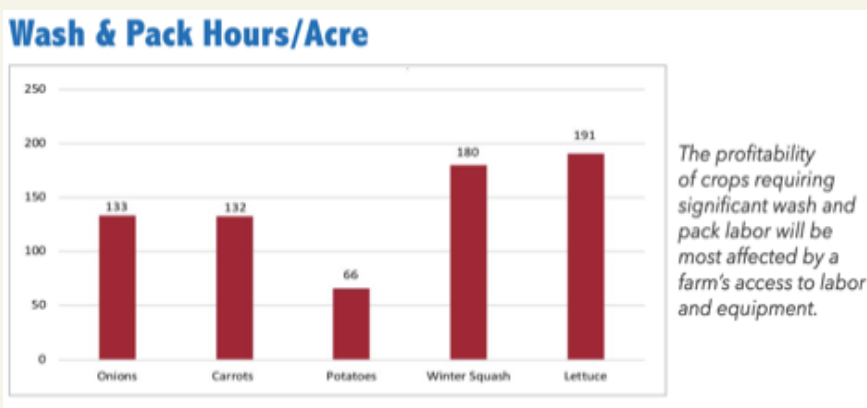
SEASON 1 2022/2023 RESEARCH RESULTS

Figure 5. NOFA research results on Harvest Hours/Acre among five crops



(NOFA, 2016)

Figure 6. NOFA research results on Wash + Pack/Acre among five crops



(NOFA, 2016)

SEASON 1 2022/2023 RESEARCH RESULTS

When considering a farm's holistic context, not only is it critical to balance the profit potential with the labor potential, but in the case that a farm or farmer is significantly impacted by the effects of climate change, different weight may be given to these factors. For instance, longer cultivation and harvest hours, inherently taking place out in the field throughout hot summer days, may be a more critical factor to take into account than the potential profitability. Further, according to the USDA ERS "In 2019, 96 percent of farm households derived some income from off-farm sources. On average, off-farm income contributed 82 percent of total income, or \$101,638, for all family farms in 2019." (USDA ERS, 2021)

In the case of a farmer suffering from climate impacts, the hours freed up by focusing on lower labor crops can assist in facilitating off farm income, helping off-set the loss in profitability from those crops. This is particularly useful to consider when those off-farm hours are required in most cases regardless of crops grown.


Red H Farm Economics

Every farm has different economic outcomes. For the purpose of this research and for the sake of consistency comparisons will be made only to Red H Farm's historical records. See Figure 7.

As the farm has scaled down since year one, the goal gross revenue is adjusted so that the numbers are relative. Based on season one 2022/23, early data from season two 2023/2024 (included) and calculated extrapolations based on hypothetical crop planning and yield expectations coupled with crop trends experienced in season one 2022/2023, Red H Farm should be able to produce as much gross revenue relative to itself, under the Winter CSA model, as it did growing succession crops for farmers market. It is worth noting that because Red H Farm is located in lowlands, some of the fields are not usable all winter - a farm growing on hilltops or slopes could likely serve more members per acre, thus grossing more.

SEASON 1 2022/2023 RESEARCH RESULTS

Figure 7. Red H Farm year on year comparison.

Year	Acreage	Irrigation Status	Markets	Labor	Gross Sales	Net Income
2016-2021	1.2 acres	Half dry-farmed	Farmers Market + Restaurants	1 full time + 1 part time (Total hours: unknown, roughly 2800-3300)	\$40-45k	\$30k
2022	1.2 acres	All irrigated	Farmers Market + Monthly Winter CSA	2 full time, 1 part time (Total hours: 3300)	\$55k	\$40k
2023 Scaled-down	0.6 acres	All Irrigated 	Monthly Winter CSA + limited farmstand	1 full time + 1 part time (Total hours: 1300)	\$21k	TBD
Scaled-up extrapolation	1.2 acres	All Irrigated	Monthly Winter CSA + limited farmstand	1 full time + 1 part time	\$45-54k	TBD

