The Organic Agriculture Industry in Pennsylvania

Economic Impact, Market Dynamics, and Opportunities for Growth

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Executive Summary

Organic agriculture has a rich history in Pennsylvania, where the agriculture industry is a major employer and contributor to the economy. Organic agriculture, which encompasses crop producers, livestock producers, and organic processors, generates employment and economic activity on more than 1,000 farms throughout the Commonwealth of Pennsylvania. The organic industry is expanding across the United States; however **Pennsylvania has seen a surge in organic agriculture that far surpasses the national average.** Nationally, organic product sales have increased by 217 percent since 2011. By comparison, Pennsylvania has seen an even larger increase, with organic product sales growing by 789 percent over the same period. **The exponential increase in the number of organic farms and the increase in total organic product sales have positioned Pennsylvania among the leading producers of organic agriculture in the United States.** With over $1.09 billion in farm commodity sales, the Commonwealth ranked third for total organic sales in 2021.[1]

Summary of the Pennsylvania Organic Agriculture Industry



Economic Impact

In Pennsylvania, agriculture is a major driver of the economy, and organic agriculture is one component of it. As with any industry, the impact of the organic agriculture sector goes beyond the market value of the products created. Direct spending within the agriculture sector ripples out through the economy, creating indirect and induced economic impacts and supporting jobs throughout the state. This means that although the grocery and restaurant industries are not included in this economic impact study, they directly benefit from Pennsylvania's strong agriculture industry.

[1] USDA, "Certified Organic Survey: 2016 Summary," www.usda.mannlib.cornell.edu. Organic Trade Association, "Percentage of U.S. Households Purchasing Organic Products," www.ota.com

In 2021, organic agriculture production directly contributed $1.09 billion in economic output to Pennsylvania's economy. The impact of this economic output goes well beyond direct spending. Indirect and induced impacts—economic ripple effects—that result from spending on organic agriculture generated an additional $1.1 billion in economic activity in Pennsylvania for a total impact of $2.2 billion in 2021. Furthermore, organic farming supports more than 7,000 direct, indirect, and induced jobs in Pennsylvania, resulting in nearly $300 million in total earnings.

The supply of and demand for organic products have grown substantially in recent years. This growth has impacted the organic industry, resulting in a surge in popularity among consumers. National organic food sales have steadily increased in market share, reaching a record $57.5 billion in 2021.[2] The growing organic product demand is demonstrated by organic sales numbers, which have accelerated both in raw numbers and as a percentage of total food sales. In recent years, Pennsylvania has grown to become one of the top states for organic production thanks to a rising generation of environmentally conscious farmers who have prioritized organic agriculture.

Despite the developments to date, continued growth in demand for organic products faces substantial barriers. High costs, inconvenient access, and wavering consumer confidence in competing label claims all discourage purchases and turn consumers away from organic products. While the difference in price from conventional products might not be as great as it was a decade ago, organic foods still tend to command a price premium that, combined with inflationary pressures, affect demand. On the supply side, the costly and time-consuming certification process makes it more difficult for farmers to grow organic, requires a lengthy transition period, and engenders increases in input costs (labor, land, supply chain issues), all of which have created challenges for the supply of organic agriculture products in recent years.

Understanding Organic Processing Needs

Several essential steps are involved in the journey of organic produce, livestock, and poultry from farms to the final packaged products. After leaving the farm, the next critical link in this chain is the processing stage. Organic processing follows strict rules, prohibiting the use of synthetic additives, preservatives, and genetically modified organisms.

Organic products must be processed in an operation that has been certified to organic standards to avoid contamination with non-organic products.[3] Processing is one of the most vital aspects of the industry and a pain point within the supply chain.



[2] Organic Trade Association 2022 Organic Industry Survey Data
[3] How is organic food processed, OTA, 2023

In this report, processing sectors are broken up into grain, fruits and vegetables, meat and poultry, dairy, and mushrooms. Progress has been made to successfully increase processing capabilities; however, gaps still remain in key sectors.

Future Forces

This report builds on the major drivers identified in the agriculture industry sessions organized by the Pennsylvania Department of Agriculture and the Team PA Foundation by undertaking a scan of the macro-level factors and regional trends affecting supply and demand for agricultural products. Through our review of existing research studies, analyses, data, and market reports, we identified several key trends impacting Pennsylvania agriculture and avenues for creating increased opportunities.



Climate Change Mitigation: The agricultural industry in Pennsylvania, particularly crop production, is vulnerable to climate change.



Equitable Economic Development: Organic farms create potential concentrations of economic growth, creating an avenue for increased opportunities in the Commonwealth.



Research and Innovation: Technology and science are among the core drivers shaping the future of agriculture in Pennsylvania. Organic agriculture has much to gain from the research and development occurring in the Commonwealth.

Industry and Policy Recommendations

The organic agriculture subsector can build on its strengths and capitalize on opportunities by positioning itself to address and adapt to changing consumer tastes, increased automation, workforce shortages, and costs associated with starting or transitioning. These recommendations are intended to guide the Pennsylvania Department of Agriculture and the industry's stakeholders in the development of a strategic plan or identifying the opportunities to support organic agriculture within Governor Shapiro's strategic planning process for the Commonwealth.

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1. Introduction

1.1. Report Purpose

The Pennsylvania Department of Agriculture (PDA) has commissioned Econsult Solutions, Inc. (ESI) to evaluate the economic impact of the organic agriculture industry in the Commonwealth of Pennsylvania. The report contains the results of this analysis and presents trends and changes in the organic industry over time, including past developments, and potential strategic recommendations to consider.

The report is structured as follows:

Section 2 presents quantitative data concerning the economic output, job creation, and employee compensation generated by the annual production operations of the organic industry within the Commonwealth.

Section 3 provides an exhaustive analysis of both demand and supply side factors that shape the landscape of organic agriculture in Pennsylvania.

Section 4 investigates the supply chain and potential gaps within the Commonwealth's organic industry, providing an exploration of five subsectors of the market.

Section 5 explores opportunities and potential threats that may impact the future of the organic industry.

Section 6 concludes with recommendations on targeted actions the Commonwealth of Pennsylvania could take to ensure the continued growth and success of the organic agriculture industry.

1.2. Defining Organic Agriculture

Organic agriculture is defined in the United States *Code of Federal Regulations* as "a production system that responds to site specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biological diversity."[4] The United States Department of Agriculture (USDA) is the regulatory agency responsible for ensuring these regulations are followed.

More specifically, foods eligible for USDA organic certification must be grown and/or processed according to federal regulations, including but not limited to soil quality, animal raising practices, and pest and weed control. To qualify for certification, crops must be grown on soil where no prohibited substances (such as pesticides) have been applied for at least three years prior to harvest. Additionally, all organic foods exclude the use of genetically modified organisms (GMOs).[5] In order for meat to qualify for organic certification, animals must be raised in environments that enable natural behaviors such as grazing on

[4] *Code of Federal Regulations*, United States of America, 7 CFR § 205.2
[5] https://www.usda.gov/media/blog/2012/03/22/organic-101-what-usda-organic-label-means

pasture and must consume exclusively organic feed and forage. Farmers must also refrain from the use of antibiotics or hormones. For processed or multi-ingredient foods to qualify as USDA organic, producers are prohibited from the use of artificial preservatives, colors, or flavors and must use organic ingredients.

Four levels of organic certification are available for food products. Products which contain entirely organic ingredients can be labeled "100 percent organic." Products containing 95 percent or more organic ingredients can be labeled "organic," while products with 70 to 95 percent organic ingredients cannot be labeled "organic" but instead can be labeled "made with organic *[specific ingredient or food group.]*" "Made with organic" products are prohibited from being labeled with the USDA organic seal but are required to identify the USDA-accredited certifier. For products with less than 70 percent organic ingredients, organic materials can be listed in the ingredient section only.

1.3. History of Organic Agriculture in PA and the Origin of Pennsylvania Certified Organic

Holistic farming practices such as composting and crop rotation have a long history that predates the contemporary organic movement.[6] The concepts of intercropping and polyculture can be traced back to Indigenous traditions. Leaders in the modern organic agriculture movement emerged in Pennsylvania. A notable leader in the movement, author and publisher J.I. Rodale, was a pioneer and promoter of organic farming methods. In the mid-twentieth century, Rodale, alarmed by the growth in use of chemicals in farming coupled with a nitrogen fertilizer shortage, established a farm in Lehigh County where he developed natural methods of preserving and rebuilding soil fertility. In 1942, Rodale began publishing his views and practical advice in a new magazine, *Organic Farming and Gardening*. For more than two decades, the magazine promulgated organic agriculture principles and advanced the organic movement in the United States, which steadily gained in popularity among home gardeners and commercial growers.[7] Five years later, Rodale established The Soil and Health Foundation where natural, sustainable methods to promote soil fertility were developed. Renamed the Rodale Institute, son Robert Rodale continued the work, playing an integral role in continuing the rise of the modern organic movement. A notable research project undertaken by Rodale Institute is the Farming Systems Trial, which has been testing and tracking the different impacts of conventional and organic grain crop systems for over forty years. Through their research trials, educational programs, and direct farmer technical support, the Rodale Institute has significantly furthered the development of the organic agriculture industry in Pennsylvania.

Commercial organic farm Walnut Acres in Snyder County was one of the first organic farms certified in Pennsylvania, established in 1946 by Paul and Betty Keene, leaders in the field of organic agriculture. From 1946 until 2000, Walnut Acres grew from an integrated family farm into a thriving organic foods business, propelling its position as a significant player in the organic movement. Started as a traditional farm producing a variety of crops, Walnut Acres Farm quickly gained recognition for its organic farming

[6] The Leaders Who Founded the organic Movement, Rodale Institute
[7] Organic Struggle, Brian Obach

practices and was a leader in the field. Over the years, Walnut Acres Farm focused on making organic food products, with an emphasis on sauces, fruit spreads, and condiments which gained for them a reputation for producing high-quality, organic, preservative-free products. In 1999, Walnut Acres was acquired by the Hain Celestial Group, which is a major player in the natural and organic food industry, allowing the brand to expand its reach and product offerings.

Alongside the growth of these Pennsylvania leaders in organic agriculture, the modern organic agricultural movement began to mature in the 1960s and 1970s, with small-scale farmers and gardeners experimenting with alternative farming methods that minimized the use of synthetic fertilizers, pesticides, and herbicides. In 1985, a group of organic farmers established the first chapter of the Organic Crop Improvement Association (OCIA) in Lancaster, Pennsylvania. OCIA would go on to become one of the leading organizations of the organic movement, performing certification services for its members.

A decade later, three members of Pennsylvania's OCIA chapter incorporated a Commonwealth-based non-profit 501 (c)(3) organization for certifying organic, called Pennsylvania Certified Organic (PCO). PCO has expanded its scope numerous times over the years. Beginning with crops, PCO now certifies processing, handling, distribution, brokering; its purview now includes mushrooms, maple products, and poultry. Additionally, PCO is a certifying agent for the Organic Plus Trust (OPT) Certified Grass-Fed Organic Certification. PCO also provides education to growers, processors, and handlers of organic and wild crops, livestock, and livestock products. PCO currently certifies over 1,600 operations in multiple states while employing more than 70 staff and inspectors. While PCO is the only organization headquartered in Pennsylvania that performs organic certification, there are more than 20 other certifiers that operate in the state today but are headquartered elsewhere.

1.4. Organic Agricultural Legislative Initiatives

The legislative framework for organic agriculture is largely the product of the 1990 Federal Farm Bill and subsequent federal farm bills. This framework includes the establishment of the National Organic Program and related federal incentives.

The Pennsylvania Farm Bill is a set of state-level agriculture programs that was signed into law by former Governor Tom Wolf in 2019 and has been fully funded in five consecutive Commonwealth budgets.[8] Pennsylvania is the only state to craft its own Farm Bill, indicating the importance of the industry and the continued political and financial support for farmers in the state. This legislation has resulted in numerous programs and funding streams that provide support for both organic and conventional farmers.

The Pennsylvania Farm Bill has invested over $120 million in Pennsylvania agriculture over the last five years, during which the industry has been weathering uncertainty and instability. The legislation provides support and investments in the Commonwealth's agriculture industry to grow opportunities and

[8] Miller, Cassie. "New state budget fully funds Pa. farm bill for a fourth time." *Pennsylvania Capital-Star*. July 14, 2022. https://www.penncapital-star.com/blog/new-state-budget-fully-funds-pa-farm-bill-for-a-fourth-time/

resources within the sector, remove barriers to entry, ease regulatory burden, increase processing capacity, and help Pennsylvanians continue to innovate in agriculture for future decades.[9]

The Federal Farm Bill and the Pennsylvania Farm Bill both have an important impact on organic agriculture in Pennsylvania through various initiatives and financing streams. Below is a list of key state and federal organic agriculture program initiatives that impact Pennsylvania farmers:

- ***Organic-Specific Programs and Initiatives (Pennsylvania only)***
    - **Organic Transition Assistance Program**: The initiative provides funding for an Organic Transition Assistance Program to help farmers and processors transition to organic agriculture. The program is free to all Pennsylvania based producers and processors.
    - **PA Preferred®**: The PA Preferred Organic™ Brand has been recently created via Act 21 of 2023 with the goal of increasing consumer confidence as part of efforts to grow the organic agriculture industry in the Commonwealth.
- ***Other Relevant Programs***
    - **Agriculture-linked Low Interest Loan (AgriLink) Program:** This PA Treasury program provides farmers with loan assistance to implement nutrient management best practices.
    - **Agricultural Conservation Program (ACAP):** This program provides financial and technical assistance to farmers to implement conservation practices that reduce pollution from entering streams.
    - **Conservation Excellence Grant Program**: This State Conservation Commission program provides financial and technical assistance to agricultural operations within the Commonwealth to assist with the implementation of best management practices.
- ***U.S. Department of Agriculture Programs***
    - **Organic Agriculture Research and Extension Initiative (OREI)**: The initiative includes funding for the Organic Agriculture Research and Extension Initiative, which supports research on organic agriculture and enhances the ability of producers and processors to grow and market their products.
    - **U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) Organic Farming Initiative**: Eligible farmers and landowners can receive financial and technical assistance to install conservation practices needed to protect natural resources as part of their certified organic or transitioning to organic operation. In addition, there is an option for farmers transitioning to organic production to receive funding to hire a certified Technical Service Provider (TSP) to develop a Conservation Plan Supporting Organic Transition.

[9] https://www.agriculture.pa.gov/Pages/PA-Farm-Bill.aspx; New state budget fully funds Pa. farm bill for a fourth time - Pennsylvania Capital-Star (penncapital-star.com)

- **U.S. Department of Agriculture Farm Service Agency (USDA FSA):** The Farm Service Agency (FSA) can help with the cost of transitioning to organic, organic certification, real estate, buildings, repairs, insurance, field buffers, routine operating expenses, storage and handling equipment, crop losses, soil and water conservation, mapping field boundaries, and acreage reporting.
- **U.S. Department of Agriculture Transition to Organic Partnership Program**: The TOPP is investing in cooperative agreements with non-profit organizations who are partnering with others to provide technical assistance and other support for transitioning and existing farmers. The TOPP network covers six regions: the Mid-Atlantic/Northeast, Southeast, Midwest, Plains, Northwest, and West/Southwest.
- **Organic Certification Cost-Share Program**: The Farm Service Agency administers the Organic Certification Cost-Share Program (OCCSP) on behalf of the USDA. The program offsets a portion of annual organic certification costs. Certified operations may receive up to 75 percent of their certification costs paid during the program year, not to exceed $750 per certification scope. OCCSP applications are approved on a "first received and complete, first to get approved" basis. Only one application for cost-share per year will be accepted per operation. The annual application postmark deadline is October 31.
- **U.S. Department of Agriculture Organic Market Development Grant**: the program supports the development of new and expanded organic markets to help increase the consumption of organic agricultural commodities. The program focuses on building and expanding capacity for certified organic production, aggregation, processing, manufacturing, storing, transporting, wholesaling, distribution, and development of consumer markets.

2. The Economic Impact of Organic Agricultural Production in Pennsylvania

The organic industry is expanding across the United States. The number of organic farms has grown rapidly over the past decade, mirroring a rise in organic product sales. **Pennsylvania has seen a surge in organic agriculture that far surpasses the national average. The exponential growth in both organic farms and organic product sales has positioned Pennsylvania among the nation's leading states in organic agriculture production.** By sales volume, organic poultry production makes up the largest portion of the state's organic agriculture industry.

