2021 CALIFORNIA ORGANIC RESEARCH AGENDA

Outcomes and Recommendations from the 2020 National Organic Surveys and Focus Groups

ORGANIC FARMING RESEARCH FOUNDATION

By Trevor Findley and Thelma Vélez
Brise Tencer, Project Director

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Project Director
Brise Tencer

Project Manager
Thelma Vélez

Staff Contributor
Caroline Baptist

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INTRODUCTION

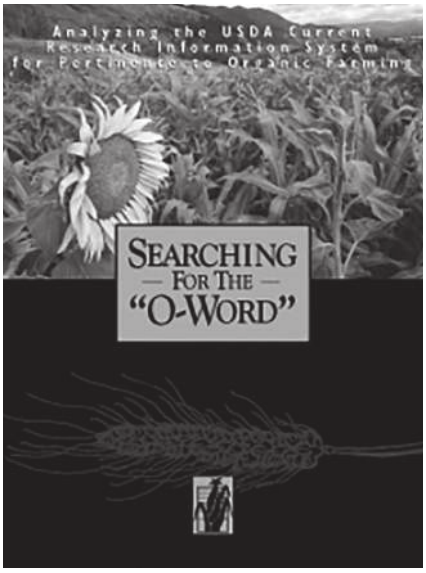
Organic Farming Research Foundation Background

The Organic Farming Research Foundation (OFRF) is a national non-profit organization founded in 1990. OFRF's mission is to foster the improvement and widespread adoption of organic farming systems by cultivating organic research, education, and federal policies with the goal of bringing more farmers and acreage into organic production. Through these efforts, OFRF strives to create a more resilient and sustainable agricultural system that values healthy environments and people.

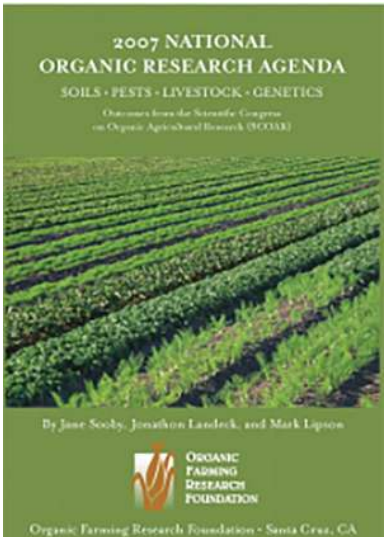
One core mission area for OFRF centers on funding organic agriculture research to advance scientific knowledge and improve the practices, ecological sustainability, and economic prosperity of organic farmers and ranchers. A second key mission area of OFRF is to provide free educational resources to support organic agriculture and organic producers across North America. OFRF offers a wide selection of guidebooks, online courses, and webinars focused for organic growers. OFRF also manages an online database with decades of science-based information organized by topic for greater accessibility and ease-of-use. All OFRF educational material can be accessed online for free.

The third core mission area for OFRF is advocating for federal programs and policies that support the unique needs of organic farmers and ranchers, and working to ensure their voices are heard in Washington, DC. OFRF believes organic producers need equal access to USDA programs and have worked for decades to "level the playing field." In addition to advocating for research, education and Extension resources for the organic sector, OFRF has prioritized improving how conservation programs, crop insurance, and other existing USDA programs work for organic producers. OFRF has worked to remove barriers to organic certification and advocated for programs that support the transition to organic by championing funding for organic certification costs-share and the collection and reporting of organic data by the USDA National Agricultural Statistics Service and the Economic Research Service. Through these efforts, OFRF strives to create a more resilient and sustainable agricultural system that values healthy environments and people.

History of the National and California Organic Research Agendas (NORA/CORA)



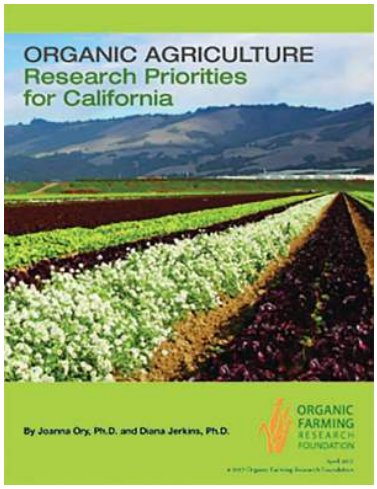
In 1997, OFRF published a pivotal study, "Searching for the 'O' Word," which documented the dearth of federally-funded organic agriculture research. At the time, less than 0.1% of USDA research funding was allocated to organic agriculture (Lipson 1997). This stark finding motivated OFRF to advocate for the establishment of the first dedicated USDA organic research program. In the 2002 Farm Bill, OFRF played an instrumental role in securing authorization of $3 million in annual funding for the newly formed Organic Research and Extension Initiative (OREI). In addition, OFRF advocated for the launch of the Organic Transitions Program (ORG). ORG is designed to address barriers to successful transition to USDA certified organic production, and to document ecosystem services realized through adoption of organic systems.



In 2007, OFRF published the first "National Organic Research Agenda" (NORA) report, a comprehensive blueprint for organic research in the U.S. This landmark document drew on three years of collaboration among farmers and ranchers, scientists, and other agricultural experts to identify and prioritize research needs and develop a framework for publicly supported organic research systems. The goal of the 2007 NORA report was to outline clear organic agriculture research recommendations and enable university, USDA, and other research programs to support the agricultural, environmental, and economic performance of organic production systems. Using findings from the 2007 NORA report, OFRF helped advocate for and secure $78 million in mandatory funding for the OREI in the 2008 Farm Bill, a historic five-fold increase from the $15 million allocated in the expiring 2002 legislation.

In response to continued interest in identifying top needs and challenges in organic production systems, OFRF published an updated research agenda for organic agriculture in 2016. The 2016 NORA report included a review of novel organic research and identified areas requiring additional research by surveying over 1,400 organic producers across the U.S. This report was used by OFRF to advocate for additional funding in the 2018 Farm Bill. OFRF collaborated with a coalition of organic champions to obtain permanent mandatory funding for OREI at $50 million per year by 2023. ORG has received annual appropriations up to $7 million in FY2021. Together, these two programs will provide a little over $500 million in funding for organic-specific research over the next ten years.

Along with the 2016 NORA, OFRF also published the first California-specific organic research agenda titled, "Organic Agriculture Research Priorities for California: Results from the 2015 OFRF National Organic Research Agenda Survey and CCOF Listening Sessions" (Ory and Jerkins 2016). The report identified the following priorities:



- Irrigation and drought management
- Soil health, biology, quality, and nutrient cycling
- Fertility management
- Pest management
- Nutritional quality and health benefits of organic food

Similar to the 2016 Organic Agriculture Research Priorities for California report, this 2021 "California Organic Research Agenda" (CORA) report was developed using the subset of California respondents from the most recent NORA survey. The forthcoming 2022 NORA report presents updated survey results from over 1,200 organic producers across the U.S., including findings from sixteen nationwide focus group discussions with organic and transitioning farmers and ranchers. The data in this report includes 144 survey respondents and two farmer focus group listening sessions to identify the current need and challenges, and the top research priorities, of organic farmers and ranchers in California.

Goals and Structure of the 2021 CORA Report

California is the nation's top producer of organic agricultural commodities and specialty crops. Thus, it is imperative to understand the unique needs of the organic growers in the nation's most agriculturally productive state. The 2021 CORA report provides up-to-date information on the stewardship practices used by organic producers across the state and identifies the most pressing production and non-production challenges faced by organic California growers. The findings presented in this report: 1) highlight the soil health management practices that organic producers in California are currently implementing, 2) outlines the most pressing challenges and needs of certified organic producers in California, and 3) outlines priorities and recommendations to address those needs through public policy, research, and Extension programs.

This report is divided into four main sections. To provide a more nuanced perspective of research needs, the report draws comparison between California responses and the national-level data, and also breaks the data down by experience and commodity categories. For the purposes of this report, experience is broken into two categories frequently used by the USDA, where 'beginning farmers' are those who reported ten years or less experience.

Chapter one provides a breakdown of the characteristics of organic farms and farmers surveyed for this report and a comparison to the national-level data. The second chapter describes the current use of best management practices, water conservation practices, and organic inputs. The third chapter outlines the key production and non-production challenges identified by organic producers as well as topics of concern for organic production. Chapter three also differentiates the top challenges rated by White producers and Black, Indigenous, and People of Color (BIPOC) producers. Chapter four summarizes the top priorities organic farmers identified through the surveys and focus groups, and discusses the implication of these priorities for policy makers and funders. The report focuses primarily on the top five challenges and priorities, though the full list is provided for the reader to reference. The final chapter describes the survey methodology.

It is important to note that while comparison between the California data and national trends offer insight into the specific needs of California growers, this data is not independent, meaning the California data is included in the overall national-level analysis. Further, because organic survey respondents could include more than one commodity type in their operations, the comparisons of challenges among commodity categories are also not independent. For example, some producers of vegetable and herb crops may also grow tree fruit; hence some of the vegetable crop growers who reported challenges with production costs, pests, or diseases may have encountered these challenges in their tree fruit enterprises and not in their vegetable crop rotations. Therefore, the commodity comparison data may over or under estimate some of the differences in production challenges among commodity categories.

CHAPTER 1
STATE AND FARMER CHARACTERISTICS

State of Organic in California

The USDA completed a special study of organic agriculture in 2019 as part of the 2017 Census of Agriculture. The 2019 study followed similar studies in 2008 and 2014, each of which surveyed all known certified organic, exempt, and transitioning operations in the U.S. Data from the 2019 report shows that California had 3,012 certified organic farms, more than two times as many as any other state (NASS 2019). California boasts 965,257 acres in organic production, which equals roughly 17.5% of all organic acreage in the United States. In terms of value, California farmers and ranchers were responsible for $4,089,542,095 in sales, or 40% of all sales of organic agricultural products in the country (CDFA 2021). The top five counties for organic sales were Monterey, Santa Cruz, Kern, Los Angeles, and Merced counties. In terms of organic acreage, the top five counties were Kern, Modoc, Lassen, Tehama, and Siskiyou counties.

Farm and Farmer Characteristics

All farmers and ranchers who participated in the CORA organic survey used for this report were certified organic. The California subset of data includes 144 respondents representing a broad range of ages, farm sizes, commodities, and marketing outlets. The majority of respondents in California identified as male (74%). Female farmers accounted for less than a quarter of respondents (24%), and 3% of respondents preferred not to identify (Table 1.1). In terms of age, an overwhelming majority of respondents were over the age of 54 (78%) with producers ages 55 and under representing only 22% of respondents. With respect to farming experience, roughly 22% of respondents stated they had less than ten years of farming experience, with the remaining 78% noting they had greater than ten years of experience farming. Most survey respondents identified as White (92%), with only 8% of respondents identifying as BIPOC farmers. Four respondents identified as Native American, one identified as Black, three identified as Hispanic or Latinx, and six identified as Asian or Pacific Islander. While we recognize there has been an increase in Hispanic, Latinx, and other BIPOC farmers, the survey instrument used for this report was only disseminated in English and may not have captured non-English speaking farmers.

When compared to the national survey respondents, California farmers and ranchers tend to be older than farmers and ranchers in the national sample. At the national level, farmers ages 55 and under composed roughly 43% of respondents, compared to just 22% in California. California farmers and ranchers also tend to own smaller parcels of land than those surveyed in the national data. In California, 56% of respondents owned twenty-five acres or less, compared to 41% nationally. Similar to owned land, California organic growers tend to lease smaller parcels of land than those in the national data. In California, 67% of respondents leased twenty-five acres or less, compared to 43% nationally. No California respondents leased more than 1,000 acres for organic production, whereas 6% of national respondents did.

Table 1.1

California & National Survey Sample of Farmer Characteristics

Category		California Percentage	National Percentage
Age	18-24	0%	<1%
	25-34	4%	10%
	35-44	9%	18%
	45-54	9%	14%
	55-64	22%	26%
	65-74	44%	26%
	75-84	12%	6%
	85-94	0%	<1%
Sex	Male	73%	78%
	Female	24%	22%
	Prefer Not to Say	3%	1%
Race	White	92%	96%
	BIPOC	8%	4%
Organic Acres Owned	25 or less	56%	41%
	26-100	21%	25%
	101-500	16%	25%
	501-1000	2%	5%
	More than 1000	5%	4%
Organic Acres Leased	25 or less	67%	43%
	26-100	16%	22%
	101-500	15%	24%
	501-1000	2%	5%
	More than 1000	0%	6%

Table 1.2

California & National Survey Sample of Commodities

California Commodities		National Commodities	
Vegetables and Herbs	31%	Vegetables, Herbs, and Flowers	37%
Cut Flowers	15%		
Berries	13%	Berries	19%
Field Crops	8%	Field Crops	36%
Forage Crops	6%	Forage Crops	22%
Livestock and Dairy	6%	Livestock and Dairy	25%
Seeds for Planting	10%	Seeds for Planting	14%
Tree Fruits	40%	Tree and Vine Crops	26%
Tree Nuts	20%		
Vineyard	19%		
Nursery Crops	8%		

Marketing Outlets

Survey respondents were asked to identify the percent of their organic sales going to different marketing outlets; the options included: 'direct to consumer,' 'direct to retail,' 'wholesale,', 'food hub or cooperative,' and 'institutions' (Table 1.3). Wholesale markets appear to be the most popular outlet for California's organic farmers and ranchers, with sixty-seven respondents saying they sell a portion of their products through wholesale channels. Of those identifying wholesale as a marketing outlet, 70% identified it as their primary marketing outlet (greater than 60% of their sales). The next most popular distribution channel respondents identified was 'direct to consumer' (forty-three respondents), followed by 'direct to retail' (forty respondents). 'Food hubs and cooperatives' and 'institution' sales were the least popular marketing channels, with nine and five respondents, respectively.

Table 1.3

Certified Organic Sales in Marketing Outlets

Outlets		Percent of Respondents
Direct to consumer (e.g., farmer's market, CSA, website sales)	1 to 20 percent (n=12)	28%
	21 to 40 percent (n=10)	23%
	41 to 60 percent (n=5)	12%
	61 to 80 percent (n=5)	12%
	81 to 100 percent (n=11)	26%
	TOTAL (n=43)	100%
Direct to Retail (e.g., local food store, supermarket, restaurant)	1 to 20 percent (n=13)	33%
	21 to 40 percent (n=8)	20%
	41 to 60 percent (n=5)	13%
	61 to 80 percent (n=4)	10%
	81 to 100 percent (n=10)	25%
	TOTAL (n=40)	100%
Wholesale (e.g., processor, distributor, broker)	1 to 20 percent (n=10)	15%
	21 to 40 percent (n=5)	8%
	41 to 60 percent (n=5)	8%
	61 to 80 percent (n=6)	9%
	81 to 100 percent (n=41)	61%
	TOTAL (n=67)	100%
Food Hub or Cooperative	1 to 20 percent (n=4)	44%
	21 to 40 percent (n=1)	11%
	41 to 60 percent (n=1)	11%
	61 to 80 percent (n=1)	11%
	81 to 100 percent (n=2)	22%
	TOTAL (n=9)	100%
Institutions (e.g., schools, hospitals)	1 to 20 percent (n=5)	100%
	TOTAL (n=5)	100%

Geographic Distribution of Products

In order to identify the geographic distribution of where commodities are being sold, respondents were asked to identify the percentage of their commodities that were being sold 'locally' (within 100 miles from their farm), 'regionally' (101-499 miles from their farm), 'nationally' (over 500 miles from their farm), and 'internationally' (Table 1.4). In California, most commodities are sold or marketed locally (within 100 miles). Eighty-five respondents indicated they are selling at least a portion of their produce within 100 miles, thirty-four respondents sold their products regionally, twenty-eight sold products nationally, and ten respondents sold their products in international markets. Of those focused on local markets, 73% indicated they were selling over 80% of their product locally. Given the proximity of Mexico to the southern border of California, it is possible that respondents identified international sales as local.

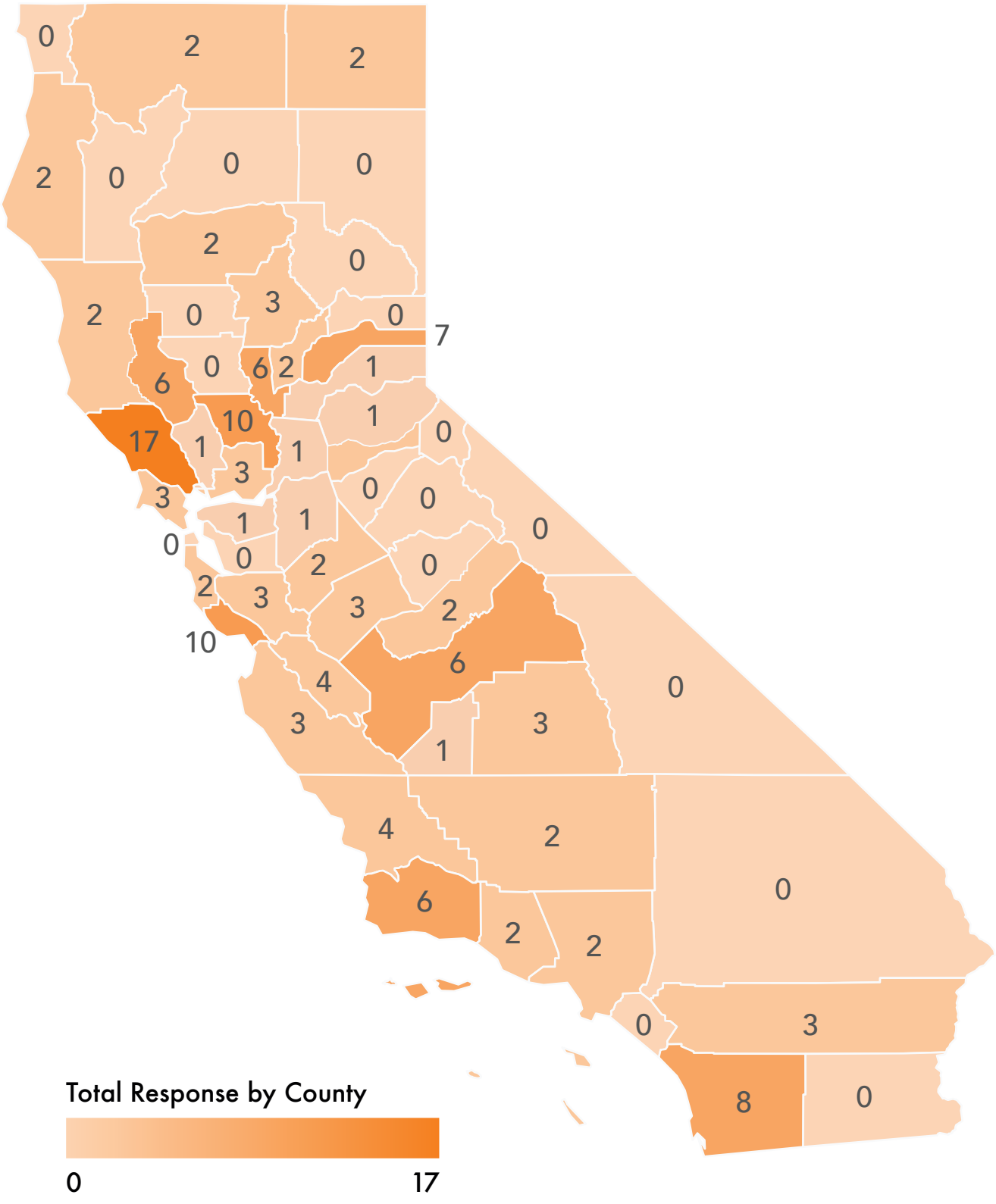
Table 1.4

Certified Organic Sales within Geographic Regions

Regions		Percent of Respondents
Local (within 100 miles)	1 to 20 percent (n=8)	9%
	21 to 40 percent (n=8)	9%
	41 to 60 percent (n=3)	4%
	61 to 80 percent (n=4)	5%
	81 to 100 percent (n=62)	73%
	TOTAL (n=85)	100%
Regional (more than 100 miles, but less than 500 miles)	1 to 20 percent (n=10)	29%
	21 to 40 percent (n=11)	32%
	41 to 60 percent (n=3)	9%
	61 to 80 percent (n=2)	6%
	81 to 100 percent (n=8)	24%
	TOTAL (n=34)	100%
National (500 miles or farther)	1 to 20 percent (n=11)	39%
	21 to 40 percent (n=2)	7%
	41 to 60 percent (n=9)	32%
	61 to 80 percent (n=3)	11%
	81 to 100 percent (n=3)	11%
	TOTAL (n=28)	100%
International	1 to 20 percent (n=6)	60%
	21 to 40 percent (n=2)	20%
	41 to 60 percent (n=2)	20%
	61 to 80 percent (n=0)	0%
	81 to 100 percent (n=0)	0%
	TOTAL (n=10)	100%

Figure 1.1

Breakdown of CA respondents by county using zip code



CHAPTER 2
CURRENT USE OF ENVIRONMENTAL STEWARDSHIP PRACTICES, WATER CONSERVATION, AND ORGANIC INPUTS

2.1 Soil Health Management Practices

Organic farming operations benefit from a variety of soil health management practices that build soil health and enhance the health of the surrounding environment. Some of these practices include cover cropping, green manures, crop rotations, and intercropping. In addition to building soil health and fertility, practices such as cover cropping, intercropping, and diverse rotations help reduce pest and disease pressures. Organic certification promotes many of these practices through rules codified by the National Organic Program (NOP).

§205.2 Terms Defined. "Crop rotation. The practice of alternating the annual crops grown on a specific field in a planned pattern or sequence … Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation."

§205.203 Soil Fertility and Crop Nutrient Management Practice Standard. "(b) The producer must manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials."

§205.205 Crop Rotation Practice Standard. "The producer must implement a crop rotation including but not limited to sod, cover crops, green manure crops, and catch crops that … (a) maintain or improve soil organic matter content. (b) provide for pest management … (c) manage deficient or excess plant nutrients; and (d) provide erosion control."

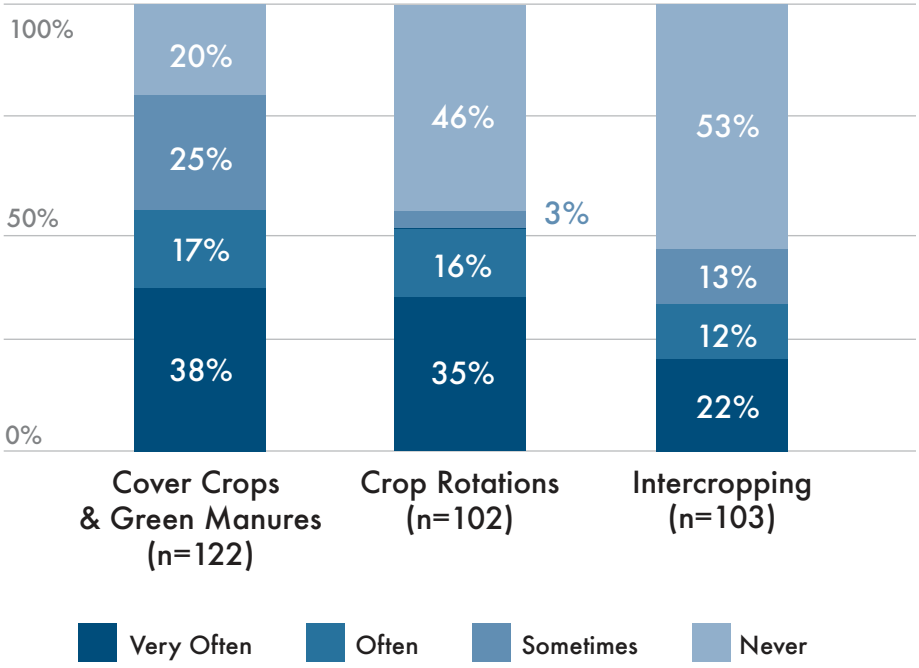
Survey respondents were asked how often they implemented three types of soil health management practices, including 'cover crops and green manures,' 'crop rotations,' and 'intercropping.' Respondents could indicate how often they implemented these practices using a four-point Likert scale ranging from 'never' to 'very often.' Respondents could also indicate if a practice was not applicable to their operation.

Overall

Cover crops and green manure were the most frequently implemented practice in California, with 80% of respondents reporting using them at least some of the time, and over 50% indicating they implement it 'often' or 'very often.' Less common was the use of crop rotations with just 54% producers indicating that they rotate crops. Intercropping was the least common practice used by California growers (47%). (See Figure 2.1.)

Figure 2.1

Percent of California Respondents' Soil Health Management Practices



National Comparison

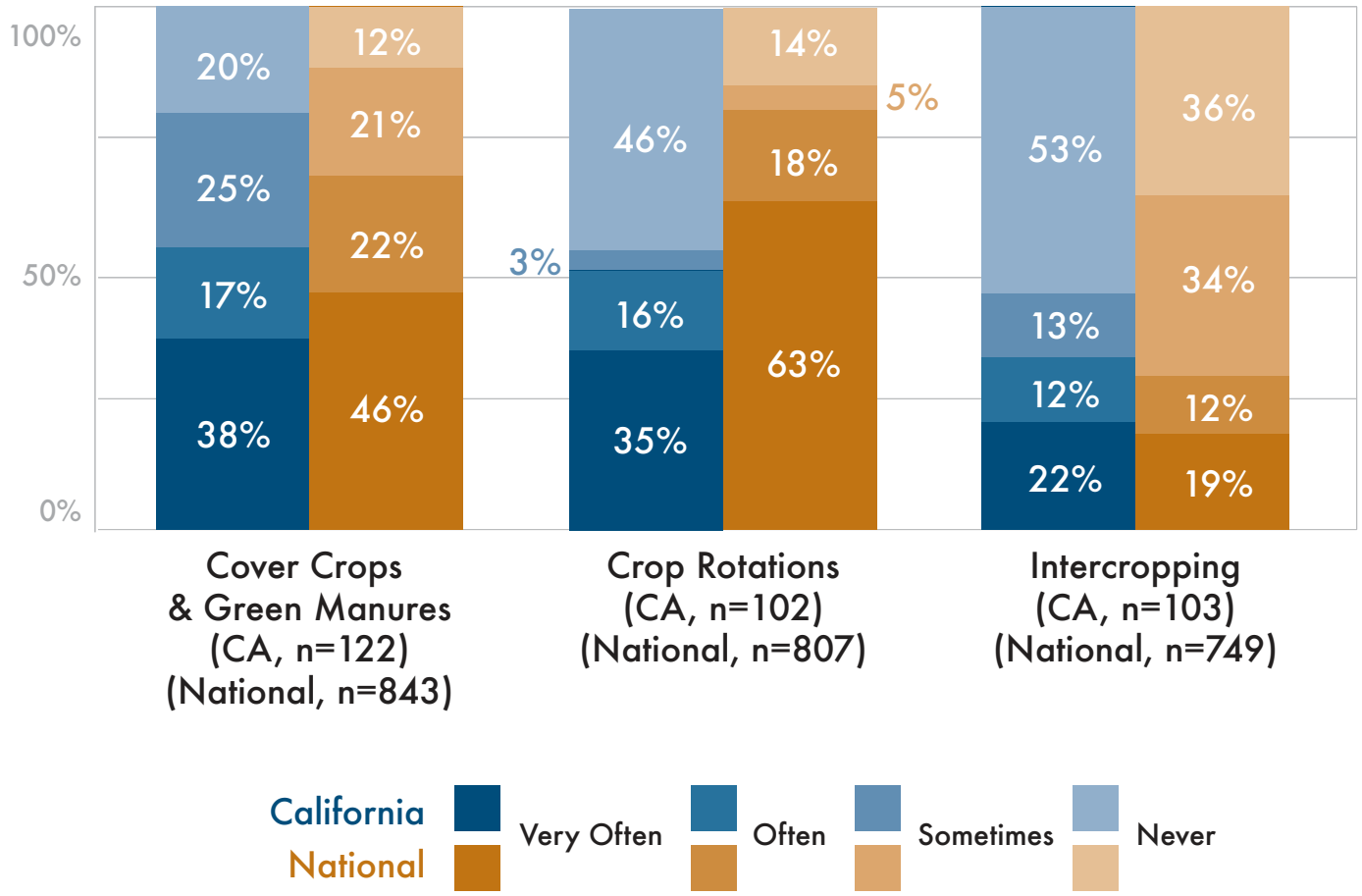
Compared to national data, California producers are lagging with a greater percentage of respondents reporting they 'never' use any of these practices (see Figure 2.2). California producers report using crop rotations less frequently. In California, 51% of producers use them 'often' or 'very often,' compared to 81% of national respondents. California producers also report using cover crops or green manures less frequently. Only 55% of California producers reported using cover crop or green manure 'often' or 'very often,' compared to 68% of national producers. Unlike cover crops and crop rotations, California producers practice intercropping 'often' or 'very often' at a similar rate, 34% in California compared to 31% in the national data.

At the national level, the high percentage of respondents who rotate crops and plant cover crops indicates a high level of compliance with NOP standards. This same level of adoption of soil health management practices does not seem to be the case in California. These numbers are concerning given the importance of implementing these practices for soil and overall farm-system health. One possible reason for lower levels of cover crop adoption in California relates to the extended growing season, where growers throughout the state often utilize their land for year-round production.

Despite the lower levels of adoption in California, certified organic farmers still utilize soil-enhancing management practices far more often than conventional producers. For example, while 80% of California respondents reported using cover crops to some extent, only about 10% of non-organic producers plant cover crops, according to the 2012 Census of Agriculture (Hellerstein et al. 2019).

