Maine Organic Agriculture from 2007-2021:

Size, Economic Impact, Farmer Goals, and Profitability

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with much assistance from **Nicolas Lindholm**, MOFGA,
and **Rose Wilson**, Rose Wilson Consulting

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Acknowledgments

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Purpose

The purpose of this report is to:

a. Describe the historical growth trajectory of organic agriculture in Maine from 2007-2021; including number of farms, acreage, gross sales and jobs.

b. Estimate the economic impact of agriculture in Maine from 2007-2021, using economic multipliers generated by the IMPLAN software program.

c. Take a deeper dive into these topics by looking at them based on farm types (dairy, vegetables, fruits, etc.), and market channel.

d. Understand some of the current goals that Maine's organic farmers have for their farms.

e. Describe the challenges that farmers see themselves currently facing as they work towards those goals.

f. Evaluate the profitability of Maine's organic farmers as of 2022 — overall, by type of farm, and by primary market channel.

It is expected that MOFGA will use this report as an internal document to help guide its programming decisions as well as an external communication document to be shared with its constituents, policymakers, and other stakeholders.

It is also important to note that the scope of this report includes certified organic farms in Maine. It does not include certified organic food processors or handlers, or other components of the overall food system.

Finally, this white paper report will be updated and revised in calendar year 2024. After further analysis and incorporation of other data — i.e, the 2022 data from the U.S. Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) and recent years' data from Maine's food access programs including SNAP/EBT, Maine Harvest Bucks, Mainers Feeding Mainers, and WIC — MOFGA will publish a full economic impact report of organic farming in Maine for distribution and utilization to a broader audience (estimated completion date: December 2024).

Methodology

This report relies on three primary sources of data:

1. Data compiled by the National Agricultural Statistics Service (NASS). Specifically, this report uses data from a 2007 special tabulation of the agricultural census compiled for MOFGA from organic survey data from 2011, 2015, 2019 and 2021, and from the organics tabulation published by NASS from the 2017 agricultural census. Each of these reports were aggregated into a single spreadsheet, and then used to produce many of the charts and graphs in this report that show changes over time. Once the data from the 2022 Census of Agriculture is available, this will be added to the aggregated spreadsheet and this report will be updated (expected completion date for this update is December 2024). While NASS data is not perfect, it represents the most comprehensive data set available.
2. Gross sales data from the NASS reports were fed into the IMPLAN software program to estimate the economic impacts of organic agriculture.
3. An "Organic Farmer Goals" survey was composed and distributed during the summer of 2023 to a subset of Maine's certified organic businesses (specifically, 417 certified organic farmers were sent the survey, while about 80 businesses that included processors, handlers and sea vegetable producers were excluded, being deemed inappropriate by our study design). This survey was broken into two sections:
    a. The first section asked farmers to describe their past, present state, and future goals as they related to production, marketing, finances and other topics; along with questions about the barriers they face in working towards those goals.
    b. The second section asked financial questions about their profitability, including their personal take-home pay, loan payments and equipment replacement costs.

Ninety-two farmers responded to the survey out of an estimated total population of 496 certified organic farms in Maine (NASS census data). This means that, when analyzing the survey results, there is a margin of about 9.25% between what our respondents said and what the overall population of organic farmers in Maine might say. For instance, if 50% of our survey respondents said they would like to invest in more equipment in the next five years, we can reasonably assume that 41.75% to 59.25% of the overall Maine organic farming population would also say so. This means that the survey results aren't a perfect representation of what all Maine organic farmers think about the questions asked in the survey; but they are accurate enough to help point MOFGA in directions that might warrant further investigation.

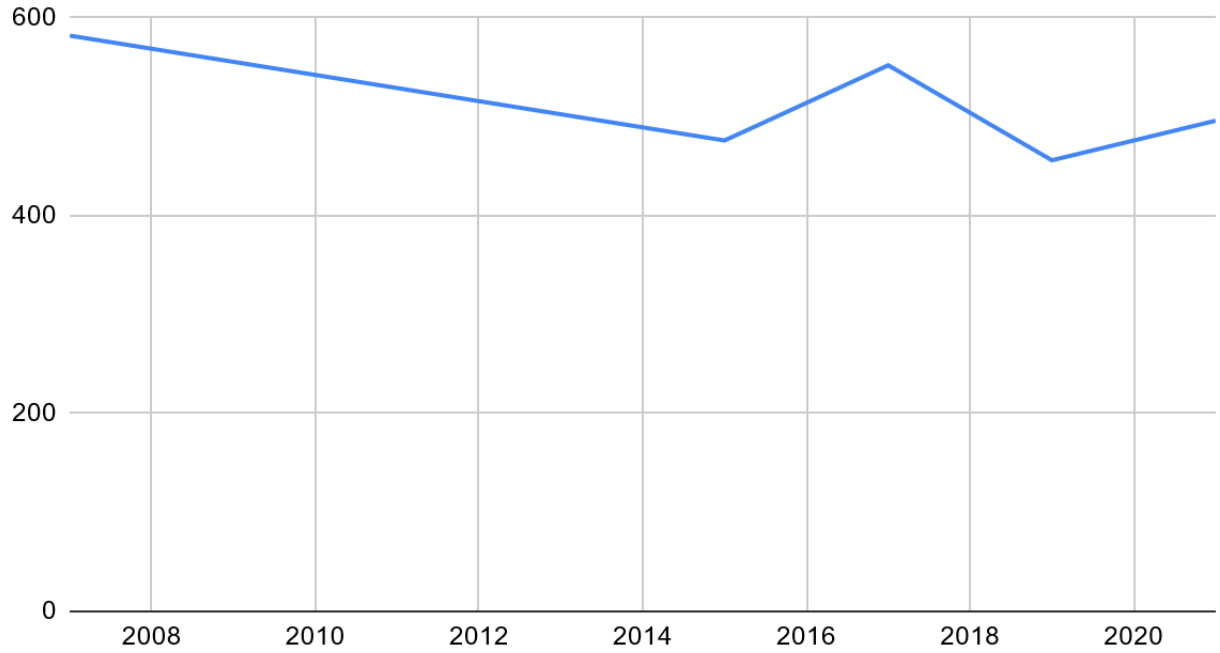
It is also important to note that this survey was sent out to existing certified organic farm operations; therefore the survey responses reflect the views of farmers who have been in business long enough to certify. The perspectives of new or aspiring farmers will likely not be reflected in these survey results.

SECTION 1. Data from NASS

Number of Farms, Sales and Acreage

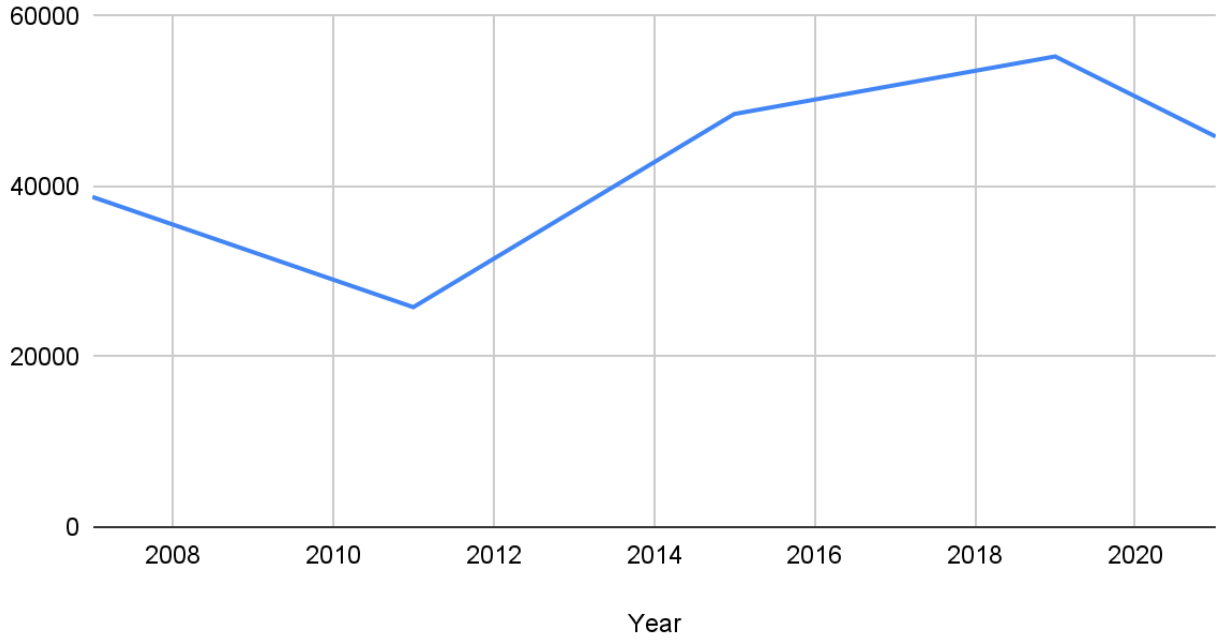
The total number of certified organic farms in Maine has declined from 582 in 2007 to 496 in 2021.