In 2021, organic agriculture production in Pennsylvania contributed $1.09 billion *directly* in economic output to the state economy. The impact of this economic output goes well beyond direct spending. Indirect and induced impacts—economic ripple effects—that result from spending on organic agriculture contributed an *additional* $1.1 billion in economic activity in Pennsylvania, for a total impact of $2.2 billion in 2021. Furthermore, organic farming supports more than 7,000 direct, indirect, and induced jobs in Pennsylvania, resulting in nearly $300 million in total earnings.[10] Due to data limitations, the economic impacts outlined in this section account for the production of organic commodities, excluding any impacts that may arise from processing.

2.1. Organic Agriculture Growth

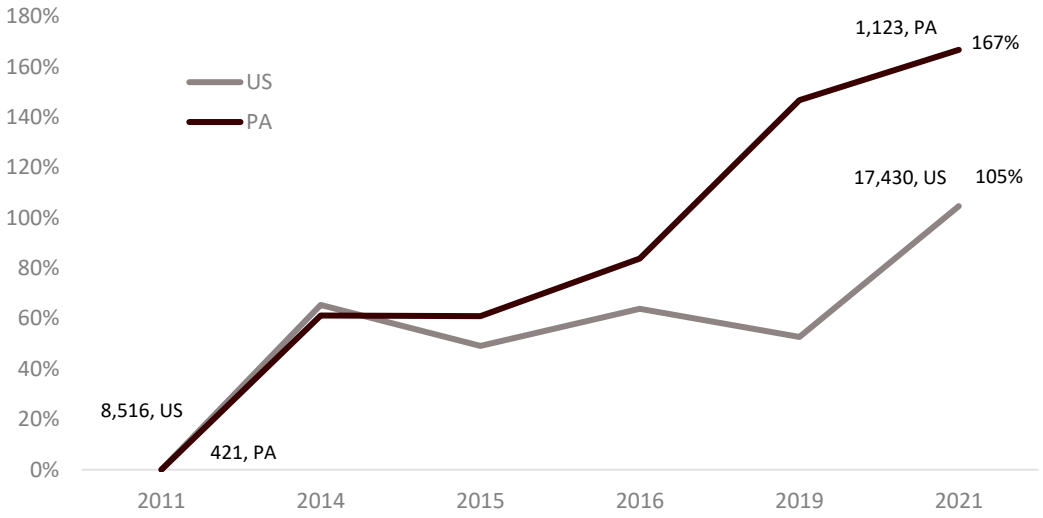
USDA's periodic organic agriculture surveys serve as a source for data related to acreage, production, and sales for organic crops and livestock commodities. The surveys also include data on organic marketing and agricultural practices. The USDA's first organic-focused survey was conducted in 2008, with additional surveys conducted in 2011, 2014, 2015, 2016, 2019, and most recently in 2021. These surveys provide a comprehensive overview of organic agriculture in the U.S. and cover all known organic operations across the country. Notably, the 2011, 2015, 2016, and 2021 certified organic surveys were conducted as part of a joint effort with the USDA's Risk Management Agency to help identify risk management needs and develop appropriate insurance products for organic farmers.

The U.S. and Pennsylvania have seen significant growth in the number of organic farms in recent years. The Commonwealth has seen its number of organic farms nearly triple in a decade, increasing from 421 organic farms in 2011 to 1,123 organic farms in 2021, a 167 percent increase (see Figure 2.1). As of 2021, the Commonwealth was ranked 4th in the total number of organic farms. The growth rate for organic farms across the U.S. between 2011 and 2021 was 105 percent, increasing from 8,516 to 17,430 organic farms. Additionally, the growth rate in Pennsylvania's percentage share of organic farms in the country is outpacing the national average growth rate. As of 2021, Pennsylvania is home to 6.4 percent of the total number of organic farms in the U.S.

[10] USDA NASS

The trends in the growth of organic farms can be attributed to the increasing demand for organic products among consumers and the growing understanding of the benefits of organic farming practices.

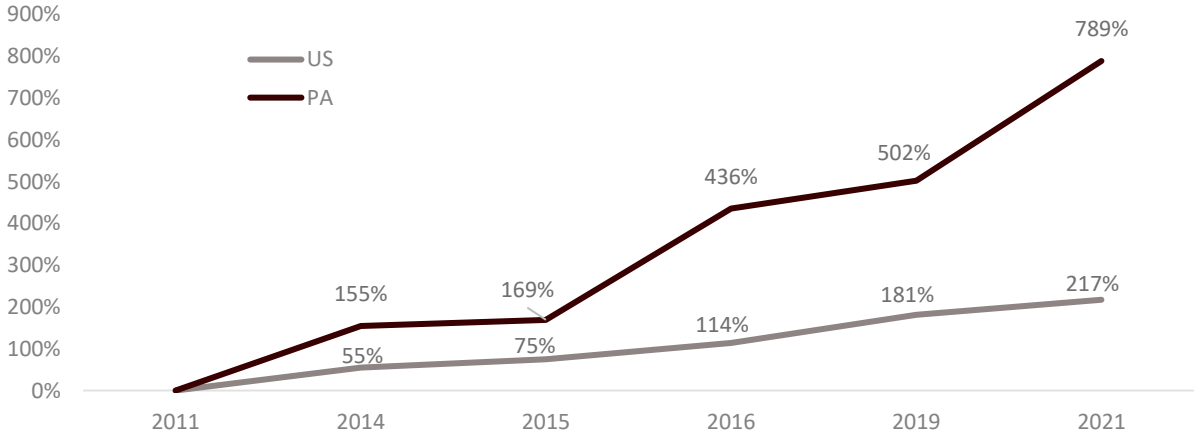
Figure 2.1: Total Number and Growth of Organic Farms in the United States and Pennsylvania, 2011-2021 Indexed



Source: USDA (2021)

The organic industry has experienced significant growth in popularity among consumers, resulting in substantial increases in organic product sales both nationally and in Pennsylvania. Nationally, organic product sales have increased by 217 percent since 2011. By comparison, Pennsylvania has seen an even larger increase, with organic product sales growing by 789 percent over the same period (see Figure 2.2), outpacing the national average.

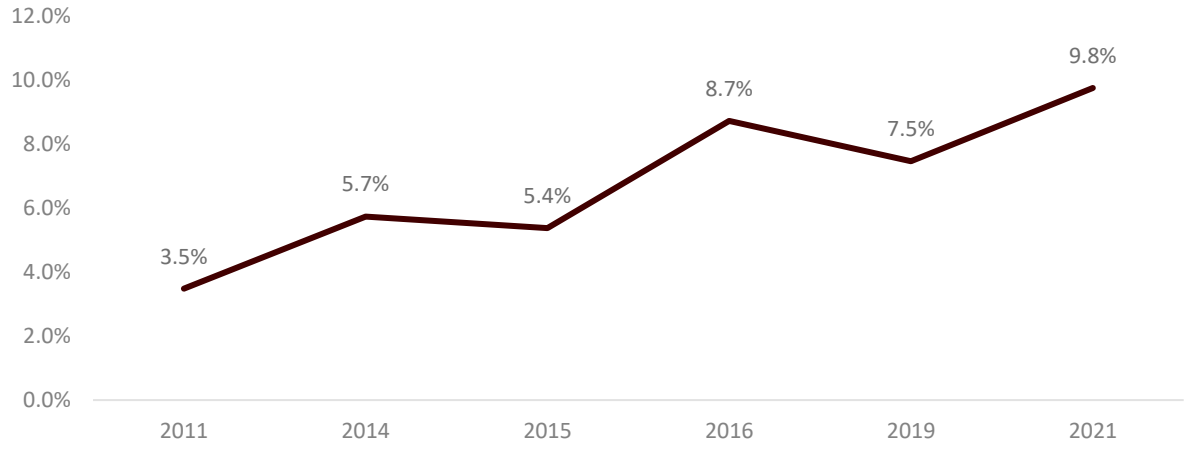
Figure 2.2: Total Organic Product Sales in the United States and Pennsylvania, 2011-2021 Indexed



Source: USDA (2021)

Pennsylvania is responsible for a substantial portion of national organic product sales, nearly one-tenth of the total market value, representing significant growth over the past decade. Pennsylvania's organic sector had over $1.09 billion in sales in 2021. These sales represent significant increase in overall market share; Pennsylvania organic sales were 9.8 percent of the total organic sales volume in the U.S. in 2021, compared to 3.5 percent of the total sales in 2011 (Figure 2.3).

Figure 2.3: PA Organic Sales as Percent of U.S. Organic Sales, 2011-2021



Source: USDA (2021)

2.2. Direct Economic Impact of Pennsylvania's Organic Agriculture Production Industry

Pennsylvania's rising leadership in organic sales is marked by notable growth in recent years, with sales increasing 47 percent from $742 million in 2019 to $1.09 billion in 2021. The demand for organically certified agricultural products has played a significant role in supporting the industry, with younger consumers continuing to drive demand.[11]

The Pennsylvania organic agriculture industry accounts for approximately $1.09 billion in direct economic output. Of this total, the majority (86 percent) of output in the state is due to organic animal production, namely chickens (58 percent), eggs (13 percent), and other animals (15 percent). The remaining 14 percent of organic agricultural output results from crop production, with mushrooms comprising 9 percent of total output in Pennsylvania.

[11] Penn State University, Trends in Organic Sales and Products,2019

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Figure 2.4: Pennsylvania's Organic Agriculture Production Direct Output

Category	Value ($M)
Crops	**$154.9**
All Field Crops	$26.59
All Dry Hay	$5.62
All Vegetables	$16.80
All Apples	$0.29
All Other fruits	$0.38
Propagative Materials	$0.15
Floriculture and Bedding	$1.46
Mushrooms	$95.41
Vegetables/Herbs grown under protection	$7.85
Organic Maple Syrup	$0.38
Animals	**$944.3**
Beef	$0.03
Other Cattle	$11.39
Milk Cows	$2.98
Milk from Cows	$71.83
Chickens	$638.64
Broilers	$638.22
Layers	$0.42
Eggs	$142.32
Turkeys	$69.12
Other Poultry	$7.22
Hogs and Pigs	$0.79
Sheep and Lamb	$0.01
Total	**$1,099.3**

Source: USDA (2021), IMPLAN (2021)

2.3. The Spillover Impacts of Organic Agriculture Production

The direct economic impact of organic agriculture does not tell the full story of what the industry means to the economy of Pennsylvania, as inter-industry linkages between the agricultural sectors and other sectors of the economy generate spillover impacts. These impacts, combined with the direct impacts, provide a more complete picture of the agricultural sector's contribution to the state's economy.

Using standard input-output modeling techniques, ESI estimated the full range of economic, employment, and labor income impacts associated with the direct activity attributable to the organic agriculture industry. The role of input-output models is to determine the linkages across industries to model the magnitude and composition of the spillover impacts (see Appendix A for more information on economic impact modeling). There are two types of spillover impacts:

- First, some proportion of the expenditure that goes to the purchase of goods and services gets circulated back into the economy, such as when those goods and services are purchased from local Pennsylvania vendors. This represents what is called an "indirect effect."
- Second, a proportion of that expenditure that goes to labor income gets circulated back into an economy when agricultural employees spend their earnings on various goods and services. This represents what is called an "induced effect."

The organic agriculture industry in Pennsylvania accounted for approximately $1.1 billion in direct output in 2021. This activity led to a total economic impact of $2.2 billion, supporting 7,100 direct, indirect, and induced jobs through $297.1 million in earnings in Pennsylvania (see Figure 2.5).[12]

Figure 2.5: Economic Impact of Pennsylvania's Organic Agriculture Industry

Impact Type	Pennsylvania
Direct Output ($M)	$1,099.3
Indirect and Induced Output ($M)	$1,101.4
Total Output ($M)	**$2,200.6**
Employment Supported (FTE)	**7,100**
Employee Compensation ($M)	**$297.1**

Source: USDA (2021), IMPLAN (2021)

[12] Direct employment counts include full-time, part-time, and seasonal employees. These counts were converted into full-time equivalent (FTE) employees before modeling, so that modeling results would be stated in terms of FTEs supported.

3. Current Organic Agriculture Market Dynamics

This section presents the potential barriers to growth for both consumer demand and producer supply in the organic market in Pennsylvania. It includes analysis of the factors that could limit the growth of the market, including consumer awareness, availability, and cost on the demand side, and the barriers to entry and transition on the supply side.[13] ESI's engagement with stakeholders and focus groups further informed the takeaways in this section.

One critical takeaway from the analysis that will be presented below is that **both supply and demand for organic agriculture have grown substantially in recent years**. Growing organic product demand is evidenced by organic sales numbers, which have accelerated both in raw numbers and as a percentage of total food sales in recent years, and Pennsylvania is among the top states for organic production. Supply has also grown in recent years, in part to a rising generation of environmentally and health-conscious farmers who have prioritized organic agriculture.

However, both supply and demand face substantial barriers to continued growth. On the demand side, high costs of organic products discourage consumer purchasing, while consumer confidence issues and misconceptions may draw consumers away from organic products. Although price premiums exist for most products, the parities between many products are becoming narrower. On the supply side, the costly and time-consuming certification process makes it more difficult for farmers to grow organic.

When forming its growth strategy, the organic industry in Pennsylvania must consider these barriers and identify which can be most easily addressed by direct action.

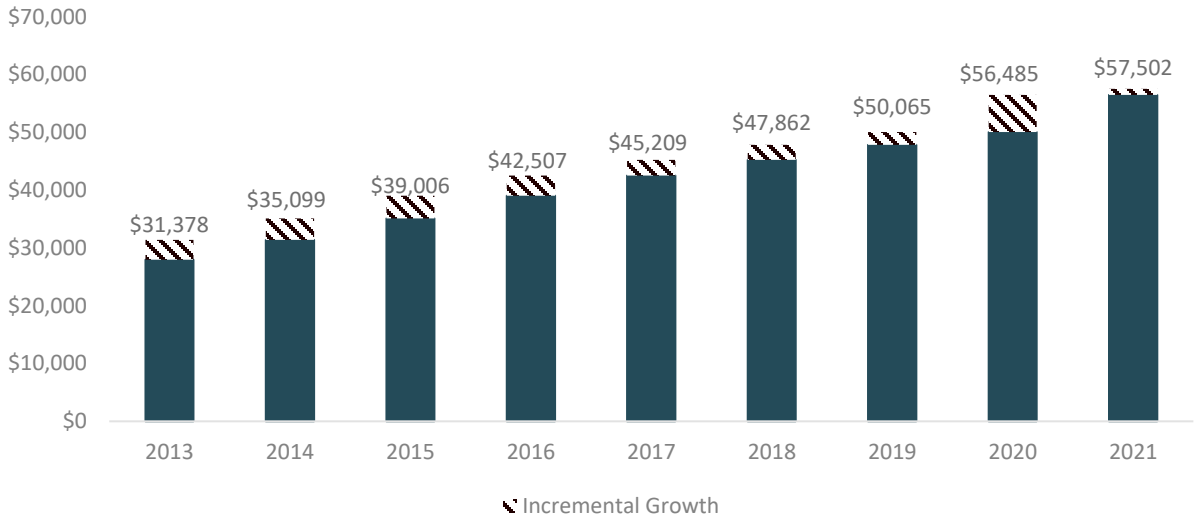
3.1. Market Demand

Sales Figures Show Surging Market Demand

The organic industry has experienced a surge in popularity among consumers in recent years with US organic food sales steadily increasing in market share and reaching a record $57.5 billion in 2021.[14] The COVID-19 pandemic contributed significantly to an increase in demand in 2020 with a double-digit year-over-year growth rate (12.8 percent) as consumers spent more time at home and potentially perceived organic food products to be healthier.[15] Organic food sales also reached record levels of market share in 2020—with organic food representing 6.4 percent of total food sales.

[13] This section was informed by a combination of research and primary data collection via round table discussions and interviews with Pennsylvania agriculture stakeholders.
[14] Organic Trade Association 2022 Organic Industry Survey Data
[15] At the same time, the COVID-19 pandemic caused a significant increase in overall food sales, with an increase of $99 billion between 2019 and 2020 (a 12.6 percent increase over the year).