Figure 2.2

Comparison of California and National Respondents' Soil Health Management Practices



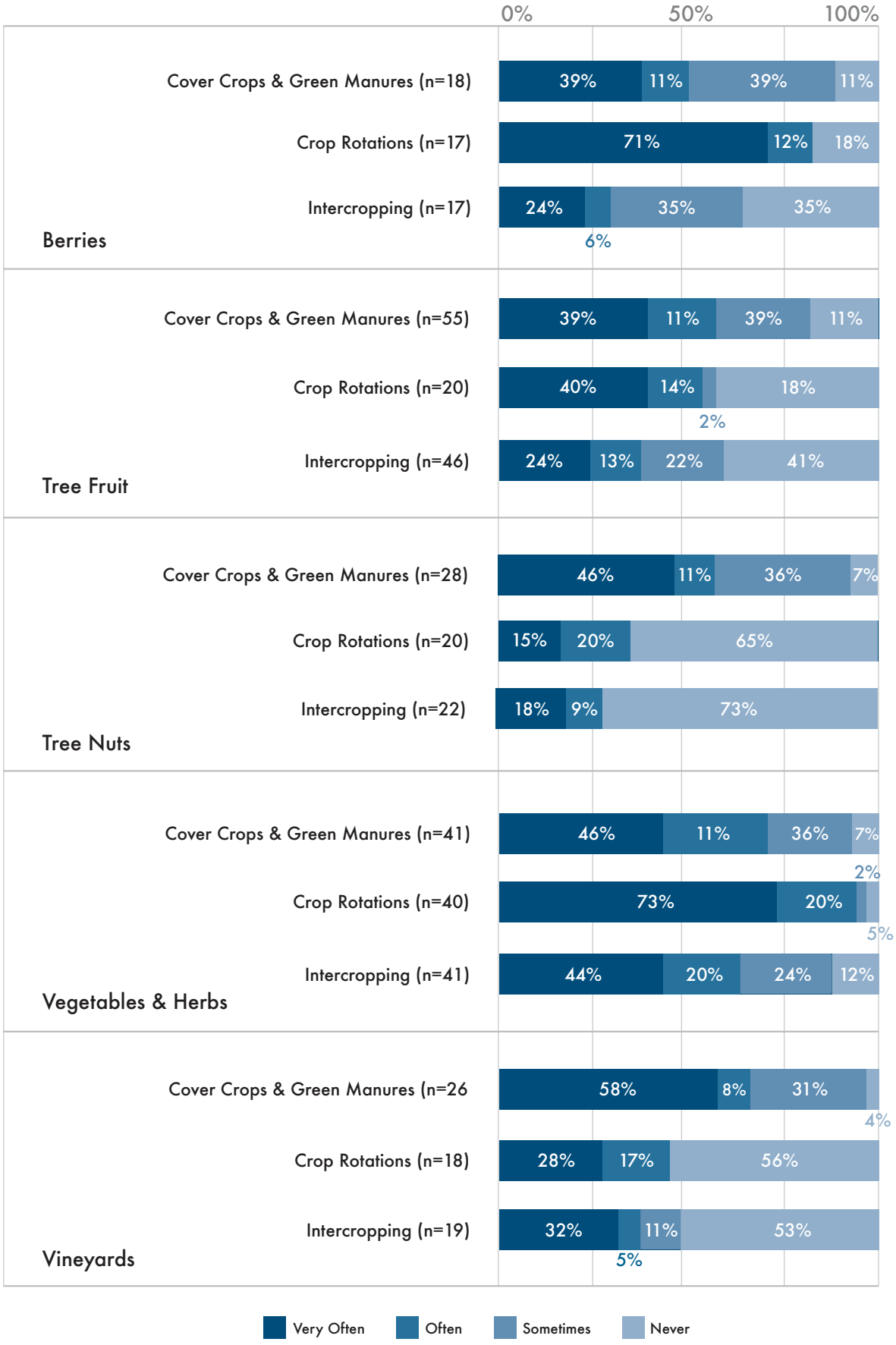
Soil Health Management Practices by Commodity

Over 95% of respondents who produce organic vegetables and herbs rotate crops regularly (i.e., 'often' or 'very often') followed by 80% of berry growers rotating crops 'often' or 'very often.' These percentages are notably higher than for respondents who do not produce these commodities (Figure 2.3). Not surprisingly, 44% of vegetable and herb growers also reported using cover cropping and intercropping 'very often.' The survey results indicate that organic producers of annual crops understand that crop rotation, cover cropping, and intercropping are especially important for soil health, pest and disease management, and long-term productivity.

Conversely, a lower percentage of tree fruit, tree nut, and vine crop growers indicated that they rotate crops when compared to other commodity categories. However, they do engage in other diversification practices. More tree nut and vine crop growers practice cover cropping and green manure 'very often' than all other categories, 46% and 58%, respectively. With the exception of vegetables and herbs, intercropping on vineyards is practiced somewhat more often (32%) than other commodity categories.

Figure 2.3

Percent of Respondents' Soil Health Management Practices by Commodities



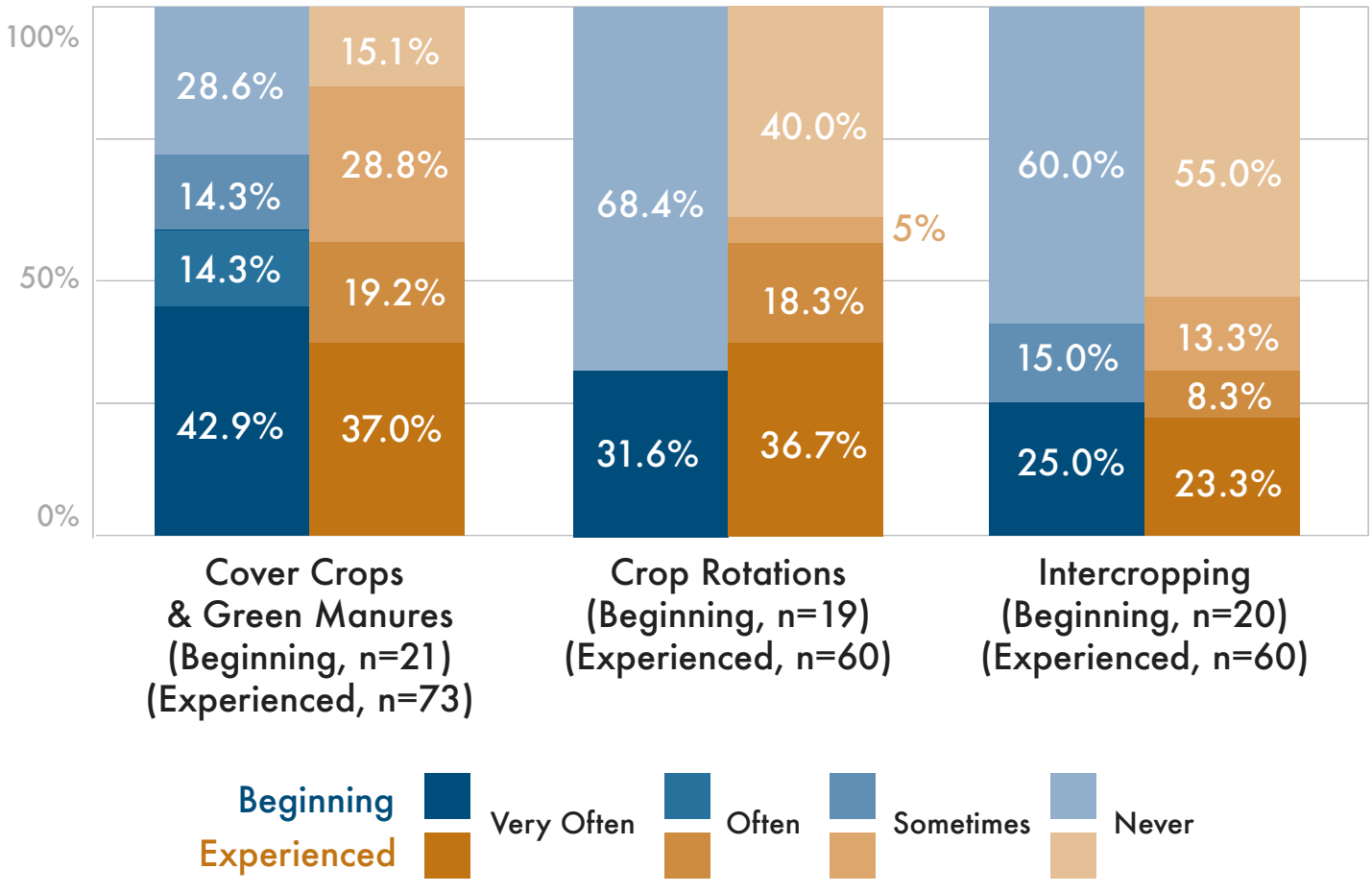
Farming Experience

Beginning farmers and experienced farmers use cover crops and green manures 'often' or 'very often' at roughly the same rate, 57% and 58%, respectively. However, 29% of beginning farmers report 'never' using cover crops and green manure when compared to just 15% of experienced farmers. Crop rotations are used with greater frequency among experienced farmers. Over half (55%) of experienced farmers report rotating crops to some extent. This is in sharp contrast to 70% of beginning farmers who report 'never' rotating crops. Intercropping is used at around the same rate between beginning and experienced farmers. Roughly one-quarter of both groups use intercropping 'very often,' an additional 15% of beginning farmers use the practice 'often,' and a little over 8% of experienced farmers use intercropping 'often' (Figure 2.4).

As farmers gain experience with organic production practices, they may feel more comfortable implementing these practices, such as cover cropping and crop rotation, on a larger scale. This suggests that in addition to providing beginning farmers with more Extension and technical support to successfully implement these practices, experienced organic producers could be a valuable resource to beginning organic farmers who may be less aware of the benefits associated with cover cropping and crop rotation, or who feel less confident to effectively implement these practices.

Figure 2.4

Percent of Respondents' Soil Health Management Practices by Farming Experience



2.2 Water Conservation Practices

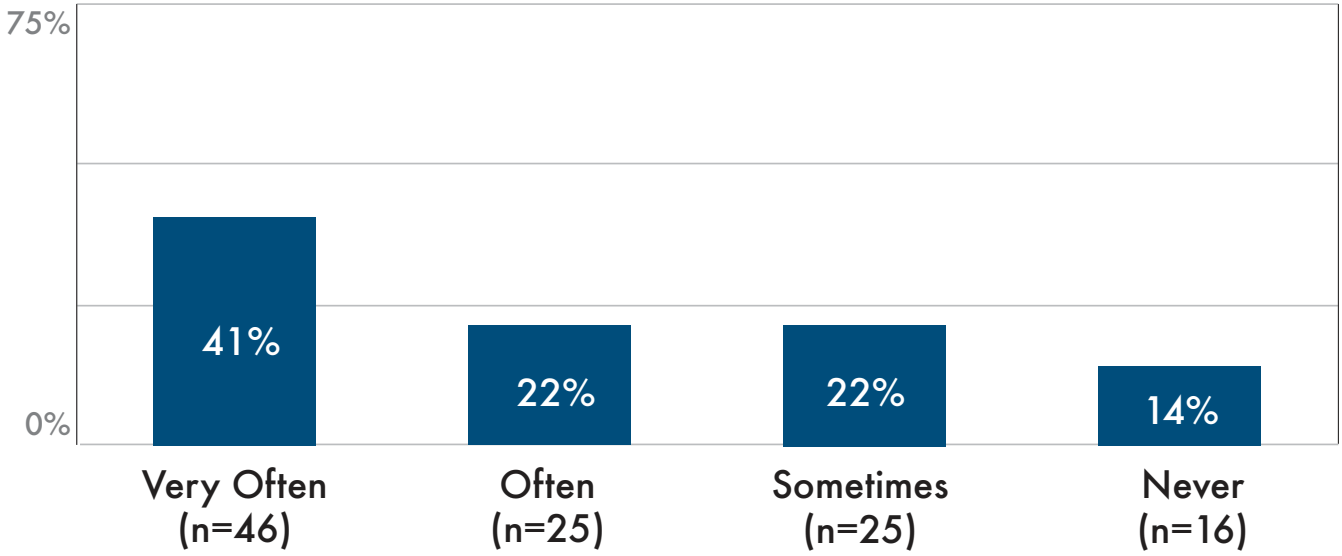
Survey participants were asked to describe how frequently they use water conservation practices using a four-point scale that ranged from 'very often' to 'never.' Survey participants could also indicate water conservation practices were 'not applicable' to their operation; thirteen respondents selected 'not applicable.' The term 'water conservation' was intended to include a broad suite of practices such as implementing drip irrigation, adapting irrigation scheduling to current weather conditions, growing drought tolerant crops, mulching, etc.

Overall

A majority of California respondents report implementing water conservation practices at least 'sometimes' (85%). Of these respondents, 41% implement water conservation practices 'very often,' 22% implement them 'often,' and another 22% reported that they 'sometimes' use them; only 14% of respondents reported 'never' using water conservation measures (Figure 2.5). Given the increased prevalence of drought and other water constraints in California, it is no surprise that farmers and ranchers are responding with a variety of water conservation efforts.

Figure 2.5

Percent of California Respondents' Water Conservation Practices

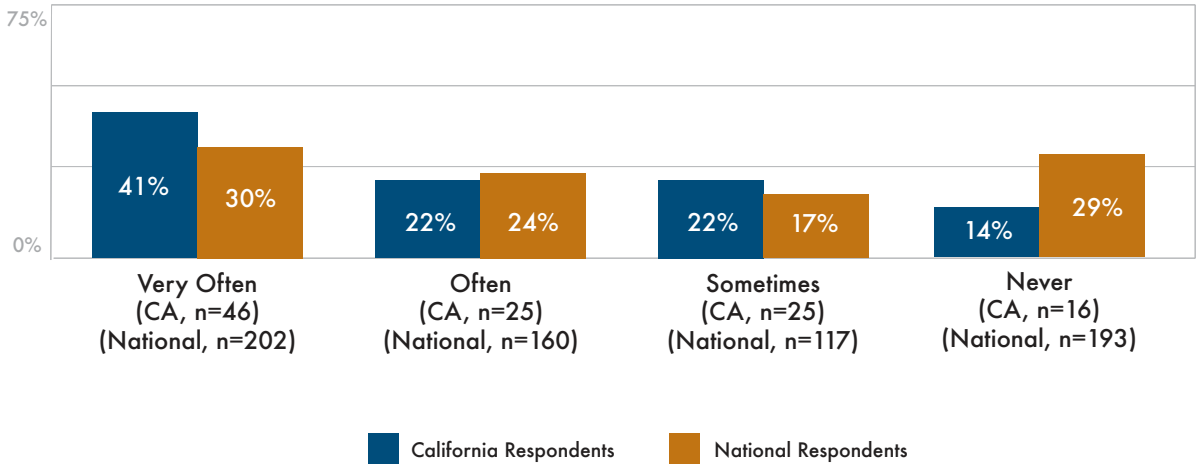


National Comparison

California organic producers engage in water conservation measures more often when compared to the national organic producers. Sixty-three percent of California producers reported implementing water conservation practices 'very often' or 'often,' compared to 54% of national respondents. While only 14% of California respondents 'never' implement water conservation practices, over one-quarter (29%) of national respondents do not. (See Figure 2.6.)

Figure 2.6

Comparison of California and National Respondents' Water Conservation Practices

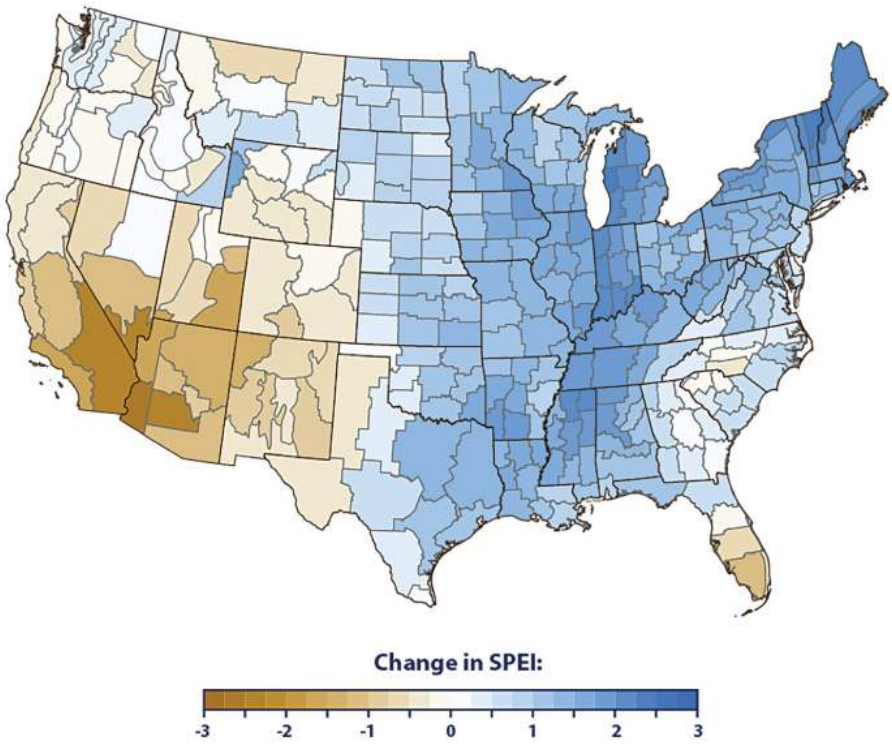


These differences reflect varied weather extremes across U.S. agricultural regions. While some farmers in arid regions of the country are increasingly challenged by drought, others are faced with more frequent and intense rainfall and flooding. Figure 2.7 highlights the average change in drought conditions across the contiguous 48 U.S. states. Over the past century, there have been large and consistent decreases in water availability throughout the western United States, particularly in the state of California. The consistent presence of drought is also tied to the prevalence of fires in California, which pose a significant threat to many communities.

Figure 2.7

Average Change in Drought (Five-Year SPEI) in the Contiguous 48 States, 1900-2020

This map from the U.S. Environmental Protection Agency (EPA) shows the total change in drought conditions across the contiguous 48 states, based on the long-term average rate of change in the five-year Standardized Precipitation Evapotranspiration Index (SPEI) from 1900 to 2020. Blue areas represent increased moisture; brown areas represent decreased moisture or drier conditions.



Data Sources

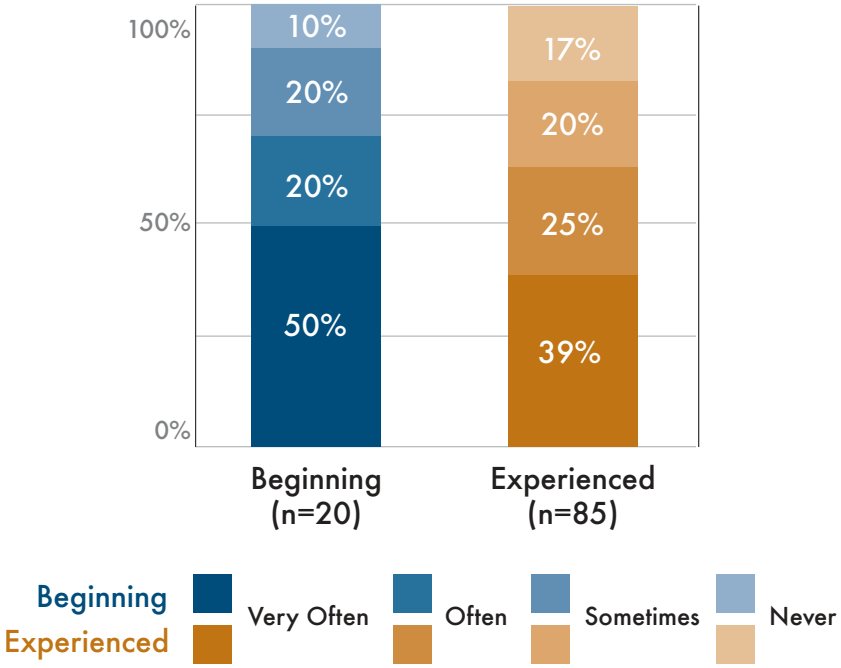
WestWide Drought Tracker. Western United States—60 month SPEI. Accessed March 2021 http://wrcc.dri.edu/wwdt

Daly, C., M. Halbleib, J.I. Smith, W.P. Gibson, M.K. Doggett, G.H. Taylor, J. Curtis, and P.A. Pasteris. 2008. Physiographically-sensitive mapping of temperature and precipitation across the conterminous United States. Int. J. Climatol. 28:2031-2064

Farming Experience

Interestingly, beginning producers were more likely than experienced farmers to implement water conservation practices (Figure 2.8). Half (50%) of beginning farmers reported implementing water conservation practices 'very often,' whereas only 39% of experienced farmers did. Higher adoption of water conservation practices by beginning farmers may be attributed to the fact that California has been in a drought for a larger portion (if not most) of the time surveyed beginning farmers have been in production. However, this trend was also reported at the national level.

Figure 2.8
Percent of Respondents' Water Conservation Practices by Farming Experience



2.3 Organic Inputs

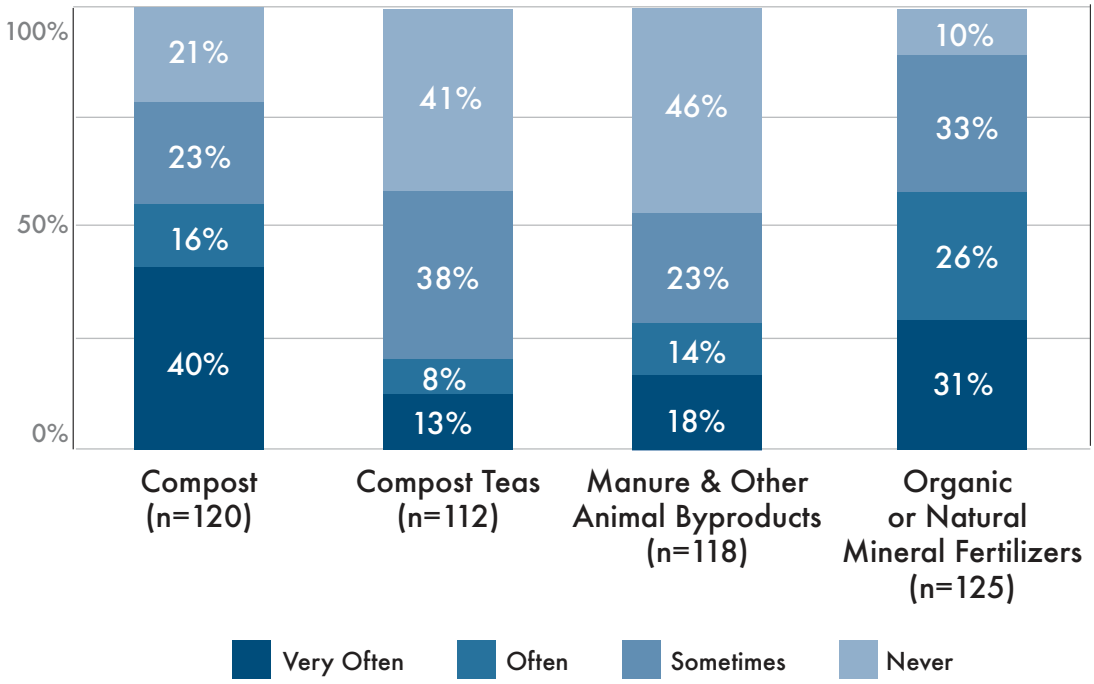
Organic farmers use a wide range of organic inputs to build soil health and fertility. To simplify the survey and reduce response burden, we asked organic survey participants to indicate on a four-point scale from 'very often' to 'never' how frequently they used four broad categories of inputs: 1) compost; 2) compost teas and microbial inoculants; 3) manure and animal byproducts; and 4) organic or natural mineral fertilizers. A variety of factors, such as cost, availability, and efficacy, may impact which inputs an organic farmer chooses to use.

Overall

Organic fertilizers were the most prevalent organic input in California with 90% of respondents indicating they use organic mineral fertilizer at least some of the time, and over half (57%) reporting they use these inputs 'very often' or 'often.' The second most common input among California organic farmers is compost, with 56% of farmers saying they use compost 'very often' or 'often.' Manure and compost teas were far less popular inputs, both of which are used 'very often' by less than 20% of farmers and 'often' by less than 15% of farmers. Compost tea requires specialized equipment and a precisely managed process to develop a microbial community with the desired properties; even small deviations from optimum conditions and timing can result in an ineffective or even harmful product. These challenges likely explain the less frequent use of this input by survey respondents.

Figure 2.9

Percent of California Respondents' Organic Inputs

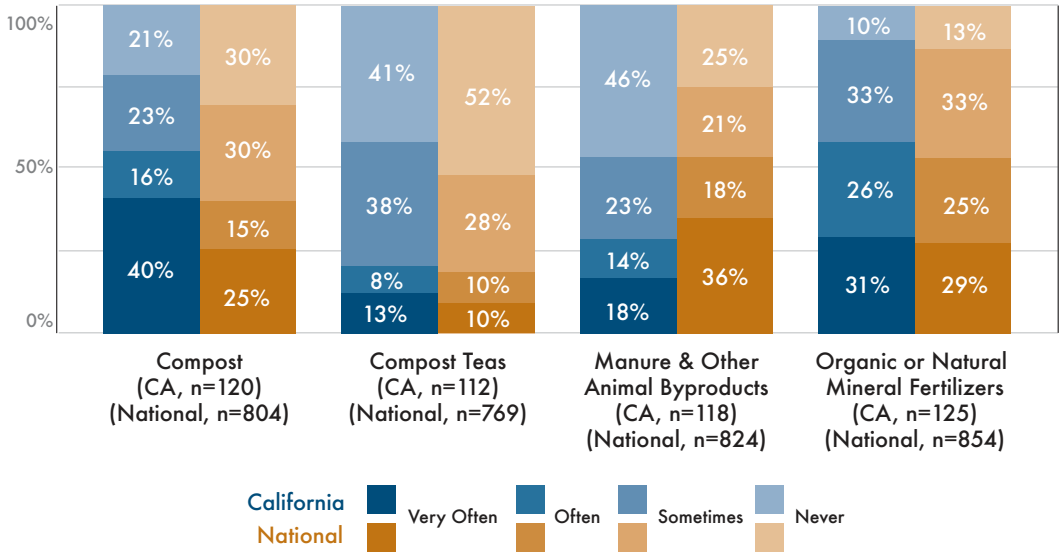


National Comparison

Compared to the national data, California's organic farmers said they use compost at a greater rate than the national respondents. While 56% of California producers reported they use compost 'very often' or 'often,' only 40% of national respondents indicated they use compost at the same rate. The difference in organic fertilizer use between California respondents and national sample was marginal, with 57% of California growers indicating they use organic or natural mineral fertilizers 'very often' or 'often,' compared to 54% of national survey respondents. Compost teas and microbial inoculants were also used by California and national growers similarly. Just 21% of California respondents said they use compost tea 'very often' or 'often,' compared to 20% of national respondents. (See Figure 7.)

Figure 2.10

Comparison of California and National Respondents' Organic Inputs



California organic growers tend to use manure less often than national producers. About one-third of California respondents (34%) said they use manure or other animal byproducts 'very often' or 'often,' compared to 54% of national respondents. One explanation for this could be that livestock production was the least prevalent commodity category (6%) reported by survey respondents in California, whereas livestock production was reported by 25% in the national survey. Producers who raise both crops and livestock apply on-farm generated manure to cropland, thus enhancing nutrient cycling and reducing the need for off-farm inputs and associated costs. A regional analysis of the national data showed high levels of manure use by organic farmers in the Northeast, Great Lakes, and Corn Belt, which likely reflects the prevalence of dairy, beef, pork, and other livestock operations in these regions.

"We use animal products to balance our soil biology, basically. That's what we do. It's just an absolutely essential ingredient, component of the comprehensive picture of an organic farm."