Farms with Organic Sales, 2007-2021



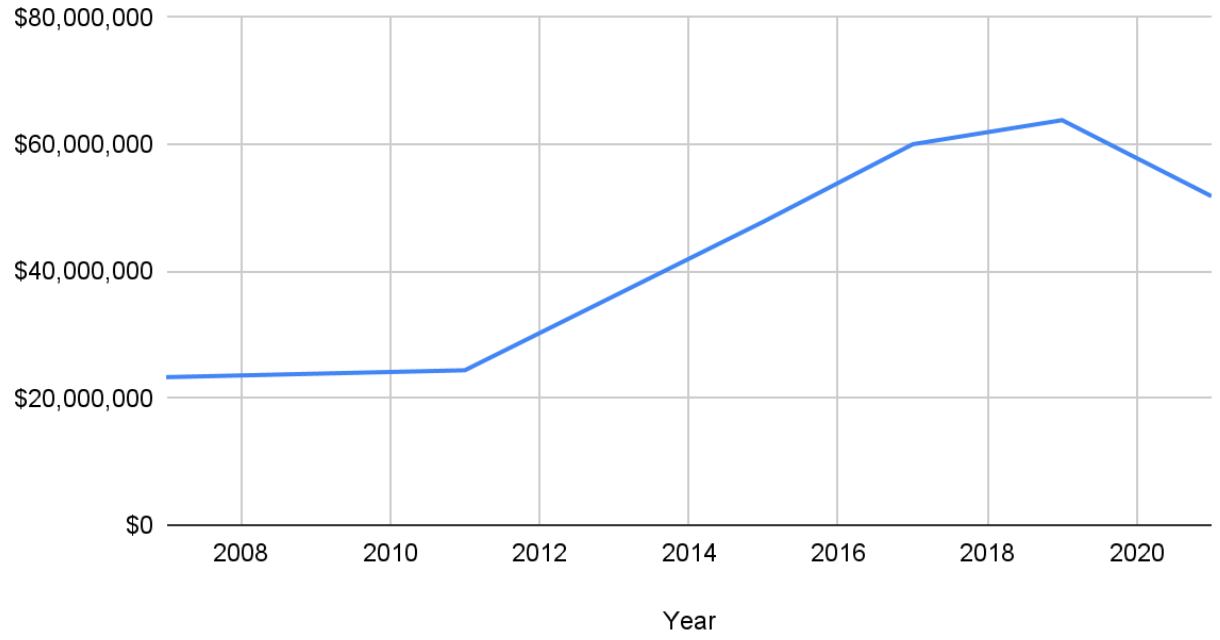
On the other hand, the amount of certified organic acres in Maine has increased from just under 40,000 in 2007, up to a high of 55,261 in 2019, then settling back down to 45,862 in 2021. The average acres per farm has increased from 66 in 2007 to 92 in 2021.

Certified Organic Acres in Maine, 2007-2021



Total sales of organic products from farms in Maine were $23,315,000 in 2007. After remaining relatively flat through 2011, sales increased steadily to a high point of $63,820,000 in 2019, before dropping to $51,835,000 in 2021 (not adjusted for inflation).

Maine Organic Product Sales, 2007-2021



Both the total acres and total sales graphs have a kind of hill shape to them: after rising until 2019, they both drop off slightly in 2021. A deeper dive into the sales figures helps explain the story a bit more.

Sales by Product Category

In 2021, the top six product categories in terms of sales were, in order:

1. Milk.
2. Crops other than vegetables, fruit, field crops (mostly grains and dry beans), or flowers.[1]
3. Vegetables.
4. Fruit.
5. Field crops (mostly grains and dry beans).
6. Floriculture crops.

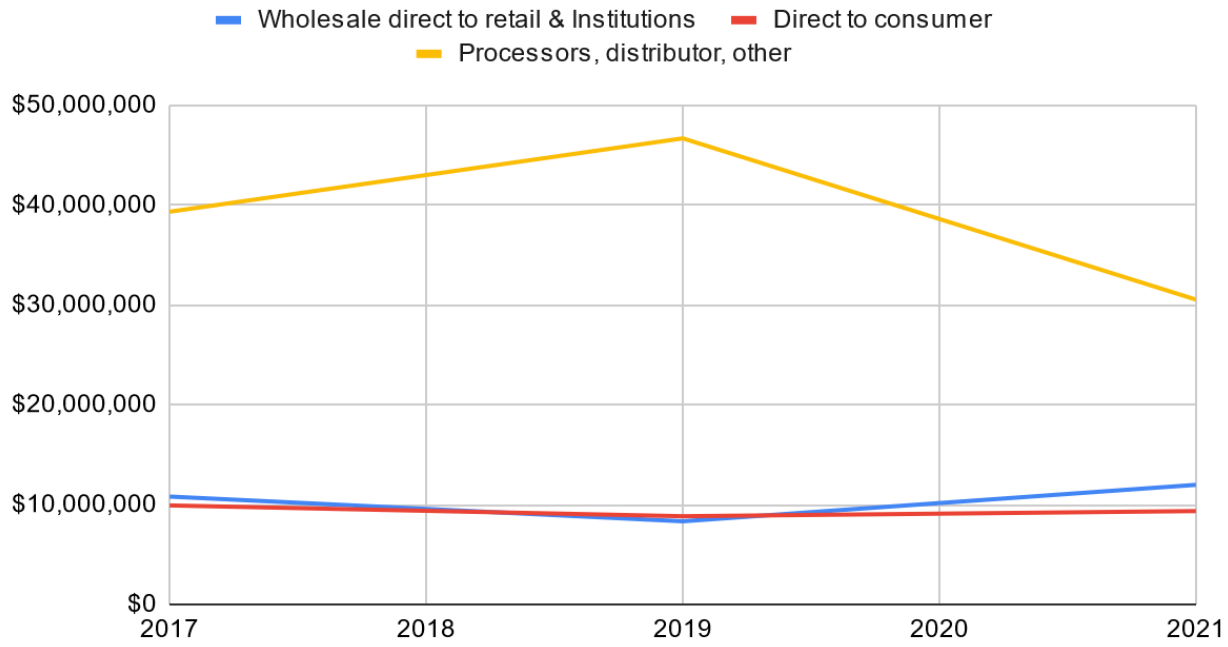
From 2015 to 2021, the sales have diversified as they have expanded. Sales of organic milk declined by $1 million; other crops remained steady; vegetables and fruits increased by over 50%; and field crops and floriculture increased even more rapidly. The biggest gain in terms of dollars came from vegetables.

	2015	2021
Milk from cows	$16,532,613	$15,528,054
Other Crops	$13,129,248	$13,495,648
Vegetables	$5,945,856	$9,193,243
Fruit	$2,227,997	$3,702,083
Field Crops	$898,498	$2,709,884
Floriculture Crops	$282,495	$1,686,801

When looking at the sales by market channel from 2017-2021, direct-to-consumer sales remained at about $10 million during the whole time period; sales direct to stores and institutions increased by about $1.2 million; whereas sales to processors, distributors, and other wholesale accounts declined sharply. It is possible that this trend is the result of declining dairy sales, given that most organic dairy sales are to processors; however, the NASS survey data does not cross-reference farm type with market channel. Assuming we can access a special tabulation of organics data from the 2022 census, we will be able to do this cross-referencing for 2022.

[1] While NASS data doesn't distinguish between these other crops, it is reasonable to assume that maple syrup and hay make up the majority of the sales.

Sales by Market Channel, 2007-2021



SECTION 2. Data Analysis Using IMPLAN

Economic Impact of Maine Organic Agriculture Over Time

Gross sales data from the NASS reports were fed into the IMPLAN software program to estimate the economic impacts of organic agriculture. Sales of each type of crop were entered for the years 2007, 2015 and 2021; each crop type corresponded to one of the North American Industry Classification System (NAICS) industry codes that IMPLAN uses to calculate impacts.

Economic impact measures the total dollars, jobs and/or household income generated in an economic region due to the existence of a certain industry or cluster of industries. In this case, we are studying the economic impact of organic farms in Maine.

IMPLAN measures impact in three different categories:

Direct impact — Initial effects to a local industry or industries due to the activity or policy being analyzed.

Indirect impact — Effects stemming from business-to-business purchases in the supply chain taking place in the region.