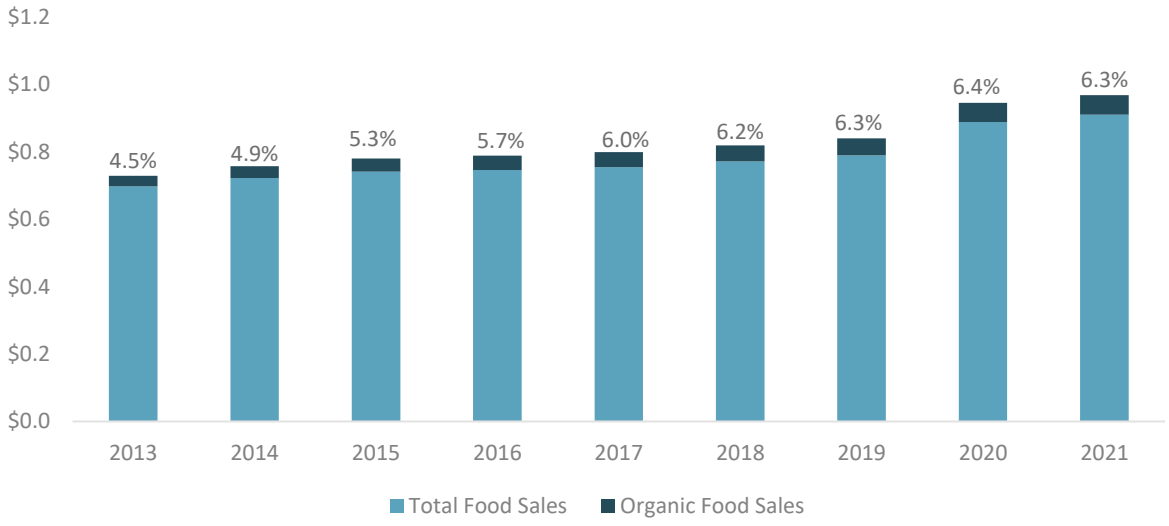
Figure 3.1: U.S. Organic Food Sales and Growth, 2013-2021 (in millions $)



Source: Organic Trade Association (2022)

As the pandemic subsides and normal pre-pandemic routines resume, many consumers are continuing to prioritize organic foods as part of their diet. However, the slower (2 percent) year-over-year growth rate indicates that the market may be shifting back towards historical trends.[16]

Figure 3.2: U.S. Organic Food Sales as a Percent of Total Food Sales, 2013-2021 (in billions $)

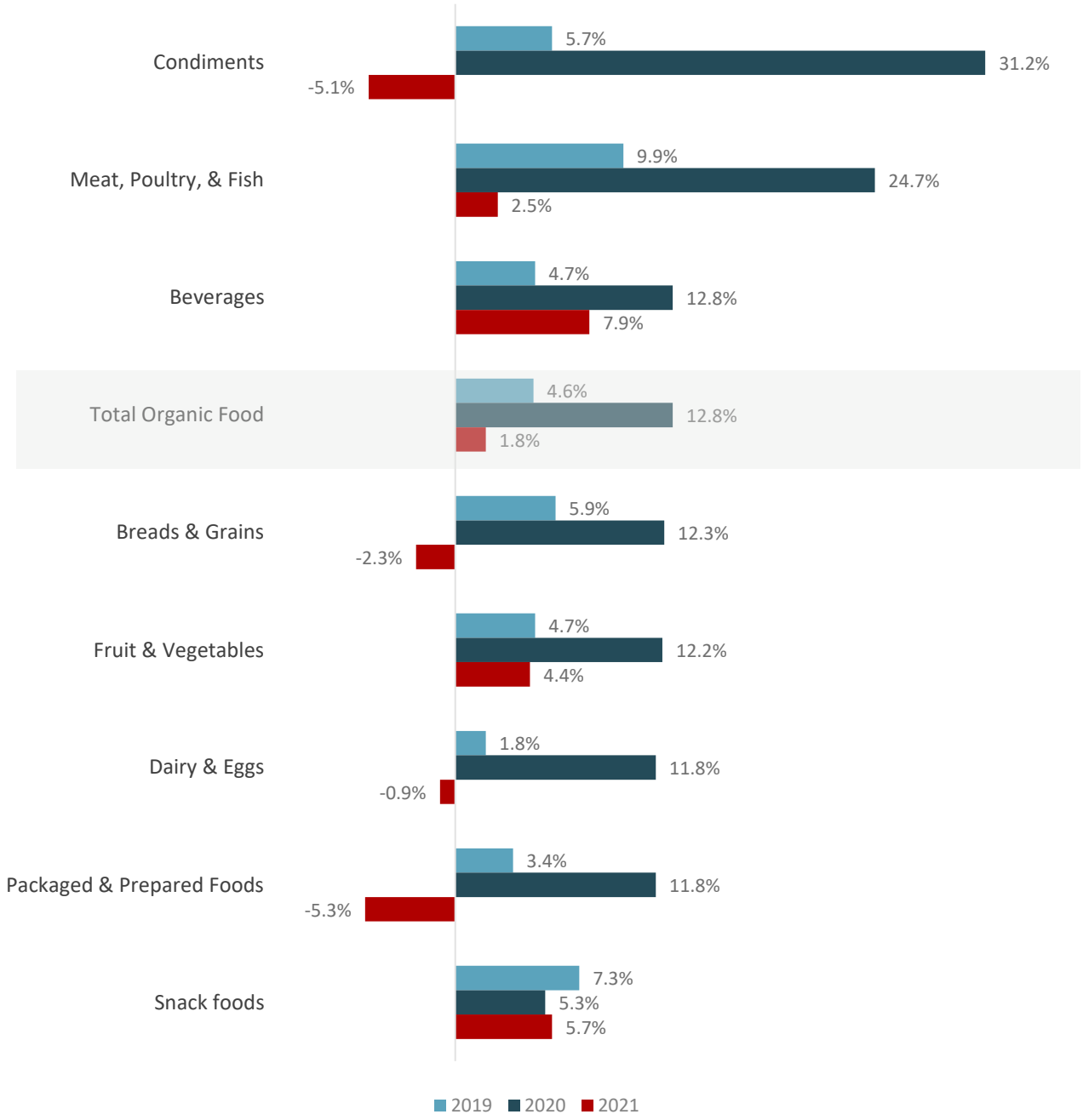


Source: Organic Trade Association (2022)

[16] https://ota.com/news/press-releases/22284

Within the subcategories of the organic food sector, the 12.8 percent growth (+$6.4 billion) between 2019 and 2020 was led by a large increase in fruit and vegetables sales, which accounted for 34.7 percent (+$2.2 billion) of the total sales growth. Increases in organic beverages (12.8 percent), dairy and eggs (12.3 percent), and packaged and prepared foods (11.9 percent) sales also contributed to the overall sector growth.

Figure 3.3: U.S. Organic Food Sales Year-Over-Year Percent Change, 2019-2021



Source: Organic Trade Association (2022)

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Younger Generations More Likely to Buy Organic

Younger generations, including Gen X, Millennials, and Gen Z, are more likely to purchase organic products compared to Baby Boomers.[17] The age cohort of 25 to 39 is particularly likely to purchase organic products, as this is the age range when many individuals start families and would like to provide all the available options for their families. Organic baby food is a major entry point for young families to switch to organic products. Among specific subcategories, organic baby food realized the highest sales growth in 2021 at 11 percent.[18]

Recent studies have shown that organic customers come from a wide variety of consumer demographics. In the past, there was a common perception that organic food was only in demand by wealthy, educated, and health-conscious individuals. However, recent research suggests that organic food is becoming more accessible and mainstream, with people from all walks of life choosing to purchase organic products.[19]

3.2. Demand-Side Barriers

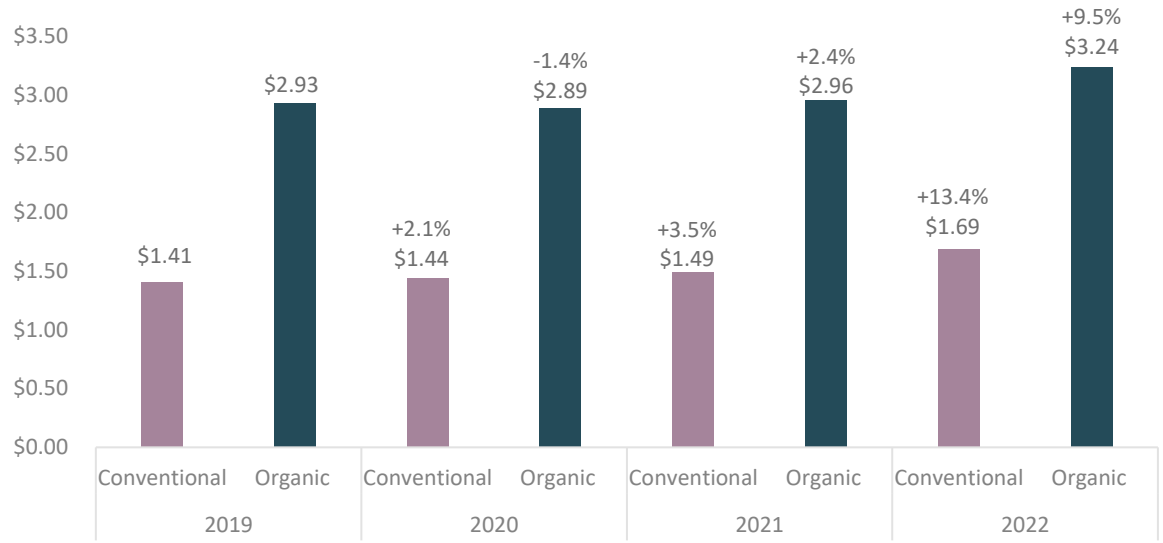
High Costs

The law of demand states that as the price of a product increases, the quantity demanded by consumers decreases. The degree of consumer responsiveness to price differentials depends on several factors, including the availability of substitute products. In the case of organic foods, conventional foods often serve as lower cost and more readily available alternatives, which acts as a barrier to market growth for organic foods. For consumers to be willing to purchase organic foods despite higher prices, conventional foods cannot be seen as a perfect or near substitute. Alternatively, increased consumer capacity, enabling individuals to afford to purchase more organic products, could help address this barrier.

Although both conventional and organic produce prices rose over the past few years, the price gap is narrowing, as the increase in prices of conventional products has outpaced those of organics. In 2019, organic produce costs more than double what conventional products cost on average ($1.41 vs. $2.93 per pound, a 208 percent difference); but in 2022 narrowed to just under double ($1.69 vs. $3.24 per pound, a 192 percent difference).

[17] Pew Research Center, https://www.pewresearch.org/short-reads/2016/12/07/younger-generations-stand-out-in-their-beliefs-about-organic-gm-foods/
[18] Organic Trade Association 2022 Organic Industry Survey Data
[19] Hertz, T., Konda, V., & Newman, C. (2020). Changes in U.S. food insecurity from 2018 to 2019. USDA Economic Research Service. Retrieved from https://www.ers.usda.gov/publications/pub-details/?pubid=106015

Figure 3.4: Organic v. Conventional Average Produce Price



Source: Q3 2022 Organic Produce Performance Report

To increase the market share of organic foods, one of two scenarios must happen. Either the primary barrier to quantity demanded—price—must be lowered through supply-side improvements (see "Supply" section), or the differences between organic and conventional products must be emphasized through marketing strategies to educate consumers for the reasons causing the price difference. The next few sections will review some consumer considerations beyond price when deciding whether to purchase organic products.

Challenges of Consumer Confidence and Industry Transparency

While the high price of organic food serves as a barrier for many consumers, premium prices are often correlated with higher levels of consumer confidence. Simply put, consumers show willingness to pay more for organic products that they trust. Building consumer confidence in both products and retailers using communication can raise confidence in organic foods. Conversely, negative media harms the credibility of organic product claims.

Consumers reportedly have significantly lower confidence in processed organic foods and trust organic vegetables more than organic fruit. In some instances, organics have lost consumer faith due to competing, confusing, and fraudulent labeling. Additionally, packaging that does not seem to be environmentally friendly affects the perception of organic product integrity and therefore undermines consumer confidence.[20] **Further, providing information that reveals transparency and traceability of the**

[20] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9009713/

supply chain, including product origin, farming practices utilized in production, as well as the journey of the product from farm to store can help shore up credibility and trust.

Building Consumer Trust

Information asymmetry exists between consumers and producers regarding organic products. Consumers often cannot fully determine the quality of the goods or verify whether they were genuinely cultivated or processed using organic standards. This imbalance of information classifies organic food as a credence good, or a good in which its qualities cannot be observed by the consumer. Because of this dynamic, trust and credibility play vital roles in shaping consumer behavior. Research has demonstrated a strong correlation between trust and consumers' organic food purchasing behaviors.[21] Currently, only twenty-six percent of U.S. consumers have confidence in organic labels.[22] Therefore, effective communication, transparent labeling, and certification standards are essential for building and maintaining consumer confidence in the organic market.

Research has identified several factors that influence consumer perceptions about the credibility of organic food products, including labeling, certification, place of purchase, country of origin, brand, price, communication, product category, and packaging. Lacking access to perfect information, consumers rely most heavily on labeling, county of origin, and certifications as a shortcut in making choices that are based on perceived credibility of organic food products.

Labeling and Certification

In the United States, the USDA organic label is the most recognized and trusted organic certification label. This seal is the official certification label for organic food products in the U.S. and is regulated by the U.S. Department of Agriculture (USDA). Nutritional values on package labeling have also been found to enhance trust in products labeled as organic.

While labels have an impact on purchase decisions, most consumers do not fully understand the meaning of USDA Organic Standard labeling. A survey by the Organic Trade Association showed that consumers are most likely to purchase organic products if they have "Raised without Antibiotics" and "All Natural" labels.[23] Organizations such as the USDA and OTA are working to ensure the public has access to credible information about organic labels. Almost half of survey respondents indicated that they get their information about organic labels from social media and friends and family, whereas only one fifth get their information from government agencies and officials.[24]

Research has demonstrated mixed results regarding supermarkets and confidence in organic food. In the U.S., consumers tend to have lower levels of trust in organic food sold in supermarkets. Positive consumer perceptions of a retailer can have a positive impact on organic food credibility, highlighting an important relationship between retailers' corporate social responsibility activities and consumer confidence.

[21] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7644777/
[22] Organic Produce Network
[23] Organic Trust Barometer, Organic Trade Association
[24] Organic Trust Barometer, Organic Trade Association

Retailers using private labels to sell organic food benefit from overlap between the place of purchase and the branding of a product, as consumers are likely to place greater trust in private-labeled organic products if the retailer is perceived as socially responsible. Notably, certifications and labeling play less significant roles in products sold via specialty shops, direct sale, or farmers' markets, although these sales channels are important in the case of organic food.

Misconceptions and Consumer Education

Common misconceptions surrounding organic food products involve perceptions of shorter shelf life and safety. While these misconceptions arise from real concerns regarding organic produce, consumers may overemphasize the severity of these issues and may be unaware of how these issues are mitigated.

Organic products do tend to have shorter shelf lives due to a side effect of one of their primary benefits—lower amounts of preservatives[25]. Unlike most conventional produce, organic produce is not treated with artificial preservative chemicals which lengthen the shelf life of conventional produce. The discrepancies in shelf life between organic and conventional produce can often be drastically reduced by consumers if they follow simple storage and handling tips. Signage placed near products can educate them on these life-extending storage and handling processes.

Within the Commonwealth, the Pennsylvania Department of Agriculture (PDA) Bureau of Food Safety inspects commercial produce farms to ensure food safety standards. The organic industry can continue building and maintaining trust in organic food products by expanding access to information regarding the certification process, labeling, and safety tips for shoppers looking to expand their organic food consumption.

3.3. Market Supply and Growth

Over the past several years, the market supply for organic products has shown significant growth. This growth has been partly driven by a rising cohort of environmentally conscious farmers, who tend to be younger.

A Growing Supply of Organic Products

Environmentally conscious and health-conscious farmers have played an important role in driving the expansion of the organic industry, allowing for increased capacity. Nevertheless, given the cost to produce organic compared to conventional agriculture (see *Input Costs* below), there is no clear profit incentive for many current non-organic farmers to make the transition to organic.