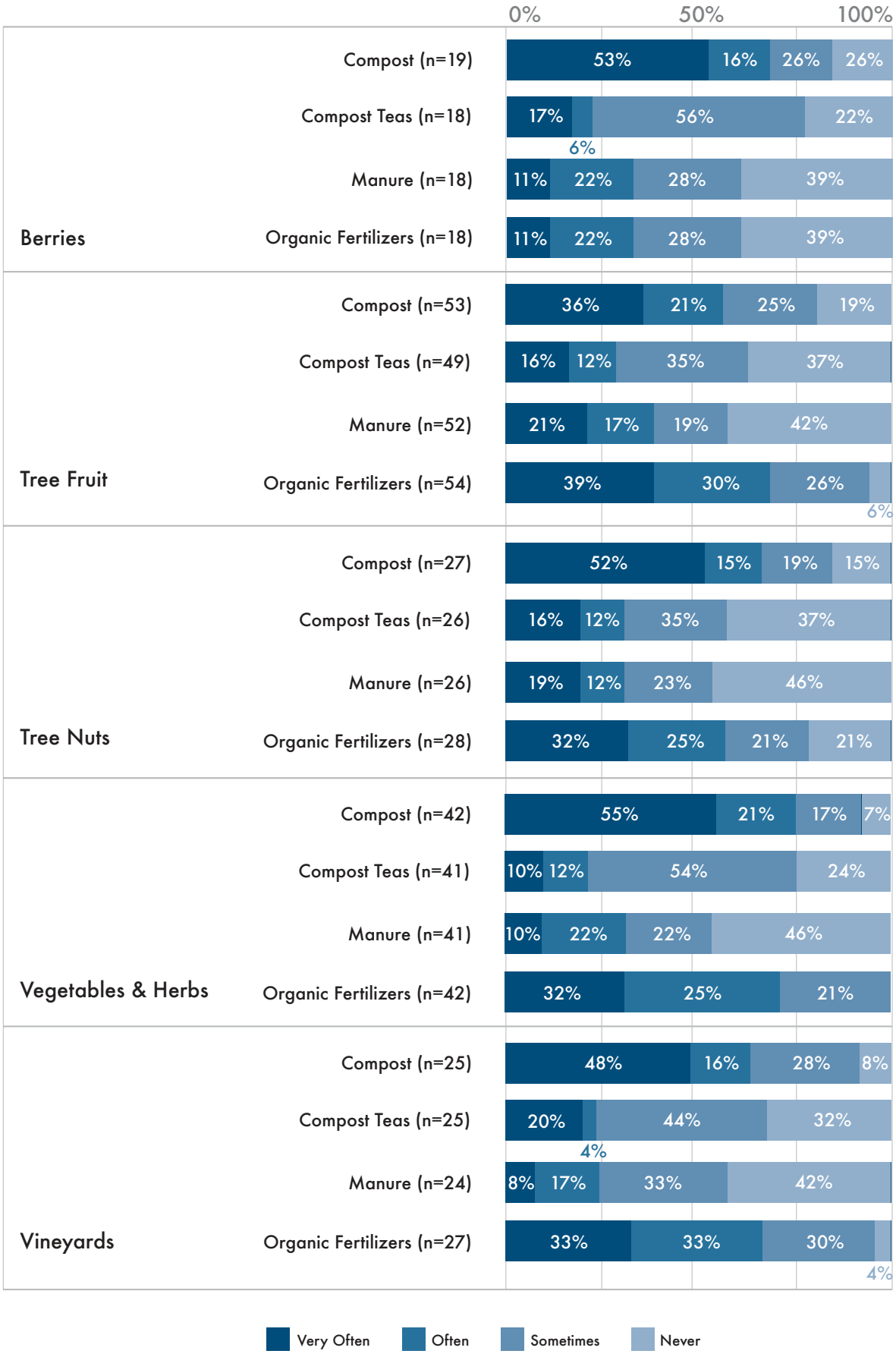
—Farmer Focus Group Participant, 2019

Organic Inputs by Commodity

There were no clear trends in the use of inputs by commodity categories. The use of inputs was roughly the same across commodities. One notable observation is that tree nut growers reported using the least inputs of all the commodity categories. This was most evident in the use of organic fertilizers. While 100% of vegetable and herb and berry commodity growers reported consistent use of at least some organic fertilizer, 21% of tree nut growers reported that they 'never' use any organic fertilizer. (See Figure 2.11.).

Figure 2.11

Percent of Respondents' Organic Inputs by Commodity

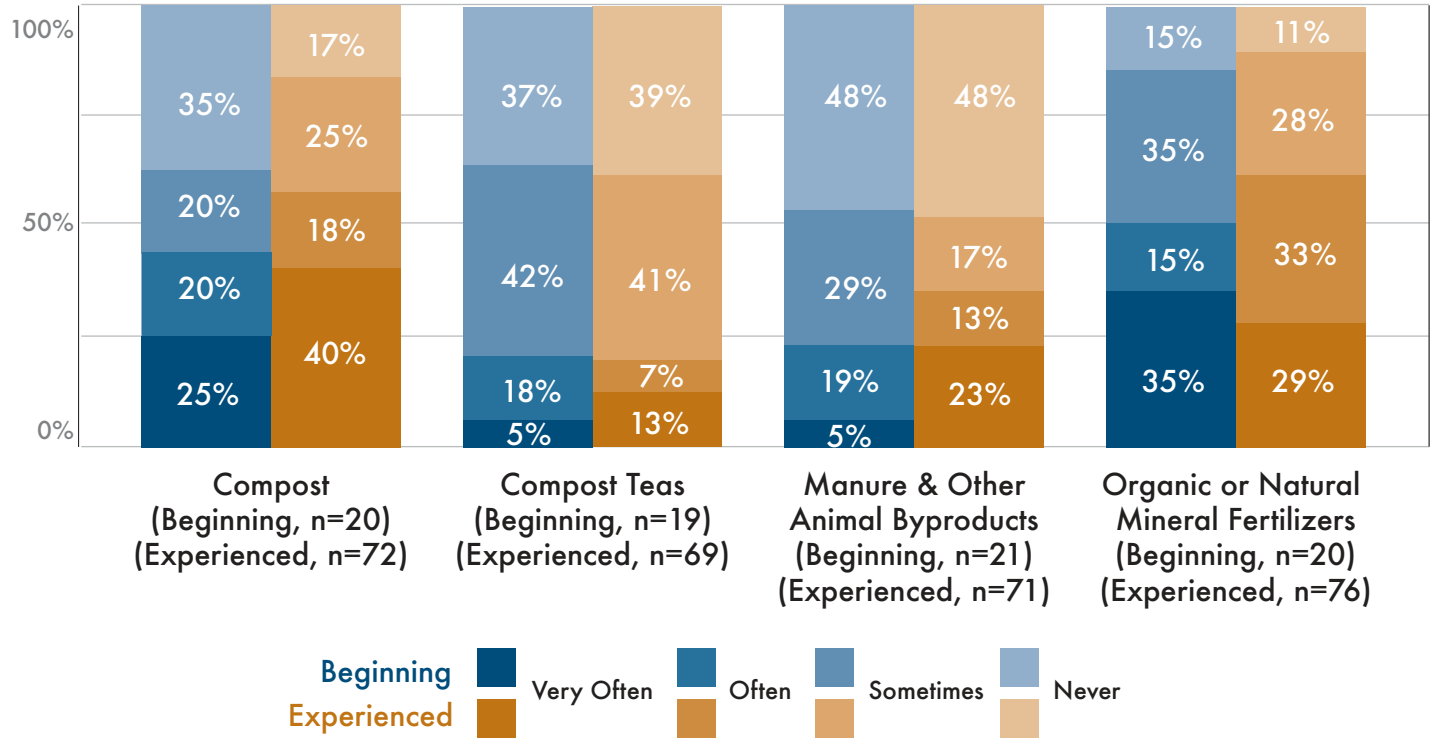


Farming Experience

Experienced farmers report using every input type 'very often' and 'often' more than beginning farmers. Only 25% of new farmers use compost 'very often,' whereas 40% of experienced farmers use compost 'very often.' While both experienced and beginning farmers report using at least some organic fertilizer, 89% and 85%, respectively, slightly more beginning farmers report using these inputs 'very often' (Figure 2.12). This may indicate that beginning farmers are using input substitution to address soil fertility challenges. Though compost teas/microbial inoculants and manure are the least common organic inputs, more experienced farmers report using them 'very often' when compared to beginning farmers. One explanation could be that more experienced farmers have broader networks from which to source manure.

Figure 2.12

Percent of Respondents' Organic Inputs by Experience



CHAPTER 3
CHALLENGES AND CONCERNS FOR CERTIFIED ORGANIC CALIFORNIA PRODUCERS

3.1 Production Challenges

Survey respondents were asked to identify their greatest production challenges from a list of possible challenges that they could rate on a five-point scale ranging from 'not a challenge' (1) to 'a strong challenge' (5). The production challenges were then ranked by calculating the percent of respondents who rated a topic as a substantial challenge (4 or 5 on the scale). The full ranked list of production challenges is presented in Table 3.1.

Overall

While organic producers face a wide range of production challenges, the report draws attention to the top five areas of concern identified by farmers in the survey:

1. Managing production costs
2. Controlling weeds
3. Controlling insect pests
4. Maintaining adequate yields
5. Managing soil fertility and crop nutrition

Table 3.1

Ranked List of Production Challenges

The "n" denotes the number of respondents who indicated the production challenge was either a "challenge" or "strong challenge."

Production Challenge	Percent Who Rated as a Substantial Challenge
Managing production costs (n=72)	71%
Controlling weeds (n=79)	70%
Controlling insect pests (n=53)	50%
Maintaining adequate yields (n=50)	49%
Managing soil fertility and crop nutrition (n=47)	43%
Controlling disease pressure (n=42)	40%
Drought management (n=40)	40%
Finding appropriate organic crop varieties and seed for your operation (n=34)	38%
Irrigation and water use (n=33)	32%
Adapting to climate change (n=31)	30%
Managing the farm as a system (n=26)	28%
Access to water resources (n=27)	27%
Optimizing soil structure, avoiding soil erosion and degradation (n=26)	25%
Seed production/seed saving (n=13)	25%
Integrating perennials and permaculture design (n=15)	23%
Minimizing adverse impacts of tillage on soil health (n=20)	21%
Managing pollinators and habitat for pollinators (n=17)	19%
Post-harvest handling methods (n=18)	18%
Enhancing agricultural biodiversity (n=18)	18%
Utilizing cover crops and green manures (n=13)	14%
Managing animal production and health (n=3)	14%

National Comparison

The top five challenges for California producers mirror those of the national survey data. The top five challenges in the national survey were controlling weeds (67%), managing production costs (59%), maintaining adequate yields (48%), managing soil fertility and crop nutrition (43%), and controlling insect pests (41%).

Production Challenges by Commodity

While most production challenges remained the same across the commodities, there was some variation. For example, the top three production challenges for organic tree fruit, tree nut, and berry producers were managing production costs, controlling weeds, and controlling insect pests; more than 50% of respondents indicated each item as a substantial challenge. However, while weeds presented a challenge for all categories, tree nut producers rated weeds as their greatest challenge, with 80% identifying it as substantial. Controlling disease pressure is only indicated as a top challenge by those in the tree fruit and vineyard categories, indicating disease pressure is especially challenging for those producers.

The category 'finding appropriate organic varieties and seed for your operation' was only identified as a top five production challenge for vegetable and herb producers (43%) and berry producers (40%). This struggle is less surprising given that vegetable, herb, and berry production systems are annual or perennial and are reliant on consistent seed or root stock supply. However, it indicates a clear need for research and investments exploring breeding of organic varieties and expanding organic seed availability.

Berry producers were the only commodity category where the challenge 'managing the farm as a system (moving away from input-substitution),' was ranked as a top production challenge. While 100% of berry growers responding to this survey said they use organic fertilizer inputs, it seems many are interested in finding alternative strategies to improve soil fertility and build soil health.

Also striking, vegetable and herb commodity producers were the only commodity category to identify 'adapting to climate change' as a top-five challenge, indicating that these respondents are well aware that climate change presents a greater challenge for vegetable and herb producers. It is also possible that respondents identified climate change related challenges through other subcategories. For example, climate change may reduce yields for some producers by shortening the growing season or decreasing water availability. Respondents may have selected 'maintaining adequate yields' as a bigger challenge, even though climate change may be causing the decreased yields. The complete list of ranked production challenges for each commodity can be found in the supplements (S1.5 – S1.9).

Table 3.2

Top Five Production Challenges by Commodity

Commodity	Production Challenge	Percent Who Rated as a Substantial Challenge
Berries	Managing Production Costs (n=15)	83%
	Controlling Weeds (n=13)	72%
	Controlling Insect Pests (n=9)	50%
	Finding Appropriate Organic Crop Varieties and Seed for Your Operation (n=6)	40%
	Managing the Farm as a System (Moving Away from Input-Substitution) (n=6)	35%
Tree Fruit	Managing Production Costs (n=29)	69%
	Controlling Weeds (n=29)	62%
	Controlling Insect Pests (n=24)	52%
	Controlling Disease Pressure (n=20)	46%
	Managing Soil Fertility and Crop Nutrition (n=18)	40%
Tree Nuts	Controlling Weeds (n=20)	80%
	Maintaining Adequate Yields (n=17)	74%
	Controlling Insect Pests (n=16)	67%
	Managing Production Costs (n=13)	62%
	Managing Soil Fertility and Crop Nutrition (n=12)	50%
Vegetables & Herbs	Managing Production Costs (n=25)	74%
	Controlling Weeds (n=26)	72%
	Adapting to Climate Change (n=17)	49%
	Finding Appropriate Organic Crop Varieties and Seed for Your Operation (n=15)	43%
	Controlling Insect Pests (n=14)	40%
Vineyard	Managing Production Costs (n=17)	71%
	Controlling Weeds (n=15)	60%
	Maintaining Adequate Yields (n=12)	52%
	Controlling Insect Pests (n=13)	52%
	Controlling Disease Pressure (n=13)	52%

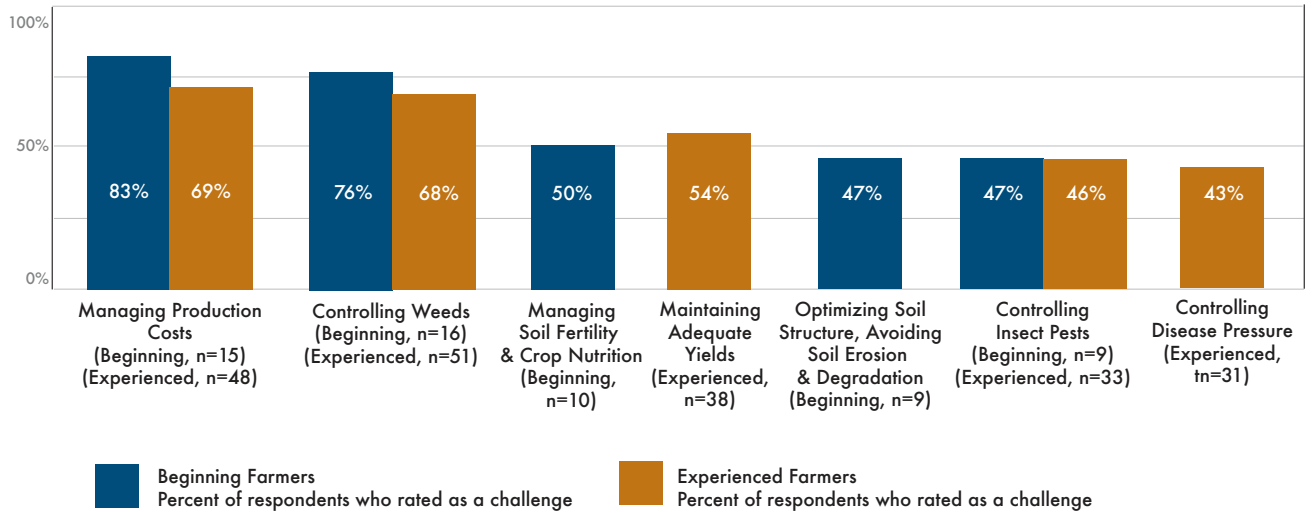
- Controlling Weeds
- Managing Production Costs
- Managing Soil Fertility and Crop Nutrients
- Finding Appropriate Organic Crop Varieties and Seed for Your Operation
- Controlling Insect Pests
- Adapting to Climate Change

Farming Experience

Managing production costs, controlling weeds, and controlling insect pests are three top production challenges for organic growers (Figure 3.1). However, 83% of beginning farmers rated 'managing production costs' as a substantial challenge compared to 67% of experienced farmers. 'Controlling weeds' was rated by 76% of beginning farmers as a substantial challenge; 68% of experienced farmers responded similarly. Unlike experienced farmers, beginning producers struggled with 'managing soil fertility and crop nutrition' (50%) and 'optimizing soil structure, avoiding soil erosion and degradation' (47%). Experienced farmers struggled more with maintaining adequate yields (54%), whereas only 34% of beginning farmers rated this a substantial challenge. It is likely beginning farmers were less focused on 'maintaining adequate yields' because other challenges were more pressing, and perhaps they recognize that managing soil fertility and crop nutrition will result in higher yields.

Figure 3.1

Comparison of Beginning and Experienced Respondents' Top Production Challenges



BIPOC Producers

Overall, the five biggest production challenges for BIPOC producers in California are maintaining adequate yields (100%), managing production costs (100%), finding appropriate organic crop varieties and seed (86%), controlling weeds (82%), and managing the farm system as a whole (75%). Three of the top production challenges were shared by both BIPOC and non-BIPOC growers (managing production costs, controlling weeds, and controlling insect pests). (See Table 3.3.) However, a greater percentage of BIPOC farmers and ranchers report experiencing these challenges when compared to non-BIPOC producers. Notably, 75-100% of BIPOC respondents reported experiencing these top five production challenges, whereas only 42-69% of White respondents reported these as an issue.

Further, 86% of BIPOC farmers said finding organic seeds was a substantial challenge and 75% said managing the farm as a system was a substantial challenge, whereas non-BIPOC producers reported managing soil fertility (42%) and controlling insect pests (49%) as a substantial challenge. While the National Organic Program allows non-organic seeds to be used in certified organic systems when organic varieties are not commercially available, BIPOC farmers seem to struggle more than White farmers with this challenge.

Table 3.3

Top-Five Production Challenges for BIPOC and non-BIPOC Respondents

	Production Challenge	Percent Who Rated as a Substantial Challenge
BIPOC Organic Farmers	Maintaining Adequate Yields (n=11)	100%
	Managing Production Costs (n=10)	100%
	Finding Appropriate Organic Crop Varieties and Seed for Your Operation (n=6)	86%
	Controlling Weeds (n=9)	82%
	Managing the Farm as a System (Moving Away from Input-Substitution) (n=6)	75%
Non-BIPOC Organic Farmers	Controlling Weeds (n=70)	69%
	Managing Production Costs (n=62)	67%
	Controlling Insect Pests (n=47)	49%
	Maintaining Adequate Yields (n=39)	42%
	Managing Soil Fertility and Crop Nutrition (n=42)	42%

Comments – Focus Group and Open-Ended Responses

Focus group participants were asked to elaborate on their production challenges, and survey participants were given the opportunity to comment on their production challenges through open-ended questions in the organic survey. Below are some of the most pressing challenges cited.

Managing Production Costs

Implementing sustainable and regenerative organic practices that comply with NOP standards can entail significant costs in materials and labor, and 71% of survey respondents indicated that the costs of production poses a substantial challenge. Organic nutrient sources and NOP-allowed pest and disease control products generally cost more than their conventional counterparts, soil building inputs such as cover crop seeds may not pay for themselves in the first few years, and managing weeds and other pests without synthetic crop protection chemicals can entail considerable additional labor.

Several farmers noted they need to reduce expenditures on inputs and nitrogen fertilizer:

> ***Finding a low-cost nitrogen input. I have tried and spent a lot of money on liquid organic nitrogen and feathermeal, and my trees are still nitrogen deficient. Organic nitrogen sources are very expensive and they don't seem to work very well."***

Other farmers identified specific challenges with water testing requirements and the cost of water:

"Small organic farms are overburdened with fees and water testing requirements that impacts the ability to be profitable and sustain the farm... Water costs and no real consideration for farm size has made it unsustainable."

"Cost of water in our area has become an issue as continued drought and California government policies make it harder for small farmers to exist."

"Keeping a healthy margin in times of inflation and stagnant prices."

"We need less expensive organic inputs and/or higher prices for the fruit."

One possible explanation for California respondents ranking 'managing production costs' so higher is the prevalence of specialty crops requiring skilled labor. While labor is technically listed as a non-production challenge, several farmers cited labor as a top production challenge.

"Cost of labor is becoming prohibitive...our blueberry production may come to an end without new sources of labor."

Just as a new farmer I think that a big challenge for us in production is labor, just kind of figuring the sweet spot."

"More mechanization, [we] need such equipment to replace workers...[who are] working more in construction."

"[We need] labor eliminating machinery at an affordable price for small farmers."

"And, you know, it was really tough -- we didn't hire any extra labor because we didn't have our sales streams figured yet, and we weren't sure if we could afford it. And right now we know that we need to hire some people in order to help because it was a lot of work with just the group, but it is kind of a question of when to hire, how much, do we get someone full-time, do we get someone temporary a couple days a week or as needed, and then how to kind of know when we can and to source those people, because I know a lot of the more established farms around here have a tough time finding people that, on a full-time basis, that actually fits within the budget that they have."

Weeds

Managing weeds emerged as a substantial challenge for 70 % of organic producers in the survey and was also among the top research priorities in 2016. In 2016, weed research was cited as a high priority area by 62% of California respondents. Some specific comments related to weeds included:

> ***"I find it is so difficult to get qualified help and the help on a regular basis, especially when the weeds are coming up now at this time of year and then also, you know, when we are harvesting."***

"Weeds absorb a lot of my time. Research on best ways to control weed organically would be helpful."

"We're starting to win on [controlling weeds], but some perennial weeds like bindweed are particularly difficult. Shading it out with a cover crop like buckwheat seems to work fairly well, in combination with a good hand weeding beforehand. We're also using occultation, flaming and hand weeding. Additional research on other methods would be helpful."

Several farmers made specific requests for further research on:

> ***"Strategies to overcome the challenges due to perennial weeds like nutsedge and morning glory."***

"Identification of pre- and post-emergent herbicides."

"Effective organic weed killer so we don't have to use so much fuel, wear out equipment and use manpower in tilling the soil to control the weeds."

Pest and Disease

Managing insect pests emerged as a substantial challenge for 50 % of organic producers in the survey and was also among the top research priorities in the 2016 CORA report. Some farmers reported increasing frequency or intensity of pest outbreaks, including new species of crop-damaging insects and microbial pathogens not seen in the past. Several farmers noted the needs to develop research on biological controls for insect pests, such as mating disruptors:

> ***"Pest management...more research for mating disruption."***

"More research on biological controls (predatory insects, biological microbes).

"Research and development of Pheromone control of scale insects in Kiwifruit. Successful Pheromone control has been achieved for Citrus Red Scale and with the development of Pheromones for Kiwifruit scale, oil applications and the environmental costs of burning fossil fuels to apply them will be reduced.

One focus group participant highlighted the importance of healthy soil as a foundation for holistic management of pests:

> ***"We definitely agree that soil is the foundation, right, of everything that we do, and soil health is our primary focus. We would say switching to no till brought back earthworms...And within a year or two of no till there was suddenly worms in every shovel load, and it was pretty encouraging to see that. And on that note, we've had earwig problems eating our squashes, and when we switched to no till suddenly there was a lot more toad homes in our beds. And the toads are out eating earwigs when I was out there trying to deal with earwigs in the middle of the night. So that was great to see."***

Soil Fertility and Crop Nutrients

Managing soil fertility and crop nutrients was a substantial concern for 43% of survey respondents. There was great interest in advancing research on nutrient management. When asked, "What additional research and information would be helpful?", several respondents noted the following:

> ***"Nitrogen...we need more organic sources."***
>
> ***"Need quantitative data showing nitrogen and other benefits in grazing orchards."***
>
> ***"Improved yields of heirloom tomatoes... information on best soil conditions and irrigation management to obtain earlier and higher yields."***
>
> ***"What are the best organic fertilizers to increase yields?"***
>
> ***"Nutrient management...something to cure iron chlorosis."***
>
> ***"Reducing chemical and commercial fertilizer while maintaining adequate fertility."***

"Codling moth damage to apples... [we need] more information on the proper use of mating disruptors and any other organic methods."

Top Pests
Identified by California Growers Include:

coddling moth	husk fly
citrus leaf miner	stink bugs
white flies	gophers
glassy-winged sharpshooter	ground & tree squirrels
root knot nematodes	moles
symphylan	mice
leafhoppers	rats
aphids	quail

Top Diseases
Identified by California Growers Include:

phytophthora infestans	scum algae
peach leaf curl	mold and mildew
reddblush	botrytis
club root	foliar diseases
fire blight	olive knot

During focus group discussions several farmers mentioned the need to better manage their soils and identify the benefits of no-till or reduced tillage practices and holistic management, noting:

> ***"I would really like people to get research to go toward people understanding why no till systems might work well or less till, but it is not always the absolute answer to everything, just like so many things."***

> ***"We are going to do our best to try to get to no till eventually, but with all that pastureland we just had a lot of grasses and things that we had to till, obviously, to get it working…As we expand we have to till, but hopefully by next year we can transition to a no till system or partially no till. But, yes, I think [soil] is the most important natural resource, and we are focusing on that."***

> ***"And the no till stuff I hear about, which…with grapes it is almost a natural because you don't till that much with grapes. But it is…not a 100% slam dunk solution. It is very appropriate in some situations and not so much in others. So I would really like people to get research to go toward people understanding why no till systems might work well or less till, but it is not always the absolute answer to everything, just like so many things."***

Drought and Climate Change

In 2016, the highest rated research priority in California was 'irrigation and drought management', which was rated as a high priority by 69.4% of respondents. In 2016 the majority of California was in extreme drought, with 40% of the state experiencing exceptional drought (Ory and Sooby 2016). While California growers did not cite drought as a top five production challenge, 40% of respondents did report it as a substantial challenge with farmers noting they needed:

> ***"Drought management irrigation techniques."***

> ***"More drought tolerance and water retention."***

Organic growers are well aware that climate change has already, and will continue to, pose new challenges to their production systems. Adapting to climate change was identified as a substantial challenge for 30% of survey respondents. In California, climate change is expected to lead to increased prevalence of drought, fires, and pest and disease pressure.

"Climate change has really affected the wine industry learning more about soil microbiology and supporting healthy root systems to resist heat spikes that we get in California especially, and just the change of varieties and clones because of the climate change."

Focus group participants said the following:

> ***"I would just say we definitely, being from California and in the Sierras, have to say something about fire. We had wildfires all over California, and our farm, we were evacuated for about three weeks in our neighborhood. A good chunk of it burned, and our mountains and our watersheds and a lot of that burned, too. So it is related to climate instability, but it's also related to localized forest management, which also just brings up the idea of the ecosystems our farms are in, their health on a localized basis and fostering that, because our watershed being burned now creates high runoff in the wet season and then a low water supply in the summer."***

One respondent also highlighted the importance of carbon farming for sequestration and climate mitigation:

> ***"I'm going to just start by saying it's all about the soil and it's the carbon sequestering that we are able to do with our pasture operations. When I say pasture, it is permanent pasture, and we do as good a job with that as anywhere in the country here on the coast in California and Oregon and Washington. And so I would like to see more, I guess, verification and studying the carbon sequestering that is happening and then literally the soil studies, and so that would be one thing."***

"Producing consistently high yielding, high quality seed. More research on variety-specific seed production costs across multiple bio-regions and soil types."

Organic Seed

NOP rules require organic producers to source organic seed; however, recognizing demand can far exceed supply, producers are allowed to use conventional seed when organic seeds are not readily available. Survey respondents struggled to source organic seed, with 38% identifying 'finding appropriate organic crop varieties and seed' as a substantial concern. Respondents also noted seed research was a high priority area:

> ***"There are no viable organic seed varieties for processing tomatoes nor for summer squash."***

Cover Crops

Though only 14% of respondents cited 'utilizing cover crops and green manure' as a substantial challenge, some farmers noted that they were experiencing challenges selecting and implementing cover crop varieties, as well as timing-related issues.

> ***"The recommended cover crops that yield the most nitrogen to benefit walnut trees."***
>
> ***"Suitability of cover crops on heavy clay soils and their ability to provide needed nitrogen for the following crop."***

3.2 Non-production Challenges

Organic survey respondents were asked to identify their greatest non-production challenges from a list of possible challenges that they could rate on a five-point scale ranging from "not a challenge" (1) to "a strong challenge" (5). The non-production challenges were then ranked by calculating the percent of respondents who rated a topic as a substantial challenge (4 or 5 on the scale) as presented in Table 3.4.

Overall

While farmers and ranchers in California face a multitude of non-production challenges, the survey data seems to indicate that non-production challenges are experienced by a fewer number of farmers than production challenges. The top five non-production challenges identified in the survey include:

1. Accessing labor
2. Finding and developing markets for organic products
3. Meeting recordkeeping requirements
4. Cost of organic certification
5. Managing business activities

Table 3.4

Ranked List of Non-Production Challenges

Non-Production Challenge	Percent Who Rated as a Substantial Challenge
Accessing labor (n=59)	55%
Finding and developing markets for organic products (n=45)	46%
Meeting recordkeeping requirements of organic certification (n=38)	35%
Cost of organic certification (n=35)	33%
Managing business activities (n=29)	29%
Developing infrastructure (n=28)	28%
Farm succession planning (n=25)	27%
Accessing capital and/or financing (n=25)	27%
Meeting organic certification requirements (n=25)	24%
Farm business planning (n=22)	22%
Accessing land (n=18)	21%
Understanding and following food safety standards (n=20)	20%
Risk of contamination from genetically engineered crops (n=7)	8%
Community relations (n=6)	6%
Social pressure to not farm organically (n=4)	4%
Relations with other farmers (n=4)	4%

The top ranked non-production challenge in California is 'access to labor' (55%). While labor challenges are not unique to California, the state does have additional factors impacting labor that other states do not, including a higher minimum wage and mandatory overtime pay. Other substantial challenges for California's organic farmers and ranchers are: finding and developing markets (46%), meeting the recordkeeping requirements of organic certification (35%), cost of organic certification (33%), and managing business activities (29%).

National Comparison

Four of the top five non-production challenges in California were closely aligned with the nationwide data. Nationwide, the top four challenges are 'accessing labor' (46%), 'finding and developing markets for organic products' (42%), 'cost of organic certification' (31%), and 'meeting the recordkeeping requirements of organic certification' (31%). The only major difference is the fifth most substantial challenge, which is 'managing business activities' (29%) in California and 'developing infrastructure' (31%) nationwide.