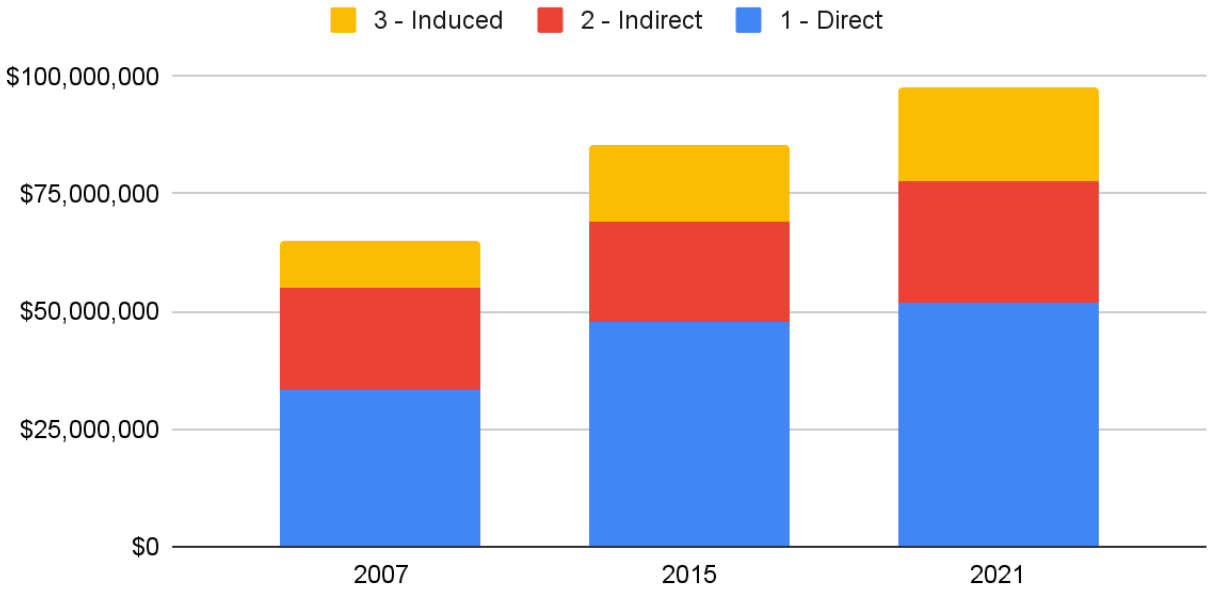
Induced impact — Effects in the region stemming from household spending of income, after removal of taxes, savings and commuters.

The sum total of direct, indirect and induced impacts equals the “total impact.”

Adjusted for inflation to 2023 dollars, IMPLAN estimates that the economic impact of Maine organic agriculture in 2007 was $65,194,823; this climbed to $97,486,633 in 2021.

Economic Impact of Maine Organic Agriculture Over Time

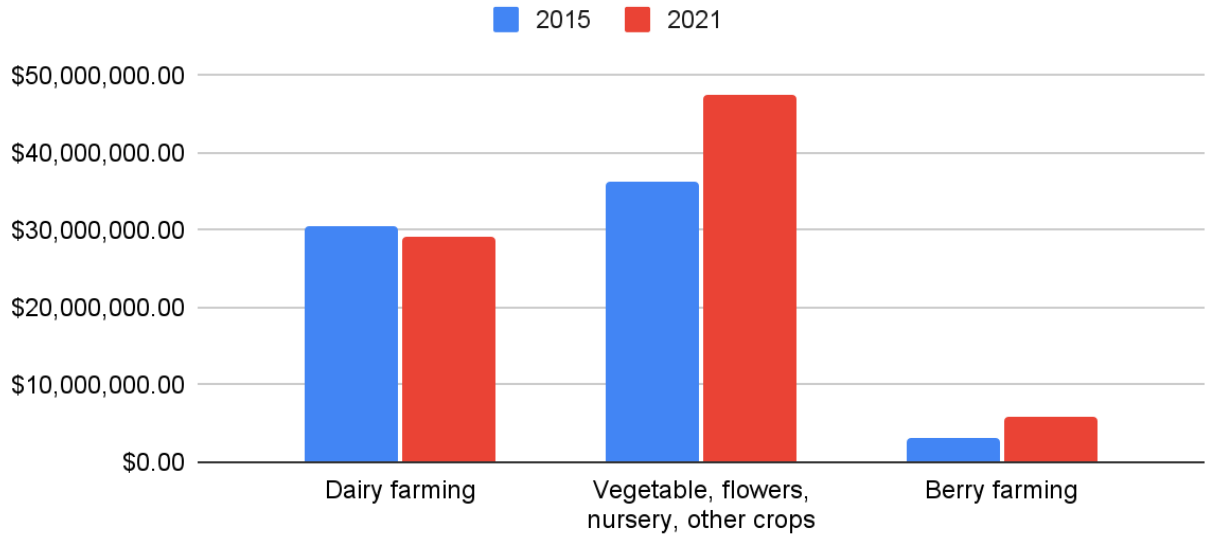
Adjusted for inflation to 2023 dollars



When looking at the impact of select types of organic farming from 2015 to 2021, we can see that the proportion of impact has shifted over time. Dairy farming's impacts have declined slightly from $30 million to $29 million; whereas vegetables, flowers, nursery and other crops have increased from $36 million to $47 million. This means the latter category generated nearly half the impact of Maine's organic farming overall in 2021.

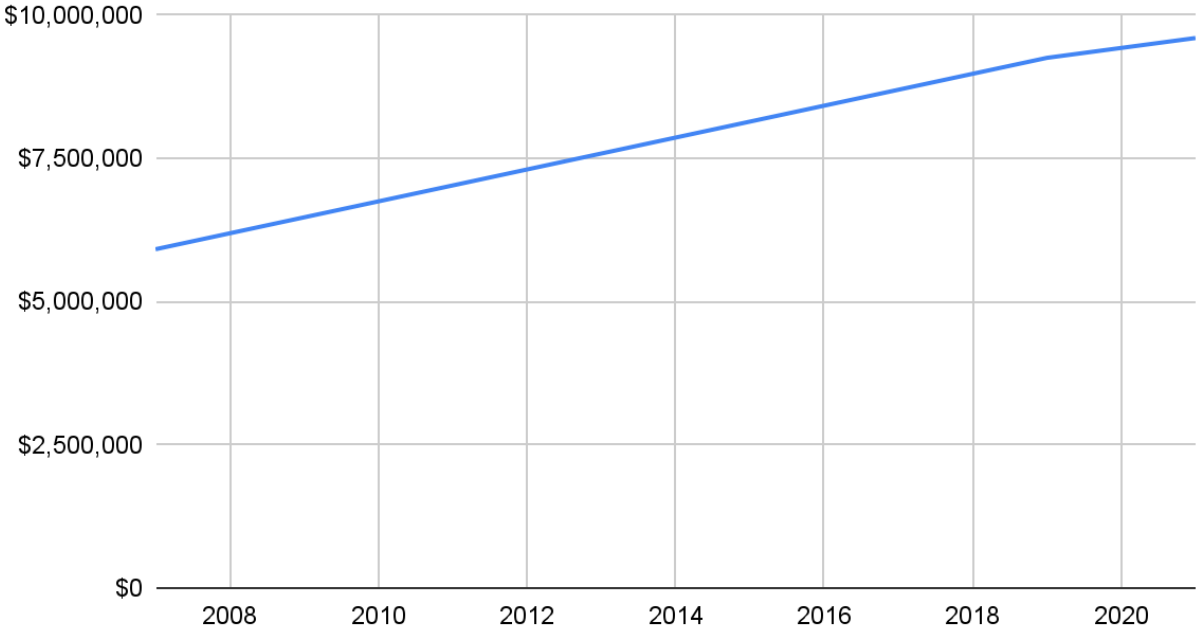
Total Economic Impact of Select Maine Organic Farm Types, 2015-2021

Adjusted for inflation to 2023 numbers



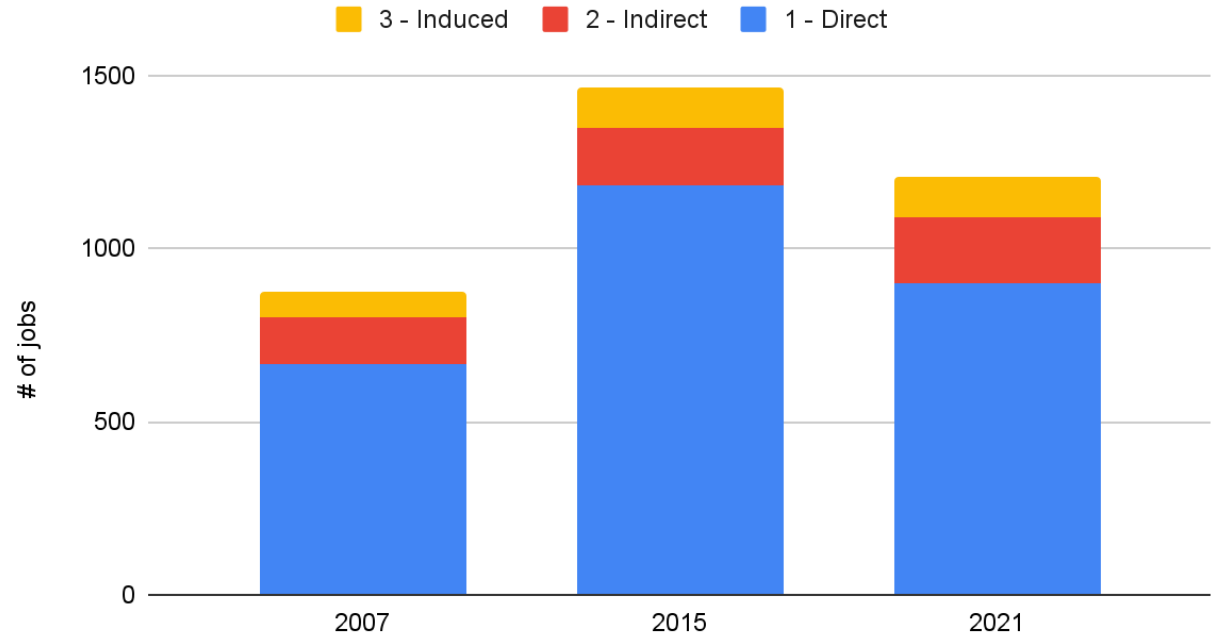
Starting at $6 million in 2007, payroll expenses rose to $9.6 million in 2021. These numbers come from NASS and do not reflect owner draws or other forms of non-payroll compensation.