The growing cohort of environmentally conscious farmers are motivated to farm organically because of environmental benefits, including improvements in soil, water, air quality, and positive impacts on climate change, among others. Since the use of synthetic fertilizers and pesticides are prohibited in organic agriculture, they are replaced with organic fertilizers such as compost, plant manure, and animal manure.

[25] Pros and cons of organic produce, Tucson Medical Center

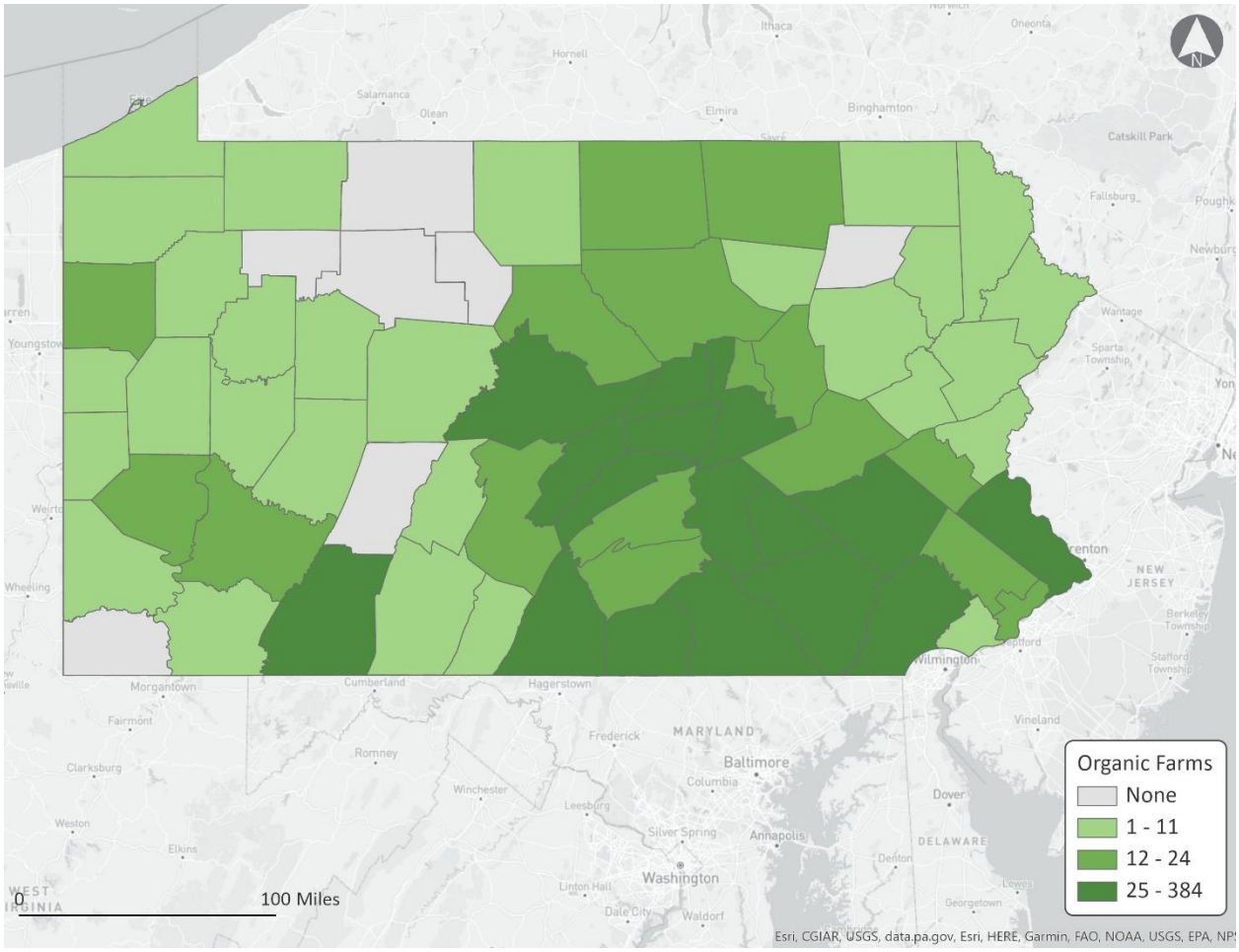
In the same way that younger consumers are more likely to consume organic foods, younger farmers are more likely to produce it. **A survey by the National Young Farmers Coalition showed that young farmers (aged 18 to 35) are 17 times more likely to farm organic,[26] and many of the organic farms in the state have operated for less time than their conventional counterparts.** Only 46 percent of organic farms in Pennsylvania have been in production for over ten years, compared to 65 percent of conventional farms in the state.[27] These younger farmers likely need a greater degree of support from farmers associations and groups, peers, and governmental programs to navigate the organic industry.

In 2021, Pennsylvania farms produced $1.09 billion worth of organic commodities, a remarkable 47 percent increase from 2019 and more than 400 percent increase since 2008.[28] Despite this growth, organic food sales in the United States still account for only six percent of total food production. However, as consumer demand for organic options continues to rise, many expect that anything available in conventional form should also be available in organic.[29] The global organic food market size was valued at $178.4 billion in 2021 and is expected to reach $497.3 billion by 2030, growing at a compound annual growth rate (CAGR) of 12.1 percent during the forecasted period from 2022 to 2030.[30]

One crucial element of increasing organic food supply is increasing the number of organic farms. In 2021, Pennsylvania was ranked third for total value of sales, fourth for the number of certified organic farms (1,125 farms), and fourth for the number of farms marketing through community supported agriculture. The following map highlights the distribution of those farms across Pennsylvania.

[26] Results and recommendations from the National Young Farmer Survey, 2017
[27] 2021 Organic Survey. National Agricultural Statistics Service (NASS), Agricultural Statistics Board, U.S. Department of Agriculture. (2022)
[28] USDA NASS, Results from the 2021 Organic Survey
[29] USDA NASS
[30] Organic Food Market, Precedence Research

Figure 3.6: Certified Organic Farms Located Across Pennsylvania



Source: Organic Integrity Database (2023)

Recently, PDA committed $1.8 million to help traditional farmers transition to organic farming, reducing barriers to entry (more in "*Transition Period*" below).[31]. To keep up with the expected increase in demand, increasing the supply of organic food in Pennsylvania is essential. Doing so can help to increase market share not only in the state but also across the country. The availability of organic processors is also an important factor and is further discussed in Section 4 of the report. The next few sections provide a review of the identified barriers to organic food production within Pennsylvania and identifies opportunities for expansion.

Inclusive Economic Growth and Racial Justice Within the Industry

Access to the organic agriculture movement and to organic certification has not been equal across racial groups. Only three percent of organic farmers across the country identify as Black, Indigenous, Hispanic or

[31] Pennsylvania Department of Agriculture

Latinx, Asian American or Pacific Islander. An overwhelming ninety-four percent of conventional farmers in the U.S. identify as white.[32] These disparities are the result of historic inequality and lack of opportunities for non-white farmers.

In 2022, only 36 percent of farmers who identified as Black were approved USDA loans, whereas 72 percent of white farmers who applied were approved.[33] These loans were intended for farmers who have been unable to access credit elsewhere, with the funds being used for land, farming equipment, or other operational costs. Inequitable access to capital is a barrier to the realization of the full potential of the organic agriculture movement. The majority of farmland is owned by white farmers, and access to land suitable for farming is an additional barrier for historically marginalized communities in the U.S. In 2023, the USDA has implemented several programs in attempts to close the racial equity gap. One of the programs received $2.2 billion from Congress to provide financial assistance to farmers of any race who experienced discrimination in USDA's farm loan programs prior to 2021.

A coalition of organizations including USDA's National Organic Program, the Organic Farmers Association, and the National Organic Coalition, among others, have been working on a DEI (Diversity, Equity, and Inclusion) initiative to engage stakeholders in prioritizing racial equity in the industry. The collaborative's goal is getting commitments from organic organizations to increase participation in organic certification by BIPOC (Black, Indigenous, People of Color) farmers, as well as inclusive hiring for inspectors and certifiers.[34] This initiative has been making progress through education and raising awareness, holding focus groups, and providing training opportunities and internships.

The Role of Plain Sect Farmers

Plain sect farmers, such as those in the Amish and Mennonite communities, often practice sustainable agricultural methods that align with several organic principles. Many farmers tend to follow organic principles in these community, and the concepts are tied to their beliefs in holistic health (e.g.: medicinal practices). Though substantiating data is not available, it is believed that while most plain sect farmers do not seek organic certification, their farming practices typically involve avoiding synthetic fertilizers, pesticides, and GMOs.

Plain sect farmers can contribute to the market supply of organic produce and dairy, given their current practices. Based on interviews conducted by Econsult Solutions, stakeholders noted that there is likely a greater percentage of organic dairy and vegetable farmers within the plain sect community compared to other communities. Working with farmers in these communities requires developing relationships while respecting their boundaries and values. Developing a strong relationship with just one farmer can enhance relationships across a community. Amish and Mennonite farmers are no longer a niche; they are becoming leaders in commercial agriculture. As a result, including plain sect farmers in the discourse on organic farming and reaching out to known growers can enhance knowledge sharing regarding market

[32] OFA
[33] NPR analysis of USDA data
[34] Diversity, Equity, and Inclusion Tools for Organic Professionals, OFA, NOC, USDA Organic, IFOAM North America, IOIA

opportunities and supports provided by the Commonwealth, ultimately, strengthening the overall organic supply chain.

3.4. Supply-side Barriers

PDA can play a crucial role in alleviating supply-side obstacles by working with partners to facilitate the expansion of organic food production and distribution. Some of the challenges associated with increasing the supply of organic food will be explored in this section.

Certification Challenges

While organic certification can provide several benefits, including access to premium markets, price premiums, and improved consumer confidence, there are costs associated with obtaining and maintaining certification. **Most U.S. organic farms surveyed in the 2021 USDA Certified Organic Survey (55 percent) consider "regulatory problems" to be a major production challenge.** That number is higher in Pennsylvania where 61 percent of farmers expressed the same concern. Pennsylvania farmers noted that regulatory problems were their top production challenge—above price issues, production problems, market access, and management issues. Competing states in the region, including New York, New Jersey, Michigan, and Ohio, expressed comparatively fewer problems, with an average of 51 percent of organic farmers citing regulatory problems as a major issue. Such issues can increase the per-unit production cost of organic products and act as a deterrent to conversion to organic.[35]

[35] USDA Certified Organic Survey 2021 Summary. https://downloads.usda.library.cornell.edu/usda-esmis/files/zg64tk92g/2z10z137s/bn99bh97r/cenorg22.pdf

High Costs

In Pennsylvania, the high costs of certification can range from a few hundred dollars to several thousand dollars with fees include a first-time application fee, annual renewal fee, assessment on annual production or sales, and inspection fees. While the fee structure is designed to increase as the size of an operation—and its sales—increases, numerous farmers in focus group discussions for this study noted that the cost burden of certification was comparatively greater for smaller operations.[36]

Due to the structure of the certification industry, price volatility exists in certification costs. Organic Certifying Agents are accredited by the USDA but act as independent organizations with the ability to set their own prices. For example, the state's largest certifier, PCO, operates as a nonprofit. A schedule of its fees can be seen in the tables below.

Figure 3.7: Pennsylvania Certified Organic Sales Assessment Tiers

Tier	Gross Organic Sales	Fee	Tier	Gross Organic Sales	Fee
1	$0 - $5,000	$0	14	$750,001 - $1,000,000	$3,300
2	$5,001 - $25,000	$70	15	$1,000,001 - $1,500,000	$4,650
3	$25,001 - $40,000	$210	16	$1,500,001 - $2,500,000	$6,000
4	$40,001 - $55,000	$300	17	$2,500,001 - $3,500,000	$8,500
5	$55,001 - $75,000	$390	18	$3,500,001 - $5,000,000	$9,000
6	$75,001 - $100,000	$540	19	$5,000,001 - $7,500,000	$11,070
7	$100,001 - $130,000	$660	20	$7,500,001 - $10,000,000	$13,200
8	$130,001 - $165,000	$750	21	$10,000,001 - $15,000,000	$16,730
9	$165,001 - $210,000	$830	22	$15,000,001 - $20,000,000	$22,000
10	$210,001 - $275,000	$1,075	23	$20,000,001 - $30,000,000	$25,000
11	$275,001 -$400,000	$1,400	24	$30,000,001 - $50,000,000	$32,000
12	$400,001 -$500,000	$1,740	25	$50,000,001 - $100,000,000	$40,000
13	$500,001 - $750,000	$2,420	26	$100,000,001 and up	45.000

Source: Pennsylvania Certified Organic Fee Schedule 2024

[36] Focus Group Dates: (to be included at end)

Figure 3.8: PCO Certification Fee Schedule 2024

A. Program Fees	**Organic Certification Program Fee:**	**Amount:**	**Description**
	Basic Certification Fee – Renewing Client	$835	Annual fee which covers your basic certification services for the upcoming certification season
	Affiliate Certification Fee – Renewing Client	$350	Annual fee which covers your basic certification services for the upcoming certification season. This fee is for reviewing livestock affiliates with one central administration and sales exclusive to one operation.
	New Applicant Fee	$935	Includes processing of application of all new applicants (including new affiliates) and the basic certification services for the upcoming certification season.
	Sales Assessment	see chart below	This fee is calculated on your annual gross organic sales for farming, handling, and processing operations in the previous year.
	Type of Organic Operation/Scope Fee:	**Amount:**	**Description**
	Livestock	$250	Applies to operations certifying any type of livestock
	Processor / handler / broker / distributor	$350	Applies to operations certifying processor, handler, broker, or distributor scope
	Additional Organic System Plan (OSP)	$300	Applies to operations with more than one OSP of the same scope
	International Export	$250	Applies to operations exporting organic products or that request verification that organic products meet the terms of an equivalency arrangement
	Other Certification Program Fee:	**Amount:**	**Description**
	Organic Plus Trust (OPT) Certified Grass-fed Organic Livestock Program	$300	Applies to operations requesting certification to the OPT Grass-fed Program
	Material Review Fee	**Amount**	**Description**
B. Inspection Fees	Material Review Fee (for reviews beyond two new submissions per year for each operation)	$150	Single- ingredient material view
		$250	Multi ingredient material review up to 20 ingredients. For products with 20+ ingredients $250+ PCO hourly rate
	Inspection Hourly Rate	$80/hour	Hourly rate includes time spent pre inspection, on site and post inspection.
	Inspection Travel Time	$40/hour	Hourly rate includes time traveling to and from inspection location.
	Inspection expenses	Actual cost	Examples include mileage, rental car, airfare, meals, overnight mail, and any other inspection related expenses.
	Inspection canceled by client	Expenses incurred up to the time it was canceled plus $165 administrative fee	Applies to inspections cancelled for non-justified reasons 5 days or less from the time of the scheduled inspection, or if a cancellation request is not communicated to the inspector.
C. Administrative Fees	**Fee:**	**Amount:**	**Description**
	Application Forms	No charge	
	Expedited Application	$3,000	Additional fee for top priority application processing(including OPT Grassfed Certification) ; this includes new affiliate operations. If more than one scope is being applied for, the additional scope(s) are charged the expedited additions fee below.
	Expedited Addition	$1,500	Additional fee for existing clients requesting top priority to add a new scope. field/land, new site, and/or new facility location or for new applicants requesting expedited certification in more than one scope.
	Expedited Product Review	$350 per product	Review within 5 business days
	Expedited Export Certificate	$150 per certificate	Review within 2 business days
	Investigation cost recovery	Actual costs	Hourly rates to be billed for each type of service rendered. Rates may include inspection rates (listed) or other services at PCO's hourly rate (listed), including applicable legal expense. See Investigation Cost Recovery section for more information.
	Late Paperwork Submission	$150 per month	Annual Update more than 10 days past due date
	Late payment	1.5% interest per month	More than 30 days past due date
	Returned Check Fee	$30 plus bank fees	For each time a check is returned as unpaid, for any reason
	Payment Plan	5% of balance	Assessed on balance to be paid over extended period
	Mediation	Informal: $225 (non-technical), $550 (technical) Formal: All costs assumed by applicant/certified client	For mediation resulting from a proposed suspension or other adverse action; due upon PCO acceptance of request for mediation
	Reinstatement	$500	For operations with suspended NOP organic certification who are requesting reinstatement
	PCO Hourly Rate	$165 per hour	For Circumstances not otherwise covered in this fee schedule; Minimum of 1 hour is billed. Examples include but are not limited to: Pre-Application OSP Review, Document Transcription, Bulk Mail Requests, PCO staff attendance at events.