Farming Experience

The top two challenges for beginning farmers and ranchers are the same as those for experienced producers — 'accessing labor' (65%) and 'finding and developing markets,' although beginning producers experienced these challenges at a greater rate than experienced farmers. Less than 40% of experienced farmers reported 'finding and developing markets' as a substantial challenge, whereas 63% of beginning farmers reported the same challenge. There were also differences in the remaining top challenges. Beginning farmers reported managing business activities (50%), accessing capital and/or financing (50%), and developing infrastructure (42%) as top substantial challenges (Figure 3.2). Experienced farmers cited meeting recordkeeping requirements (36%) farm succession planning (32%), and cost of certification (28%). (See Figure 3.3.) For beginning farmers, the struggle to develop infrastructure and access capital are intertwined, as capital investments are needed to develop more infrastructure. Additionally, many of these beginning farmers are still learning how to manage the various aspects of business operations, while experienced growers are more established.

Figure 3.2

Beginning Farmer Non-Production Challenges

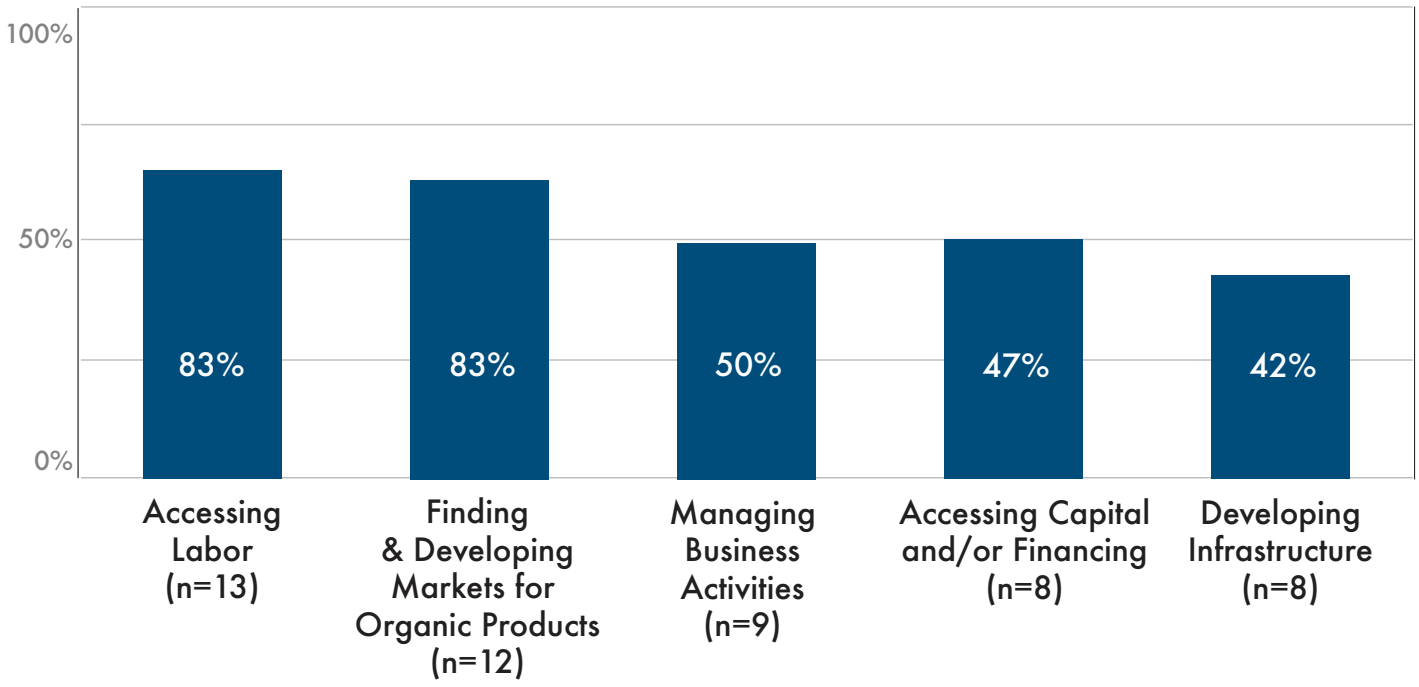
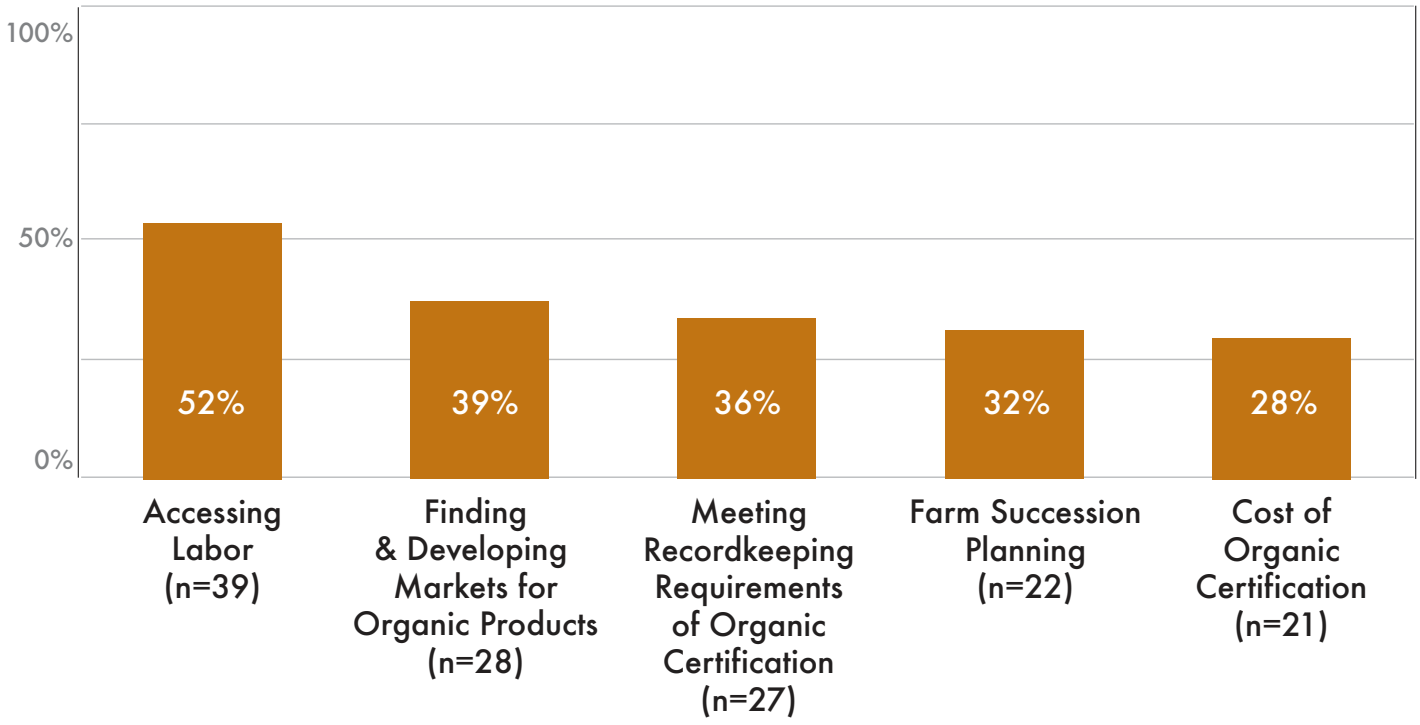


Figure 3.3

Experienced Farmer Non-Production Challenges



BIPOC Producers

As with production challenges, the top five challenges facing BIPOC producers were experienced at a greater rate than their White counterparts (Figure 3.4). While all five of the biggest challenges for BIPOC producers were substantial challenges for more than 60% of respondents, the biggest challenge for White producers was only rated a substantial challenge by 52% of respondents, and the remaining top five challenges were a progressively smaller number of producers (Figure 3.5).

Looking at the specific challenges facing BIPOC and White producers also highlights stark contrasts in the farming experience. While all five substantial challenges for BIPOC producers focus on immediate needs, like labor, costs, cash flow, and marketing products, White producers are able to consider longer-term challenges like farm succession planning.

A prime example of inequity in agriculture can be found in accessing capital—the third biggest challenge for BIPOC producers (64%). Capital for farmers is, theoretically, available from both public and private lenders, although both have historically discriminated against BIPOC farmers and ranchers. Producers who are unable to meet the creditworthiness demands of private lenders, such as banks and cooperatives, can go to the United States Department of Agriculture's Farm Service Agency. Previously referred to as the "lender of last resort," the agency has tried to rebrand as the "lender of first opportunity."

BIPOC producers, however, have also been discriminated against by the USDA. Landmark cases such as Pigford v. Glickman (1999) and Pigford II (2010) intended to resolve claims of USDA loan discrimination, inequity, and failure to adequately compensate Black farmers. A combined $2.25+ billion was distributed through both settlement claims processes, though the government still failed to remedy its past actions and distribute the settlement funds in a non-discriminatory manner. In 2021, Congress continues to have discussions about providing additional debt relief to BIPOC producers in its budget reconciliation process.

Figure 3.4

BIPOC Farmer Non-Production Challenges

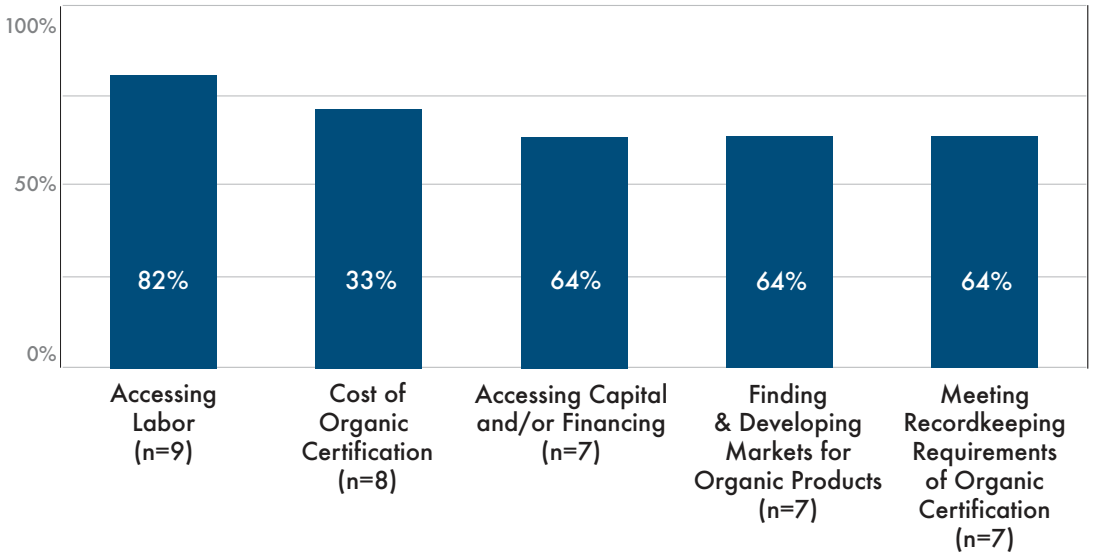
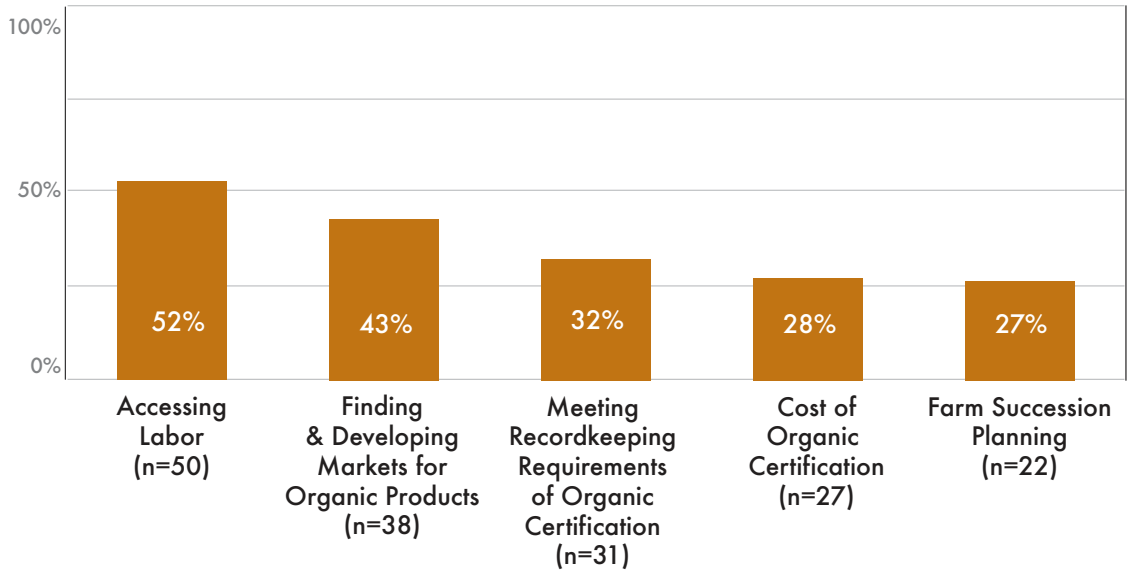


Figure 3.5

Non-BIPOC Farmer Non-Production Challenges



Non-Production Challenges by Commodity

There were no stark differences in the overall trend of non-production challenge faced by commodity categories, however there were a few notable differences. Berry producers are the only crop category that did not rate access to labor as a top challenge, which is interesting given the labor-intensive nature of berry production. Though a greater percentage of vegetable and herb growers (38%) reported 'developing infrastructure' as a challenge, it was also shared by tree nut (24%) and tree fruit (26%) producers. Tree fruit producers, along with berry producers, were the only commodity categories where respondents reported accessing capital as a substantial challenge. And berry and vegetable and herb were the only commodities where respondents reported 'access to land' as a top non-production challenge. Out of all of the commodities, only vine crops ranked 'cost of certification' as a top five non-production challenge.

Table 3.5

Substantial Non-Production Challenges by Commodity

Commodity	Non-Production Challenge	Percent Who Rated as a Susbtantial Challenge
Berries	Finding and developing markets for organic products (n=12)	71%
	Accessing labor (n=10)	59%
	Accessing land (n=6)	43%
	Accessing capital and/or financing (n=6)	40%
	Meeting recordkeeping requirements of organic certification (n=6)	35%
Tree Fruit	Accessing labor (n=26)	55%
	Finding and developing markets for organic products (n=19)	42%
	Accessing capital and/or financing (n=11)	28%
	Managing business activities (n=12)	27%
	Developing infrastructure (n=11)	26%
Tree Nuts	Accessing labor (n=13)	57%
	Finding and developing markets for organic products (n=10)	46%
	Meeting recordkeeping requirements of organic certification (n=7)	29%
	Farm succession planning (n=6)	29%
	Developing infrastructure (n=5)	24%
Vegetables & Herbs	Accessing labor (n=24)	67%
	Finding and developing markets for organic products (n=15)	43%
	Developing infrastructure (n=13)	38%
	Managing business activities (n=12)	35%
	Accessing land (n=10)	35%
Vineyard	Accessing labor (n=11)	46%
	Finding and developing markets for organic products (n=8)	36%
	Farm succession planning (n=7)	32%
	Cost of organic certification (n=7)	29%
	Meeting recordkeeping requirements of organic certification (n=6)	25%

Comments – Focus Group and Open-Ended Responses

Focus group participants were asked to elaborate on their non-production challenges, and survey participants were given the opportunity to comment on their non-production challenges through open-ended questions in the organic survey. Below are some of the most pressing challenges cited.

Labor

Comments by focus group participants and open-ended responses illustrate the difficulties that organic producers have experienced in securing the labor they need for their operations and dealing with the high cost of labor. These comments are in addition to those cited earlier under production challenges, underscoring the importance of this issue in organic production systems. At the time the survey was distributed, COVID-19 was in the early stages with some of the most stringent precautions taking place nationwide. It is possible that labor shortages were most salient because of the COVID-19 pandemic. Respondents noted they needed assistance with:

"Labor is difficult to find and the cost of labor continues to go up."

> ***"Attracting and keeping an adequate workforce. Moving away [from] labor intensive crops as minimum wage requirements in California drive up all wages and associated costs."***

> ***"Finding farm laborers continues to be an issue."***

> ***"High cost of labor."***

> ***"The cost of labor makes it pretty much not worth farming. We're four years in and still paying to farm. But what we pay does not provide a living wage for the help. Something has to change with that!!"***

Some respondents were specific with the need to reform guest worker programs to ease labor issues:

> ***"Guest worker programs and farmworker reforms need to be examined."***

> ***"Research into the development of a truly workable, grower friendly guest worker or other program capable of developing a reliable workforce for organic agriculture. The spread of information to let lawmakers and other stakeholders know the importance of a capable workforce for the growing organic industry is critical to this industry."***

Finding and Developing Markets

Finding and developing markets for organic products emerged as a top non-production challenge for 46% of organic producers in our survey. It was also an important theme in focus group and open-ended comments, with farmers highlighting their struggle to access specific markets, diversify their markets, and compete with larger or conventional producers.

"Alternatives to farmers markets and restaurants. How to start a farm stand?"

> ***"Finding markets. Farmers are asked to wear too many hats. Help here would be extremely valuable."***

> ***"We are in...a rural urban [area], and across the street is a Safeway grocery where they sell organic produce, and so they are like our biggest competitor right now."***

> ***"Information on how to promote u-pick farm business at low cost."***

> ***"I think for the smaller farms, too, like ours the bigger farms have taken that advantage or they will market — they will bring their produce to San Francisco and sell it. So they have got that niche. Yeah, it's just really hard for a starting farm to really get that community, you know, just that community visual, just to get that help."***

> ***"When we got certified back in 2009, we just started with some grain, and one of our biggest things is trying to find buyers for, you know, the organics and keeping the prices up, since the yields and everything are not as good as your conventional crop. With the hay, with it going up and down, and I know California has had a lot of problems in the dairy industry as far as the nuts kind of taking over, so finding a spot for the organic hay has been a challenge in the past. We do have one local buyer that has a local dairy, but anything that he can't take has sometimes been difficult to get rid of."***

One farmer highlighted their struggle securing contracts as a result of COVID-19 restaurant closures:

> ***"...Last year when we didn't have a buyer because our contract, you know, was terminated — or not terminated, but we couldn't grow because the restaurants were closing, we didn't have a sure buyer, it was really hard for us to find out, well, who would buy our produce."***

Several growers identified consumer education and consumer research as key areas to focus on to help increase marketing and sales:

> ***"Continue to run consumer research about buying habits and sentiments."***
>
> ***"Provide materials to the public that stress the worth of organic production."***
>
> ***"Raise consumers interest in organic products, perhaps by researching the benefits of local and organic as a strategy for climate change."***
>
> ***"Raise the awareness of the benefits of organic farming."***

Recordkeeping

With respect to recordkeeping, several respondents noted the need for less paperwork or a more streamlined process with automated templates.

> ***"Streamlining certification paperwork."***
>
> ***"Less paperwork."***
>
> ***"Are there some automated templates for organic record keeping?"***
>
> ***"The bureaucracy is so great already with the vast amount of paperwork involved with reporting wine production that many people just aren't willing to take it on. So I think streamlining that."***

One focus group participant elaborated on the challenge of meeting recordkeeping requirements while striving to be more sustainable in their compost production.

> ***"Two things that came to mind real quick was we make a lot of on-farm compost for our beds, and we…acquire a lot of the ingredients for that from friends and neighbors with their, you know, horse manure or their goat manure or we get vegetable scraps from the meditation center or the school, and so it was tricky to suddenly have to produce affidavits of material composition for all those compost ingredients. It's kind of a limiting factor sometimes because we want to do right ecologically by taking used biomass products that we trust as not toxic, even though they are not certified organic and usually we'd use them in our composting. But to get affidavits to all of our suppliers of our various ingredients and have that fly with CCOF was kind of hard. And then also just audit trails for everything. If we have patchwork recordkeeping financially, you know, tracking receipts and everything, those are kind of two things when we transitioned that were difficult for us."***

3.3 Technical Assistance Needs

In addition to identifying production and non-production challenges, organic survey participants were asked to report their greatest technical assistance needs. Participants were presented with a list of potential technical assistance needs and asked to rank their need for each on a four-point scale that included 'no need,' 'little need,' 'some need,' and 'strong need.' Participants could also indicate a topic was not applicable to their operation. The list of potential technical assistance needs included a wide range of topics ranging from soil health and pest management to financing and transportation logistics, allowing us to better gauge the relative need for assistance with production versus non-production issues.

The technical assistance needs were ranked by those indicating a 'substantial need,' adding the percent of organic survey respondents who indicated there was a 'strong need' or 'some need' for a topic and listing technical assistance needs in descending order from highest to lowest percent. The full ranked list of technical assistance needs is presented in Table 3.6.

Overall

While organic producers report a broad range of technical assistance needs, the top five areas of concern include:

1. Organic weed, insect pest, and disease management
2. Soil fertility and management of crop nutrients
3. Soil conservation and soil health
4. Securing sales channels
5. Labor needs

Table 3.6

Ranked List of Substantial Technical Assistance Needs

The following table identifies specific technical assistance needs in order of greatest need to least need. The needs were ranked by adding the percent of respondents who rated a topic as either a strong need or some need, and listing them in descending order from highest to lowest percent.

Technical Assistance Need	Percent Who Rated as a Substantial Challenge
Organic weed, insect pest, and disease management (n=71)	76%
Soil fertility and management of crop nutrients (n=55)	60%
Soil conservation and soil health (n=52)	57%
Securing sales channels (n=44)	52%
Labor needs (n=43)	48%
Production assistance (n=35)	41%
Water management (n=37)	40%
Business and financial planning (n=32)	36%
Logistics of product distribution (n=29)	35%
Access to capital/resources (n=30)	34%
Risk management/crop insurance (n=29)	33%
Technology assistance with processing/ value added products (n=28)	33%
Food safety, FSMA, and other food safety requirements (n=29)	32%
Organic certification regulations (n=29)	32%
Meeting National Organic Program (NOP) requirements (n=26)	30%
Transportation options (n=25)	28%
Organic system planning (n=23)	26%
Integrating livestock into organic production (n=10)	19%
Legal assistance (n=15)	17%
Livestock production and health (n=5)	11%
Land access (n=8)	10%

National Comparison

The top five technical assistance needs for California growers are closely aligned with the national survey data. In the national survey, 'production assistance' ranked fifth, followed closely by 'labor needs' (41%). National survey respondents reported their greatest needs included:

1. Organic weed, insect pest, and disease management (74%)
2. Soil fertility and management of crop nutrients (65%)
3. Soil conservation and soil health (60%)
4. Securing sales channels (54%)
5. Production assistance (43%)

Technical Assistance Needs by Commodity

While weed, insect pest, and disease management was cited at the top challenge across all commodities, the greatest need was reported by both vegetable and herb (90%) and berry (93%) producers, followed by tree nuts (81%), tree fruit (74%), and vine crop (67%) producers. Securing sales channels also ranked highest among berry (92%) producers and vegetable and herb (71%) producers. Interestingly, vine crop growers reported less technical assistance needs overall with the exception of 'business and financial planning' and assistance processing/value added products.

Table 3.7

Substantial Technical Assistance Needs by Commodity

Commodity	Technical Assistance Need	Percent Rated as a Substantial Need
Berries	Organic weed, insect pest, and disease management (n=14)	93%
	Securing sales channels (n=12)	92%
	Soil fertility and management of crop nutrients (n=10)	67%
	Soil conservation and soil health (n=10)	67%
	Logistics of product distribution (n=9)	64%
Tree Fruit	Organic weed, insect pest, and disease management (n=29)	74%
	Soil fertility and management of crop nutrients (n=22)	56%
	Labor needs (n=19)	50%
	Soil conservation and soil health (n=19)	50%
	Securing sales channels (n=18)	47%
Tree Nuts	Organic weed, insect pest, and disease management (n=17)	81%
	Soil fertility and management of crop nutrients (n=15)	71%
	Soil conservation and soil health (n=14)	70%
	Labor needs (n=12)	63%
	Securing sales channels (n=9)	47%
Vegetables & Herbs	Organic weed, insect pest, and disease management (n=27)	90%
	Securing sales channels (n=20)	71%
	Labor needs (n=18)	60%
	Soil fertility and management of crop nutrients (n=18)	58%
	Soil conservation and soil health (n=17)	55%
Vineyard	Organic weed, insect pest, and disease management (n=14)	67%
	Labor needs (n=11)	58%
	Business and financial planning (n=11)	55%
	Technology assistance with processing/value added products (n=9)	47%
	Securing sales channels (n=8)	47%

Farming Experience

Three-quarters of beginning farmers reported a substantial need for technical assistance with 'business and financial planning.' Roughly the same percentage of beginning (78%) and experienced farmers (75%) identified organic weed, insect pest, and disease management as a top priority. In general, beginning farmers reported needing technical assistance to a greater degree than experienced farmers (Table 3.8). For example, more beginning farmers reported needing technical assistance with 'labor,' 'soil conservation and soil health,' and 'securing sales channels.' Further, while 'soil fertility and management of crop nutrients' was a top five challenge for experienced farmers, a greater percent of beginning farmers cited this as a substantial need (58% vs 67%). See supplements figures (S3.1 and S3.2) for a full list of technical assistance needs by farming experience.

Table 3.8

Comparison of Beginning and Experienced Farmers' Substantial Technical Assistance Needs

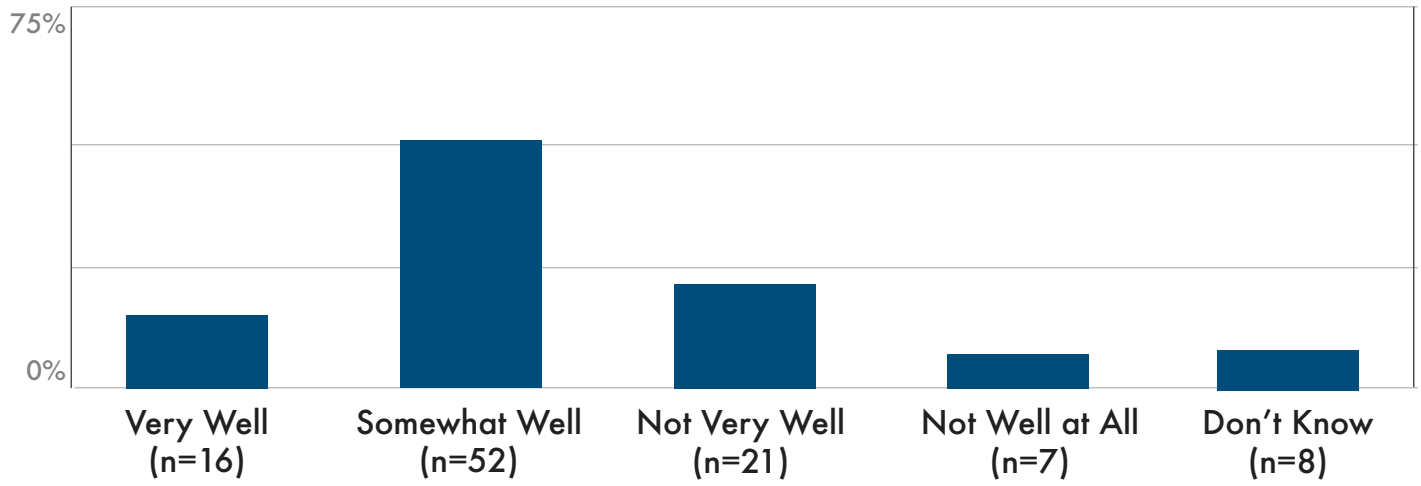
	Technical Assistance Need	Percent Rated as a Substantial Need
Beginning Farmers	Organic weed, insect pest, and disease management (n=14)	78%
	Labor needs (n=13)	77%
	Business and financial planning (n=12)	75%
	Soil conservation and soil health (n=12)	71%
	Securing sales channels (n=11)	69%
Experienced Farmers	Organic weed, insect pest, and disease management (n=52)	75%
	Soil fertility and management of crop nutrients (n=40)	58%
	Soil conservation and soil health (n=37)	54%
	Securing sales channels (n=30)	46%
	Labor needs (n=29)	43%

In addition to identifying their top technical assistance needs, organic survey respondents were asked to report how well their technical assistance needs were being met using a four-point scale ranging from 'very well' to 'not well at all.' Respondents could also indicate they were not sure how well their needs were met.

While most survey respondents report having their technical assistance needs met at least somewhat well, more than one in four indicated that there is room for improvement (Figure 3.9). Roughly two-thirds of survey respondents said their research and information needs were being met to some extent (very well or somewhat well), while 20% felt their needs were not being met very well, and 7% indicated not well at all.