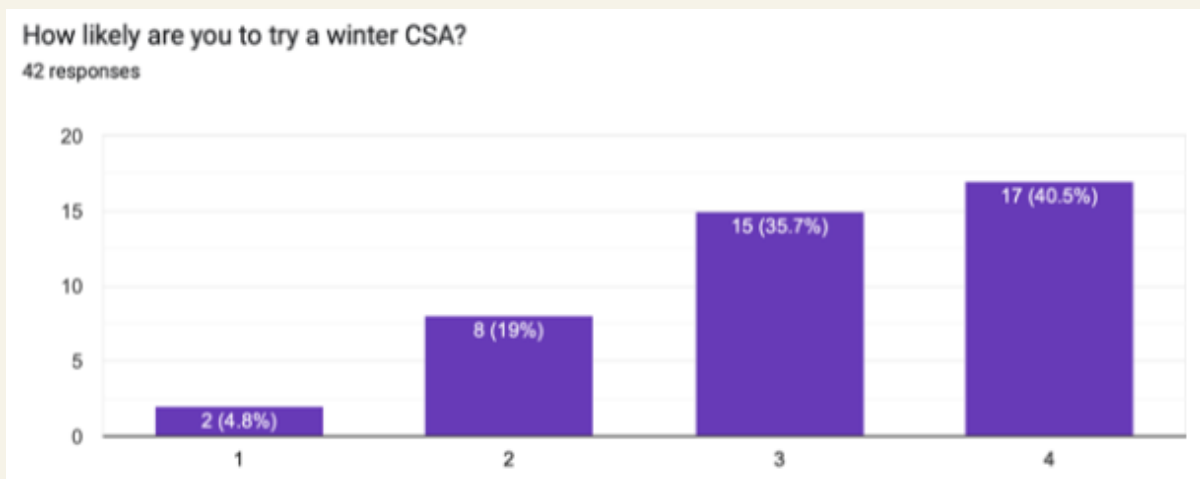
SEASON 1 2022/2023 RESEARCH RESULTS

Market

Data shows there is likely a market for Winter CSAs in the greater Bay Area, California. Of 41 farms found serving the greater Bay Area, thirty nine provided main season CSAs and only twenty five offered winter CSAs. Of those twenty five, three were aggregators and not single-farm CSAs. (sources: Edible East Bay, LocalHarvest, Community Alliance with Family Farmers, Google Search). This indicates a potential gap in the market to be filled for individuals who already subscribe to the CSA model.

In a survey conducted at the Sebastopol farmers market, and online to current summer, year-round and/or winter CSA subscribers, when asked to rate their likelihood of joining a winter CSA on a scale of 1 (Never going to happen) to 4 (Very likely to join) of forty two respondents thirty two (76%) were likely or very likely to join. See Figure 8. Survey participants were contacted while shopping at Red H Farm's booth at the farmers market and received the survey via email from farmer colleagues in Sonoma County who were willing to share it with their members. Participants were asked about their interest in Winter CSAs, details behind their interest or lack thereof, and various factors that would be important to them in a Winter CSA, including preference for specific crops and add-ons from other farms.

Figure 8. Winter CSA interest survey results - How likely are you to try a winter CSA?



SEASON 1 2022/2023 RESEARCH RESULTS

For those uninterested in the Winter CSA model, reasons included already belonging to a year-round CSA, assumptions around lack of variety and choice, and desire to shop at the farmers market.

While 76% of respondents indicated interest in the CSA model, Red H Farm found it challenging to actually acquire the desired number of members in year one. With a goal of fifty members, the farm had thirty-six members sign up in year one 2022/23. This could be due to a number of factors including lack of experience in CSA marketing, lack of clarity on informational materials and the novelty of the concept.

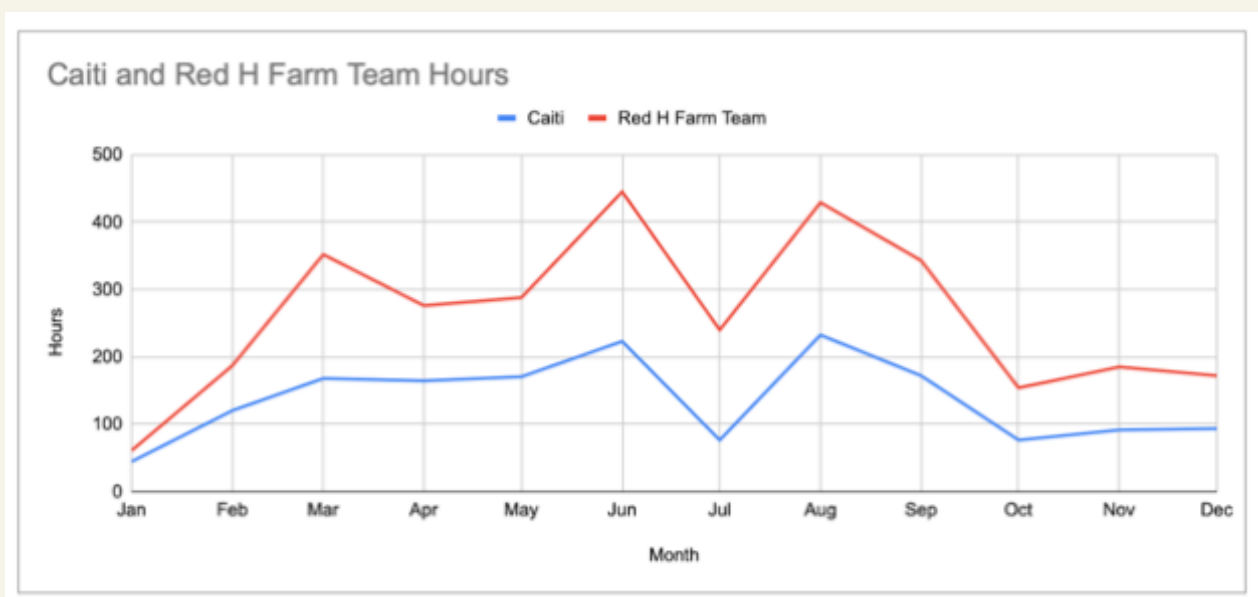
Of note, of thirty-six members, twenty-one members (58%) re-joined for the 2023/24 season. Three of those memberships are solidarity shares for which funds were raised (thus members are not paying for those shares). Of the fifteen that did not rejoin, six were members who had acquired shares through an organizational grant. So of paying members, 60% returned. This is a favorable comparison to the 45% average retention rate of CSAs across the country. (Moyer, 2023)