Source: Pennsylvania Certified Organic Fee Schedule 2024

Lengthy and Challenging Transition Period

Prior to certification, farmers and producers must undergo a three-year transition period in which they adhere to the *National List of Allowed and Prohibited Substances*, set by the National Organic Standards Board. Regulations are similarly strict: livestock must be managed organically from the last third of the gestation period, poultry must be raised organically after the second day of life, and dairy must be organically managed for twelve months.

During this period, farmers incur higher production costs associated with organic farming, including lower crop yield and increased labor costs, while simultaneously charging the lower cost of conventional agriculture for their goods. Farmers in the transition period cannot reap the price premium benefits of organic sales. As of 2021, only an estimated five percent of non-certified farms received a 0-25 percent price premium for goods under transition.[37] This imbalance of input costs and product sales can render the transition to organic financially infeasible for many farmers. Additionally, the lack of access to professional guidance during this period of transition is a major challenge. Lack of access to guidance from crop consultants can lead to very low yields during this time and can discourage farmers already transitioning.

There are existing programs, sponsored by federal and state governments, to assist with the costs of the transition period. However, they operate on an annual cycle, which may not align with the three-year transition cycle. Current transition programs include:

- **Organic and Transitional Education and Certification Program** (OTECP): This is a USDA program that assists with the financial costs of transition for agricultural producers and handlers. Eligible costs include application and inspection fees (most regulatory admin costs). This program covers a portion of costs associated with transition, with a maximum reimbursement of $1,050. This program will provide up to $20 million in reimbursements over the span of fiscal years 2020, 2021, and 2022.
- **Transitional and Organic Grower Assistance Program** (TOGA): This USDA program provides premium assistance to transitioning and organic producers with crops covered by the Federal Crop Insurance Corporation. Producers undergoing transition can receive coverage for 10 percent of their premium subsidy. This program requires no paperwork and premium assistance will automatically be applied to enrollees' bills.
- **Transition to Organic Partnership Program** (TOPP): This $100 million, 5-year USDA-funded grant program provides funding to non-profit organizations who provide technical assistance and wrap-around services to both transitioning and existing organic farms. TOPP partner organizations within the Commonwealth include Pennsylvania Certified Organic, Rodale, Grow Pittsburgh, Pennsylvania Department of Agriculture, and the USDA Agricultural Marketing Service National Organic Program. Note that USDA's National Organic program identified PCO as the program development leader for the Northeast/Mid-Atlantic region.[38]

[37] 2021 Organic Survey. National Agricultural Statistics Service (NASS), Agricultural Statistics Board, U.S. Department of Agriculture. (2022)
[38] https://paorganic.org/wp-content/uploads/2023/01/Pressreleaseforwebsite.docx.pdf

- **USDA Organic Certification Cost Share** (OCCSP): Administered by the PA Department of Agriculture, the program covers up to $750 for crops, wild crops, livestock, processing, handling, and state organic fees. USDA provided approximately $179,000 in reimbursement to qualifying organic producers and processors in 2022.

Shortage of Organic Inspectors

To ensure compliance with organic standards, farms and processing facilities undergo regular inspections by trained inspectors. However, the number of inspectors has not kept pace with the increased number of farms transitioning to organic agriculture. According to PCO, the nature of inspection work, including long hours on farms and processing plants accompanied with substantial paperwork, has made it challenging for PCO to retain an adequate number of certifiers to meet demand. In addition, farms and processing facilities are distributed across large geographic areas, causing further delays in certification.

Increased Certification Regulations

Following numerous high-profile organic fraud cases in the past few years, the USDA increased the regulatory requirements for organic certification. While this is an important step for consumer confidence, it also increases the burden on some organic producers, making it more difficult for them to maintain organic certification.

On January 19, 2023, the USDA published its final ruling on the National Organic Program (NOP) Strengthening Organic Enforcement, in response to organic fraud cases including two separate instances of a grain broker who made millions of dollars in fraudulent sales of organic goods. This recent ruling will require greater certification of grain imports and require increased record keeping for all organic producers and processors to increase the ease and efficacy of supply chain audits.

The ruling has caused controversy within the organic industry. Proponents say this legislation can help combat a recent rise in individuals and corporations taking advantage of the organic price premium and assuage the consumer confidence issues presented above. Opponents are skeptical that the ruling will have a material impact and have also decried the exemptions made for retailers of organic packaged goods.

Inputs and Production Costs

In addition to the costs associated with certification and the financial burden during the transition period, the use of sustainable practices in organic farming may increase the overall costs of production compared to conventional practices. While some argue that the long-term benefits of organic farming, such as improved soil health and reduced harmful environmental impact, may outweigh the initial costs, the short-term costs are a barrier to production for some operations.

Both organic and conventional farming use the same standard inputs, such as land, labor, and capital; however, the intensity and mix of these inputs can differ greatly between the two methods. Organic farming places more emphasis on sustainable land management practices such as crop rotation, cover cropping, and composting. These practices typically require more labor but are essential to maintain healthy soil, reducing the need for synthetic inputs.

Conversely, conventional farming is more capital- and equipment-intensive, relying heavily on machinery and automation to increase efficiency and productivity. This often includes the use of synthetic fertilizers, pesticides, and herbicides, which aid in efficient yield per acre or worker. Given the lower costs, higher yields, and higher efficiency, farmers looking to strictly maximize their profits would most likely pursue conventional farming.

Labor

Part of the reason for the premium on organic foods is that organic farming requires substantially more labor per output compared to conventional farming. Price may act as a barrier to many consumers that are either not willing or able to pay for the organic produce.

Labor costs are exacerbated by the shortage of farm workers faced by the agriculture industry across the United States (both conventional and organic). This shortage is attributed to several factors, including changing immigration laws and a decreased interest in agricultural employment.[39] As this shortage persists, the gap between available jobs in agriculture and available laborers is widening. While other industries are also facing similar issues, the agricultural sector faces unique challenges due to the physically demanding nature of the work, an uneven work-life balance, and low wages and lack of benefits.

In discussions that ESI held with organic farmers, many noted the difficulties in securing employees. Hiring difficulties were seen across job types, including open managerial positions and seasonal planting and harvesting roles. In addition to the labor challenges mentioned above, interviewees noted a specific concern regarding the shortage of affordable housing for farm workers and the lack of experienced workers available for hire. Inability to secure the necessary number of farm hands on short notice can result in a drastic decrease in the amount of food harvested or processed. This issue is exacerbated by climate change, which has increased variability in the life cycle of crops.

To fill the demand gap, many farms in the U.S. depend on workers from abroad, which is made possible by the H-2A temporary agricultural worker program. This program allows agricultural employers who anticipate a shortage of domestic workers to bring nonimmigrant foreign workers to the U.S. to perform agricultural labor or services of a temporary or seasonal nature.[40] The H-2A temporary work authorization visa allows foreign workers to secure employment in agricultural operations for a period of 10 months. Employers are required to pay at least minimum wage, provide housing, and pay for worker transportation. Hourly wages are set by the U.S. Department of Labor, with Pennsylvania's currently at $16.55 (middle range). Demand for this program is rising, with an 87 percent increase in applications between 2015-2020. While this program is essential in securing agricultural workers during shortfalls in the domestic workforce, the ten-month employment period can create challenges for livestock and dairy operations which need year-round labor. There are currently ongoing legislative efforts to meet industry demands.

[39] Three Ways Immigration Reform Could Help U.S. Farmers, AgAmerica Lending
[40] Immigrant Farmworkers and America's Food Production, FWD U.S.

In the face of declining population in rural areas, this program offers an opportunity to increase the Pennsylvania agricultural labor force.[41] However, several issues have arisen nationally, such as border delays and worker abuses. Farmers have reported the inability of temporary foreign workers to cross the border into the U.S. despite possessing all the necessary documentation. Bureaucratic discrepancies have left farmers with a harvest and no workers. An example is the case of Owyhee Produce, an Oregon-based farm that lost a year's worth of profit after a group of workers were denied entry at the border.[42] Federal laws are meant to ensure decent working conditions, fair pay, and safe housing for guest workers, who are tied to sponsoring employers and must return to their home countries after the short-term visas expire, as the program does not provide a pathway to citizenship. Despite these strategies and programs, nearly half of all crop farmworkers lack legal status.[43]

Land

According to the Young Farmers Coalition, finding and securing access to land is the number one barrier preventing young farmers from entering the industry. Across the country, climbing land prices and competition with the development market have made it increasingly difficult for farmers to find land they can afford. Over the last decade, the average cost of farm real estate across the country has more than doubled.[44] Organic farmers also encounter particular challenges in finding suitable land that has not been exposed to chemical pesticides or fertilizers. Increasing the number of organic acres directly impacts the level of production within the industry. Leased land and owned land provide varying levels of opportunity in this discussion. As a result, this creates a need for two separate educational campaigns targeted towards farmers who own land and those that lease.

In Pennsylvania, 7.2 million acres were devoted to agriculture use in 2017, down from 7.7 million acres in 2012, with much of that land owned and operated by farmers aged 55 and older.[45] To incentivize land transition to younger farmers, the Commonwealth signed into law the "Beginning Farmer Tax Credit," a program allowing landowners to sell or lease their land to qualified beginning farmers in exchange for tax credits.[46] The impacts of the program are currently difficult to assess as the program has existed for only three years.

Supply Chain Issues

Organic farming, like all industries, has experienced supply chain difficulties in the past few years. Many of these challenges stem from pandemic-related disruptions and the subsequent cost increases seen across the board. Livestock and poultry producers have been particularly burdened by the increased costs of organic feed. The causes for organic feed supply chain disruptions are numerous. The Ukraine-Russian war has limited the supply of organic grain shipped from eastern Europe. Additional disruptions in the supply chain include tightening of standards for other organic imports, resulting in a further decrease in imports

[41] Population Projections, Center for Rural Pennsylvania
The H-2A Temporary Agricultural Worker Program in 2020. USDA (2022).
[43] Three Ways Immigration Reform Could Help U.S. Farmers, AgAmerica Lending
[44] National Young Farmers Coalition
[45] National Agricultural Statistics Service (NASS) 2017 Ag Census
[46] Pennsylvania Department of Agriculture, Beginning Farmers

from eastern Europe. Domestically, there has been a decrease in the amount of organic alfalfa produced, due to droughts in the western United States.

In addition to disruptions in foreign and domestic supplies, there have been many recent disruptions in organic imports. In May 2022, the U.S. Department of Commerce placed an "Antidumping Duty Order" on the import of organic soybean meal from India. Tariffs were placed on imports of organic soybeans from India due to the "material injury" the low prices of Indian soybeans had on the U.S. industry. As of 2019-2020, Indian organic soybeans comprised 42 percent of U.S. organic soybean and meal supplies, roughly double the amount of U.S. production.[47] This ruling resulted in a tariff rate of nearly 284 percent for most organic soybean meal shipments from India.[48]

One of the most vital inputs required by animal farmers is livestock feed, which is sometimes imported from abroad. Livestock feed can consist of any combination of corn, soybeans, wheat, vitamins, and other ingredients. The feed itself needs to be certified organic, which presents a challenge for farmers. According to the U.S. Department of Agriculture Economic Research Service (USDA ERS), the demand for organic livestock feed is rising in the U.S., leading to insufficient supply and higher prices.[49] Turkey, Argentina, Romania, India, Canada, and Ukraine are the leading organic grain suppliers to the U.S., according to the USDA. However, supply chain issues, coupled with difficulties importing from Ukraine, have resulted in an increase in this shortage, making it more difficult for farmers to access feed.

To substitute for the loss of these imports, farmers have started to import other organic feeds, including various oilseeds (rapeseeds, sunflower, and canola seeds). However, a significant portion of imported organic oilseeds are grown in Ukraine, which is facing several war-induced disruptions. As of 2020, Ukraine produced 45 percent of U.S. organic vegetable oil imports, but this percentage is projected to decrease in the face of ongoing war.[50] The combined regulations on Indian organic soybean imports and the disrupting impacts of the war in Ukraine will result in higher prices of organic feed. These increased costs present a challenge to U.S. organic livestock producers, but also present an opportunity for U.S. organic feed producers to compete in an increasingly lucrative market.

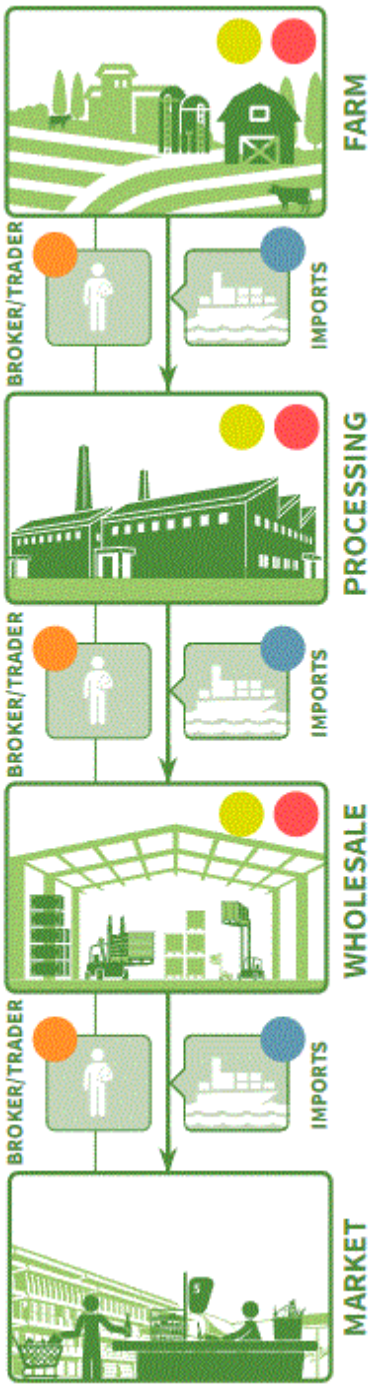
For organic dairies in particular, increased input costs have created difficulties. For example, California is expected to lose 50 organic dairies due to financial infeasibility.[51] In response to the increased costs incurred to organic livestock producers, the USDA is set to create the Organic Dairy Marketing Assistance Program to enable them to improve margins. This $100 million program will grant $40,000 per farm, meant to cover up to 75 percent of a farm's projected marketing costs.[52]

The Commonwealth is home to a number of small to medium-sized organic producers. These dedicated producers face the challenge of competing against significantly larger organic counterparts, especially in organic meat and milk production. The challenge is particularly pronounced due to the proximity to the

[47] *Organic Soybean Market Challenged with Potential Trade Issues.* World Grain (2021)
[48] *Ukraine War, Trade Tensions with India Causing Volatility in U.S. Organic Soybean Market.* The Organic & Non-GMO Report (2022)
[49] Organic Feed Grains and Livestock: Factors That Influence Outcomes in Thinly Traded Markets, USDA Economic Research Service
[50] The War in Ukraine's Impact on U.S. Organic Markets. Mercaris (2022)
[51] *Organic Livestock Farmers, Hit by Rising Prices, Seek Help.* San Diego Tribune. (2022)
[52] Press Release No. 0013.23. USDA. (2023)

Midwest, where these smaller-scale producers find themselves competing against counterparts up to 100 times larger in size. The economies of scale can often pose a significant threat, potentially compromising their competitiveness in the marketplace.

4. Organic Processing Needs Assessment



For Pennsylvania to continue as a leader in organic agriculture production—particularly as organic demand continues to rise—the Commonwealth needs to understand and support the organic food production system. This includes both recognizing the ongoing shifts in consumer demand and preferences while understanding the barriers to growth for the entire industry. One major barrier is the availability of processors across the state, which this section will highlight. In particular, this section will focus on some key segments representing current strengths and future opportunities in the processing of feed grains, dairy, meat and poultry, fruits and vegetables, and mushrooms.[53]

For a product to be labeled organic, any processing that an organic product may undergo must also be certified organic. Because organic certification is costly and there is a shortage of inspectors in Pennsylvania, there is a limited number of organic processors statewide with uneven access across different regions. Even where there are local organic processors, they are often smaller in scale and need to charge more than the large out-of-state processors. This dynamic of fewer, smaller, and more expensive in-state processors results in a supply chain challenge that restricts growth opportunities for Pennsylvania's organic industry. According to focus groups and interviews, producers are typically directed to large processors, resulting in many small to medium organic processors in Pennsylvania going out of business over the past few years, further exacerbating the challenge.