Figure 3.6

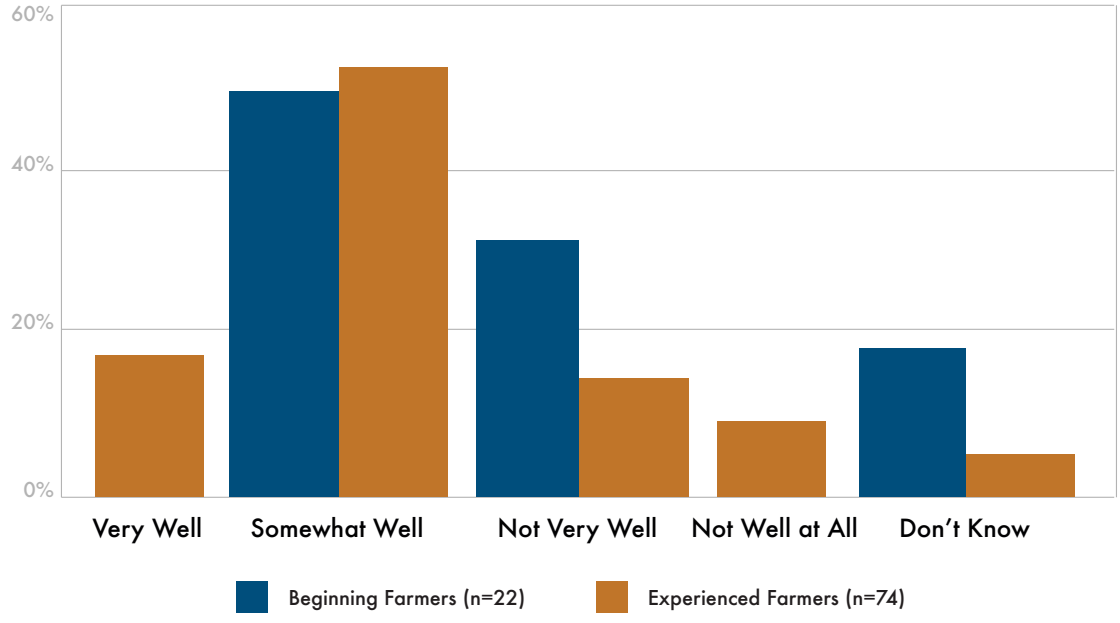
Percent of Respondents Reporting How Well Their Technical Assistance Needs Were Being Met



Perhaps not surprisingly, beginning farmers and ranchers report needing more technical assistance. No beginning producers indicated their research and information needs were being met 'very well' (Figure 3.7). Only half responded that their research and information needs were being met 'somewhat well.' Around one-third indicated their research and information needs were not being met very well, and the remaining respondents did not know how well their needs were being met. It is understandable that more experienced farmers and ranchers would feel their research and information needs are being better served, as they have more experience and possibly broader networks to rely on, whereas beginning farmers and ranchers are more likely to come across challenges they have not experienced before and may not have extensive networks. to the same degree that more experienced farmers and ranchers have.

Figure 3.7

Comparison of Beginning and Experienced Farmers Reporting How Well Their Technical Assistance Needs Were Being Met



3.4 Farmer Concerns about Organic Agriculture

Overall

Organic survey participants were presented with a list of potential topics of concern related to organic production, costs, marketing, and resources and were asked to indicate whether they were "very concerned," "concerned," "somewhat concerned," or "not concerned" about each topic. To summarize the findings, we ranked topics of concern by quantifying the percent of respondents who indicated they were either "very concerned" or "concerned" about the topics.

1. Organic fraud and integrity of USDA organic label
2. Lack of skilled labor
3. Imbalance of domestic certified organic supply and demand
4. Industrial organic
5. Crop contamination

The most substantial concern is organic fraud and integrity of the organic label, which was shared by 68% of respondents. The next most substantial concern--lack of skilled labor (61%) —is shared throughout agriculture and could be an opportunity for organic producers and their representatives to partner with other agricultural organizations. The following three concerns were imbalance of domestic certified organic supply and demand (53%), industrial organic (52%), and crop contamination (52%). Though not listed in the top five, both availability of organic research funds and adaptation to climate change was reported a concern by roughly half of California survey respondents.

Topics of Concern in Organic Agriculture	Percent of Respondents Who Rated as a Concern
Organic fraud and integrity of USDA organic label (n=66)	67%
Lack of skilled labor (n=57)	60%
Imbalance of domestic certified organic supply and demand (n=47)	53%
Industrial organic (n=46)	52%
Crop contamination (e.g., GMOs, pesticide drift) (n=49)	52%
Availability of organic research funds (n=46)	50%
Adaption to climate change (n=47)	49%
Access to agricultural service providers who are knowledgeable about certified organic operations (n=45)	47%
Animal welfare (n=34)	46%
Access to certified organic seeds (n=35)	40%
Access to seeds bred for organic systems (n=32)	39%
Access to certified organic animal feed (n=17)	37%

National Comparison

Compared to the national data, California growers share the exact same concerns, although they place them in a different order. At the national level, the top-five concerns are:

1. Organic fraud and integrity of the USDA organic label (77%)
2. Industrial organic (73%)
3. Crop contamination (63%)
4. Imbalance of domestic certified organic supply and demand (58%)
5. Lack of skilled labor (54%)

Comments – Focus Group and Open-Ended Responses

The concerns shared by California organic farmers and ranchers are well-documented in the organic community, especially the top ranked concern, 'organic fraud and integrity of the USDA organic label.' Survey and focus group participants were given the opportunity to elaborate on these concerns. Below are some notable comments:

> ***"OTA needs to hammer the importers that are sending fraudulent organic products to the US."***

> ***"A few producers will endanger the organic market by selling non organic product as organic. Electronic tracking that is coordinated with the certification process needs to be investigated."***

> ***"Even as a retailer-grower the downward pressure on price because of imports is a serious defect".***

> ***"So the other thing that we encounter is a lot of people say they are certified or registered or they are organic, and they are not, especially when it comes to their water source."***

Fraud and integrity have been the subject of Congressional inquiry and Congress has allocated additional funds to the USDA National Organic Program to maintain the integrity of the organic seal by increasing fraud detection and enforcement activity.

While the category, 'access to agricultural service providers who are knowledgeable about organic operations' ranked 8th on the list, several organic farmers and ranchers noted that they struggled to find knowledgeable people that could offer technical assistance:

> ***"There is no one in the San Diego area with any technical expertise in dry bean production."***

> ***"My advisor doesn't know the answers or get back to me."***

"I wish my certifier would be more forthcoming with suggestions, rather than just offering only critiques of what I could be doing better."

CHAPTER 4
INFORMATION RESOURCES

4.1 Useful Sources of Information

The organic survey asked participants to describe the usefulness of different sources of information using a four-point scale ranging from 'very useful' to 'not at all useful.' Information sources were ranked by quantifying the percent of respondents who rated each source as either 'very useful' or 'mostly useful.' Table 4.1 presents the rankings for how all information sources.

Overall

The five top sources of information for organic producers included:

1. Certified organic farmers
2. Online resources
3. Other farmers
4. Organic certifiers
5. Crop consultants

Table 4.1

Percent of Respondents Who Rated Sources of Information as Useful

Sources of information ranked by organic survey participants in descending order from most to least useful. Sources of information were quantified by calculating the percent of respondents who rated an information source as either 'mostly useful' or 'very useful.' The "n" denotes the number of respondents who selected either "mostly useful" or "very useful" for the corresponding information source.

Sources of Information	Percent of Respondents Who Rated as Useful
Certified organic farmers (n=64)	70%
Online resources (n=54)	59%
Other farmers (n=49)	58%
Organic certifiers (n=55)	57%
Crop consultants (n=36)	57%
Extension personnel focusing on organic production (n=42)	56%
Natural Resources Conservation Service (NRCS) (n=29)	44%
Suppliers (n=32)	42%
Buyers (n=31)	41%
Non-profit agriculture organizations (n=28)	41%
Handlers and processors (n=27)	39%
Extension personnel focusing on conventional production (n=23)	35%
Grower association (n=19)	30%
State agriculture department (n=18)	28%

With the exception of online resources, organic farmers in California highly value the opportunity for knowledge sharing and gathering information directly from other individuals. Organic farmers in California prefer to get information from other certified organic farmers (70%). Following other organic farmers, the preferred sources of information are all closely rated: online resources (59%), other farmers (58%), organic certifiers (57%), crop consultants (57%), and extension personnel focusing on organic production (56%). The least preferred source of information is the state department of agriculture.

National Comparison

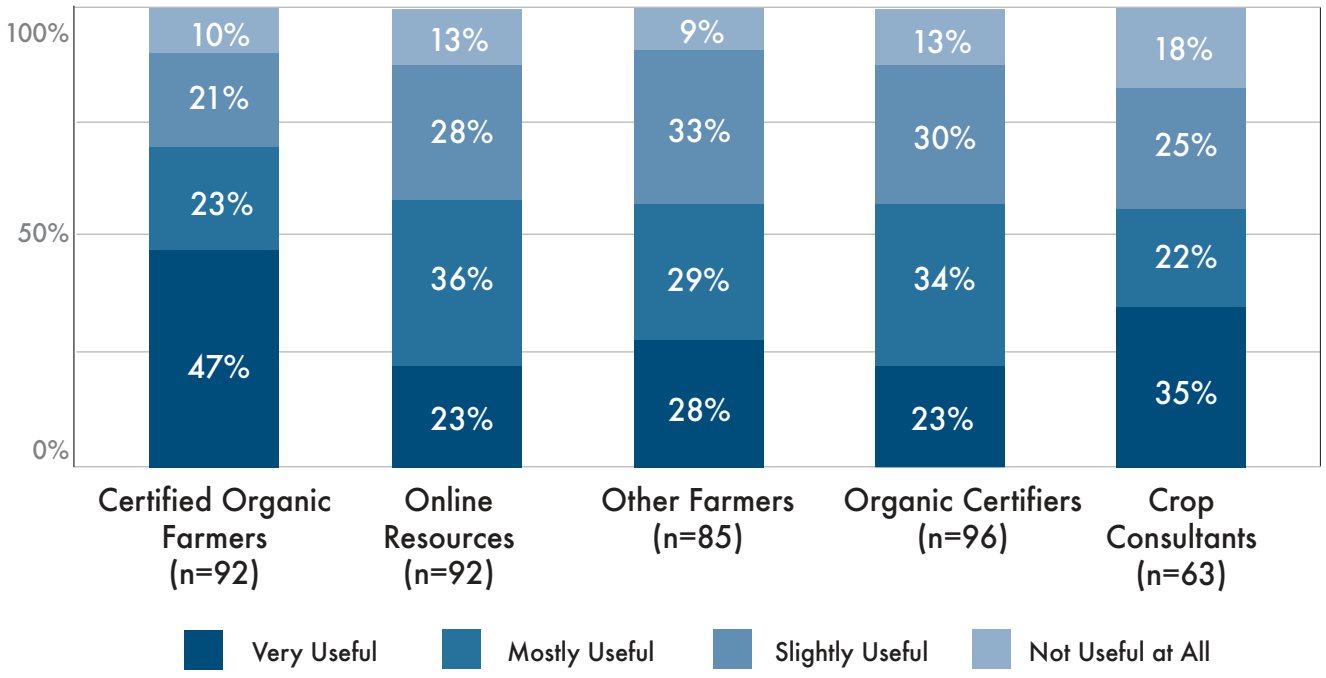
The top five ranked sources of information that were found to be 'very useful' or 'mostly useful in California closely mirrored those reported at the national level.

1. Certified organic farmers (82%)
2. Other farmers (61%)
3. Online resources (59%)
4. Organic certifiers (57%)
5. Crop consultants (48%)

Figure 4.1

National Respondents Top Five Sources of Information Rated as Useful

Sources of information ranked by organic survey participants in descending order from most to least useful. Sources of information were quantified by calculating the percent of respondents who rated an information source as either 'mostly useful' or 'very useful.' The "n" denotes the number of respondents who selected either 'mostly useful' or 'very useful' for the corresponding information source.



Farming Experience

The top five sources of useful information for both experienced and beginning producers are similar. While fifty-nine percent of beginning and experienced farmers and ranchers identified 'organic certifiers' as useful sources of information, beginning farmers and ranchers cited 'crop consultants' as more useful to their operations (64%).

Table 4.2

Comparison of Beginning and Experienced Farmers Top Sources of Useful Information

	Source of Information	Percent Rated as Useful
Beginning Farmers	Certified organic farmers	71%
	Online resources	67%
	Other farmers	65%
	Crop consultants	64%
	Extension focused on organic	63%
	Organic certifiers	59%
Experienced Farmers	Certified organic farmers	70%
	Organic certifiers	59%
	Other farmers	57%
	Online resources	54%
	Extension focused on organic	53%
	Crop consultants	53%

4.2 Preferred Modes of Information

The organic survey also asked participants to indicate their most preferred way of receiving information. Participants could respond to a list of options using a four-point scale ranging from 'highly preferred' to 'not preferred.' The modes of information were ranked in the same way as the sources of information and are presented in Table 4.3.

Overall

Survey participants indicated a preference for receiving information via the following formats:

1. Email newsletters, groups, listservs
2. Printed materials
3. Online materials
4. Online videos
5. On-farm demonstrations

Table 4.3

Respondent's preferred modes of Information

Information formats ranked by organic farmers in descending order from most preferred to least preferred (full organic survey sample). Preference for information formats was quantified by adding the percent of respondents who rated a format as either 'preferred' or 'highly preferred.' The "n" denotes the number of respondents who selected either 'preferred' or 'highly preferred.'

Modes of Information	Percent of Respondents Who Rated as Preferred
Email newsletters, groups, and listservs (n=54)	57%
Printed materials (books, manuals, pamphlets, magazines) (n=52)	57%
Online materials (digital materials and/or websites) (n=52)	55%
Online videos (n=43)	47%
On-farm demonstrations and field days (n=43)	46%
Online courses and webinars (n=38)	41%
Conferences and workshops (n=37)	39%
Scientific journals (n=32)	34%
In-person classes and/or coursework (n=27)	29%
Films or documentaries (n=21)	24%
Social media (Facebook, Instagram, Twitter) (n=7)	8%

California organic growers indicated a preference for receiving information via 'email newsletters, groups, and listservs' (rated as preferred by 57% of survey respondents). 'Printed materials' was rated equally as high, followed closely by 'online materials' (55%), 'online videos' (47%), and 'on-farm demonstrations and field days' (46%). (See Figure 4.3.) The least preferred way to receive information is through social media (8%). All other modes of receiving information were preferred by approximately one in every four farmers, suggesting that farmers and ranchers as a group prefer to receive information in a variety of ways. When evaluating the California survey responses, it is clear that there is no single, primary way farmers receive information. A comprehensive approach may be the most effective way to disseminate information.

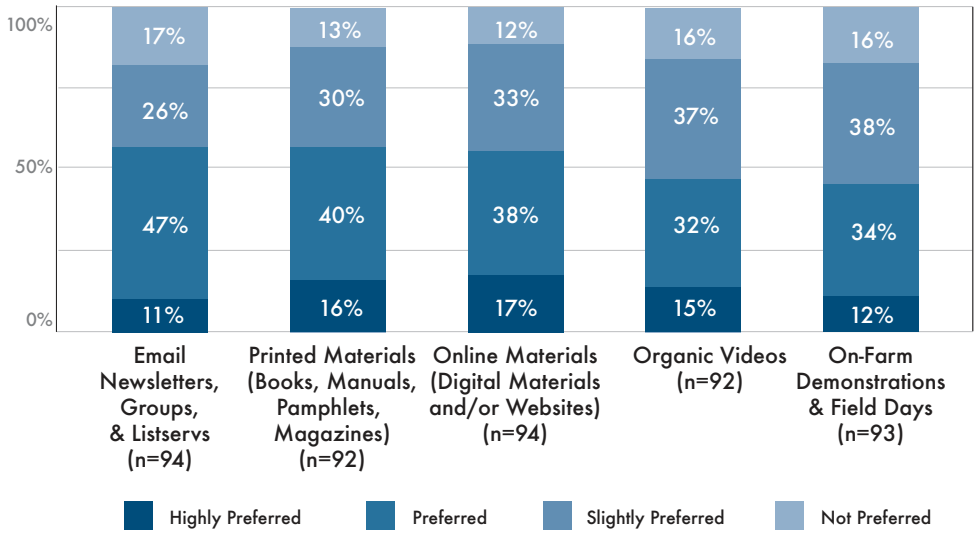


Figure 4.2

California Respondents Preference for Receiving Information

National Comparison

There were slight differences in the top five preferred modes of receiving information between California respondents and the national respondents. At the national level, farmers and ranchers indicated they had a greater preference for 'on-farm demonstrations' and 'conferences and workshops' compared to California respondents.

1. Printed materials (65%)
2. On-farm demonstrations and field days (63%)
3. Conferences and workshops (53%)
4. Online materials (51%)
5. Email newsletters, groups, and listservs (48%)

Farming Experience

There was some overlap between beginning and experienced farmers with respect to their preferred modes of information. Beginning farmers indicated a greater preference for in person sources of information with on-farm demonstrations and field days being the most preferred source of information by 62% of respondents, compared to 41% of experienced growers. Experienced farmers and ranchers preferred email newsletters, groups, and listservs (61%) and printed materials (57%) as their most preferred means of communication.

Table 4.4

Comparison of Beginning and Experienced Farmers' Preferred Modes of Information

	Modes of Information	Percent Rated as Preferred
Beginning Farmers	On-farm demonstrations and field days (n=13)	62%
	Online materials (digital materials and/or websites) (n=12)	60%
	Online videos (n=11)	55%
	Printed materials (books, manuals, pamphlets, magazines) (n=9)	47%
	Conferences and workshops (n=9)	45%
	Email newsletters, groups, and listservs (n=9)	45%
Experienced Farmers	Email newsletters, groups, and listservs (n=9)	61%
	Printed materials (books, manuals, pamphlets, magazines) (n=9)	57%
	Online materials (digital materials and/or websites) (n=12)	52%
	Online videos (n=11)	44%
	On-farm demonstrations and field days (n=13)	41%
	Conferences and workshops (n=9)	38%

CHAPTER 5
SUMMARY OF TOP RESEARCH, EXTENSION, AND POLICY PRIORITIES

5.1 Summary of Results

Findings from the 2022 CORA report reveal that organic producers are leading the way in the use of soil health management practices such as cover crops, crop rotations, and intercrops. Roughly eight in ten organic producers reported using cover crops compared to only about one in ten non-organic producers (Hellerstein et al. 2019). Almost half of survey respondents reported intercropping, a practice that is rarely used on conventional farms.

Despite the widespread use of these beneficial practices, the report demonstrated that certified organic and transitioning producers face a formidable array of challenges related to production, labor, marketing, and other key determinants in the success of an organic operation. Leading production challenges identified in our survey include managing production costs, organic weed, insect pest and disease management, soil fertility and health, maintaining yields, and accessing appropriate crop seeds and cultivars for organic production. Top non-production challenges included accessing skilled labor, developing markets, and meeting recordkeeping requirements of NOP certification. Survey respondents expressed especially high levels of concern about the impacts of organic fraud, industrial-scale organic operations, and crop contamination by NOP-prohibited substances on their livelihoods and the integrity and customer trust of the organic label. They also registered concern about the availability of organic research funds.

The following priorities and recommendations are based on the survey findings presented in the preceding chapters, and address production and non-production challenges separately.

5.2 Production Challenges, Recommendations, and Priorities

Managing Production Costs

Farmer livelihoods depend on keeping production costs manageable while maintaining yields. The biggest production challenge identified by organic producers in California is managing production costs. Production costs seem especially challenging in organic specialty crops including tree and vine crops, berries, vegetables, and herbs.

Respondents included examples of costs that are difficult to manage, including labor costs, water costs, the cost of food safety audits, the cost of organic seed, and inflationary pressure on other input costs. While some industries are able to offset increased costs by increasing the price for their own products, farmers and ranchers in California have noted that the increased availability of organic imports puts downward pressure on the prices they are able to charge.

OFRF recommends the following research to address these challenges:

- Conduct interdisciplinary research to evaluate the net profitability of organic systems considering costs (labor, inputs, etc.), income foregone for conservation practices, proceeds from sales, and long-term economic trends under organic management.
    - Cost analysis and enterprise budgeting for individual specialty crops and for diversified vegetable rotations and perennial horticultural cropping systems may be especially helpful for organic produce and tree nut farmers.
- Document advantages, disadvantages, and net returns for different marketing strategies.
- Research and develop organic management strategies to reduce labor requirements.
- Research, document, and demonstrate the capacity of organic conservation and soil health practices to maintain satisfactory yields and reduce input costs by enhancing nutrient- and water-use efficiency, crop resilience, and disease suppression.
- Develop more practical, reliable, and affordable economic analysis tools for farmers to use in their production and management decisions.
    - Provide outreach and assistance on integrating these tools into day-to-day management, particularly through farmer-to-farmer learning.
- Research, document, and model the impacts of weather extremes related to climate change on organic yields and production costs and develop region-specific resilience strategies.

Organic Weed Management

Weed management emerged as the second ranked challenge among California organic farmers with 70% citing it as a substantial challenge. Organic producers also identified the broader category of 'organic weed, pest, and disease management' as their leading technical assistance need (76%). Controlling weeds, insects, and disease in organic production can be especially difficult given NOP constraints on the types of inputs that can be used in production systems. Farmer identified solutions to controlling weeds include additional research on inexpensive methods of weed control, and pre- and post-emergent herbicides.

OFRF recommendations for organic integrated weed management (IWM) research include:

- Farmer-researcher collaboration to develop regionally adapted, cost effective, and labor-efficient organic IWM strategies.
- Fine-tune "tried-and-true" non-cultivation tactics such as mulching, mowing, flame, tarping, and manual removal.
- Breed, select, and evaluate crop cultivars for weed tolerance and weed competitiveness.
- Develop organic IWM strategies that combine non-soil-disturbing tactics with strategic crop rotations, cover cropping, nutrient and water management to favor crops over weeds, and weed-resilient crops to minimize the need for cultivation.
- Design and demonstrate new cultivation tools or tool combinations that give the best weed control with the least damage to soil structure and soil life.

- Research and develop organic pre- and post-emergent IWM strategies for invasive perennial weeds especially bindweed, Canada thistle, nutsedge, and rhizomatous grasses.
- Develop adaptive IWM strategies that can respond effectively to increasingly extreme and erratic rainfalls and droughts related to climate change.
- Research and develop strategies to manage weeds and restore soil health during transition to organic production.

Controlling Insect Pests and Disease

Controlling insect pests also emerged as one of the top five challenges for California growers. Over half of organic survey respondents who produce specialty crops (berries, tree fruit, tree nuts, and vine crops) found both insect pests and plant diseases challenging to manage. As stated previously, organic producers identified 'organic weed, pest, and disease management' as their leading technical assistance need (76%). Farmer identified solutions to controlling insect pests include additional research on mating disruption and biological controls, such as predatory insects and biological microbes.

OFRF recommends the following research priorities:

- Develop organic IPM strategies for insect pests and diseases based on an ecological understanding of the target organism.
    - For insect pests, integrate crop diversification and habitat plantings for natural enemies of insect pests with biopesticides and other NOP-allowed materials.
    - For diseases, combine crop rotation, soil health practices, varietal resistance, anaerobic soil disinfestation, and other methods to build a disease-suppressive soil microbiome, with biofungicides and other NOP-allowed materials.
- Research and develop organic management strategies for serious pests and diseases of fruit, vegetable,

and other horticultural crops, including pheromone control and mating disruptors.

- In addition to addressing individual pests and pathogens, research, develop, and promote cost-effective organic strategies to build soil and agroecosystem health and manage pest and pathogen complexes through prevention and avoidance as well as targeted suppression tactics.
    - o Evaluate the effects of these strategies on crop damage, yield, and profitability as well as pest/pathogen abundance.

- Monitor the spread of insect pests and pathogens beyond their historical ranges into new regions in response to climate change and adapt organic IPM strategies accordingly.
- Identify, monitor, and prioritize new invasive pests and pathogens for organic IPM research.

Maintaining Yields and Soil Health

Almost half (49%) of California's organic producers surveyed indicated 'maintaining adequate yields' as a substantial challenge, followed by 43% who identified 'managing soil fertility and crop nutrition' as a substantial challenge. Further, 60% of respondents said they needed technical assistance with 'soil fertility and management of crop nutrients,' followed by 57% who said they needed technical assistance with 'soil conservation and soil health.'

Farmer identified solutions for maintaining adequate yields included increasing drought tolerance and water retention, identifying organic fertilizers that will increase yield, and seed production for specific bio-regions and soil types. For managing soil fertility and crop nutrition, farmers identified a need for cover crop recommendations that yield the most nitrogen, more organic sources of affordable nitrogen, data showing nitrogen and other benefits of grazing orchards, increased knowledge about nutrient management, and strategies for reducing chemical and commercial fertilizer use while maintaining adequate fertility.

Therefore, OFRF recommends the following to address these challenges:

- Research on soil biotic communities in organically managed soils, including rhizosphere and endophyte microbiomes. Evaluate impacts of different crop rotations, crop genetics, tillage practices, organic amendments, NOP-allowed crop protection materials, and non-use of synthetic inputs on biological soil functions.
- Develop practical organic minimum tillage strategies for different cropping systems and regions, especially annual vegetables, field crops, and seeds for planting.
- Develop and deliver practical, reliable, and affordable tools and methods for measuring soil health parameters related to tilth, fertility, and other soil biological functions.
- Develop advanced biologically based organic nutrient management strategies.
- Research and document the impacts of weather extremes related to climate change on organic yields and production costs and develop region-specific resilience strategies.
- Conduct impartial evaluations of the efficacy and cost-efficiency of commercial microbial inoculants and

other inputs marketed to organic growers and claimed to improve soil health, suppress disease, or enhance yields.

- Research, document, and demonstrate the capacity of organic conservation and soil health practices to maintain satisfactory yields and reduce input costs by enhancing nutrient- and water-use efficiency, crop resilience, and disease suppression.

Implications for Policy Makers

While policymakers are not likely in a position to identify effective ways to increase soil fertility and crop nutrition, they can fund such research, education, and Extension efforts to make sure that farmers and ranchers have access to the technical assistance they need in order to be successful. Research, education, and Extension provides a multitude of services that help farmers and ranchers remain in business, and increased funding for these activities would help with a variety of production and non-production challenges. For instance, most of the production challenges (e.g. weed control, soil fertility, etc.) can be solved, or greatly reduced, by having knowledgeable Extension agents that have access to relevant research results that will help them reduce the burdens experienced by farmers and ranchers. This is true when it comes to production challenges like maintaining soil fertility, nutrient management, maintaining adequate yields, and controlling weeds and pests, as well as non-production challenges like business planning.

Just as increased funding for technical assistance will help producers, increased funding for public plant breeding programs, with an emphasis on developing crops for specific bio-regions and soils, would ensure farmers have access to the tools necessary to maintain adequate yields in a changing climate. These public investments are integral to ensuring producers are equipped with the tools they need to produce the food society relies on.

Policymakers are in a better position than extension to help farmers and ranchers with rising input costs. The input costs identified by producers in California include water costs, labor costs, food safety audit costs, organic seed costs, and other general price increases caused by inflation. Labor costs, in California in particular, are higher than other states because of a higher minimum wage and mandatory overtime pay. While organic producers in California acknowledge that even these higher costs of labor may fail to provide their workforce with a living wage, the increased costs across the board make it difficult for farmers and ranchers to survive.

Where possible, policymakers should consider potential ways to offset some of the costs that farmers and ranchers incur in order to conduct business. For example, the Organic Certification Cost Share Program run by USDA provides a partial reimbursement for the cost of organic certification. Acknowledging that similar certification and audit costs have a disproportionately bigger impact on small- and medium-sized producers, cost reimbursements, grants, or other credits that would help producers offset these costs would allow them to remain competitive under increasingly tight margins.

5.3 Non-Production Challenges, Recommendations, and Priorities

Access to Labor

Organic production methods are generally more labor-intensive than conventional systems. Accessing labor was the leading non-production challenge, identified by 55% of survey respondents and was a frequently noted challenge in the open-ended responses for both production and non-production challenges. Specialty crops are particularly labor-intensive and more than half of respondents who produced tree fruit, tree nuts, berries, or vegetable and herb commodities cited labor as a substantial challenge. Six out of ten survey respondents expressed concerns about a lack of skilled labor. Unfortunately, this issue has a disproportionate impact on California growers given the sheer volume of specialty crops produced in the state.

Organic farms can provide meaningful work for job seekers, yet the tight budgets under which many organic farms operate can make it difficult for producers to afford to hire and appropriately remunerate the skilled workers they need. Organic farms with good labor relations can serve as training grounds as their employees gain skills and find their own callings to become independent farmers. This helps the organic farming sector grow but leaves the employer once again seeking labor. At the other extreme, the crushingly low wages, exploitative work schedules, and poor living conditions that millions of farmworkers hired by industrial-scale agribusiness operations face day in and day out amount to a national humanitarian crisis.

An urgent need exists to develop win-win solutions that:

- Promote research and development of effective organic management technologies to reduce the need for labor, including mechanical harvesters and pruners accessible to smaller producers and affordable automation where possible.
    - All public investments in increased automation and development should come with a requirement that any new technologies remain affordable and accessible for small- and medium-sized farms.
- Institute immigration reform and reform the existing guest worker program that would increase access to a skilled labor force.
- Offer meaningful work opportunities to vulnerable communities including people of color, at-risk youth, low-income inner-city neighborhoods, and military veterans.
- Guarantee all farmworkers a living wage, a safe and respectful workplace, and other basic labor rights protections.
- Provide a pathway from farmworker to farmer, while at the same time facilitate hiring of additional help as employees graduate to manage their own farms.

It is crucial for multidisciplinary and socio-economic research to develop new models for farmer-worker relations, and to identify policy needs to support the desired outcomes. Stakeholder sessions or focus groups composed of farmers, farm labor, rural sociologists, educators,

policy makers, and other key stakeholders will play a vital role in this process. With the paradox that both employers and employees in the farming sector often experience severe financial stress, taxpayer-funded government subsidies designed to ensure decent farmworker wages while maintaining farm economic viability may be warranted.

Finding Markets and Business Management

Finding and developing markets for organic products emerged as a top non-production challenge for 46% of organic producers in our survey, and ranked as the highest or second highest challenge across all commodities. It was also an important theme in focus group and open-ended comments, with farmers highlighting their struggle to access specific markets, diversify their markets, and compete with larger or conventional producers. Similarly, 69% of beginning farmers and 46% of experienced farmers identified 'securing sales channels' as an area where technical assistance is needed. The struggle to access markets is closely tied to business planning and management. Nearly one in three producers found managing business activities to be a substantial challenge. One farmer suggested that help producing a sound farm business plan would be useful. For research and Extension agents, this may translate to conducting business planning seminars and courses during the offseason that would allow farmers and ranchers to focus on non-production, business management needs.