Hired Labor on Organic Farms, 2007-2021



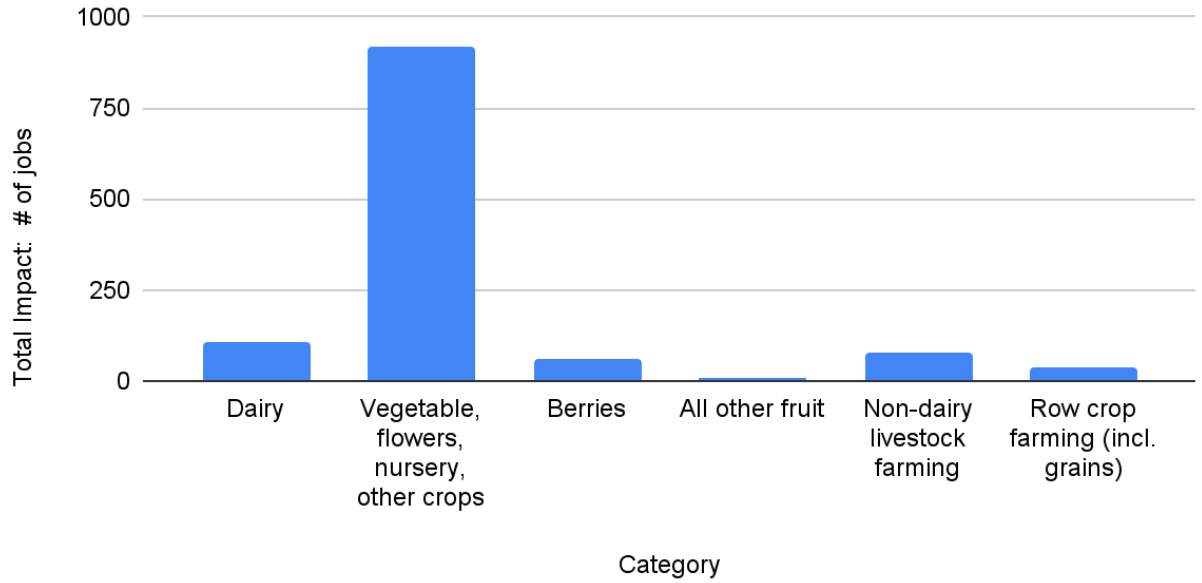
The IMPLAN model, however, does estimate the total number of jobs created by Maine organic agriculture, including owner/operators taking draws. According to IMPLAN, the total number of direct jobs in organic farming rose from 664 in 2007, up to a high of 1,182 in 2015, then down to 962 in 2021.

Employment of Maine Agriculture Over Time



In 2021, vegetable, flower, nursery and other crop farming generated the lion's share of direct, indirect and induced employment, at a total of 917 jobs. However, it is important to note that the way that IMPLAN defines a job is not equal to full-time equivalents. IMPLAN defines a job using an industry-specific mix of full-time, part-time and seasonal employment. It is an annual average that accounts for seasonality and follows the same definition used by the federal Bureau of Labor Statistics. IMPLAN uses a formula that does include wages, salaries and proprietor income.

Total Employment Impact of Maine Organic Farms by Category, 2021



SECTION 3. Data from MOFGA's Organic Farmer Goals Survey

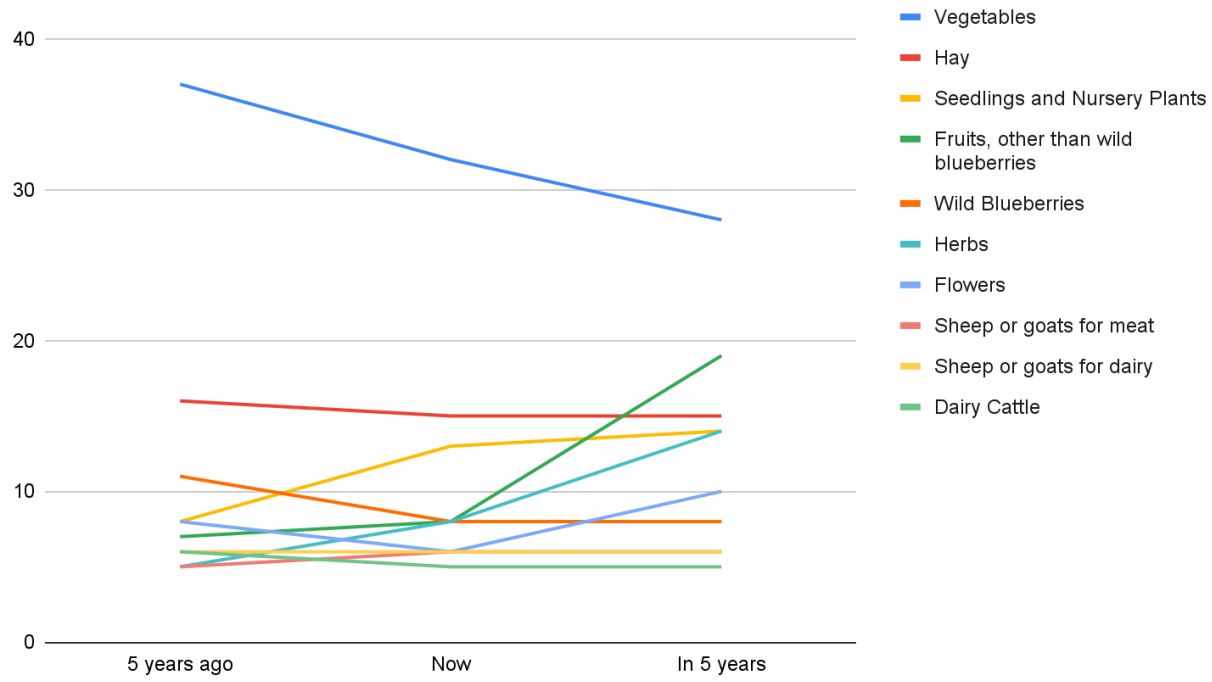
Survey Analysis of Farmer Goals and Barriers

Everything covered in this report so far has been focused on the overall size and impact of organic farming in Maine from a bird's-eye view. In order to add more depth, we need to also consult the perspectives of the organic farmers themselves. What goals do they have? What barriers do they face? The next section of this report focuses on the results of our Organic Farmer Goals survey.

Enterprise Makeup/Balance

Farmers were asked to rate the importance of different enterprises (e.g., vegetables, fruits, dairy, etc.) to their overall farm five years ago, now, and five years in the future. Interestingly, the most common current enterprise — vegetables — is something that many respondents hope to diminish in importance in the future. On the other hand, many respondents hope to increase the importance of fruits and seedlings/nursery crops to the business in the future. Other enterprises remained mostly steady.

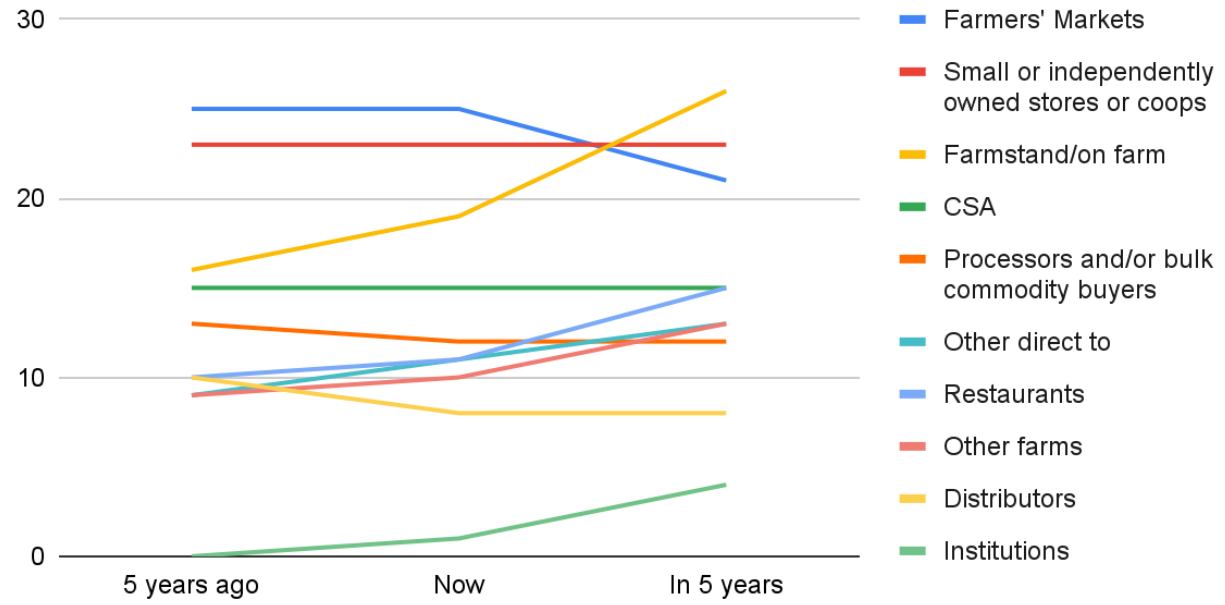
Number of Farmers Who Rated Each Enterprise at Least Somewhat Important to Their Farm: Then, Now and in 5 Years



Market Channel Makeup/Balance

Farmers were also asked a similar question about the importance of various marketing channels to their farms. Similar to our findings with the enterprise question above, the most important current channel — farmers' markets — will have diminished importance if the respondents achieve their goals, while the third most important channel — on-farm direct-to-consumer sales — will rise to become the most important. The second most important — direct wholesale to stores and restaurants — remains steady. The CSA (Community Supported Agriculture) model remains steady, while processor and distributor sales will hopefully (according to respondents) become slightly less important.