4.1. Organic Supply Chain

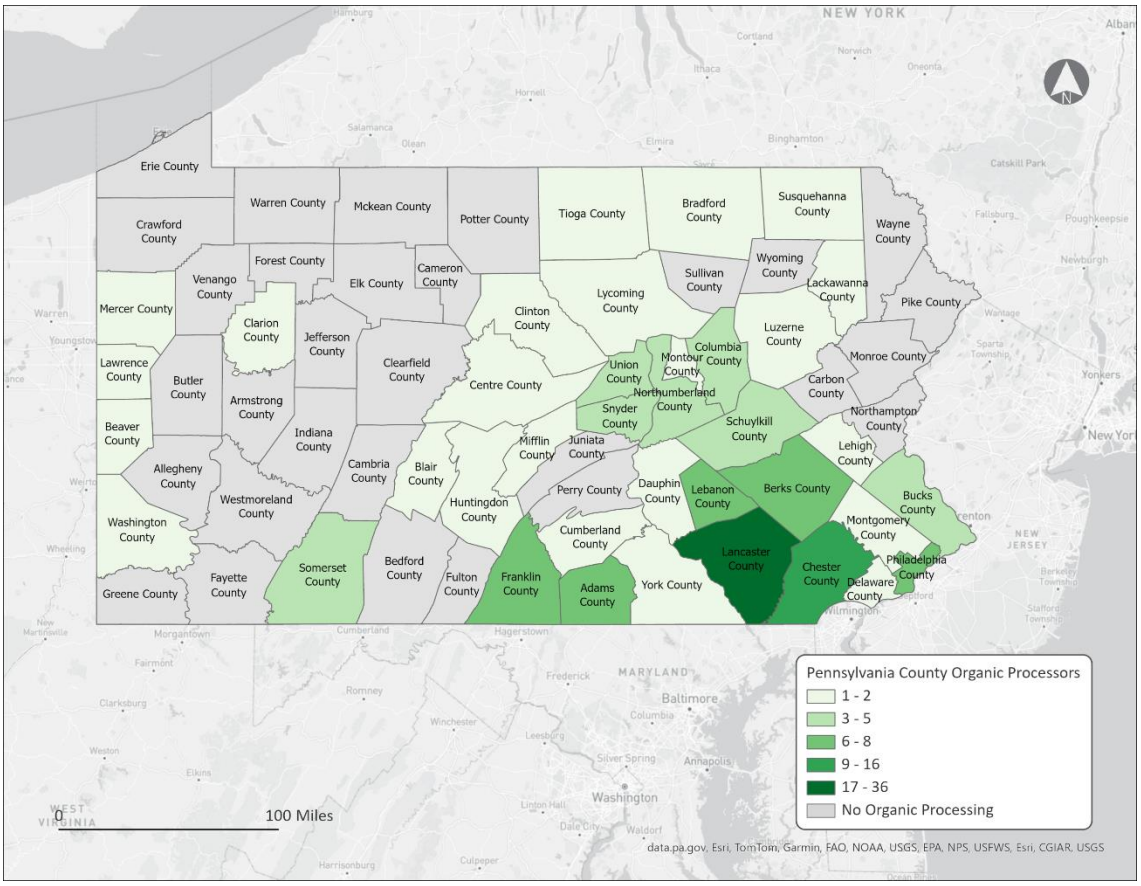
Several essential steps are involved in the journey of organic produce and livestock from farms to final packaged products. After leaving the farm, the next critical link in this chain is the processing stage. Thus, the presence of certified organic processors plays a pivotal role in ensuring that organic products successfully reach store shelves. Given the size of the overall organic agriculture market (less than 2 percent of the United States' food market), the movement of produce, grain, and livestock from the farm to the processor can, in some cases, be more

[53] This section was informed by a combination of research and primary data collection via round table discussions and interviews with Pennsylvania agriculture stakeholders.

complicated than other industries. While producers and processors can sometimes be in proximity, this is not always the case given the emerging nature of many organic subsectors. **For example, in speaking with organic grain farmers within Pennsylvania, it was noted that for oats grown in Pennsylvania, the only large-scale processors are in California and Michigan. Farmers expressed that Pennsylvania has enough land to produce oats but are limited by the number of processors.** This does not mean a lack of demand for oats in the state; for example, a local organic snack company requires over 1 million pounds of oats annually. The distance between producers and processors can add lengthy transportation times and high costs, creating negative market implications such as spoiled produce and shortened shelf life.[54]

Increasing the number of processors and diversifying the locations can have positive impacts for the industry. Figure 4.1, below, shows the distribution of organic processors in these major processing categories across Pennsylvania. [55]

Figure 4.1: Distribution of Organic Processors in Key Sectors in Pennsylvania by County



Source: Organic Integrity Database (2023)

[54] The Supply and Demands of Processing Organic Foods, Food Processing
[55] All analysis based on 2023 data

4.2. Processing for Key Segments

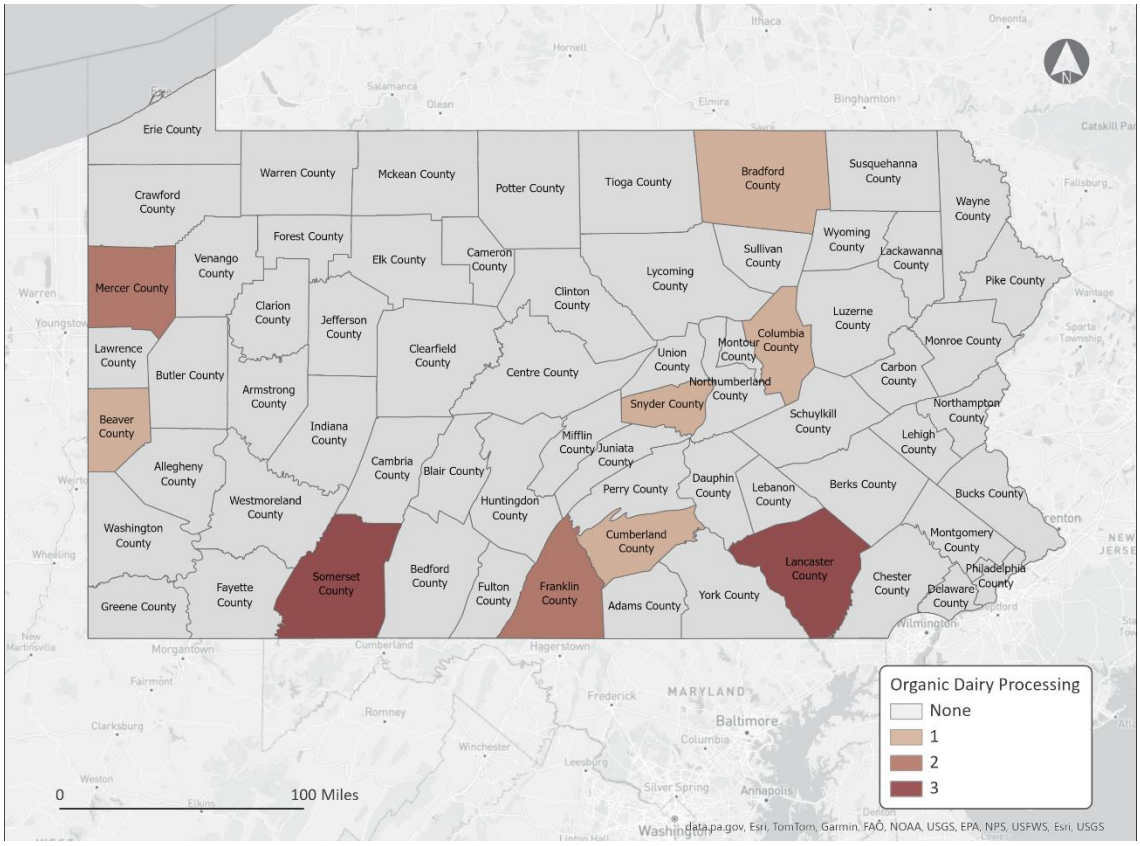
Processing sectors evaluated in this report include dairy, meat and poultry (inclusive of eggs), fresh fruit and vegetables, mushrooms, and feed grains.

Dairy

Pennsylvania has approximately 15 certified organic dairy processors, with half of them being specifically milk processors. Additionally included in the Organic Integrity Database's (OID) dairy processors are products such as cheese, yogurt, and cream.

The presence of limited certified organic dairy processors in Pennsylvania highlights the challenges experienced by a robust organic dairy sector. Notably, some companies find that the supply of their dairy products outpaces the availability of processing facilities. One company interviewed indicated that it does not process any milk in Pennsylvania but rather sends all its product to co-packers in New York, Ohio, and Virginia who split the product between brand, bulk, and private label. While the company expressed a desire to process in-state, there are currently no processers who match their specifications.

Figure 4.2: Number of Organic Dairy Processors in Pennsylvania by County



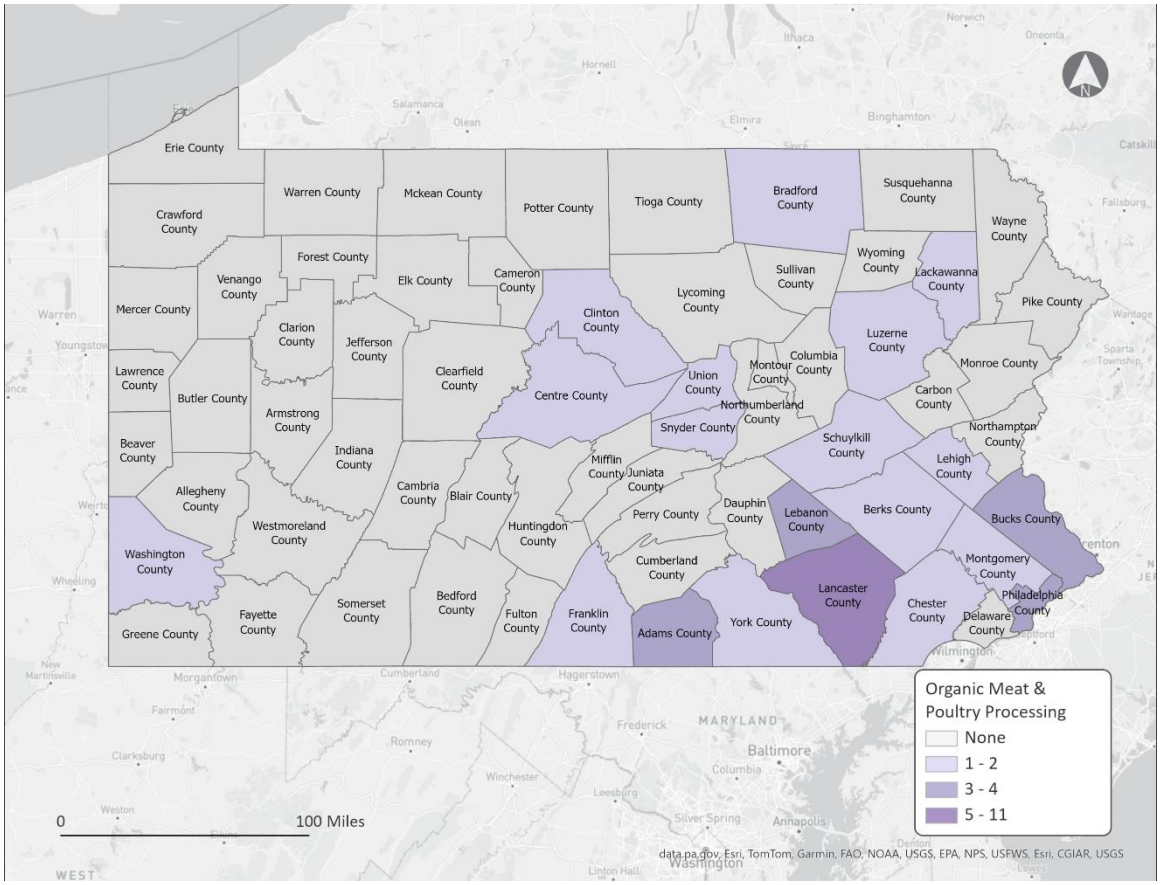
Source: Organic Integrity Database (2023)

Meat and Poultry

The organic meat and poultry industry in Pennsylvania is also a growing sector. At least 242 farms produced a total of $708 million worth of organic meat, accounting for 64 percent of organic sales in Pennsylvania in 2021. Meat processing can be challenging and expensive because of refrigeration needs, especially between slaughter and arrival on the shelf, requiring a streamlined process for successfully reaching the market. Overall, the high cost of small-scale organic meat processing (both costs for paying inspectors and navigating complex USDA regulations) has been a major barrier in keeping processing within the state.

Roughly 45 Pennsylvania organic meat and poultry processors are listed in the OID (included in this category is egg processing). Of these processors, approximately 20 percent are in Lancaster County, with another seven percent in Adams and Lebanon County.

Figure 4.3: Number of Organic Meat and Poultry Processors in Pennsylvania by County



Source: Organic Integrity Database (2023)

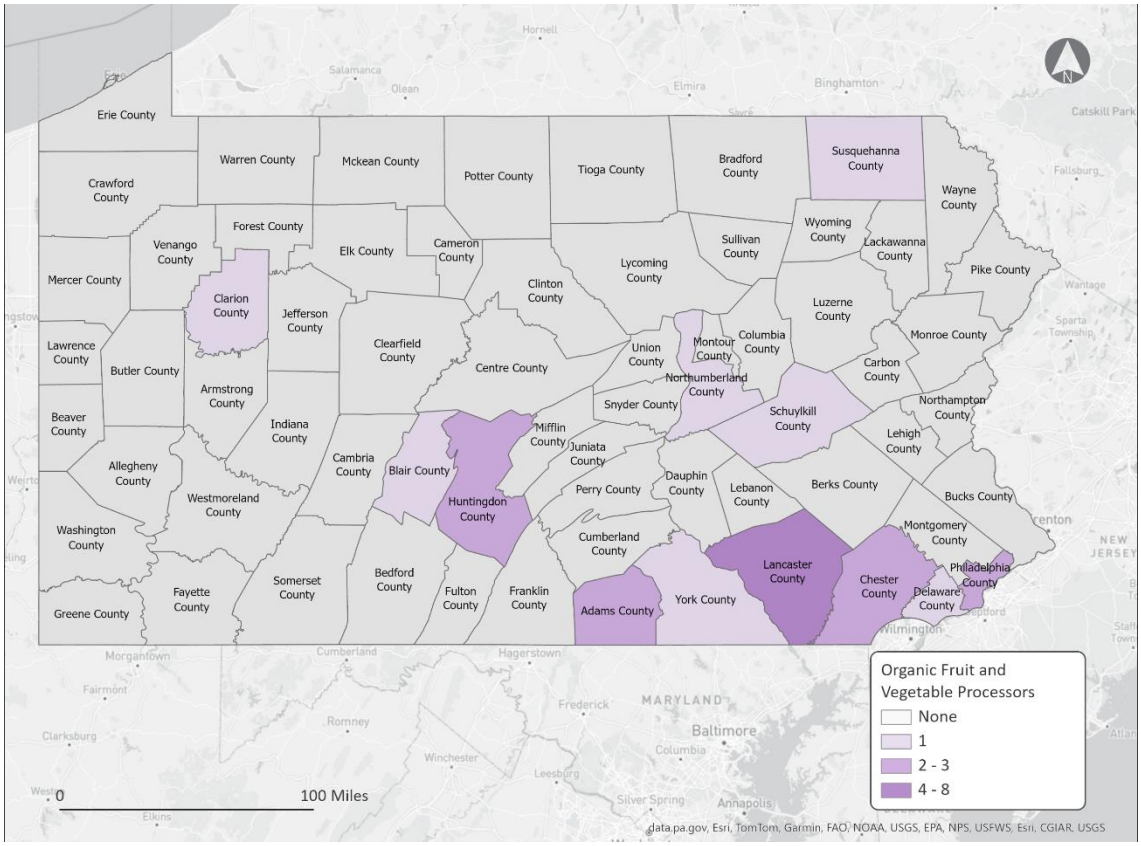
Fresh Fruit and Vegetables

There are many certified organic fruit and vegetable farms in Pennsylvania, with a variety of crops grown throughout the state. Most of these farms are located in the southeastern and central regions, where there is a strong demand for local and organic produce.