When the COVID-19 pandemic hit the U.S. shortly after the launch of the NORA survey, farmers faced a whole new range of challenges related to marketing and delivery of organic farm products, supply lines for farm inputs, and business management. Specific issues ranged from the loss of restaurant chefs as buyers and disruptions in meat processing and shipping of farm products to the need to "pivot" rapidly to online marketing venues. Some respondents welcomed the new skills and venues associated with online marketing and distribution as an opportunity. However, even as pandemic-related restrictions in economic activity continue to ease, farmers will face a whole new spate of shifting market conditions, problems, and opportunities, and will need to develop longer-term marketing and distribution strategies to make their operations more resilient to unpredictable future crises.

Based on survey findings related to marketing, business management, and the impacts of the pandemic, OFRF recommends the following research and outreach priorities:

- Conduct marketing research for organic farming enterprises to identify underlying causes of the disconnect between high demand and inadequate farmgate prices.

- Research models for marketing of organic vegetables, fruits and other products, including farmer cooperatives and local/regional food system venues. Develop tools and methods for making these models more effective.
- Research and document the many impacts of the COVID-19 pandemic on organic markets and supply chains, adaptive responses by producers and market venues throughout the organic sector, and future needs. Identify:
    - Lessons learned: successful innovations as well as failures and their causes.
    - Farmer needs to adapt to near-future market shifts in the wake of the pandemic.
    - Strategies for building farm, market, food system, and community resilience to future crises.
- Build capacity to deliver technical assistance with market development and other aspects of farm business planning and management.
- Develop and deliver farmer-friendly, dynamic informational resources on the business aspects of highly diversified organic specialty crop enterprises that entail more complex budgeting, financial planning, and other business management activities. In particular, educational resources and tools that increase farmers' understanding of the costs of production and that are specifically designed to account for the cropping system used by the farmer.

Organic Certification Cost and Recordkeeping

NOP recordkeeping requirements and cost of certification emerged as a substantial non-production challenge for roughly one-third of survey respondents. Focus group comments revealed widespread concern with this issue, especially for highly diversified operations like CSAs with 20 or more different crops and multiple plantings. Policymakers are in a position to address the dual challenges of organic certification recordkeeping and organic certification cost since both stem from regulatory requirements. On the cost side, the USDA's Organic Certification Cost-Share Program (OCCSP) reimburses organic operations for a portion of their certification costs, but the amount of reimbursement declined in 2020 from $750 per scope to $500 per scope. Despite an increase in organic certification costs since the OCCSP began, producers now receive less funding. At a minimum, the reimbursable amount should be returned to $750. In order to actually resolve the problem, the amount reimbursed should be updated to reflect the current economic situation of organic farmers, as well as the fact that the cost is not incurred by other types of operations such as conventional farmers.

On recordkeeping, NOP requirements for detailed seed-to-market documentation for each crop and planting impose a serious burden on diversified operations, and create a major disincentive to maintain the crop diversity that builds soil health, climate

resilience, and ecological balance that is required by the NOP standards themselves. Research should be done on ways to streamline the recordkeeping requirements for organic certification, which could include the development of user-friendly templates, phone apps that would allow farmers to update records in real-time, and forms that auto-fill from any previous records that may exist.

OFRF recommends research into ways to reduce the record-keeping burden while maintaining the ability of farmer records to provide robust verification and enforcement of compliance with NOP practice standards. Specific strategies to explore include:

- Conduct focus groups with producers, certifiers, organic inspectors, and other stakeholders to develop ideas about how to best streamline the recordkeeping process.
- Develop user-friendly data technology to simplify data entry, including applications and reusable templates.
- Simplify recordkeeping requirements for highly diversified, specialty crop rotations and polycultures.
- Explore potential to streamline and combine processes across agencies, including organic certification and food safety recordkeeping requirements.

Organic Integrity and Market Access

Certified organic farmers registered high levels of concern about organic fraud and the integrity of the USDA organic label, the impacts of large-scale industrial organic operations, and the threat of contamination of organic crops by NOP-prohibited substances. In addition, over half of organic producers registered concern about the imbalance of domestic certified organic supply and demand, which could be related to market globalization and industrial organic. Industrial operations can depress prices and undercut smaller scale organic farmers. Crop contamination can cause a loss of organic certification for up to three years. Any of these issues can undermine the reputation of USDA certified organic farm products, restrict organic market opportunities, and threaten farmer livelihoods.

Clearly, an urgent need exists for strengthened policies to protect the integrity of USDA certified organic products, improve market access, and sustain the economic viability of small- to mid-scale organic farms and ranches.

Effective policy development will require additional research in the following areas:

- Document and optimize the design of buffer plantings, diversions, and other landscape practices to protect organic crops from spray drift and GMO pollen.
- Improve the accuracy, practicality, and affordability of testing and tracking for domestic and imported products distributed and marketed as "organic" to detect and intercept fraudulent products, and to identify presence and sources of pre-harvest or post-harvest contamination beyond the organic producer's control.
- Support market and socio-economic research to evaluate and mitigate the impacts of industrial organic on market access for small to midsize organic producers.
- Develop improved criteria by which NOP can more consistently and effectively enforce requirements for crop rotations and other measures to build and maintain soil health, soil-friendly tillage practices, and measures to protect and maintain biodiversity.

In the meantime, organic farmers need Extension, education, and technical assistance to meet the challenges of organic integrity and market access, including:

- Assistance in identifying and developing direct markets and local and regional supply chains for small to medium scale organic operations.
- Educational tools to help farmers identify potential sources of contamination of their organic crops and implement buffer plantings and other mitigation practices.
- Legal support to deal with crop contamination issues including spray drift, GMO pollen, GMO contamination of crop seed, and instances of organic fraud.

Surveys and focus groups for the 2022 NORA report were conducted by the Organic Farming Research Foundation (OFRF) in partnership with the Organic Seed Alliance (OSA) to identify challenges and concerns that organic and transitioning growers across the US encounter, and assess their needs for additional research-based information, and technical assistance related to these issues. The goal of the data collection was to identify the barriers and challenges associated with organic farming, and the practical information, technical assistance, and other resources organic producers need to make a livelihood and meet the growing demand for certified organic products.

CHAPTER 6 METHODS

6.1 Survey Design

The survey was written and designed by OFRF staff with input from OSA staff and social scientists at the Washington State University (WSU) Social and Economic Science Research Center (SESRC). The survey instrument was designed based on the Tailored Design Method (TDM) model of social science survey principles, practices, and protocols (Dillman et al. 2009). The TDM guides survey content and design to maximize user comprehension, ensure ease of navigability, and accommodate accessibility needs.

Question types in the survey instrument were predominantly closed-ended, including a mix of dichotomous (i.e., respondents choose between two options), semantic differential (i.e., respondents rate an item within the framework of a multi-point rating scale), rank order (i.e., respondents rearrange and rank multiple options in order of their importance), and/or multiple-choice questions (i.e., respondents choose one or more items from a limited list of options). We included several open-ended questions to capture more detail on individual farmers' top production and non-production challenges, and technical assistance needs and perspectives. Demographic questions allowed us to analyze, cross-tabulate, and cross-reference responses based on geographic location, farming experience, and the race/ethnicity of respondents. Drafts of the organic and transition survey instruments were pretested by organic and transitioning farmers and ranchers who provided feedback and recommendations regarding content, format, and navigability.

The survey was reviewed for protection of human subjects by the Washington State University (WSU) Human Subjects Institutional Review Board (IRB). Both surveys were certified exempt. To develop the survey procedures, SESRC staff followed the code of professional ethics and practices of the American Association for Public Opinion Research (AAPOR). That code states that "unless the respondent waives confidentiality for specified uses, we shall hold as privileged and confidential all information that might identify a respondent with his or her responses. We shall also not disclose or use the names of respondents for non-research purposes unless the respondents grant us permission to do so."

Organic Survey

The questions in the organic survey were designed to identify the most pressing production and environmental challenges for organic farmers and ranchers; the social, economic, and policy barriers to successful organic agricultural enterprises; and the technical assistance and financial support programs organic producers need to overcome these barriers. Because access to high quality organic seed is a vital but challenging need, the survey included questions to assess respondents' perspectives on organic seed, including current use and difficulties in sourcing organic seed. The survey also asked which crops and crop traits should be prioritized in organic plant breeding programs. Because the organic survey was conducted in conjunction with OSA, some questions were abbreviated, and definitions of common agricultural terms or concepts were not provided to limit the length of the survey instrument. To view the organic survey instrument, please see Appendix A.

To capture a representative sample of the broader organic farming community and to reach as many growers as possible, the organic survey was implemented in two phases: 1) a web-based and paper survey (i.e., mixed mode survey) of a random sample of certified organic producers (closed distribution survey) followed by 2) an open distribution convenience non-probability web survey (open distribution survey). The same survey instrument was used in both phases of implementation and contained a total of 44 questions (see Appendix A). Farmers who participated in the survey were eligible to win a $100 REI gift card.

For the closed distribution survey, we used the Organic INTEGRITY Database to select a random sample of 2,000 certified organic farmers and ranchers who had an email address listed in the database. Our goal was to achieve a 20% response rate; typical response rates for farmer surveys range from 20-30% (Yammarino et al. 1991) and can be as low as 15% (Pennings et al. 2002, Prokopy 2011). The online survey was implemented by the SESRC at WSU using their NetSurveyWorks software. The closed survey was initiated with a personalized email invitation and an introductory postal letter with a web link to the survey. The invitation email provided a web link to the organic survey and a unique access code for each recipient. An email and postcard reminder were sent to the 2,000 organic producers in the random sample one week after the email and postcard invitations were sent. One month later, a hardcopy of the survey instrument was mailed to all non-respondents. Following the mailing of the hardcopy survey, we sent three additional email reminders along with a replacement survey questionnaire to non-respondents. Staff at SESRC also made phone calls to non-respondents to encourage participation.

The closed distribution survey was open from December 2019 through May 2020. We received 158 fully completed web-based surveys in addition to 242 fully completed hardcopy surveys that were submitted in the mail. We also received forty-eight partially complete surveys that were eligible for analysis. In total, out of the random sample of 2,000 certified organic farmers, 448 respondents completed or partially completed the organic survey resulting in a 22.53% response rate for the closed distribution survey, which exceeded our target 20% response rate.

After launching the closed distribution survey, SESRC implemented the same survey instrument via an open distribution method on February 17, 2020. To announce the open distribution survey, SESRC directly emailed all certified organic producers—excluding the 2,000 organic growers randomly identified for the closed distribution survey—at the email address listed in the USDA Organic INTEGRITY Database. We sent an email reminder along with a mailed postcard reminder. OFRF, OSA, and our advisory committee and outreach partners also advertised the survey through multiple mechanisms, including electronic announcements via organization websites, newsletters, social media, and organization publications.

The open distribution organic survey was open from February through August 2020. We received 349 fully completed web surveys and 262 partially complete web surveys that were eligible for analysis, for a total of 611 survey responses. From the closed and open distribution surveys combined, we received a total of 1,059 eligible responses that were used in the analysis.

Focus Group Design

To complement the survey data, we conducted 16 focus group discussions with certified organic and transitioning farmers and ranchers across the country for the broader NORA report. Our goal was to interview transitioning producers separately from certified organic producers, but some focus groups contained a mix of transitioning and certified producers. The focus groups were meant to be in-person discussions, and one took place at the January 2020 Southern Sustainable Agriculture Working Group Conference. The other fifteen focus groups were hosted virtually due to the COVID-19 pandemic. The sixteen focus groups were held between January 2020 and March 2021. Over 100 organic and transitioning producers participated in the focus group discussions and represented all regions of the U.S.

For this CORA report, we only included two farmer focus groups in the analysis. One group was composed entirely of California participants. The second focus group had participants representing the Pacific region, and we only selected comments from those who identified their operations were based in California.

OFRF staff developed a moderator's guide to outlining topics to be discussed at all focus groups to ensure consistency (see Appendix C). Participants were identified using one of two methods: 1) participants were randomly selected from an existing conference registration or membership list; or 2) if there was not an existing list, an open call for participants was released and participants were then randomly selected from the list of those who responded. Once participants were identified and prior to the focus group, we emailed participants a description of the research project and a voluntary survey to collect information on their farm characteristics and demographics.

Each focus group session lasted approximately two hours. Sessions were recorded and transcribed verbatim by a court reporter. At least two researchers from either OFRF or the agricultural organizations selected to host focus groups attended each discussion, one to facilitate the conversation and another to take notes to accompany the transcript. An OFRF staff member was also present at each focus group to provide technical assistance, if needed. This format allowed the facilitator to focus on managing the discussion and ensuring all participants had the opportunity to speak. We reached our target number of between four and twelve participants for each session. Each participant received a $25 VISA gift card as a thank you for participating.

6.2 Data Analysis

Organic Survey Analysis

In the following analysis of the organic survey data, we combined the data from the closed and open distribution surveys to maximize the number of organic producers represented in the overall NORA report. This combined dataset included 749 fully complete survey responses and 310 partially complete responses for a total of 1,059 responses from organic producers. For this report, we extracted all respondents with zip codes representing the state of California, n=144.

Data were analyzed using SPSS statistical software to present descriptive statistics. In addition to analyzing the aggregate responses from all survey respondents, we used demographic descriptors related to race/ethnicity, and farming experience to group the survey participants. The percentages provided in all tables and figures were rounded to the nearest integer.

Farmer Experience

The report also examines how farming experience influences the practices an organic farmer chooses to implement and the challenges they face. Survey respondents were asked to indicate how long they had been farming and this data was used to place participants into two groups. One group included beginning farmers with less than 10 years of farming experience, which is based on the USDA definition of a beginning farmer, and the second group included experienced farmers with more than 10 years of experience.

Farmer Race/Ethnicity

Demographic data collected in the organic survey was also used to compare survey responses from BIPOC and White farmers to determine if research needs and priorities differed between these two farmer groups. Survey respondents were given the opportunity to provide information about their race and/or ethnicity. Survey respondents could select "yes" or "no" for the following categories: 'Asian/Pacific Islander,' 'Black or African American,' 'Hispanic or Latinx,' 'Native American or American Indian,' 'White,' and/or 'Other.' Respondents had the option to skip any part of the question. For example, if a survey participant identified solely as 'White,' it was possible for them to answer "yes" to that option and leave the other race/ethnicity options blank.

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* For project proposal summaries, progress and final reports for USDA funded Organic Research and Extension Initiative (OREI) and Organic Transitions (ORG) projects, enter proposal number under “Grant No” and click “Search” on the CRIS Assisted Search Page at:

http://cris.nifa.usda.gov/cgi-bin/starfinder/0?path=crisassist.txt&id=anon&pass=&OK=OK.

APPENDICES

Appendix A: Organic Survey Instrument
Appendix B: Transition Survey Instrument
Appendix C: Focus Group Moderator's Guide
Supplemental Figures – Production Challenges

S1.1 Beginning Farmer – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Managing production costs (n=15)	83%
Controlling weeds (n=16)	76%
Managing soil fertility and crop nutrition (n=10)	50%
Optimizing soil structure, avoiding soil erosion and degradation (n=9)	47%
Controlling insect pests (n=9)	47%
Drought management (n=8)	44%
Adapting to climate change (n=8)	44%
Maintaining adequate yields (n=7)	39%
Controlling disease pressure (n=7)	39%
Irrigation and water use (n=6)	33%
Managing pollinators and habitat for pollinators (n=5)	33%
Enhancing agricultural biodiversity (n=5)	29%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=5)	29%
Seed production/seed saving (n=3)	27%
Integrating perennials and permaculture design (n=3)	25%
Minimizing adverse impacts of tillage on soil health (n=4)	24%
Finding appropriate organic crop varieties and seed for your operation (n=3)	20%
Utilizing cover crops and green manures (n=3)	18%
Access to water resources (n=3)	17%
Post-harvest handling methods (n=2)	11%
Managing animal production and health (n=0)	0%
Grazing and pasture management (n=0)	0%
Managing crop rotations (n=0)	0%

S1.2 Experienced Farmer – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Managing production costs (n=48)	69%
Controlling weeds (n=51)	68%
Maintaining adequate yields (n=38)	54%
Controlling insect pests (n=33)	46%
Controlling disease pressure (n=31)	43%
Finding appropriate organic crop varieties and seed for your operation (n=26)	41%
Managing soil fertility and crop nutrition (n=30)	41%
Drought management (n=27)	39%
Irrigation and water use (n=22)	31%
Adapting to climate change (n=20)	29%
Access to water resources (n=20)	29%
Seed production/seed saving (n=8)	24%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=16)	24%
Optimizing soil structure, avoiding soil erosion and degradation (n=16)	23%
Minimizing adverse impacts of tillage on soil health (n=14)	21%
Managing animal production and health (n=3)	19%
Post-harvest handling methods (n=12)	17%
Enhancing agricultural biodiversity (n=12)	17%
Managing pollinators and habitat for pollinators (n=10)	16%
Integrating perennials and permaculture design (n=6)	14%
Managing crop rotations (n=5)	12%
Utilizing cover crops and green manures (n=7)	11%
Grazing and pasture management (n=2)	10%

S1.3 BIPOC – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Maintaining adequate yields (n=11)	100%
Managing production costs (n=10)	100%
Finding appropriate organic crop varieties and seed for your operation (n=6)	86%
Controlling weeds (n=9)	82%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=6)	75%
Drought management (n=6)	60%
Controlling insect pests (n=6)	60%
Adapting to climate change (n=6)	60%
Managing soil fertility and crop nutrition (n=5)	56%
Minimizing adverse impacts of tillage on soil health (n=5)	56%
Seed production/seed saving (n=2)	50%
Optimizing soil structure, avoiding soil erosion and degradation (n=5)	50%
Irrigation and water use (n=5)	50%
Controlling disease pressure (n=5)	50%
Integrating perennials and permaculture design (n=2)	40%
Enhancing agricultural biodiversity (n=4)	40%
Managing pollinators and habitat for pollinators (n=4)	40%
Grazing and pasture management (n=1)	33%
Managing crop rotations (n=2)	33%
Access to water resources (n=3)	27%
Post-harvest handling methods (n=2)	22%
Utilizing cover crops and green manures (n=1)	14%
Managing animal production and health (n=0)	0%

S1.4 Non-BIPOC – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Controlling weeds (n=70)	69%
Managing production costs (n=62)	67%
Controlling insect pests (n=47)	49%
Maintaining adequate yields (n=39)	42%
Managing soil fertility and crop nutrition (n=42)	42%
Finding appropriate organic crop varieties and seed for your operation (n=28)	34%
Controlling disease pressure (n=37)	39%
Drought management (n=34)	37%
Irrigation and water use (n=28)	30%
Access to water resources (n=24)	27%
Adapting to climate change (n=25)	27%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=20)	24%
Optimizing soil structure, avoiding soil erosion and degradation (n=21)	23%
Seed production/seed saving (n=11)	22%
Integrating perennials and permaculture design (n=13)	22%
Post-harvest handling methods (n=16)	18%
Minimizing adverse impacts of tillage on soil health (n=15)	17%
Managing pollinators and habitat for pollinators (n=14)	16%
Managing animal production and health (n=3)	15%
Enhancing agricultural biodiversity (n=14)	15%
Utilizing cover crops and green manures (n=12)	14%
Managing crop rotations (n=4)	8%
Grazing and pasture management (n=1)	5%

S1.5 Berries – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Managing production costs (n=15)	83%
Controlling weeds (n=13)	72%
Controlling insect pests (n=9)	50%
Finding appropriate organic crop varieties and seed for your operation (n=6)	40%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=6)	35%
Irrigation and water use (n=6)	33%
Seed production/seed saving (n=4)	31%
Maintaining adequate yields (n=5)	29%
Managing soil fertility and crop nutrition (n=5)	29%
Optimizing soil structure, avoiding soil erosion and degradation (n=5)	29%
Drought management (n=5)	29%
Controlling disease pressure (n=5)	28%
Adapting to climate change (n=5)	28%
Grazing and pasture management (n=1)	25%
Managing pollinators and habitat for pollinators (n=4)	24%
Integrating perennials and permaculture design (n=3)	23%
Post-harvest handling methods (n=4)	22%
Managing crop rotations (n=3)	21%
Minimizing adverse impacts of tillage on soil health (n=3)	20%
Enhancing agricultural biodiversity (n=3)	19%
Utilizing cover crops and green manures (n=2)	13%
Access to water resources (n=2)	13%
Managing animal production and health (n=0)	0%

S1.6 Tree Fruit – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Managing production costs (n=29)	69%
Controlling weeds (n=29)	62%
Controlling insect pests (n=24)	52%
Controlling disease pressure (n=20)	46%
Managing soil fertility and crop nutrition (n=18)	40%
Maintaining adequate yields (n=17)	39%
Drought management (n=15)	38%
Irrigation and water use (n=17)	38%
Adapting to climate change (n=15)	34%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=11)	29%
Finding appropriate organic crop varieties and seed for your operation (n=10)	26%
Seed production/seed saving (n=6)	26%
Optimizing soil structure, avoiding soil erosion and degradation (n=11)	25%
Access to water resources (n=9)	22%
Post-harvest handling methods (n=9)	21%
Enhancing agricultural biodiversity (n=9)	21%
Integrating perennials and permaculture design (n=6)	19%
Managing pollinators and habitat for pollinators (n=8)	19%
Minimizing adverse impacts of tillage on soil health (n=7)	18%
Utilizing cover crops and green manures (n=5)	13%
Grazing and pasture management (n=1)	11%
Managing crop rotations (n=2)	8%
Managing animal production and health (n=0)	0%

S1.7 Tree Nuts – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Controlling weeds (n=20)	80%
Maintaining adequate yields (n=17)	74%
Controlling insect pests (n=16)	67%
Managing production costs (n=13)	62%
Managing soil fertility and crop nutrition (n=12)	50%
Controlling disease pressure (n=12)	50%
Access to water resources (n=7)	33%
Drought management (n=7)	30%
Irrigation and water use (n=6)	29%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=6)	27%
Seed production/seed saving (n=3)	25%
Finding appropriate organic crop varieties and seed for your operation (n=4)	24%
Adapting to climate change (n=5)	24%
Utilizing cover crops and green manures (n=5)	21%
Integrating perennials and permaculture design (n=4)	21%
Optimizing soil structure, avoiding soil erosion and degradation (n=4)	17%
Post-harvest handling methods (n=3)	13%
Managing crop rotations (n=1)	11%
Minimizing adverse impacts of tillage on soil health (n=2)	9%
Managing pollinators and habitat for pollinators (n=1)	6%
Enhancing agricultural biodiversity (n=1)	5%
Managing animal production and health (n=0)	0%
Grazing and pasture management (n=0)	0%

S1.8 Vegetables and Herbs – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Managing production costs (n=25)	74%
Controlling weeds (n=26)	72%
Adapting to climate change (n=17)	49%
Finding appropriate organic crop varieties and seed for your operation (n=15)	43%
Controlling insect pests (n=14)	40%
Maintaining adequate yields (n=13)	38%
Drought management (n=10)	32%
Irrigation and water use (n=11)	32%
Managing soil fertility and crop nutrition (n=11)	31%
Optimizing soil structure, avoiding soil erosion and degradation (n=11)	31%
Access to water resources (n=9)	28%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=9)	27%
Controlling disease pressure (n=9)	26%
Minimizing adverse impacts of tillage on soil health (n=8)	25%
Seed production/seed saving (n=5)	21%
Post-harvest handling methods (n=7)	20%
Integrating perennials and permaculture design (n=5)	19%
Managing pollinators and habitat for pollinators (n=6)	18%
Grazing and pasture management (n=1)	17%
Utilizing cover crops and green manures (n=5)	16%
Enhancing agricultural biodiversity (n=5)	15%
Managing crop rotations (n=4)	13%
Managing animal production and health (n=0)	0%

S1.9 Vineyard – Production Challenge

Production Challenge	Percent Rated as Substantial Challenge
Managing production costs (n=17)	71%
Controlling weeds (n=15)	60%
Maintaining adequate yields (n=12)	52%
Controlling insect pests (n=13)	52%
Controlling disease pressure (n=13)	52%
Drought management (n=11)	44%
Managing soil fertility and crop nutrition (n=9)	38%
Finding appropriate organic crop varieties and seed for your operation (n=6)	33%
Seed production/seed saving (n=3)	25%
Irrigation and water use (n=5)	21%
Optimizing soil structure, avoiding soil erosion and degradation (n=5)	20%
Access to water resources (n=5)	20%
Adapting to climate change (n=4)	17%
Minimizing adverse impacts of tillage on soil health (n=4)	16%
Integrating perennials and permaculture design (n=2)	15%
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes) (n=3)	14%
Enhancing agricultural biodiversity (n=3)	13%
Managing pollinators and habitat for pollinators (n=2)	8%
Post-harvest handling methods (n=1)	4%
Managing animal production and health (n=0)	0%
Grazing and pasture management (n=0)	0%
Managing crop rotations (n=0)	0%
Utilizing cover crops and green manures (n=0)	0%

S1.10 Number of Survey Respondents by County and Zip Code

County	Number of Respondents	Respondents' Zip Codes
Sonoma	17	93012, 94952, 95401, 95404, 95407, 95448, 95472
Santa Cruz	10	95003, 95060, 95062, 95064, 95076
Yolo	10	95606, 95612, 95616, 95627, 95637, 95691, 95694, 95695
San Diego	8	92025, 92028, 92061, 92065, 92082
Nevada	7	95945, 95946, 95949, 95959
Fresno	6	93210, 93622, 93648, 93706, 93723
Lake	6	95451, 95457
Santa Barbara	6	93013, 93111, 93456, 93117
Sutter	6	95668, 95957, 95982, 95991, 95993
San Benito	4	95023
San Luis Obispo	4	93420, 93442, 93446, 93461
Butte	3	95942, 95948, 95974
Marin	3	94924, 94937, 94946
Merced	3	95322, 95333, 95340
Monterey	3	93924, 95012
Riverside	3	92590, 92592, 92860
Santa Clara	3	94301, 94306, 95070
Solano	3	94534, 95688
Tulare	3	93247, 93618
Amador	2	95640, 95669
Humboldt	2	95536, 95556
Kern	2	93203, 93307
Los Angeles	2	90265,90274
Madera	2	93637
Mendocino	2	95466, 95470
Modoc	2	96101, 96110
San Mateo	2	94060
Siskiyou	2	96023, 96067
Stanislaus	2	95358, 95360
Tehama	2	96021, 96059
Ventura	2	93015, 93023
Yuba	2	95918, 95901
Conta Costa	1	94803
El Dorado	1	95667
Kings	1	93230
Napa	1	94567
Placer	1	95713
Sacramento	1	95624
San Joaquin	1	95240

Supplemental Figures – Non-Production Challenges

S2.1 Beginning Farmer – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=13)	65%
Finding and developing markets for organic products (n=12)	63%
Accessing capital and/or financing (n=8)	50%
Managing business activities (n=9)	50%
Developing infrastructure (n=8)	42%
Cost of organic certification (n=8)	38%
Meeting recordkeeping requirements of organic certification (n=8)	36%
Farm business planning (n=5)	29%
Meeting organic certification requirements (n=6)	28%
Understanding and following food safety standards (n=4)	24%
Accessing land (n=3)	20%
Farm succession planning (n=1)	6%
Relations with other farmers (n=1)	5%
Risk of contamination from genetically engineered crops (n=0)	0%
Community relations (n=0)	0%
Social pressure to not farm organically (n=0)	0%

S2.2 Experienced Farmer – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=39)	52%
Finding and developing markets for organic products (n=28)	39%
Meeting recordkeeping requirements of organic certification (n=27)	36%
Farm succession planning (n=22)	32%
Cost of organic certification (n=21)	28%
Managing business activities (n=18)	25%
Developing infrastructure (n=17)	23%
Meeting organic certification requirements (n=17)	23%
Accessing land (n=13)	21%
Farm business planning (n=15)	21%
Accessing capital and/or financing (n=13)	19%
Understanding and following food safety standards (n=13)	18%
Risk of contamination from genetically engineered crops (n=7)	10%
Community relations (n=5)	7%
Social pressure to not farm organically (n=3)	5%
Relations with other farmers (n=2)	3%

S2.3 BIPOC – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=9)	82%
Cost of organic certification (n=8)	73%
Accessing capital and/or financing (n=7)	64%
Meeting recordkeeping requirements of organic certification (n=7)	64%
Finding and developing markets for organic products (n=7)	64%
Managing business activities (n=6)	55%
Developing infrastructure (n=6)	55%
Meeting organic certification requirements (n=6)	55%
Farm business planning (n=5)	46%
Accessing land (n=3)	43%
Understanding and following food safety standards (n=4)	40%
Farm succession planning (n=3)	30%
Risk of contamination from genetically engineered crops (n=1)	13%
Community relations (n=0)	0%
Relations with other farmers (n=0)	0%
Social pressure to not farm organically (n=0)	0%

S2.4 Non-BIPOC - – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=50)	52%
Finding and developing markets for organic products (n=38)	43%
Meeting recordkeeping requirements of organic certification (n=31)	32%
Cost of organic certification (n=27)	28%
Farm succession planning (n=22)	27%
Managing business activities (n=23)	26%
Developing infrastructure (n=22)	25%
Accessing capital and/or financing (n=18)	22%
Accessing land (n=15)	20%
Farm business planning (n=17)	20%
Meeting organic certification requirements (n=19)	20%
Understanding and following food safety standards (n=16)	18%
Risk of contamination from genetically engineered crops (n=6)	7%
Community relations (n=6)	7%
Social pressure to not farm organically (n=4)	5%
Relations with other farmers (n=4)	4%