Number of Farmers Who Rated Each Market Channel at Least Somewhat Important to Their Farm: Then, Now and in 5 Years



Production Goals

Survey respondents were asked to rate the importance of various production-related goals to their farms.

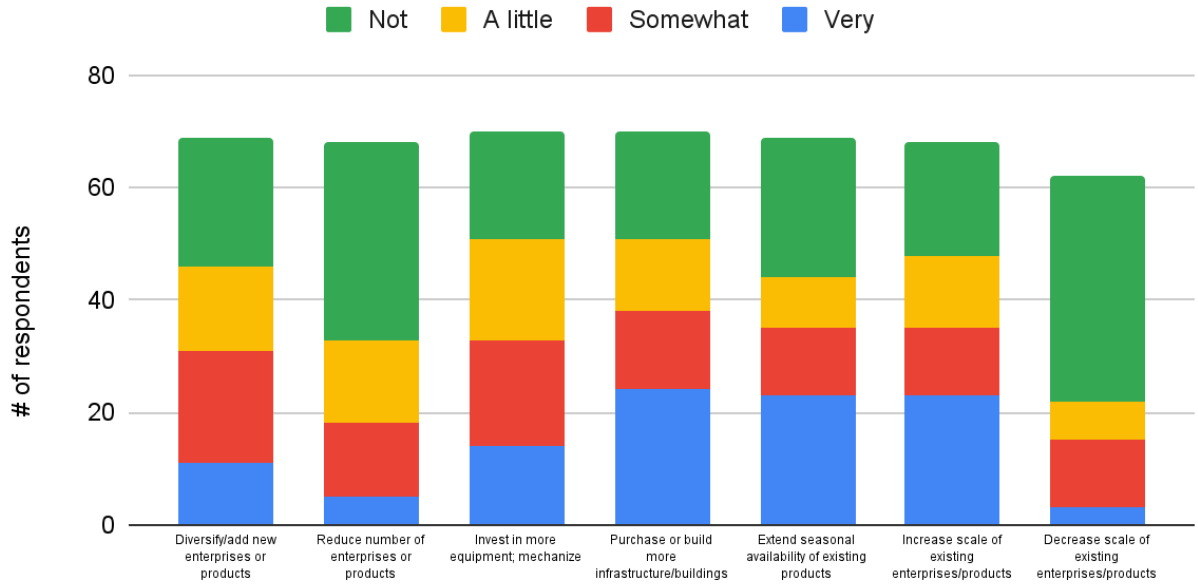
Overall, the most popular "very important" responses involved purchasing or building more infrastructure; extending seasonal availability of existing products; and increasing scale of existing products. Respondents were less interested in decreasing scale. Also, overall, respondents were less interested in equipment investments.

However, marked differences appear once we start looking at the responses broken out by farm focus. For instance, farms focused on livestock production were much more interested in investing in equipment; 44% of livestock farmers rated this "very important," and 22% "somewhat." The other cohorts ranked this much lower.

Fruit farmers were the cohort most interested in "increasing scale of existing enterprises/products": 63% responded "very," and 13% responded "somewhat." The other cohorts were not as interested in this goal.

Vegetable farmers were the highest of all the cohorts interested in “purchase or build more infrastructure/buildings”: 52% responded “very,” and 13% responded “somewhat.” Other cohorts ranked this lower. Vegetable farmers were also the highest of all the cohorts interested in “extending seasonal availability of existing products”: 43% responded “very,” and 26% responded “somewhat.”

How Important are the Following Production Goals to Your Farm in the Next 5 Years?

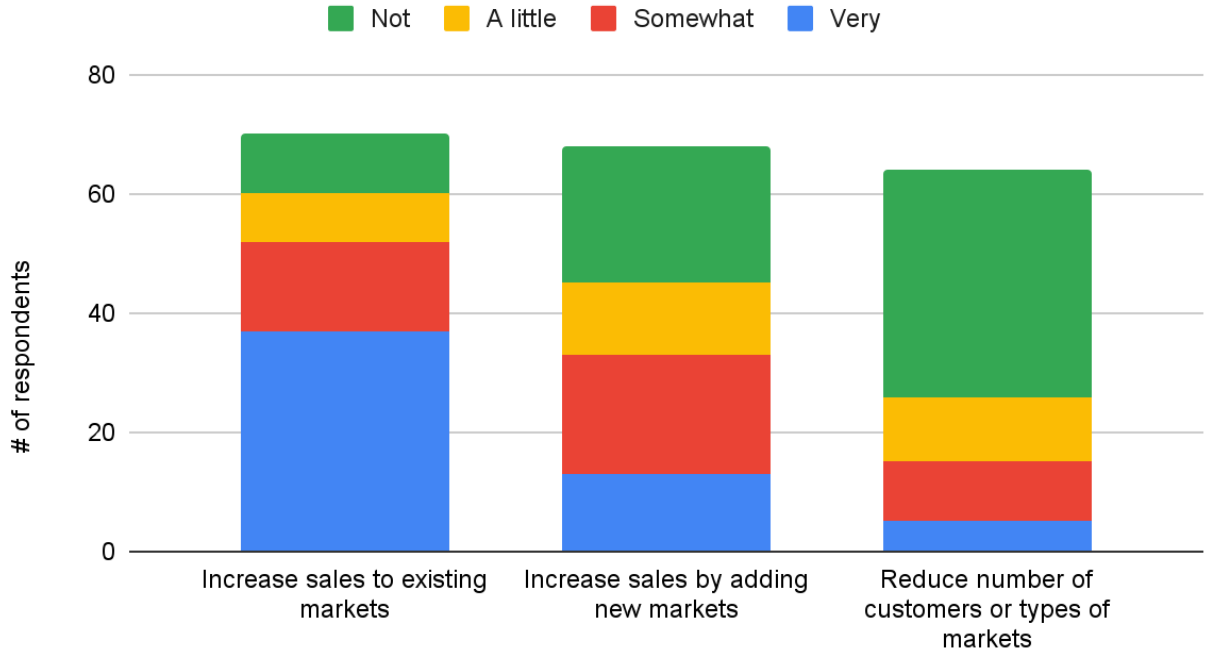


Marketing Goals

Respondents were also asked about the importance of various marketing goals to the farms. Overall, farmers were much more interested in trying to increase their sales to existing markets rather than adding new markets or reducing markets.

Similar to the question on production goals, marked differences appeared between different farm types. Vegetable and fruit farmers were most interested in increasing sales to existing markets; livestock farmers were more likely to want to find new markets.

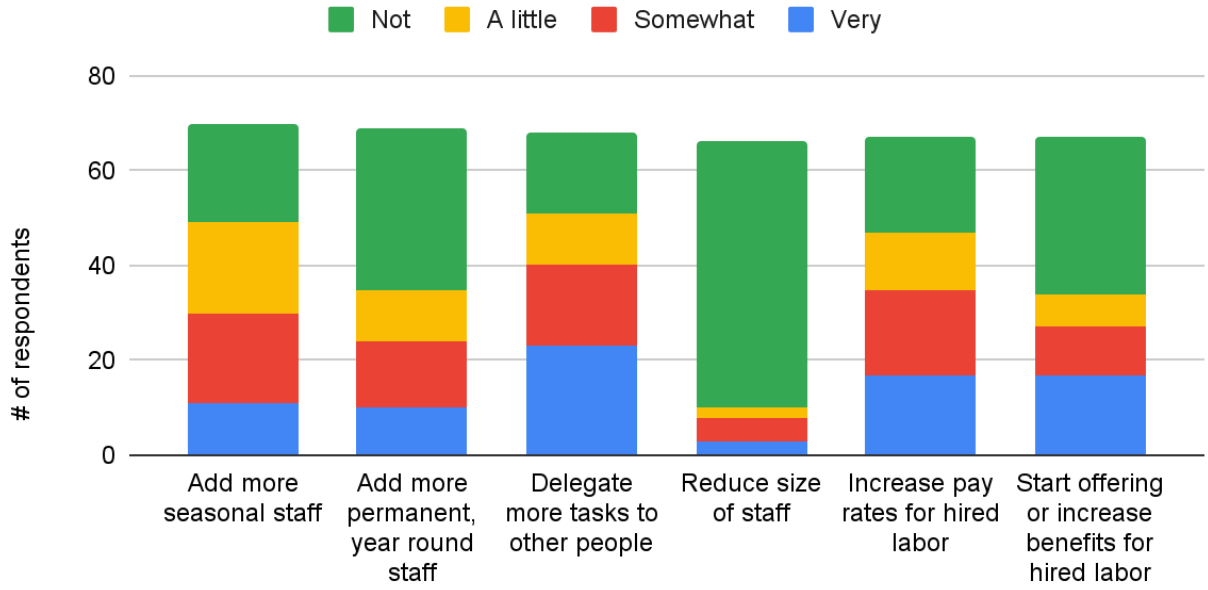
How Important are the Following Marketing Goals to Your Farm in the Next 5 Years?