Currently the organic vegetable processing market is cornered by California, which accounts for over 40 percent of the national market share. Other key organic vegetable processors include Washington (17 percent of national value) and Wisconsin (11 percent). **While Pennsylvania ranks sixth in the country for most farms processing organic vegetables, it ranks 14th for the value of vegetable goods produced. Pennsylvania accounts for less than one percent of the total value of processed organic vegetables in the country.**

Approximately 25 fruit and vegetable processors are located across twenty-seven counties within the Commonwealth, with about 30 percent of these processors located within Lancaster County.

Figure 4.4: Number of Organic Fruit and Vegetable Processors in Pennsylvania by County

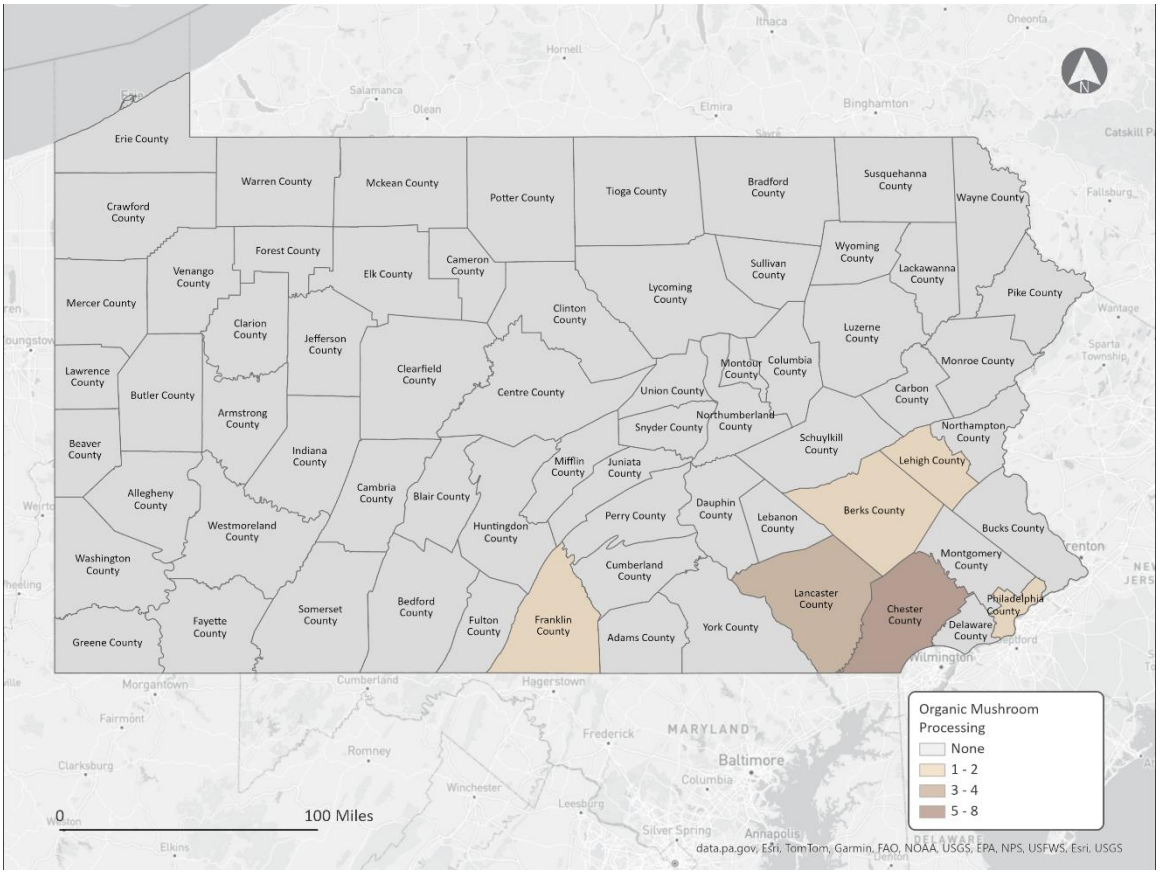


Source: Organic Integrity Database (2023)

Mushrooms

Pennsylvania is home to an incredibly competitive organic mushroom industry, producing and selling more organic mushrooms than any other state. The 2021 Organic Survey revealed that about 10 percent ($95 million) of total organic sales in the state were mushroom sales.[56] These sales were concentrated in 16 farms in the state. While these farms represent roughly 10 percent of the total organic mushroom farms in the U.S., they account for 61 percent of the total square feet of organic mushroom farms and nearly half of all organic mushroom sales nationwide. The concentration of farms provides opportunities for efficient processing. The majority of mushroom processing takes place on farms, as companies have their own grow houses and processing facilities. The OID identifies 17 certified organic mushroom processors in Pennsylvania (these processors include those that solely process mushrooms as well as those that list mushrooms among a large variety of fruit and vegetable), concentrated in six counties. Nearly half of Pennsylvania's mushroom processors are in Chester County, clustered in and around the town of Kennett Square, known as the Mushroom Capital of the World.

Figure 4.5: Number of Organic Mushroom Processors in Pennsylvania by County



Source: Organic Integrity Database (2023)

[56] USDA National Agricultural Statistics Service

Feed Grains

Organic food production in the United States requires that grains fed to livestock intended for organic sale be organically produced. Some of the most widely used grains include corn, wheat, barley, oats, soybeans, and more. Feed grain is a critical input for other organic sectors, including meat and poultry, dairy, and eggs.

Field crop and harvested hay sales are widely dispersed across the country with no state taking up over ten percent of sales. States with strong field crop sales include Texas (10 percent), Iowa (10 percent), California (6 percent), Illinois (6 percent), and Nebraska (6 percent). Pennsylvania is home to over 600 organic farms harvesting more than 62,000 acres of field crops and grain. This harvest accounts for about two percent of the nation's total organic field crops and hay sales. Pennsylvania ranks fourth in number of organic farms producing field crops and hay; however, the per farm yield is smaller than the national average, with Pennsylvania ranking 16th in the number of harvested acres.

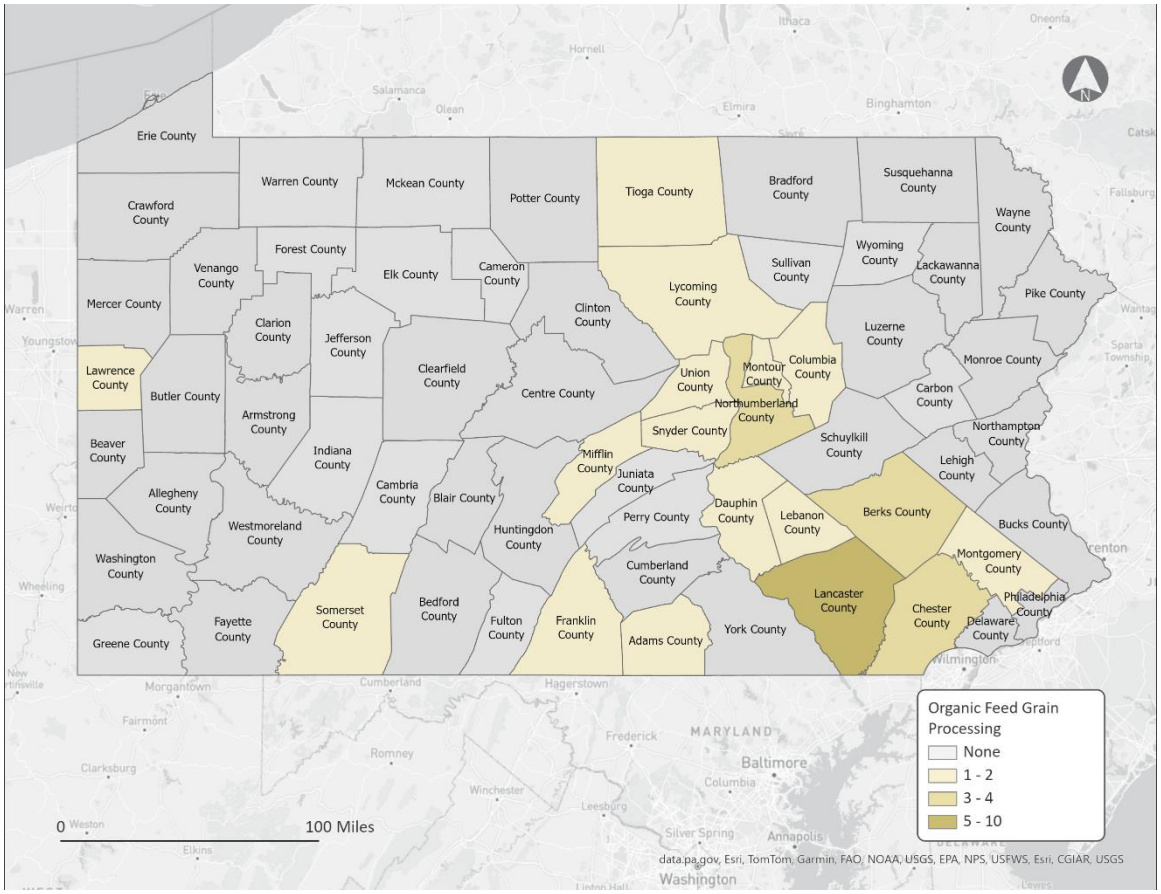
Pennsylvania excels in the growth of certain feed grains including greenchop, or corn grown for silage, haylage, hay, and other types of greenchop. **Organic farms across Pennsylvania are responsible for five percent of the hay harvested in the country, making them the fifth largest organic hay producer in the nation, but the Commonwealth has an even greater share of the haylage and greenchop market, accounting for 12 percent of the country's farms (third in the nation) and five percent of the harvested quantity (seventh in the nation).**[57]

There are approximately 40 feed grain processors located in Pennsylvania, with 25 percent of these processors located in Lancaster County. Other processors are widely dispersed across Pennsylvania, with processors located in over eighteen counties. However, **much of the organic feed grain used for organic agriculture in Pennsylvania is imported from the Midwest, leading to greater supply chain costs.** There are a few factors that have contributed to Pennsylvania's position in the feed grain sector. Regionally, New York and Maryland have established organic grain processors that can be accessed via freight. New York has both federal and state organic inspection with additional legislation that requires processors and distributors to sell within the state. This could be a model for Pennsylvania-specific legislation to bolster the processing capabilities of the sector.

Another state- and sector-specific factor is the lack of a comprehensive state grain insurance program in Pennsylvania. Other states—including all Western states—have state programs to insure grain. This is common in areas with more growers than producers. With state grain insurance, producers could utilize smaller processors (which could be risker than larger, more established processors) and if the processors went out of business for any reason, the producers would be compensated for any lost crop.

[57] All statistics referenced here rely on 2021 data from the USDA

Figure 4.5: Number of Organic Feed Grain Processors in Pennsylvania by County



Source: Organic Integrity Database (2023)

5. Future Forces and Opportunities

Amid growing concerns about environmental sustainability and human health, organic agriculture can play a pivotal role in shaping the future of farming. As a method of food production that emphasizes ecological balance, biodiversity, and the avoidance of synthetic inputs, organic agriculture is gaining significant momentum and is expected to experience transformative changes in the years to come.[58] The recent Covid-19 pandemic also generated major challenges for the industry, impacting supply chain networks and farmers' ability to maintain operations. Efforts to build resilience will be critical to ensure the industry remains stable in the face of future pandemics and other challenges. Explored in this section are the future forces that will drive the advancement of organic agriculture, including climate change mitigation, economic development, and research and innovation. The organic agriculture sector holds great potential to contribute towards a more resilient and sustainable food system within Pennsylvania and across the region.

5.1. Climate Change Mitigation

Climate change is expected to have significant long-term impacts on the agricultural industry and farming practices. Food production systems across the globe are susceptible to climate change and other disruptions, especially in high-risk regions. Pennsylvania's agricultural production can be influenced by challenges including weather variability, diseases and pests, and a host of other hurdles. Climate change may be one of the Organic practices such as rotational grazing, planting carbon sequestering crops, and emphasis on soil health all represent resilience measures that help mitigate extreme weather conditions. A greater emphasis on how soil health creates a positive feedback loops and helps mitigate climate challenges such as drought could be a focus of educational programming by PDA and the organic community in the years to come.

5.2. Equitable Economic Development

"Supply Side Barriers," Section 3.4, outlined some of the issues that potential organic farmers face when attempting to enter the industry or expand their current operation. Farms are vulnerable to seasonal yield variability between one growing season to another, further hindering new, small, and independent farmers from entering and expanding in the organic sector. Despite these challenges and the racial disparities that have traditionally existed in farming, organic farming has a role to play in advancing equitable economic development in Pennsylvania.

Organic farms and the related ecosystem can be an additional opportunity to provide jobs and training within communities, leading to positive economic impacts and gradual development of communities. Strategic investments, educational and learning opportunities, programmatic support, and outreach to encourage participation of underrepresented farmers in the organic movement could strengthen organic farming in communities with fewer farms and less historic access to fresh and organic foods.

[58] Food and Agriculture Organization of the United Nations

5.3. Agricultural Research and Technological Innovation

Technological innovation—in both the conventional and the organic sectors—creates an opportunity for the organic sector to increase productivity and can alleviate some labor constraints associated with organic production.[59] Underfunding of research and development has contributed to an innovation gap between conventional and organic agriculture; of the $49 billion spent annually on global farming research, less than one percent is dedicated to research and development in compliance with organic standards.[60]

Organic farmers forgo using common herbicides and pesticides, so the available tools for them to tackle common agricultural challenges are limited.[61] Agricultural research and technological innovation go hand-in-hand, and scientists have been working to adapt the latest technologies to work on advancing the industry. Advancements can be categorized under hardware improvements, such as more efficient irrigation infrastructure or software improvements such as use of artificial intelligence and crop monitoring applications.

Opportunity

Governor Josh Shapiro's fiscal year 2023-2024 budget provides key investments in agricultural disaster preparedness and response, improvements to agricultural programs, and support for agricultural innovation.[62] The budget allocates $1 million to fund a new Organic Center of Excellence, to drive innovation in organic production and processing techniques. Specifically, the goal of this center is to remove production and processing barriers for organic farmers. It will act as the gateway to services and resources for farmers trying to transition to organic farming. To do so, the center is charged to establish stronger public-private partnerships with relevant industry stakeholders, streamline state services, and bolster other industry-supportive initiatives.[63] This presents a major opportunity to improve the performance of organic agriculture in Pennsylvania and aims to be a model for other states looking to expand their organic sector.

Research is being conducted in a multitude of areas regarding technological advancement within organic farming. Technological advancements in the agricultural industry, especially in weed and pest control, offer the largest advantage to organic farmers. For example, the Penn State College of Agricultural Sciences is conducting new research on the management of soil-based pests and pathogens in both high-tunnel and open field production systems for organic vegetable production. The research will analyze the benefits and drawbacks of organic vegetable production and production systems.[64] Another example of innovation within the Commonwealth is Penn State's Fruit and Research Extension Center, which has been doing research on robotic crop load management.[65] In addition, Penn State's College of Agricultural

[59] Organic Agriculture and Organic Product Market Analysis, Oregon Business Development Department, 2023
[60] Sustainability of Organic Food Production: Challenges and innovations
[61] Organic Confluences Conference: Connecting Organic and Agtech Summary, 2021
[62] Pennsylvania Pressroom, Agriculture
[63] Looking to harness "great potential," Pennsylvania banks on the future of organic agriculture, Postindustrial
[64] Organic vegetable research, water quality highlight Ag Progress Days tours, Penn State College of Agricultural Sciences
[65] The Future of Farming, Penn State, 2023

Sciences has received $1 million to support research on soil health and weed suppression in organic farming.[66] The research aims to help farmers tackle the challenge of fighting weed suppression whilst maintaining good soil health. Looking ahead, research and innovation in the organic sector must address some of the major forces at play in the global food system: providing enough food for a rapidly growing population, improving distribution, reduction of pollution and greenhouse gases, developing resilient food chains, protecting biodiversity, and addressing changing consumer demands and lifestyle needs.[67]

[66] USDA grant awarded for study on soil health, weed control in organic operations, Penn State Sustainability
[67] Organic Food and Farming Research Agenda to 2025, Brussels and Frick

6. Policy Recommendations

This section details initial recommendations for PDA to consider in support of the organic agricultural industry in the Commonwealth. These recommendations are intended to guide various components of the organic agriculture industry as the Shapiro Administration plans its priorities for the years to come. The recommendations are organized into two key areas—demand and supply support.