S2.5 Berries – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Finding and developing markets for organic products (n=12)	71%
Accessing labor (n=10)	59%
Accessing land (n=6)	43%
Accessing capital and/or financing (n=6)	40%
Meeting recordkeeping requirements of organic certification (n=6)	35%
Managing business activities (n=5)	31%
Developing infrastructure (n=5)	29%
Cost of organic certification (n=5)	29%
Understanding and following food safety standards (n=4)	25%
Farm succession planning (n=4)	24%
Farm business planning (n=3)	19%
Meeting organic certification requirements (n=3)	18%
Risk of contamination from genetically engineered crops (n=1)	6%
Community relations (n=1)	6%
Relations with other farmers (n=1)	6%
Social pressure to not farm organically (n=0)	0%

S2.6 Tree Fruit – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=26)	55%
Finding and developing markets for organic products (n=19)	42%
Accessing capital and/or financing (n=11)	28%
Managing business activities (n=12)	27%
Developing infrastructure (n=11)	26%
Understanding and following food safety standards (n=10)	22%
Meeting recordkeeping requirements of organic certification (n=10)	21%
Farm business planning (n=7)	17%
Cost of organic certification (n=8)	17%
Meeting organic certification requirements (n=8)	17%
Farm succession planning (n=6)	15%
Accessing land (n=4)	13%
Risk of contamination from genetically engineered crops (n=3)	8%
Social pressure to not farm organically (n=1)	3%
Community relations (n=0)	0%
Relations with other farmers (n=0)	0%

S2.7 Tree Nuts – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=13)	57%
Finding and developing markets for organic products (n=10)	46%
Meeting recordkeeping requirements of organic certification (n=7)	29%
Farm succession planning (n=6)	29%
Developing infrastructure (n=5)	24%
Managing business activities (n=5)	23%
Understanding and following food safety standards (n=5)	23%
Cost of organic certification (n=5)	22%
Accessing capital and/or financing (n=4)	21%
Meeting organic certification requirements (n=4)	18%
Farm business planning (n=3)	14%
Risk of contamination from genetically engineered crops (n=2)	9%
Accessing land (n=1)	6%
Community relations (n=1)	5%
Relations with other farmers (n=0)	0%
Social pressure to not farm organically (n=0)	0%

S2.8 Vegetables and Herbs – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=24)	67%
Finding and developing markets for organic products (n=15)	43%
Developing infrastructure (n=13)	38%
Accessing land (n=10)	35%
Managing business activities (n=12)	35%
Farm succession planning (n=10)	33%
Accessing capital and/or financing (n=10)	31%
Meeting recordkeeping requirements of organic certification (n=11)	31%
Farm business planning (n=9)	27%
Cost of organic certification (n=9)	26%
Meeting organic certification requirements (n=8)	23%
Understanding and following food safety standards (n=8)	23%
Risk of contamination from genetically engineered crops (n=4)	13%
Community relations (n=2)	6%
Relations with other farmers (n=1)	3%
Social pressure to not farm organically (n=1)	3%

S2.9 Vineyard – Non-Production Challenge

Non-Production Challenge	Percent Rated as Substantial Challenge
Accessing labor (n=11)	46%
Finding and developing markets for organic products (n=8)	37%
Farm succession planning (n=7)	32%
Cost of organic certification (n=7)	29%
Meeting recordkeeping requirements of organic certification (n=6)	25%
Accessing land (n=4)	22%
Managing business activities (n=5)	21%
Meeting organic certification requirements (n=5)	21%
Accessing capital and/or financing (n=4)	19%
Understanding and following food safety standards (n=4)	18%
Farm business planning (n=4)	17%
Developing infrastructure (n=2)	8%
Relations with other farmers (n=2)	8%
Risk of contamination from genetically engineered crops (n=1)	5%
Community relations (n=1)	4%
Social pressure to not farm organically (n=1)	4%

Supplemental Figures – Technical Assistance Needs

S3.1 Beginning Farmer - Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=14)	78%
Labor needs (n=13)	77%
Business and financial planning (n=12)	75%
Soil conservation and soil health (n=12)	71%
Securing sales channels (n=11)	69%
Soil fertility and management of crop nutrients (n=12)	67%
Logistics of product distribution (n=7)	47%
Access to capital/resources (n=7)	44%
Integrating livestock into organic production (n=4)	44%
Production assistance (n=7)	44%
Water management (n=7)	41%
Technology assistance with processing/value added products (n=6)	40%
Transportation options (n=5)	31%
Risk management/crop insurance (n=5)	29%
Organic certification regulations (n=5)	29%
Food safety, FSMA, and other food safety requirements (n=4)	25%
Organic system planning (n=2)	13%
Meeting NOP requirements (n=2)	13%
Land access (n=1)	7%
Legal assistance (n=1)	6%
Livestock production and health (n=0)	0%

S3.2 Experienced Farmer - Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=52)	75%
Soil fertility and management of crop nutrients (n=40)	58%
Soil conservation and soil health (n=37)	54%
Securing sales channels (n=30)	46%
Labor needs (n=29)	43%
Production assistance (n=25)	39%
Water management (n=27)	38%
Technology assistance with processing/value added products (n=21)	32%
Food safety, FSMA, and other food safety requirements (n=22)	32%
Meeting NOP requirements (n=22)	32%
Access to capital/resources (n=21)	31%
Logistics of product distribution (n=20)	31%
Risk management/crop insurance (n=20)	31%
Organic certification regulations (n=21)	30%
Organic system planning (n=20)	29%
Transportation options (n=19)	28%
Business and financial planning (n=18)	26%
Legal assistance (n=11)	16%
Integrating livestock into organic production (n=6)	15%
Livestock production and health (n=5)	14%
Land access (n=7)	11%

S3.3 Berries - Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=14)	93%
Securing sales channels (n=12)	92%
Soil fertility and management of crop nutrients (n=10)	67%
Soil conservation and soil health (n=10)	67%
Logistics of product distribution (n=9)	64%
Labor needs (n=9)	60%
Transportation options (n=8)	57%
Business and financial planning (n=8)	53%
Access to capital/resources (n=7)	47%
Water management (n=6)	40%
Technology assistance with processing/value added products (n=5)	33%
Food safety, FSMA, and other food safety requirements (n=5)	33%
Organic certification regulations (n=4)	27%
Meeting NOP requirements (n=4)	27%
Livestock production and health (n=1)	25%
Land access (n=3)	21%
Production assistance (n=3)	21%
Risk management/crop insurance (n=3)	21%
Organic system planning (n=3)	20%
Integrating livestock into organic production (n=1)	17%
Legal assistance (n=2)	14%

S3.4 Tree Fruit - Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=29)	74%
Soil fertility and management of crop nutrients (n=22)	56%
Labor needs (n=19)	50%
Soil conservation and soil health (n=19)	50%
Securing sales channels (n=18)	47%
Food safety, FSMA, and other food safety requirements (n=16)	41%
Production assistance (n=14)	40%
Logistics of product distribution (n=14)	38%
Water management (n=14)	36%
Technology assistance with processing/value added products (n=13)	35%
Business and financial planning (n=12)	32%
Transportation options (n=12)	32%
Risk management/crop insurance (n=9)	26%
Meeting NOP requirements (n=9)	24%
Access to capital/resources (n=8)	22%
Organic system planning (n=8)	21%
Organic certification regulations (n=7)	18%
Legal assistance (n=4)	11%
Livestock production and health (n=1)	5%
Integrating livestock into organic production (n=1)	5%
Land access (n=1)	3%

S3.5 Tree Nuts - Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=17)	81%
Soil fertility and management of crop nutrients (n=15)	71%
Soil conservation and soil health (n=14)	70%
Labor needs (n=12)	63%
Securing sales channels (n=9)	47%
Risk management/crop insurance (n=9)	45%
Logistics of product distribution (n=8)	44%
Production assistance (n=8)	44%
Organic certification regulations (n=8)	40%
Food safety, FSMA, and other food safety requirements (n=7)	37%
Water management (n=7)	35%
Meeting NOP requirements (n=6)	33%
Access to capital/resources (n=6)	32%
Technology assistance with processing/value added products (n=5)	31%
Transportation options (n=5)	26%
Legal assistance (n=4)	21%
Organic system planning (n=4)	21%
Business and financial planning (n=3)	16%
Livestock production and health (n=1)	9%
Integrating livestock into organic production (n=1)	8%
Land access (n=1)	5%

S3.6 Vegetables and Herbs Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=27)	90%
Securing sales channels (n=20)	71%
Labor needs (n=18)	60%
Soil fertility and management of crop nutrients (n=18)	58%
Soil conservation and soil health (n=17)	55%
Logistics of product distribution (n=15)	52%
Access to capital/resources (n=15)	50%
Technology assistance with processing/value added products (n=14)	48%
Business and financial planning (n=14)	45%
Transportation options (n=13)	45%
Food safety, FSMA, and other food safety requirements (n=14)	45%
Production assistance (n=11)	39%
Water management (n=11)	36%
Risk management/crop insurance (n=9)	35%
Legal assistance (n=8)	29%
Integrating livestock into organic production (n=4)	27%
Organic system planning (n=8)	27%
Meeting NOP requirements (n=8)	27%
Livestock production and health (n=3)	25%
Organic certification regulations (n=6)	20%
Land access (n=5)	19%

S3.7 Vineyard - Technical Assistance Needs

Technical Assistance Needs	Percent Rated as Substantial Need
Organic weed, insect pest, and disease management (n=14)	67%
Labor needs (n=11)	60%
Business and financial planning (n=11)	55%
Securing sales channels (n=8)	47%
Technology assistance with processing/value added products (n=9)	47%
Soil fertility and management of crop nutrients (n=9)	43%
Soil conservation and soil health (n=9)	43%
Water management (n=9)	43%
Access to capital/resources (n=8)	40%
Organic certification regulations (n=8)	38%
Integrating livestock into organic production (n=4)	36%
Logistics of product distribution (n=6)	33%
Organic system planning (n=7)	33%
Meeting NOP requirements (n=7)	33%
Risk management/crop insurance (n=6)	30%
Production assistance (n=5)	29%
Transportation options (n=5)	28%
Food safety, FSMA, and other food safety requirements (n=5)	26%
Legal assistance (n=4)	21%
Land access (n=2)	11%
Livestock production and health (n=1)	11%

APPENDICES

Appendix A: Organic Survey Instrument

"Accessing Research, Education and Outreach Needs to Meet the Growing Demand for Organic Products" questionnaire for organic producers is available online at https://bit.ly/NORA2022-organic-survey.

Assessing Research, Education and Outreach Needs to Meet the Growing Demand for Organic Products

2019 Survey of Organic Farmers and Ranchers

You can help ensure future research investments are relevant and responsive to the top needs of organic producers!

The Organic Farming Research Foundation (OFRF) and Organic Seed Alliance (OSA) request your participation in an important national survey to identify the top challenges facing organic farmers and ranchers today. This feedback is critical to building a comprehensive roadmap for future research investments that help advance organic agriculture across the United States. Results will be published in updates of OFRF's National Organic Research Agenda (NORA) report and OSA's State of Organic Seed (SOS) report.

The survey is voluntary and all responses will be kept confidential. You can skip any question you prefer not to answer. Under no circumstance will your identity be shared in the resulting data and reports. This work is supported by the Organic Agriculture Research and Extension Initiative (OREI) grant no. 2019-51300-30249 from the USDA National Institute of Food and Agriculture.

Please have the person most familiar with the day-to-day management of your farm or ranch complete this survey (such as the farm owner or primary farm operator). As you answer the survey questions, please think about both owned and leased land.

If you are not the person who is most familiar with the operation, please give this survey to the person who is most familiar with the farm/ranch operation.

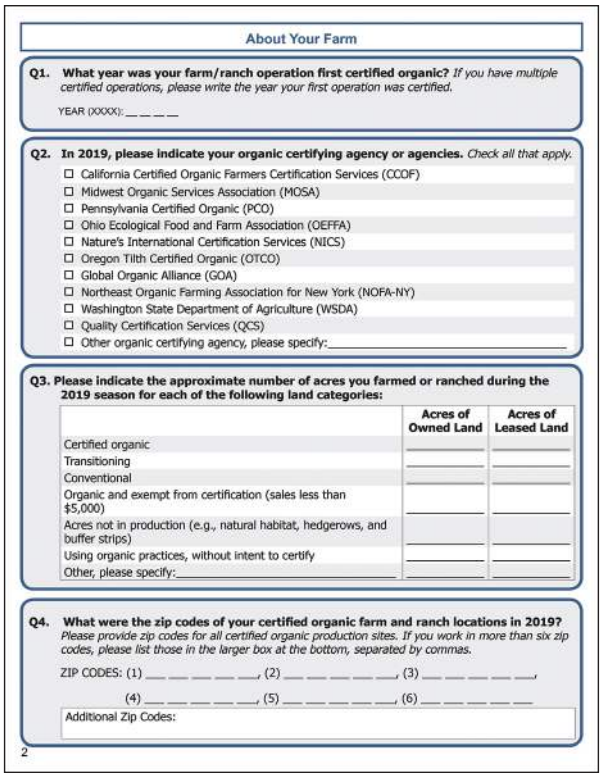
If you are a split operation and have both conventional and certified organic land, please answer the survey questions with information related to your certified organic operation.

Do you operate a farm/ranch that produces and markets any certified organic products?

○ Yes → *Please turn to the next page to start the survey.*
○ No certified organic products are produced or marketed → *This survey is for those with certified organic products. Skip to back page.*

ORGANIC FARMING RESEARCH FOUNDATION — ORGANIC seed ALLIANCE

1



About Your Farm

Q1. What year was your farm/ranch operation first certified organic? *If you have multiple certified operations, please write the year your first operation was certified.*

YEAR (XXXX): _ _ _ _

Q2. In 2019, please indicate your organic certifying agency or agencies. *Check all that apply.*

- ☐ California Certified Organic Farmers Certification Services (CCOF)
- ☐ Midwest Organic Services Association (MOSA)
- ☐ Pennsylvania Certified Organic (PCO)
- ☐ Ohio Ecological Food and Farm Association (OEFFA)
- ☐ Nature's International Certification Services (NICS)
- ☐ Oregon Tilth Certified Organic (OTCO)
- ☐ Global Organic Alliance (GOA)
- ☐ Northeast Organic Farming Association for New York (NOFA-NY)
- ☐ Washington State Department of Agriculture (WSDA)
- ☐ Quality Certification Services (QCS)
- ☐ Other organic certifying agency, please specify:_____

Q3. Please indicate the approximate number of acres you farmed or ranched during the 2019 season for each of the following land categories:

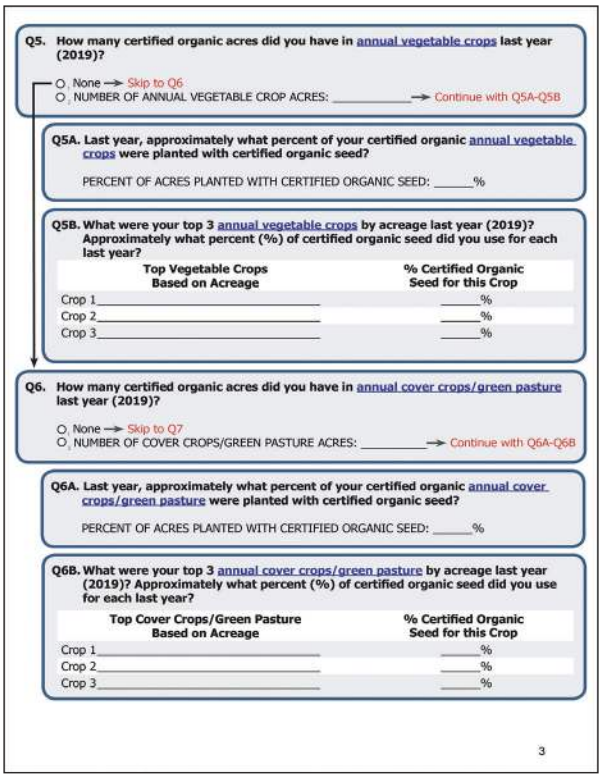
	Acres of Owned Land	Acres of Leased Land
Certified organic		
Transitioning		
Conventional		
Organic and exempt from certification (sales less than $5,000)		
Acres not in production (e.g., natural habitat, hedgerows, and buffer strips)		
Using organic practices, without intent to certify		
Other, please specify:_____		

Q4. What were the zip codes of your certified organic farm and ranch locations in 2019?
Please provide zip codes for all certified organic production sites. If you work in more than six zip codes, please list those in the larger box at the bottom, separated by commas.

ZIP CODES: (1) ___ ___ ___ ___ ___, (2) ___ ___ ___ ___ ___, (3) ___ ___ ___ ___ ___,
(4) ___ ___ ___ ___ ___, (5) ___ ___ ___ ___ ___, (6) ___ ___ ___ ___ ___

Additional Zip Codes:

2



Q5. How many certified organic acres did you have in annual vegetable crops last year (2019)?

○ None → Skip to Q6
○ NUMBER OF ANNUAL VEGETABLE CROP ACRES: _____ → Continue with Q5A-Q5B

Q5A. Last year, approximately what percent of your certified organic annual vegetable crops were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q5B. What were your top 3 annual vegetable crops by acreage last year (2019)? Approximately what percent (%) of certified organic seed did you use for each last year?

Top Vegetable Crops Based on Acreage	% Certified Organic Seed for this Crop
Crop 1_____	_____%
Crop 2_____	_____%
Crop 3_____	_____%

Q6. How many certified organic acres did you have in annual cover crops/green pasture last year (2019)?

○ None → Skip to Q7
○ NUMBER OF COVER CROPS/GREEN PASTURE ACRES: _____ → Continue with Q6A-Q6B

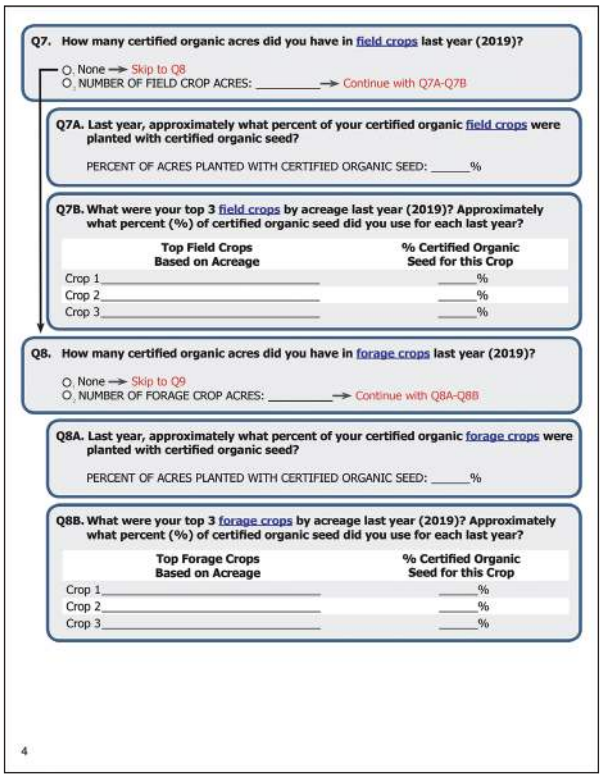
Q6A. Last year, approximately what percent of your certified organic annual cover crops/green pasture were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q6B. What were your top 3 annual cover crops/green pasture by acreage last year (2019)? Approximately what percent (%) of certified organic seed did you use for each last year?

Top Cover Crops/Green Pasture Based on Acreage	% Certified Organic Seed for this Crop
Crop 1_____	_____%
Crop 2_____	_____%
Crop 3_____	_____%

3



Q7. How many certified organic acres did you have in field crops last year (2019)?

○ None → Skip to Q8
○ NUMBER OF FIELD CROP ACRES: _____ → Continue with Q7A-Q7B

Q7A. Last year, approximately what percent of your certified organic field crops were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q7B. What were your top 3 field crops by acreage last year (2019)? Approximately what percent (%) of certified organic seed did you use for each last year?

Top Field Crops Based on Acreage	% Certified Organic Seed for this Crop
Crop 1_____	_____%
Crop 2_____	_____%
Crop 3_____	_____%

Q8. How many certified organic acres did you have in forage crops last year (2019)?

○ None → Skip to Q9
○ NUMBER OF FORAGE CROP ACRES: _____ → Continue with Q8A-Q8B

Q8A. Last year, approximately what percent of your certified organic forage crops were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q8B. What were your top 3 forage crops by acreage last year (2019)? Approximately what percent (%) of certified organic seed did you use for each last year?

Top Forage Crops Based on Acreage	% Certified Organic Seed for this Crop
Crop 1_____	_____%
Crop 2_____	_____%
Crop 3_____	_____%

4

Q9. Do you grow or raise the following certified organic products for sale? *Mark Yes or No for each.*

	Yes	No		Yes	No
Grains for livestock and poultry feed	O	O	Herbs	O	O
Grains, dry beans, and pulses for human consumption	O	O	Cut flowers	O	O
Oil seeds	O	O	Mushrooms	O	O
Cotton	O	O	Berries	O	O
Forages	O	O	Vineyard	O	O
Livestock and poultry (sold live)	O	O	Tree fruit	O	O
Meat	O	O	Tree nuts	O	O
Poultry (meat)	O	O	Maple syrup	O	O
Dairy	O	O	Peanuts	O	O
Eggs	O	O	Nursery crops	O	O
Animal fiber	O	O	Seeds for planting (all crops)	O	O
Vegetables	O	O	Other, please specify: _____	O	O

Q10. What are the top three certified organic products by dollar value that you grow or raise for sale?

Product 1: _____

Product 2: _____

Product 3: _____

Q11A. For your certified organic operation, how often do you use the following inputs? *Select one response in each row or mark "Not applicable" for those that do not apply to your certified organic operation.*

	Never	Sometimes	Often	Very often	Not applicable
Compost	O	O	O	O	O
Compost teas and other microbial inoculants	O	O	O	O	O
Manure and other animal byproducts	O	O	O	O	O
Organic or natural mineral fertilizers/amendments	O	O	O	O	O
Reduced irrigation or water conservation	O	O	O	O	O
Other, please specify: _____	O	O	O	O	O

Q11B. For your certified organic operation, how often do you use the following practices? *Select one response in each row or mark "Not applicable" for those that do not apply to your certified organic operation.*

	Never	Sometimes	Often	Very often	Not applicable
Cover crops and green manures	O	O	O	O	O
Crop rotations	O	O	O	O	O
Intercropping	O	O	O	O	O
Other, please specify: _____	O	O	O	O	O

Q11C. Please indicate the approximate number of acres of the following buffers or habitat plantings you have on your certified organic land.

	Number of Acres
Buffer strips or border rows	_____
Hedgerows, windbreaks, or shelterbelts	_____
Wildflower strips	_____
Other, please specify: _____	_____

Q12. Over the next 5 years, which of the following categories best describes what you plan to do with regard to your certified organic operation?

- O Increase certified organic acreage
- O Maintain current levels of certified organic acreage
- O Decrease certified organic acreage
- O Discontinue certified organic acreage
- O Discontinue all agricultural production

Challenges and Research Needs

Q13. Below is a list of production challenges that certified organic farmers and ranchers might face when farming organically. How much has each of these been a challenge to you in your certified organic farm operation? *Select one response in each row or mark "Not applicable" for those that do not apply to your farm or ranch.*

	Not a challenge ←				→ Strong challenge	Not applicable
Finding appropriate organic crop varieties and seed for your operation	O	O	O	O	O	O
Seed production/seed saving	O	O	O	O	O	O
Maintaining adequate yields	O	O	O	O	O	O

Q13 continued on next page

Q13. *(continued from previous page).* **How much has each of these been a challenge to you in your certified organic farm operation?** *Select one response in each row or mark "Not applicable" for those that do not apply to your farm or ranch.*

	Not a challenge ←				→ Strong challenge	Not applicable
Managing production costs	O	O	O	O	O	O
Managing animal production and health	O	O	O	O	O	O
Grazing and pasture management	O	O	O	O	O	O
Managing crop rotations	O	O	O	O	O	O
Utilizing cover crops and green manures	O	O	O	O	O	O
Integrating perennials and permaculture design	O	O	O	O	O	O
Managing soil fertility and crop nutrition	O	O	O	O	O	O
Optimizing soil structure, avoiding soil erosion and degradation	O	O	O	O	O	O
Minimizing adverse impacts of tillage on soil health	O	O	O	O	O	O
Drought management	O	O	O	O	O	O
Access to water resources	O	O	O	O	O	O
Irrigation and water use	O	O	O	O	O	O
Post-harvest handling methods	O	O	O	O	O	O
Controlling weeds	O	O	O	O	O	O
Controlling insect pests	O	O	O	O	O	O
Controlling disease pressure	O	O	O	O	O	O
Adapting to climate change	O	O	O	O	O	O
Enhancing agricultural biodiversity	O	O	O	O	O	O
Managing pollinators and habitat for pollinators	O	O	O	O	O	O
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes)	O	O	O	O	O	O
Other, please specify: _____	O	O	O	O	O	O

Q14. Please tell us about the top two production challenges on your certified organic operation and explain what additional research and information would be helpful (please be specific).

Production Challenge #1: _____

What additional research and information would be helpful?

Production Challenge #2: _____

What additional research and information would be helpful?

Q15. Below is a list of non-production challenges that certified organic farmers and ranchers might face when farming organically. How much has each of these been a challenge to you in your certified organic farm operation? *Select one response in each row or mark "Not applicable" for those that do not apply to your farm or ranch.*

	Not a challenge ←				→ Strong challenge	Not applicable
Accessing labor	O	O	O	O	O	O
Accessing land	O	O	O	O	O	O
Accessing capital and/or financing	O	O	O	O	O	O
Managing business activities	O	O	O	O	O	O
Farm business planning	O	O	O	O	O	O
Developing infrastructure	O	O	O	O	O	O
Finding and developing markets for organic products	O	O	O	O	O	O
Cost of organic certification	O	O	O	O	O	O
Meeting organic certification requirements	O	O	O	O	O	O
Meeting recordkeeping requirements of organic certification	O	O	O	O	O	O
Understanding and following food safety standards	O	O	O	O	O	O
Risk of contamination from genetically engineered crops	O	O	O	O	O	O
Community relations	O	O	O	O	O	O

Q15 continued on next page

Q15. *(continued from previous page).* **How much has each of these been a challenge to you in your certified organic farm operation?** *Select one response in each row or mark "Not applicable" for those that do not apply to your farm or ranch.*

	Not a challenge ←				→ Strong challenge	Not applicable
Relations with other farmers	O1	O2	O3	O4	O5	O6
Social pressure to not farm organically	O1	O2	O3	O4	O5	O6
Farm succession planning	O1	O2	O3	O4	O5	O6
Other, please specify: _____	O1	O2	O3	O4	O5	O6

Q16. Please tell us about the top two <u>non-production challenges</u> on your certified organic operation and explain what additional research and information would be helpful (please be specific).

Non-production Challenge #1: _____
What additional research and information would be helpful?

Non-production Challenge #2: _____
What additional research and information would be helpful?

Q17. Overall, how well do you feel that your current certified organic production and non-production research and information needs are being met?

- O1 Not well at all
- O2 Not very well
- O3 Somewhat well
- O4 Very well
- O5 Don't know

Q18. How concerned are you about the following topics for organic agriculture?

	Not concerned	Somewhat concerned	Concerned	Very concerned	Not applicable
Access to certified organic seeds	O1	O2	O3	O4	O5
Access to seeds bred for organic systems	O1	O2	O3	O4	O5
Access to certified organic animal feed	O1	O2	O3	O4	O5
Imbalance of domestic certified organic supply and demand	O1	O2	O3	O4	O5
Industrial organic	O1	O2	O3	O4	O5
Lack of skilled labor	O1	O2	O3	O4	O5
Organic fraud and integrity of USDA organic label	O1	O2	O3	O4	O5
Animal welfare	O1	O2	O3	O4	O5
Crop contamination (e.g., GMOs, pesticide drift)	O1	O2	O3	O4	O5
Use of a transitional label	O1	O2	O3	O4	O5
Availability of organic research funds	O1	O2	O3	O4	O5
Access to agricultural service providers who are knowledgeable about certified organic operations	O1	O2	O3	O4	O5
Adaptation to climate change	O1	O2	O3	O4	O5
Other, please specify: _____	O1	O2	O3	O4	O5

Q19. Do you hold a certified organic handler license?

- O1 Yes → Continue with Q19A
- O2 No → Skip to Q20
- O3 Don't know → Skip to Q20

Q19A. If yes, what is your greatest challenge being a certified organic handler?

Marketing Outlets

Q20. For 2019, please estimate the percent of your certified organic sales in the following <u>marketing outlets</u>. *The sum of the percentages in A through F should equal 100%.*

		% of All Certified Organic Sales
A.	Direct to consumer (e.g., farmer's market, CSA, website sales)	_____%
B.	Direct to retail (e.g., local food store, supermarket, restaurant)	_____%
C.	Wholesale (e.g., processor, distributor, broker)	_____%
D.	Food hub or cooperative	_____%
E.	Institutions (e.g., schools, hospitals)	_____%
F.	Other, please specify: _____	_____%
		TOTAL = 100%

Q21. For 2019, please estimate the percent of your certified organic sales in the following <u>geographic locations</u>. *The sum of the percentages in A through D should equal 100%.*

		% of All Certified Organic Sales
A.	Local (within 100 miles)	_____%
B.	Regional (more than 100 miles, but less than 500 miles)	_____%
C.	National (500 miles or farther)	_____%
D.	International	_____%
		TOTAL = 100%

How You Get Information

Q22. For your certified organic operation, what is your need for <u>technical assistance</u> on the following topics?