Hired Labor Goals

Overall, survey respondents were interested in improving the compensation/job quality of their employees by increasing pay and benefits, rather than adding new positions. The greatest response rate, however, indicates that many were looking to develop better methods of delegating more tasks to employees. Vegetable farmers were the highest of all the cohorts in this regard: 43% responded “very,” and 30% responded “somewhat.”

How Important are the Following Hired Labor Goals to Your Farm in the Next 5 Years?

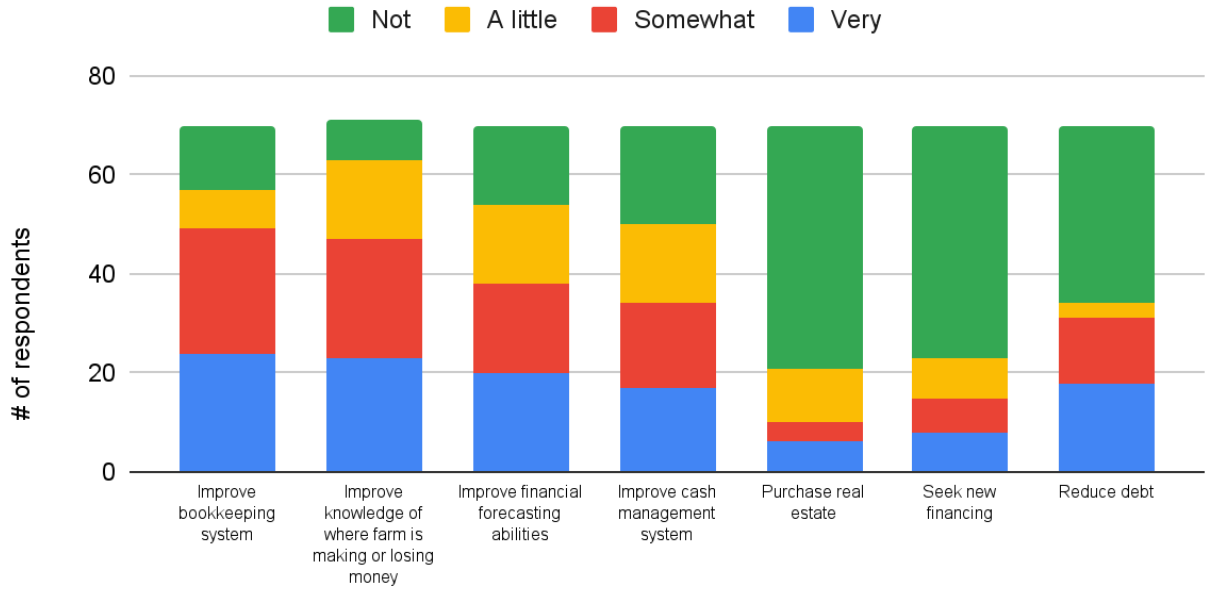


Financial Management Goals

Respondents expressed a relatively high level of interest in improving their financial management systems, in particular improving bookkeeping, understanding where the farm is making or losing money, and financial forecasting.

Fruit growers in particular were interested in a goal to “improve bookkeeping system”: 50% “very” and 25% “somewhat.” On the other hand, the majority of vegetable growers were less interested in this topic: 22% “a little” and 17% “not.”

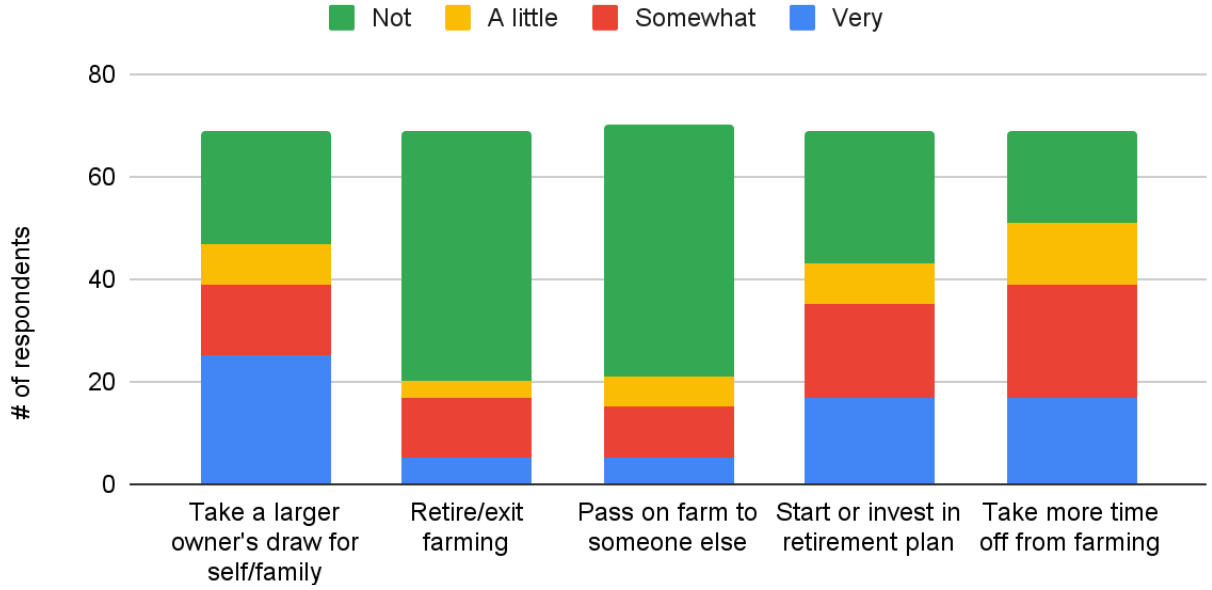
How Important are the Following Financial Management Goals to Your Farm in the Next 5 Years?



Personal Owner/Operator Goals

Overall, respondents were most interested in figuring out how to take a larger owner’s draw, to take more time off from farming, and to start or invest in a retirement plan. Not many were interested in exiting or passing on the farm to someone else.

How Important are the Following Personal Owner/Operator Goals to Your Farm in the Next 5 Years?



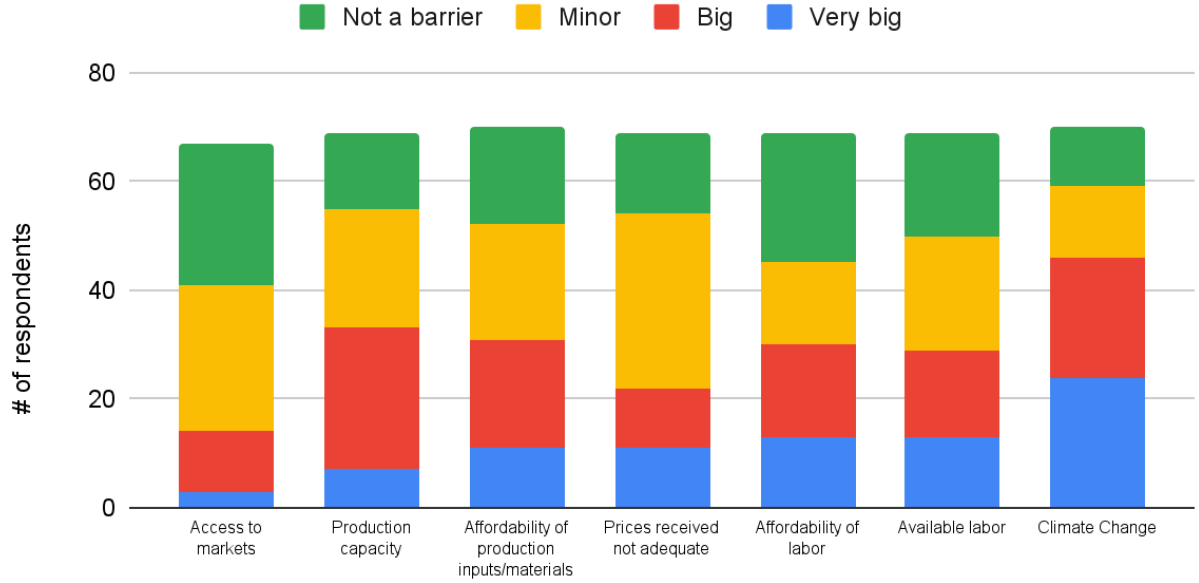
Barriers

Overall, respondents ranked climate change as the number one barrier, with availability and affordability of labor next. “Access to new financing,” “PFAS contamination,” “making payments on existing loans” and “access to farmland” were ranked as relatively unimportant barriers.

The livestock cohort differed markedly from the other cohorts in terms of the barriers it emphasized. Livestock farmers were the highest of all the cohorts who responded “prices received were not adequate”: 56% “very big” and 22% “big.” The other cohorts ranked this lower (actually the majority responded this is “minor” or “not a barrier”).