SEASON 1 2022/2023 RESEARCH RESULTS

Farmer well-being

The 2022 farm season marked the most total days off - one hundred and one - that farmer Caiti Hachmyer has taken in the last decade of farming. This included two, three-week trips away from the farm between July and November, as well as some weekend days off throughout the season, some long weekend trips and the typical slow schedule in December and January. Notably this is still not on track with the conservative number of weekend and vacation days of a typical job - one hundred and fourteen when considering weekends and two weeks of vacation. Additionally, it will require further seasons of study to ascertain if these days off are due to the shift in the farming schedule with more land in long season crops that require less day-to-day tending over summer, having a second full-time person working on the farm or a combination of the two. One assumption is that half of the farm being dedicated to long term crops allowed one farmer to leave for longer stints (note the dips in hours shown in Figure 9.) because the land under more rigorous daily management was smaller. This could facilitate the same kind of breaks even without a second full time manager, if the land is completely dedicated to CSA crops. In this case the time needed for management and the tasks needing to be completed could be supported with part time labor or a “farm-sitter.”

Figure 9. Farmer Caiti and Red H Farm Team Cumulative Hours



SEASON 1 2022/2023 RESEARCH RESULTS

Notably, the average hourly rate (roughly \$12.5/hour) as calculated by net revenue divided by hours worked does not meet the very conservative living wage metric of \$20.14/hour for Sonoma County, California (MIT, 2024). However, the average hourly rate increased from approximately \$10-11/hour in previous years.

Farmer well-being was tracked using qualitative data including a daily Likert scale score of 1-4 and field notes. See Figure 10. It is worth noting that comparing the Likert scores given to the daily notes taken, subjectively the scale ratings seem higher than the detailed descriptions would indicate. This will be taken into account in future years to ensure a more rigorous analysis.

Figure 10. Well Being Score by Month



Looking for trends in field notes, common themes for days rated 1 or 2 included:

- Long hours
- Farmers market days
- Heat waves
- Sense of depletion for periods of time following heat waves
- Working alone

SEASON 1 2022/2023 RESEARCH RESULTS

Trends noted for days with a rating of 4 included

- Days off
- Days of feeling especially productive or caught up
- Days when having two people clearly allowed one to rest
- Cool, mild weather
- Days with extra help
- Days with shorter overall hours
- CSA pickup days

Overall, this data provides us a baseline for future years of research because these factors were not tracked to this level of detail in years leading up to the transition. We can only make informed approximations for earlier seasons.

CONCLUSION

Conclusion

Very preliminary data suggests that the winter CSA can generate a similar gross revenue to the farmers market model at Red H Farm while potentially requiring fewer labor hours and facilitating more time off, thus increasing farmer well-being. Data indicates that there is a market for winter CSAs in California. To clearly assess the questions at hand with specific regard to the CSA model as a standalone, including economics and farmer well-being, isolating the work and finances attributed specifically to the CSA model with fewer additional variables is paramount. With multiple variables making it impossible to consider this a controlled study, further seasons of research are necessary. We will continue assessing the economics, market, and farmer well-being related to the Winter CSA model for two more seasons.

RESOURCES

Resources

2016. North East Farming Association. Cost of Production Project: Crop Profitability Comparisons. https://www.nofavt.org/sites/default/files/files/resources/crop-comparison-cop-factsheet_0.pdf

2024. Massachusetts Institute of Technology. Living Wage Calculator. <https://livingwage.mit.edu/counties/06097>

2023. Moyer, Brian F. Finding and Keeping Your CSA Members. Penn State Extension. <https://extension.psu.edu/finding-and-keeping-your-csa-members>

2021. USDA ERS. Off-Farm Income a Major Component of Total Income for Most Farm Households in 2019
<https://www.ers.usda.gov/amber-waves/2021/september/off-farm-income-a-major-component-of-total-income-for-most-farm-households-in-2019/>