6.1. Demand Supports: Grow Consumer Trust and Interest in Organic Foods

Consumer Education Campaign

As discussed in Section 3.2 of this report, consumers have varying attitudes toward organic food and do not always trust the claims about the health and environmental benefits. Engaging in a campaign to inform the public would be a lengthy but valuable endeavor for the PA Preferred Organic™ Initiative to spearhead. Such an educational campaign will require a thoughtful plan to engage all Pennsylvanians and inform them of the multifaceted benefits of supporting local, organic farmers. For example, a campaign that explains the certification process, how it ensures organic integrity, along with providing the various definitions associated with organic labeling may go a long way to dispel mistrust, building consumer confidence in Pennsylvania organic agriculture. Additionally, profiling Pennsylvania organic farmers and processors can help consumers feel more connected to and more trusting of the organic foods that are available in local markets, while helping them feel more involved in growing the Pennsylvania economy.

Expansion of Organic Education at State Colleges and Universities

Classes at various levels regarding nutrition, agriculture, and environmental science can play a role in teaching the next generation about agricultural production and can influence future farmers, health care practitioners, policymakers, and consumers. State colleges and universities can play even greater roles. Organic farmers, college instructors and administrators, and policymakers should continue to communicate to make sure students are receiving accurate and relevant information about the state and importance of organic agriculture today. Large institutional buyers can play a role in promoting organic food in several ways: by directly buying the food, by labeling it and thus educating people about what they are eating, and by holding events that entertain and educate the public, such as visits from organic farmers or to farms.

Engage Grocers on PA Preferred Organic™ Campaign

Pennsylvania Department of Agriculture already engages with grocery stores in the state in marketing the *PA Preferred®* program. Engagement by PDA, through sharing educational information with Pennsylvania grocers and profiling local organic farmers as a part of the *PA Preferred®* marketing activities could be beneficial.

Institutional Buyers

The Commonwealth could evaluate how to encourage institutional buyers such as schools, colleges, offices, and hospitals to make large purchases combined with educational and experiential programs (e.g.:

visits to farms). These purchases would not only directly increase the demand for organic food, but also may influence attitudes towards organic food among the public going forward. These institutions could also label the food as “PA Preferred Organic™," so that the people consuming can learn about the contents they are eating.

The first step in successfully implementing an organic institutional buyer initiative would be to engage with institutions that are already focusing on “buy local” initiatives. These institutions often have the procurement practices and framework in place to think creatively about their purchasing and may be able to understand and justify the long-term value of purchasing organic products despite a higher upfront cost. Challenges of this approach may arise from institutions being unable to pay a price that represents sufficient profit for farmers because of regulatory price restrictions.

Furthermore, institutions can do more than serve and label organic food. Pennsylvania schools can incorporate visits from farmers who grow the food served at the school, visits from nutrition experts, or field trips to the farms themselves; such programs can be supported by the Pennsylvania Farm to School Network.[68] Other large buyers such as nursing homes, offices, colleges, or hospitals can combine educational programming with purchasing organic food.

In conjunction with greater engagement and planning with grocery stores throughout Pennsylvania (see previous recommendation), PDA can consider how to provide technical support for CSAs. This support can both contribute to the supply of organic food (by easing delivery) and the demand (by delivering it in a way that increases consumer trust).

Setting up CSAs and finding customers can present a technical challenge. Without legacy customers, farmers would need to do significant marketing and customer sources via the internet, farmers markets, or other options. Funds could be made available to provide technical training or marketing grants for small farmers starting CSAs. PDA could complete additional market research to understand the potential and efficacy of CSAs in growing customer demand for organic products in Pennsylvania.

6.2. Supply Supports

Subsidies for Transition Period

As mentioned earlier, farmers and producers must undergo a three-year transition period in which they adhere to the National List of Allowed and Prohibited Substances, set by the National Organic Standards. **ESI recommends that Pennsylvania explore additional funding for programs like Organic Certification Cost Share and prospect supplementing USDA transition-assistance programs as well.** The transition period is a large barrier to becoming Certified Organic. Farmers suffer a loss during this transition period as they cannot charge the organic price premium that certified farmers can charge for as long as 3 years. The costs incurred by farmers going through the transition process includes purchasing new equipment, organic seeds, and organic inputs (fertilizers, insect control, etc.). Increased availability of transition

[68] Our Work – Pennsylvania Farm to School Network (pafarmtoschool.org)

assistance can help in easing the difficulties of transitioning to organic agriculture and, as a result, encourage more farmers to transition.

Another possibility is to allow farmers to advertise themselves as transitioning to organic when they are in the late stages of the transition. Many farmers interested in organic agriculture do not become certified because of the costs (see Figure 3.8 for sample costs), so it is worth considering many options to make the transition easier.

Supports for New Farmers: Incubation Farms

The Seed Farm's Farm Incubator Program is a promising model to support new farmers who need time to build their business, processes, and experience.[69] This type of program allows farms to get their business plans validated and provides farmers an opportunity to get hands on experience before graduating to a larger-scale operation. These farms are valuable to place within agricultural communities seeking to support nascent farmers, but there are challenges to funding for this type of program. Specifically, the incubator program requires land, support staff, and equipment that these farmers share.

In Pennsylvania, there are currently two incubator farm locations, both of which are at capacity from a farmer and equipment standpoint. PDA could support seed farms in a few ways:

- Identify land for new seed farms across Pennsylvania
- Provide grant supports to pay for seed farm staff and equipment.

SOE Implementation and Inspector Training

With the increased regulation detailed in the Strengthening Organic Enforcement (SOE) rule, there will likely need to be an increase in the number of organic inspectors. PDA can work with high schools, community colleges, and agricultural associations (FFA, 4-H) in agricultural areas to increase awareness of organic inspector roles. The Pennsylvania Department of Agriculture can also work with the International Organic Inspectors Association (IOIA) to increase the availability of apprenticeship options for inspectors undergoing certification. Additionally, they could coordinate additional IOIA training within the state.

Supply Chain and Food Processing

As detailed earlier in this report, food processing is a large challenge for Pennsylvania organic agriculture. There are a small number of processors in the state, many of which are small operations that charge more than larger outfits. Pennsylvania organic food is often transported to other states to be processed, which makes organic food more expensive and threatens the integrity of the food itself. Furthermore, farmers may not be aware of all processing options in the state or under what terms and prices the processors will operate.

Information Channels and a PA Processing Database

Increasing online information regarding currently-operating organic processors can help Pennsylvania farmers find in-state processors. Producers should easily be able to find out what businesses process

[69] https://www.theseedfarm.org/about-us

which products, where they are located, their rates, and if they are looking for more business. This level of accuracy will likely require dedicated staff to update this information. However, if businesses are up to date on their certification, information should be available at least on an annual basis. Efforts would likely require significant coordination between state agencies and organic certifiers. Publishing the Organic Integrity Database on the Pennsylvania Department of Agriculture website would be helpful to spread information.

Increased Access to Land

As described earlier, Pennsylvania can use public policies to make more arable land available to organic farmers. Similarly, such policies can be applied to make more space available for food processors, ideally in locations close to where the food is being grown. Providing (via the Commonwealth) or advocating (via USDA) for funding for remediation of land (not only environmental contamination but also rubble removal) that is identified for farming purposes is one opportunity to increase available land for farmers. Additionally, supporting farmers to ensure that they can keep that land without facing major issues is important. The Beginning Farmers Association has helped producers with access to resources, planning, and other information on all areas of farming, which could be a useful resource for all beginning farmers.

Plain Sect Farmers Inclusion

As mentioned earlier, many plain sect farmers follow processes that are organic or close to meeting organic requirements. The Pennsylvania Department of Agriculture could integrate Plain Sect Leadership into current Boards or Committees. This ensures that there is a platform to communicate with plain sect farmers about how they can get certified organic. In addition, this also opens a line of communication to hear any issues or feedback that Plain Sect Farmers may have.

Minority Outreach

Efforts are underway to address inequalities and low minority participation in organic agriculture. Organic-certified farmers are overwhelmingly white, which can be partially overcome by making more outreach to minority farmers and by hiring more minorities who work as inspectors of organic farms. Additionally, interviews with minority farmers highlighted that increased engagement and communication from PDA on programming, funding, and educational opportunities would help these farmers understand and access the resources available from the Commonwealth. Education and knowledge sharing are key gaps among farmers of color, and especially farmers in urban settings, as they are often less connected to longstanding farming communities. PDA providing a conduit for information sharing for these farmers would be invaluable.

Supporting Farmers from Disadvantaged Communities

The following recommendations could be viewed as supporting the broader agriculture or organic agriculture community; however, based on interviews with a number of stakeholders, these policy ideas could provide crucial support for farmers from disadvantaged communities in particular.

Increase Caps on Commonwealth Grant Funding

Currently, the Pennsylvania General Assembly has placed a cap on the amount of funds that entities can receive via PDA's Urban Agriculture Grant. This cap artificially constrains access for many farms, as the grants are typically directly accessed through an intermediary (for example Grow Pittsburgh), who then passes the funds through to the farmers themselves. By increasing the cap or creating a framework that caps the end recipient instead, this barrier to accessing funding support could be lifted.

Provide Technical Support for Grant Applications

The Commonwealth's grant application process is often confusing and complicated for individuals or organizations that are not accustomed to seeking public funding support. Knowledge of when funding windows open, the details required for the application, and the grant compliance requirements often serve as barriers for many organizations to access these opportunities. Farmers, and organic farmers in particular, do not necessarily have the time or knowledge to apply for or seek help with these programs. Technical assistance through PDA or the Department of Community and Economic Development (DCED), as well as broader outreach (see above recommendations) to targeted communities, could increase the impact of these grant programs to a broader community of farmers.

7. Appendix A: Economic and Fiscal Impact Modeling

Economic impact estimates are generated by utilizing input-output models to translate an initial amount of direct economic activity into the total amount of economic activity that it supports, which includes multiple waves of spillover impacts generated by spending on goods and services and by spending of labor income by employees. This section summarizes the methodologies and tools used to construct, use, and interpret the input-output models needed to estimate this project's economic impact.

A.1. Input Output Model Theory

In an inter-connected economy, every dollar spent generates two spillover impacts:

- First, some amount of the proportion of that expenditure that goes to the purchase of goods and services gets circulated back into an economy when those goods and services are purchased from local vendors. This represents what is called the "indirect effect," and reflects the fact that local purchases of goods and services support local vendors, who in turn require additional purchasing with their own set of vendors.
- Second, some amount of the proportion of that expenditure that goes to labor income gets circulated back into an economy when those employees spend some of their earnings on various goods and services. This represents what is called the "induced effect," and reflects the fact that some of those goods and services will be purchased from local vendors, further stimulating a local economy.

The role of input-output models is to determine the linkages across industries in order to model out the magnitude and composition of spillover impact to all industries of a dollar spent in any one industry. Thus, the total economic impact is the sum of its own direct economic footprint plus the indirect and induced effects generated by that direct footprint.

A.2. Input-Output Model Mechanics

To model the impacts resulting from the organizational expenditures Econsult Solutions, Inc. developed a customized economic impact model using the IMPLAN input/output modeling system. IMPLAN represents an industry standard approach to assess the economic and job creation impacts of economic development projects, the creation of new businesses, and public policy changes within a county its surrounding area

IMPLAN has developed a social accounting matrix (SAM) that accounts for the flow of commodities through economics. From this matrix, IMPLAN also determines the regional purchase coefficient (RPC), the proportion of local supply that satisfies local demand. These values not only establish the types of goods and services supported by an industry or institution, but also the level in which they are acquired locally. This assessment determines the multiplier basis for the local and regional models created in the IMPLAN modeling system. IMPLAN takes the multipliers and divides them into 536 industry categories in accordance to the North American Industrial Classification System (NAICS) codes.

The IMPLAN modeling system also allows for customization of its inputs which alters multiplier outputs. Where necessary, certain institutions may have different levels of demand for commodities. When this occurs, an "analysis-by-parts" (ABP) approach is taken. This allows the user to model the impacts of direct economic activity related to an institution or industry with greater accuracy. Where inputs are unknown, IMPLAN is able to estimate other inputs based on the level of employment, earnings, or output by an industry or institution.

A.3. Employment and Wages Supported

IMPLAN generates job estimates based on the term "job-years", or how many jobs will be supported each year. For instance, if a construction project takes two years, and IMPLAN estimates there are 100 employees, or more correctly "job-years" supported, over two years, that represents 50 annual jobs. Additionally, these can be a mix of a full and part-time employment. Consequently, job creation could feature more part-time jobs than fulltime jobs. To account for this, IMPLAN has a multiplier to covert annual jobs to full-time equivalent jobs.

Income to direct, indirect, and induced jobs is calculated as employee compensation. This includes wage and salary, all benefits (e.g., health, retirement) and payroll taxes (both sides of social security, unemployment taxes, etc.). Therefore, IMPLAN's measure of income estimates gross pay opposed to just strictly wages.

A.4. Tax Revenue Impact

The economic impacts in turn produce one-time or ongoing increases in various tax bases, which yield temporary or permanent increases in various tax revenues. To estimate these increases, Econsult Solutions, Inc. created a tax revenue impact model to translate total economic impacts into their commensurate tax revenue gains. These tax revenue gains only account for a subset of the total tax revenue generation that an institution or industry may have on the economy. Furthermore, where institutions are tax exempt, only the tax revenue generation from supported indirect and induced industries is accounted for.

A.5 Stakeholder Interviews

	Date	Attendees
Organic Farming Virtual Roundtable 1	02/03/2023	Tyler Buck, Dean James – Cotner Farms PA Bridget Gilmore – Rodale Institute Ashley Fehr – PA Department of Ag Kristen Markley – PA Department of Ag Jennifer Reed-Harry – PennAg Industries Association Phyllis Rubin - Two Gander Farm, Pasa Sustainable Agriculture
Organic Farming Virtual Roundtable 2	02/17/2023	Diana Kobus - PA Department of Ag David Jackson - Owner of kiwi merry organics. Jeff Tkach - Chief Impact Officer with Rodale Jennifer Glenister - Organic Vegetable Grower in Central PA Diana Kobus - Executive Director of PCO. Office in Springmill. Eve Adrian - Grower Kegan Hilaire - Small Farms Consultant at Rodale Catherine Peebles - Organic Consultant for Rodale .

		Julie - Certified Organic vegetable farmer
Bell and Evans	06/21/2023	Daniel Chirico
Organic Processors Roundtable	01/13/2023	
Organic Valley Processing	06/27/2023	Georgia Pfleegor, Adam Warthesen, Shawna Nelson – Organic Valley
Plain Sect Discussion Roundtable	06/16/2023	Leon Ressler – Lancaster county ed Jeff Graybill – Penn State Extension, grew up in Lancaster Carly Becker – Diary Education in Lancaster County with Penn Extension Jeff Stoltzfus – Penn State Extension 13 years easter Lancaster school dist

About Econsult Solutions, Inc.

This report was produced by Econsult Solutions, Inc. ("ESI"). ESI is a Philadelphia-based economic consulting firm that provides businesses and public policy makers with economic consulting services in urban economics, real estate economics, transportation, public infrastructure, development, public policy and finance, community and neighborhood development, planning, as well as expert witness services for litigation support. Its principals are nationally recognized experts in urban development, real estate, government and public policy, planning, transportation, non-profit management, business strategy and administration, as well as litigation and commercial damages. Staff members have outstanding professional and academic credentials, including active positions at the university level, wide experience at the highest levels of the public policy process, and extensive consulting experience.



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