Livestock farmers were also the highest of all the cohorts to find “affordability of production inputs/ materials” to be a barrier: 44% responded “very big,” and 33% responded “big.” The comments section contained multiple mentions of the price of organic grain. The other cohorts ranked this much lower.

If You Face Barriers in Achieving Your Goals, What are the Biggest Ones?



Farm Profitability

No analysis of economic impact would be complete without an understanding of the profitability of the individual businesses involved. Impact is only sustainable if the businesses operating in an industry can do so at a high enough profit to keep the owners (in this case, the farmers) invested.

While NASS data does report certain expenses and income, it leaves out several critical data points that are needed to assemble the complete picture of "true" profitability:

- Owner draws in excess of payroll costs.
- Loan payments.
- Equipment replacement cost — defined as the average amount of money a farm needs to set aside each year to replace its existing equipment as it ages out. This is a similar concept to depreciation, but the depreciation reported by farms for tax purposes is often unrealistically high to paint a true picture of profitability.

In our Organic Farmer Goals survey, respondents were asked to provide their 2022 total sales, expenses, non-owner payroll costs, owner's draw, loan payments, and equipment replacement costs. These figures were then used to analyze the "true" profitability of Maine organic farms.

As the chart below shows, the average per farm revenue is around $154,000. This is enough to cover expenses, payroll, and an owner's labor cost of $24,000, but not enough to cover loan payments and equipment replacement. In practice, farmers are likely to make their loan payments and equipment investments before paying themselves, resulting in an even more meager owner's draw.

Across all responses, labor (including both employees and owners) represents about 33% of revenues.

Average per Farm Revenue vs. Expenses

From Survey data

Profitability by Income Class

We broke the survey respondents into different levels of annual gross sales to analyze profitability. We established four different categories: less than $35,000; between $36,000 and $100,000; between $100,000 and $200,000; and over $200,000.

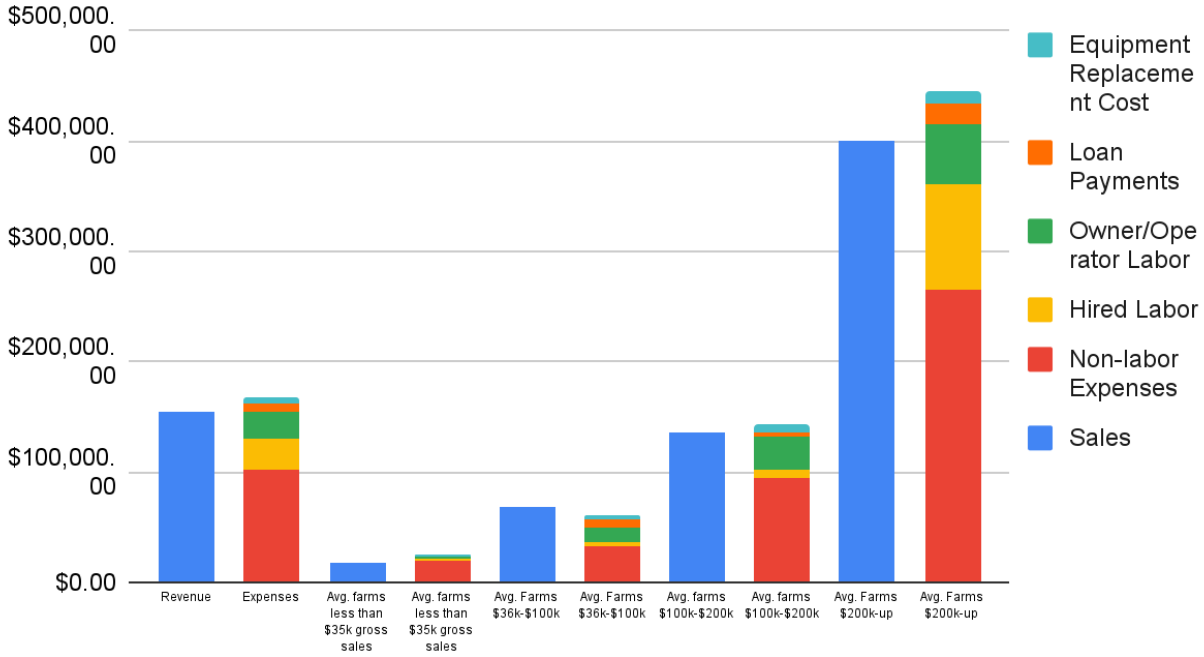
The less than $35,000 gross sales cohort has a labor-to-revenue margin of 17.86%, lowest of all the cohorts, but that's because the owners don't appear to pay themselves. They operate at an average loss of -$3,784.41 per farm (without paying themselves).

The $36,000-$100,000 gross sales cohort is the only cohort with positive net profit and margin after owner's labor, loans and equipment replacement is paid — however, the owner's labor is only about $11,500 per farm. This leads us to conclude that farms at this level of sales are not providing a full-time living for the farmer; the farm in this case is most likely part of a mix of income that is relied upon to support the household.

The $100,000-$200,000 gross sales cohort shows the best capacity to pay themselves (total owner compensation = 21.46%, highest of all the cohorts). But they only pay themselves $29,000 per year on average — not a living wage and also likely to be part of a mix of income that is relied upon to support the household.

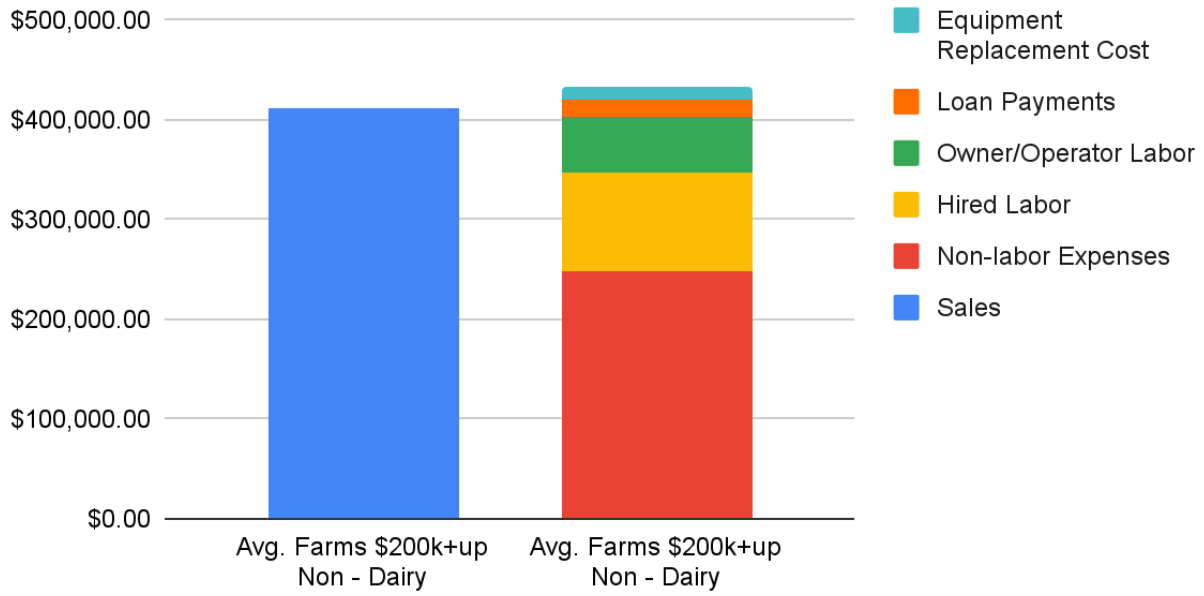
The $200,000-plus gross sales cohort has the highest labor-to-revenue margin of all the cohorts at 37.48%. This cohort posts the largest average loss per farm of the cohorts.

Sales and Expenses, Overall and by Gross Income Class



The $200,000-plus gross sales cohort contains the larger dairy farms, so we decided to look at the profitability of this group with dairy farms removed. This group is more profitable than when the dairy farms were included; however, the non-dairy farms with more than $200,000 in sales are still not generating enough revenue to cover all the expenses. There is an average loss of -$21,000 per farm, with a net margin of -5%.

Average Sales and Expenses for Non-Dairy Farms with More than $200,000 in Annual Sales

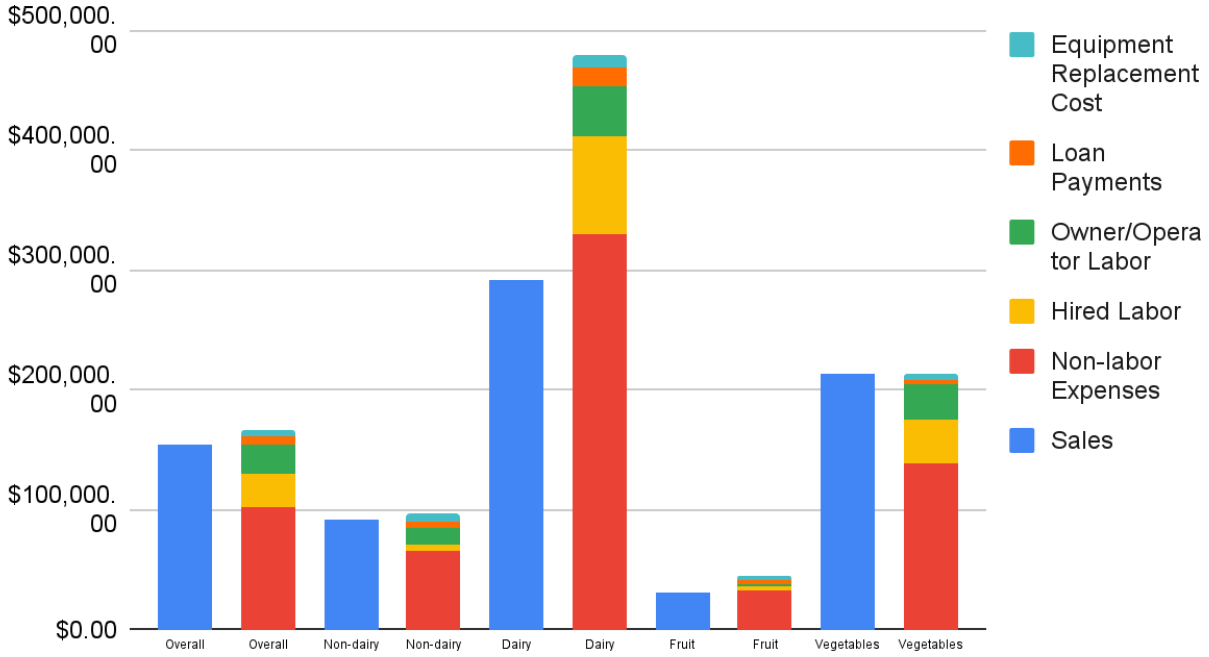


Profitability by Farm Type

An even greater contrast between profitability appears when we look at the profitability of different farm types. Vegetable and non-dairy livestock farms do appear to generate enough revenue to cover their full costs, with vegetable farms being the larger of the two.

On the other hand, fruit farms operate at a deficit. And the dairy farm respondents in particular operated at a big loss in 2022. Non-labor expenses alone exceeded revenues, without factoring any of the labor, owner's pay, loans or equipment costs.

Average per Farm Sales and Expenses by Farm Type

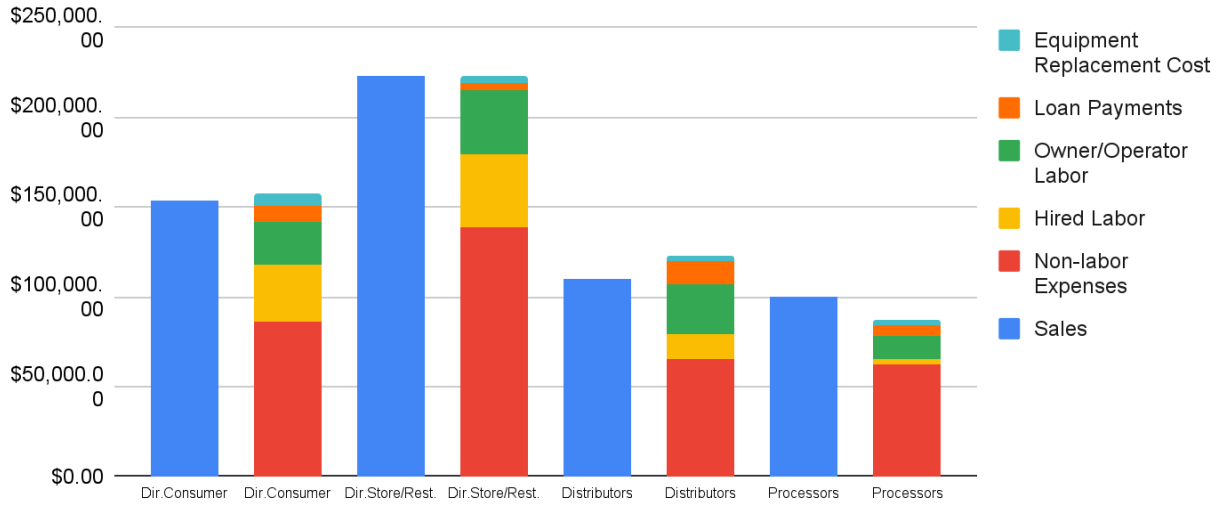


Profitability by Market Focus

There is also a sharp contrast in the profitability of different farms based on their primary market channel. Those farms that focused their sales on wholesaling direct to stores, restaurants and other farms averaged enough sales to cover their full expenses. Those farms that focused on direct-to-consumer sales operated at a very slight deficit. Farms that focused on sales to distributors and processors, on the other hand, operated at greater deficits — with distributor-focused farms at a mild deficit, and processor-focused farms at a larger one.

However, when these same market channel profitability numbers are calculated without the dairy farms, the profitability picture for sales to processors and distributors looks significantly better. Non-dairy farmers who cited processors as their primary market channel have a net margin of 13% — the highest of each of the market channel cohorts.

Profitability by Market Channel, Dairy Farms Not Included



Conclusions

Report Conclusions

Maine's organic farming sector has seen many changes in the 14 years between 2007 and 2021. While the economic impact has increased from $65 million to $97 million over the time period, the number of acres has increased only slightly, and the number of certified farms has declined. From 2019-2021, we have seen a decline in both sales and employment.

One way to view this story is that it is a shift in types of farming. In 2007, organic dairy farming was a surging industry, as relatively high milk prices and stable contracts convinced many Northeast dairy farms to certify. Since then, changes in the national organic dairy industry, including stagnant prices, rising costs of production, and supply chain consolidation, have hit Maine and the Northeast hard. On the other hand, organic crop farming, in particular vegetables, nursery crops and flowers, has grown steadily and considerably; such farming represents half of Maine's organic sector in terms of economic impact in 2021.

One dimension not considered so far in this study is age. Since no survey question covered age or years farming, we can't cross-reference things like farmer goals or profitability with these factors. We suspect that some of the loss of farms is due to retirement, and new farmers are generally entering the industry focusing on specialty crops like vegetables, nursery crops and flowers at a small or limited scale. This could be an area for further investigation.

Another way to read this story is that it demonstrates the challenges of attempting to scale up. Survey participants generally ranked goals related to scaling up as important to their farms. Overall, farmers identified purchasing or building more infrastructure/buildings, extending seasonal availability of existing products, and increasing scale of existing enterprises/products as the most important. Livestock farmers ranked investing in more equipment/mechanization much higher than the other cohorts, and it was noted that fruit farmers ranked increasing scale of existing enterprises/products much more so than the other cohorts.

On the other hand, there appears to be a connection between increasing scale and decreasing profitability that spans all types of farms, and it presents challenges to the further growth of Maine's organic farming sector. Farms in the $36,000-$100,000 gross sales cohort are able to generate enough revenue to cover their expenses — however, the owner's labor is only about $11,500 per farm. The farm in this case is most likely part of a mix of income that is relied upon to support the household. As farms grow beyond the $100,000 gross sales mark, however, their average profitability decreases.

Marketing strategy presents a similarly complicated picture. According to survey respondent goals, the most important current channel — farmers' markets — will have diminished importance, while the third most important channel — on-farm direct-to-consumer sales — will rise to become the most important. Sales direct to stores and restaurants will hold steady, while sales to distributors and processors will decline slightly. On the other hand, overall, farmers identified increasing sales to existing markets as the most important. When responses were split out into separate cohorts by farm enterprise, fruit farmers additionally ranked increasing sales by adding new markets as a significant goal. For non-dairy farmers, sales to processors, direct to stores, and direct to consumer appear to be the most profitable channels (in that order).

The majority of our respondents want to keep farming, and improve quality of life while doing so. Many survey responses emphasized improvements to quality of life for farm operators and their employees. For instance, when asked to rank the importance of various personal goals, farmers

identified taking a larger owner's draw for self/family, starting or investing in retirement plans, and taking more time off from farming as most important. This desire for better quality of life extends to employees as well. Overall, farmers identified increasing pay rates and to start offering or increase benefits to hired labor as the most important.

Financial management skills were also emphasized. When asked to rank the importance of various financial management goals, farmers identified improving bookkeeping systems, improving knowledge of where the farm is making or losing money, and improving financial forecasting abilities as most important.

Overall, farmers identified climate change as their biggest barrier, followed by both availability and affordability of labor. However, there were some significant differences when responses were split out into separate cohorts by farm enterprise: livestock farmers rated "prices received not adequate" as their greatest barrier, and identified affordability of production inputs/materials as a major barrier, while the other cohorts rated these much lower.

Next Steps

This report delved into many topics but was limited by the relative depth of the NASS survey data. The 2022 agricultural census will provide a much richer, broader set of data to draw from. The report team (and MOFGA) can work to identify additional questions raised by this report, and develop the means to answer them in 2024, especially once the 2022 census data is analyzed.

Some of the challenges presented in this report will be most effectively addressed through policy efforts, such as continuing to advocate for farmer support in an effort to relieve market conditions related to low organic milk prices and high costs of inputs.

MOFGA can also enhance its programming to assist farmers in many of the areas cited as barriers — financial management skills and climate change adaptation, for example. Furthermore, farmers indicated a strong interest in developing more on-farm sales, as well as increasing sales to existing customers. MOFGA can take the opportunity to follow up with farmers to learn more about these marketing goals and develop programming to support them.