	No need	Little need	Some need	Strong need	Not applicable
Land access	O1	O2	O3	O4	O5
Labor needs	O1	O2	O3	O4	O5
Access to capital/resources	O1	O2	O3	O4	O5
Business and financial planning	O1	O2	O3	O4	O5
Securing sales channels	O1	O2	O3	O4	O5
Logistics of product distribution	O1	O2	O3	O4	O5
Transportation options	O1	O2	O3	O4	O5
Legal assistance	O1	O2	O3	O4	O5
Livestock production and health	O1	O2	O3	O4	O5
Integrating livestock into organic production	O1	O2	O3	O4	O5
Production assistance	O1	O2	O3	O4	O5
Soil fertility and management of crop nutrients	O1	O2	O3	O4	O5
Soil conservation and soil health	O1	O2	O3	O4	O5
Organic weed, insect pest, and disease management	O1	O2	O3	O4	O5
Water management	O1	O2	O3	O4	O5
Risk management/crop insurance	O1	O2	O3	O4	O5
Technology assistance with processing/value added products	O1	O2	O3	O4	O5
Food safety, FSMA, and other food safety requirements	O1	O2	O3	O4	O5
Organic certification regulations	O1	O2	O3	O4	O5
Organic system planning	O1	O2	O3	O4	O5
Meeting National Organic Program (NOP) requirements for biodiversity and resource conservation	O1	O2	O3	O4	O5
Other, please specify: _____	O1	O2	O3	O4	O5

Q23. Please list the top two areas where you are having trouble accessing technical assistance for your certified organic operation, and explain why (please be specific).

Area #1: _____
Why are you having trouble accessing technical assistance in this area?

Area #2: _____
Why are you having trouble accessing technical assistance in this area?

Q24. Please indicate your preferred ways of getting information for your certified organic operation.

	Not preferred	Slightly preferred	Preferred	Highly preferred
Conferences and workshops	O1	O2	O3	O4
Email newsletters, groups, and listservs	O1	O2	O3	O4
Films or documentaries	O1	O2	O3	O4
In-person classes and/or coursework	O1	O2	O3	O4
On-farm demonstrations and field days	O1	O2	O3	O4
Online courses and webinars	O1	O2	O3	O4
Online materials (digital materials and/or websites)	O1	O2	O3	O4
Online videos	O1	O2	O3	O4
Printed materials (books, manuals, pamphlets, magazines)	O1	O2	O3	O4
Scientific journals	O1	O2	O3	O4
Social media (Facebook, Instagram, Twitter)	O1	O2	O3	O4
Other, please specify: _____	O1	O2	O3	O4

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Q25. How useful have each of the following resources been to you in obtaining information about organic production and non-production topics?

	Not at all useful	Slightly useful	Mostly useful	Very useful	Haven't used this resource
Certified organic farmers	O1	O2	O3	O4	O5
Other farmers	O1	O2	O3	O4	O5
Extension personnel focusing on organic production	O1	O2	O3	O4	O5
Extension personnel focusing on conventional production	O1	O2	O3	O4	O5
Handlers and processors	O1	O2	O3	O4	O5
Organic certifiers	O1	O2	O3	O4	O5
Crop consultants	O1	O2	O3	O4	O5
State agriculture department	O1	O2	O3	O4	O5
Natural Resources Conservation Service (NRCS)	O1	O2	O3	O4	O5
Online resources	O1	O2	O3	O4	O5
Non-profit agriculture organizations	O1	O2	O3	O4	O5
Grower association	O1	O2	O3	O4	O5
Buyers	O1	O2	O3	O4	O5
Suppliers	O1	O2	O3	O4	O5
Other, please specify: _____	O1	O2	O3	O4	O5

Seed Information

Q26. Last year, by amount spent, approximately what percentage of your seed (organic or non-treated conventional) did you get from the following sources? *Fill in your best general estimate below. The sum of the percentages for each item should add up to 100%.*

☐ I do not use seed on my farm → Skip to Q32

Source for Seed:	% From Each Source
Produced your own	_____%
Supplied by processor or buyer	_____%
Purchased from seed company (via sales representative, catalog, website or other source)	_____%
Garden centers or farm supply stores	_____%
Other farmers	_____%
Other, please specify: _____	_____%
Other, please specify: _____	_____%
	TOTAL = 100%

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Q27. Over the last 3 years (2017-2019), by amount spent, have you decreased or increased the percentage of organic seed that you use for each of the following crop types?

Crop Type	Decreased the %	About the same %	Increased the %	Already at 100%	Did not grow this crop type
Vegetable crops	O1	O2	O3	O4	O5
Cover crops/green pasture	O1	O2	O3	O4	O5
Field crops	O1	O2	O3	O4	O5
Forage crops	O1	O2	O3	O4	O5

Q28. Over the last 3 years (2017-2019) has your certifier requested that you take greater steps to source organic seed?

O1 Yes → Continue with Q28A
O2 No → Skip to Q29

Q28A. Which additional steps has your certifier requested?

Steps For Sourcing Organic Seed	Yes	No
Conducting trials of available organic varieties	O1	O2
Searching Organic Seed Finder or another online database	O1	O2
Researching more than 3 seed catalogs	O1	O2
Requesting seed in a timely manner	O1	O2
Contracting organic seed production	O1	O2
Other, please specify: _____	O1	O2

Q29. Over the last three years (2017-2019), how much were each of the following a factor in your decision NOT to purchase organic seed?

	Not a factor	Slight factor	Moderate factor	Significant factor
Lack of seed treatments, such as pelleting or priming	O1	O2	O3	O4
Processor (buyer) requires or supplies varieties that are not available organically	O1	O2	O3	O4
Insufficient quantity of seed	O1	O2	O3	O4
Save my own seed	O1	O2	O3	O4
Distrust of organic seed quality	O1	O2	O3	O4
Price	O1	O2	O3	O4
Specific variety not available as organic seed	O1	O2	O3	O4
Lack of desirable genetic traits	O1	O2	O3	O4
Other, please specify: _____	O1	O2	O3	O4

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Q30. Please indicate the extent to which you disagree or agree with the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Seed companies should conduct testing and report rates of GE (GMO) crop contamination in organic and conventional seed.	O1	O2	O3	O4	O5
The federal regulations that oversee GE crop (GMO) approvals are adequate for protecting my organic farm product(s) from potential contamination by GE crops (GMOs).	O1	O2	O3	O4	O5
Unintentionally planting GE-contaminated seed on my farm puts at risk the integrity of my organic products.	O1	O2	O3	O4	O5
Organic seed is important to the integrity of organic food production.	O1	O2	O3	O4	O5
Varieties bred for organic production are important to the overall success of organic agriculture.	O1	O2	O3	O4	O5

Q31. Do you think there are crops in need of organic plant breeding?

O1 No → Skip to Q33
O2 Yes → Continue with Q32

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Q32. In this next section, please choose two crops you think are most in need of organic plant breeding (crop improvement). Then for both of these crops, please indicate which two traits are most in need of improvement.

32A: FIRST CROP IN MOST NEED OF IMPROVEMENT: _____

32B. Referring to the crop listed above, select the TOP 2 TRAITS of that crop in need of improvement from the list below.

- ☐ Nutrient use efficiency
- ☐ Flavor
- ☐ Appearance
- ☐ Cold hardiness/season extension
- ☐ Drought tolerance
- ☐ Heat tolerance
- ☐ Yield
- ☐ Disease resistance/tolerance (please specify): _____
- ☐ Germination/seedling vigor
- ☐ Competitiveness with weeds
- ☐ Maturity/earliness
- ☐ Quality
- ☐ Other trait, please specify: _____
- ☐ Other trait, please specify: _____

32C: SECOND CROP IN MOST NEED OF IMPROVEMENT: _____

32D. Referring to the crop listed above, select the TOP 2 TRAITS of that crop in need of improvement from the list below.

- ☐ Nutrient use efficiency
- ☐ Flavor
- ☐ Appearance
- ☐ Cold hardiness/season extension
- ☐ Drought tolerance
- ☐ Heat tolerance
- ☐ Yield
- ☐ Disease resistance/tolerance (please specify): _____
- ☐ Germination/seedling vigor
- ☐ Competitiveness with weeds
- ☐ Maturity/earliness
- ☐ Quality
- ☐ Other trait, please specify: _____
- ☐ Other trait, please specify: _____

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Q33. Which of the following categories best fits your situation pertaining to producing organic seed?

- ○ Produce both organic seed for on-farm and for commercial use → Skip to Q37
- ○ Produce organic seed for commercial use only → Skip to Q37
- ○ Produce organic seed for on-farm use only → Continue with Q34
- ○ Do not produce organic seed either for on-farm or for commercial use → Continue with Q34

Q34. Are you interested in producing organic seed for commercial use at some point in the future?

- ○ Not interested → Skip to Q36
- ○ Somewhat interested → Continue with Q35
- ○ Interested → Continue with Q35
- ○ Very interested → Continue with Q35

Q35. How interested are you in taking a training on producing organic seed for commercial use?

- ○ Not interested
- ○ Somewhat interested
- ○ Interested
- ○ Very interested

Q36. Are you interested in conducting plant breeding (crop improvement) on your farm?

- ○ Not interested → Skip to Q38
- ○ Somewhat interested → Continue with Q37
- ○ Interested → Continue with Q37
- ○ Very interested → Continue with Q37

Q37. How interested are you in learning about economic opportunities related to plant breeding (crop improvement) on your farm?

- ○ Not interested
- ○ Somewhat interested
- ○ Interested
- ○ Very interested

Q38. How interested are you in trainings that help you conduct plant breeding (crop improvement) on your farm?

- ○ Not interested
- ○ Somewhat interested
- ○ Interested
- ○ Very interested

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About You

Q39. How many years have you been farming or ranching? *Please respond in number form (e.g., 17).*

Number of years farming or ranching: _____

Q40. Where or how did you learn to farm organically? *Check all that apply.*

- ☐ Farm apprenticeship
- ☐ On-farm training program
- ☐ Mentor farmer
- ☐ Family member
- ☐ Self-taught
- ☐ Work experience on a farm or ranch
- ☐ Higher education in an agricultural field
- ☐ Other, please specify: _____

Q41. In what year were you born? *Please respond in number form (e.g., 1957).*

YEAR: __ __ __ __

Q42. Please specify your race/ethnicity: *Please select Yes or No for each row.*

	Yes	No
Asian/Pacific Islander	○	○
Black or African American	○	○
Hispanic or Latinx	○	○
Native American or American Indian	○	○
White	○	○
Other, please specify:_____	○	○
Prefer not to say	○	○

Q43. Please specify your sex:

- ○ Male
- ○ Female
- ○ Non-binary
- ○ Other, please specify:_____

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Q44. What is the primary language you speak at home?

- ○ English
- ○ Spanish
- ○ Mandarin
- ○ Other, please specify:_____

Thank you for your participation in the OFRF and OSA 2019 Survey of Organic Farmers and Ranchers.

1. To be entered into a drawing to win a $100 gift card to REI, please provide:
   Email Address: _____
2. If you are interested in participating in a follow up organic seed producer survey, please provide:
   Email Address: _____
   Phone Number: _____
3. If you are willing to be contacted for additional information, please provide:
   Email Address: _____

Final Comments

If you have any final comments or concerns for the researchers, please add them here. Also, please provide any comments you have about organic farming or feedback regarding this survey.

If you have any questions for the researchers, feel free to contact them at the email/phone numbers provided in your invitation.

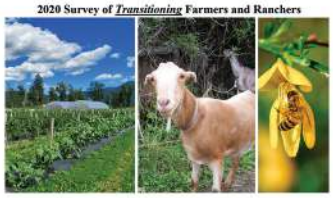
20 ver.A

Appendix B: Transition Survey Instrument

"Accessing Research, Education and Outreach Needs to Meet the Growing Demand for Organic Products" questionnaire for transitioning producers is available online at https://bit.ly/NORA2022-transition-survey.

Assessing Research, Education and Outreach Needs to Meet the Growing Demand for Organic Products

2020 Survey of *Transitioning* Farmers and Ranchers



You can help ensure future research investments are relevant and responsive to the top needs of organic and transitioning producers!

The Organic Farming Research Foundation (OFRF) and Organic Seed Alliance (OSA) request your participation in an important national survey to identify the top challenges facing farmers and ranchers who are **transitioning land to certified organic**. This feedback is critical to building a comprehensive roadmap for future research investments that help advance organic agriculture across the U.S. Results will be published in updates of OFRF's National Organic Research Agenda (NORA) report and OSA's State of Organic Seed (SOS) report.

The survey is voluntary and all responses will be kept confidential. You can skip any questions you prefer not to answer. Under no circumstance will your identity be shared in the resulting data and reports. This work is supported by the Organic Agriculture Research and Extension Initiative (OREI) grant no. 2019-51300-30249 from the USDA National Institute of Food and Agriculture. If you have any questions about the survey, please contact Lauren Snyder from the Organic Farming Research Foundation at lauren@ofrf.org.

Please have the person most familiar with the day-to-day management of your farm or ranch complete this survey (such as the farm owner, farm manager, or primary farm operator).

If you are not the person who is most familiar with the operation, please give this survey to the person who is most familiar with the farm/ranch operation.

Please think about both owned and leased acres that are managed by your operation and are currently in transition from conventional production to organic production.

This survey is targeted to operations that are transitioning land to certified organic. We will refer to this process throughout the survey as "transitioning" or "transition."

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About Your Farm

***Eligibility question*—Do you have any pieces of certified organic land?**

- ○ Yes [Please do not complete the remainder of this survey. Contact lauren@ofrf.org for the certified organic production farmer survey]
- ○ No [Continue to Q1]

1. Are you in the process of transitioning one or more pieces of land to certified organic?

- ○ Yes [Go to Q1a]
- ○ No [Go to Q1b]

1a. Please provide the anticipated certification year(s) for each piece of transitioning land.

____, ____, ____, ____, ____, ____ (e.g. 2020).

[Go to Q2]

1b. Which of the following categories best describes your farm or ranch?

- ○ Land was previously certified organic and is no longer organic [Continue to Q2a]
- ○ Have never been certified organic, only have conventional land [Go to Q2b]

Q2. Is this the first time you are transitioning land to certified organic?

- ❑ Yes [Go to Q3]
- ❑ No [Go to Q3]

Q2a. Why did you decide to give up your organic certification? *Please be specific.*

[Go to the last page]

Q2b. Have you ever been interested in pursuing organic certification?

- ○ Yes
- ○ No. Please explain why not: _____ [Go to the last page]

Q2c. Why did you decide not to complete the certification process?

Q2d. What kind of support (if any) would encourage you to begin the process of transitioning to certified organic?

Q2e. What research or technical assistance is needed to make certified organic production more feasible and practical for you?

[Go to the last page]

Q3. If you are working with a certifying agency during the transition period, please indicate your organic certifying agency or agencies. *Check all that apply.* in organic survey

- ❑ California Certified Organic Farmers Certification Services (CCOF)
- ❑ Midwest Organic Services Association (MOSA)
- ❑ Pennsylvania Certified Organic (PCO)
- ❑ Ohio Ecological Food and Farm Association (OEFFA)
- ❑ Nature's International Certification Services (NICS)
- ❑ Oregon Tilth Certified Organic (OTCO)
- ❑ Global Organic Alliance (GOA)
- ❑ Northeast Organic Farming Association for New York (NOFA-NY)
- ❑ Washington State Department of Agriculture (WSDA)
- ❑ Quality Certification Services (QCS)
- ❑ Other organic certifying agency, *please specify:* _____
- ❑ I am not working with a certifying agency yet

Q4. Please indicate the approximate number of acres you farmed or ranched during the 2019 season for each of the following land categories: in organic survey

	Acres of Owned Land	Acres of Leased Land
Transitioning		
Conventional		
Organic and exempt from certification (sales less than $5,000)		
Acres not in production (e.g., natural habitat, hedgerows, and buffer strips)		
Using organic practices, without intent to certify		
Other, please specify: _____		

Q5. What were the zip codes of your farm and ranch locations that were transitioning in 2019? *Please provide zip codes for all transitioning production sites.* in organic survey

ZIP CODES: _____, _____, _____

_____, _____, _____

Additional zip codes

Q6. How many transitioning acres did you have in annual vegetable crops last year (2019)?

- ❑ None [Go to Q7]
- ❑ NUMBER OF ANNUAL VEGETABLE CROP ACRES: _____ Continue with Q6A-Q6B

Q6A. Last year, approximately what percent of your annual vegetable crops grown on transitioning land were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q6B. What were your top 3 annual vegetable crops by acreage last year (2019) grown on transitioning land? Approximately what percent of certified organic seed did you use for each last year?

Top Vegetable Crops Based on Acreage	% Certified Organic Seed for this Crop
Crop 1	%
Crop 2	%
Crop 3	%

Q7. How many transitioning acres did you have in annual cover crops/green pasture last year (2019)?

- ❑ None [Go to Q8]
- ❑ NUMBER OF COVER CROP/GREEN PASTURE ACRES: _____ [Continue with Q7A-Q7B]

Q7A. Last year, approximately what percent of your annual cover crops/green pasture grown on transitioning land were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q7B. What were your top 3 annual cover crops/green pasture by acreage last year (2019) grown on transitioning land? Approximately what percent of certified organic seed did you use for each last year?

Top Cover Crops/Green Pasture Based on Acreage	% Certified Organic Seed for this Crop
Crop 1	%
Crop 2	%
Crop 3	%

Q8. How many transitioning acres did you have in field crops last year (2019)?

- ❑ None [Go to Q9]
- ❑ NUMBER OF FIELD CROP ACRES: _____ [Continue with Q8A-Q8B]

Q8A. Last year, approximately what percent of your field crops grown on transitioning land were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q8B. What were your top 3 field crops by acreage last year (2019) grown on transitioning land? Approximately what percent of certified organic seed did you use for each last year?

Top Field Crops Based on Acreage	% Certified Organic Seed for this Crop
Crop 1	%
Crop 2	%
Crop 3	%

Q9. How many transitioning acres did you have in forage crops last year (2019)?

- ❑ None [Skip to Q10]
- ❑ NUMBER OF FORAGE CROP ACRES: _____ [Continue with Q9A-Q9B]

Q9A. Last year, approximately what percent of your forage crops grown on transitioning land were planted with certified organic seed?

PERCENT OF ACRES PLANTED WITH CERTIFIED ORGANIC SEED: _____%

Q9B. What were your top 3 forage crops by acreage last year (2019) grown on transitioning land? Approximately what percent of certified organic seed did you use for each last year?

Top Forage Crops Based on Acreage	% Certified Organic Seed for this Crop
Crop 1	%
Crop 2	%
Crop 3	%

Q10. For your transitioning land, do you grow or raise the following products for sale? *Mark Yes or No for each..* in organic survey

	Yes	No		Yes	No
Grains for livestock and poultry feed	O	O	Herbs	O	O
Grains, dry beans, and pulses for human consumption	O	O	Cut flowers	O	O
Oil seeds	O	O	Mushrooms	O	O
Cotton	O	O	Berries	O	O
Forages	O	O	Vineyard	O	O
Livestock and poultry (sold live)	O	O	Tree fruit	O	O
Meat	O	O	Tree nuts	O	O
Poultry (meat)	O	O	Maple syrup	O	O
Dairy	O	O	Peanuts	O	O
Eggs	O	O	Nursery crops	O	O
Animal fiber	O	O	Seeds for planting (all crops)	O	O
Vegetables	O	O	Other, please specify:_____	O	O

Q11. What are the top three products by dollar value that you grow or raise for sale on your transitioning land? in organic survey

Product 1: _____
Product 2: _____
Product 3: _____

Q12. For your transitioning operation, how often do you use the following inputs? *Select one response in each row or mark "Not applicable" for those that do not apply to your transitioning operation.* in organic survey

	Never	Sometimes	Often	Very often	Not applicable
Compost					
Compost teas and other microbial inoculants					
Manure and other animal byproducts					
Organic or natural mineral fertilizers/amendments					
Reduced irrigation or water conservation					
Other, please specify: _____					

Q13. For your transitioning operation, how often do you use the following practices? *Select one response in each row or mark "Not applicable" for those that do not apply to your transitioning operation.* in organic survey

	Never	Sometimes	Often	Very often	Not applicable
Cover crops and green manures					
Crop rotations					
Intercropping					
Other, please specify: _____					

Q14. Please indicate the approximate number of acres of the following buffers or habitat plantings you have on the land you are transitioning. in organic survey

	Number of Acres
Buffer strips or border rows	
Hedgerows, windbreaks, or shelterbelts	
Wildflower strips	
Other, please specify: _____	

Decision to Transition

Q15. When you first decided to pursue organic certification for this farm or ranch, which of the following were motivating factors? *Mark Yes or No for each.*

	Yes	No
Potential increase in profit	O	O
Access to the expanding market for organics	O	O
Specific market opportunity or contract from a buyer	O	O
Response to a community need for organically produced products	O	O
Concerns about human health	O	O
Concerns about farm worker well-being	O	O
Concerns about the environment and biodiversity	O	O
Potential enhancement of farm environmental sustainability	O	O
Greater resilience to the impacts of climate change through organic practices	O	O
Personal and/or family values	O	O
Other, *please specify*: _____	O	O

Q16. In your own words, please tell us why you decided to transition land to certified organic.

Q17. Please indicate the approximate number of acres you farmed or ranched on transitioning land during the 2019 season for each of the following land categories:

	Acres of Owned Land	Acres of Leased Land
Fallow *(Please describe the condition of your fallow land; Sod, wooded, brushy, invasive vegetation, native vegetation, green manure, bare soil, etc.)* _____		
Cover crops		
Pasture or hay		
Growing products that will be sold as conventional		
Growing products that will be sold with a "Transitional" label		
Other, please specify: - _____		

Challenges and Research Needs

Q18. Below is a list of production challenges that farmers and ranchers might face when transitioning to organic certification. How much has each been a challenge to you during your operation's transition to organic certification? *Select one response in each row or mark "Not applicable" for those that do not apply to your farm or ranch.* in organic survey

	Not a challenge 1	2	3	4	Strong challenge 5	Not applicable
Finding appropriate organic crop varieties and seed for your operation						
Seed production/seed saving						
Maintaining adequate yields						
Managing production costs						
Managing animal production and health						
Grazing and pasture management						
Managing crop rotations						
Utilizing cover crops and green manures						
Integrating perennials and permaculture design						
Managing soil fertility and crop nutrition						
Optimizing soil structure, avoiding soil erosion and degradation						
Minimizing adverse impacts of tillage on soil health						
Drought management						
Access to water resources						
Irrigation and water use						
Post-harvest handling methods						
Controlling weeds						
Controlling insect pests						
Controlling disease pressure						
Adapting to climate change						
Enhancing agricultural biodiversity						
Managing pollinators and habitat for pollinators						
Managing the farm as a system (moving away from input-substitution to obtain desired outcomes)						
Other, please specify: _____						

Q19. Please tell us about the top two production challenges on your transitioning operation and explain what additional research and information would be helpful (please be specific). in organic survey

Production Challenge #1: _____

- What additional research and information would be helpful for addressing this challenge?

Production Challenge #2: _____

- What additional research and information would be helpful for addressing this challenge?

Q20. Below is a list of non-production challenges that farmers and ranchers might face when transitioning to organic certification. How much has each been a challenge to you during your operation's transition to organic? *Select one response in each row or mark "Not applicable" for those that do not apply to your farm or ranch.* in organic survey

	Not a challenge 1	2	3	4	Strong challenge 5	Not applicable
Accessing labor						
Accessing land						
Accessing capital and/or financing						
Managing business activities						
Farm business planning						
Developing infrastructure						
Finding and developing markets for organic products						
Cost of organic certification						
Meeting organic certification requirements						
Meeting recordkeeping requirements of organic certification						
Understanding and following food safety standards						
Risk of contamination from genetically engineered crops						
Community relations						
Relations with other farmers						
Social pressure to not farm organically						
Farm succession planning						
Other, please specify:_____						

Q21. Please tell us about the top two non-production challenges on your transitioning operation and explain what additional research and information would be helpful (please be specific). in organic survey

Production Challenge #1: _____

- What additional research and information would be helpful for addressing this challenge?

Production Challenge #2: _____

- What additional research and information would be helpful for addressing this challenge?

Q22. Overall, how well do you feel that your current production and non-production research and information needs are being met as you transition to organic certification? in organic survey

- O Not well at all
- O Not very well
- O Somewhat well
- O Very well
- O Don't know

Q23. How concerned are you about the following topics for organic agriculture? in organic survey

	Not concerned	Somewhat concerned	Concerned	Very concerned	Not applicable
Access to certified organic seeds					
Access to seeds bred for organic systems					
Access to certified organic animal feed					
Imbalance of domestic certified organic supply and demand					
Industrial organic					
Lack of skilled labor					
Organic fraud and integrity of USDA organic label					
Animal welfare					
Crop contamination (e.g., GMOs, pesticide drift)					
Use of a transitional label					
Availability of organic research funds					
Access to agricultural service providers who are knowledgeable about certified organic operations					
Adaptation to climate change					
Other, please specify: _____					

Marketing Outlets

Q24. For 2019, please estimate the percent of your sales from your transitioning operation in the following marketing outlets. *The sum of the percentages in A through F should equal 100%.* in organic survey

% of All Certified Organic Sales

A. Direct to consumer (e.g., farmer's market, CSA, website sales) _____%
B. Direct to retail (e.g., local food store, supermarket, restaurant) _____%
C. Wholesale (e.g., processor, distributor, broker) _____%
D. Food hub or cooperative _____%
E. Institutions (e.g., schools, hospitals) _____%
F. Other, please specify: _____ _____%
TOTAL = 100%

Q25. For 2019, please estimate the percent of your sales from your transitioning operation in the following geographic categories. *The sum of the percentages in A through D should equal 100%.* in organic survey

% of All Certified Organic Sales

A. Local (within 100 miles) _____%
B. Regional (more than 100 miles, but less than 500 miles) _____%
C. National (500 miles or farther) _____%
D. International _____%
TOTAL = 100%

How You Get Information

Q26. For your transitioning operation, what is your need for technical assistance on the following topics? in organic survey

	No need	Little need	Some need	Strong need	Not Applicable
Land access					
Labor needs					
Access to capital/resources					
Business and financial planning					
Securing sales channels					
Logistics of product distribution					
Transportation options					
Legal assistance					
Livestock production and health					
Integrating livestock into organic production					
Production assistance					
Soil fertility and management of crop nutrients					
Soil conservation and soil health					
Organic weed, insect pest, and disease management					
Water management					
	No need	Little need	Some need	Strong need	Not Applicable
Risk management/crop insurance					
Technology assistance with processing/value added products					
Food safety, FSMA, and other food safety requirements					
Organic certification regulations					
Organic system planning					
Meeting National Organic Program (NOP) requirements for biodiversity and resource conservation					
Other, please specify: _____					

Q27. Please list the top two areas where you are having trouble accessing technical assistance for your transitioning operation, and explain why (please be specific). in organic survey

Area #1: _____

- Why are you having trouble accessing technical assistance in this area?

Area #2: _____

- Why are you having trouble accessing technical assistance in this area?

Q28. Please indicate your preferred ways of getting information for your transitioning operation. in organic survey

	Not preferred	Slightly preferred	Preferred	Highly preferred
Conferences and workshops				
Email newsletters, groups, and listservs				
Films or documentaries				
In-person classes and/or coursework				
On-farm demonstrations and field days				
Online courses and webinars				
Online materials (digital materials and/or websites)				
Online videos				
Printed materials (books, manuals, pamphlets, magazines)				
Scientific journals				
Social media (Facebook, Instagram, Twitter)				
Other, please specify: _____				

Q29. How useful have each of the following resources been to you in obtaining information about organic production and non-production topics? in organic survey

	Not at all useful	Slightly useful	Mostly useful	Very useful	Haven't used this resource
Certified organic farmers					
Other farmers					
Extension personnel focusing on organic production					
Extension personnel focusing on conventional production					
Handlers and processors					
Organic certifiers					
Crop consultants					
State agriculture department					
Natural Resources Conservation Service (NRCS)					
Online resources					
Non-profit agriculture organizations					
Grower association					
Buyers					
Suppliers					
Other, please specify: _____					

Q30. Have you received training, information, or support on the following topics? *Please check all that apply and indicate where you received the training, information, or support in the blank space next to each option.*

- ❑ Accessing transportation _____
- ❑ Writing an organic system plan _____
- ❑ Keeping necessary records for organic certification _____
- ❑ Receiving technical advice on organic standards _____
- ❑ Finding affordable land _____
- ❑ Navigating the federal cost share program _____
- ❑ Obtaining financial assistance or cost share for certification _____
- ❑ Obtaining a price premium during transition period _____
- ❑ Obtaining financial incentive to transition to organic _____
- ❑ Obtaining capital resources _____
- ❑ Receiving on-farm organic production advice _____
- ❑ Receiving on-farm production advice specifically for land in transition _____
- ❑ Restoring soil and ecosystem health on land in transition _____
- ❑ Managing costs to maintain economic viability during transition _____
- ❑ Other, please specify: _____

Q31. Please tell us about the resources you have relied on to navigate the transitioning period. What people, programs, or organizations have provided you with financial or informational resources, and for what specific topics?

Q32. What resources and information do you wish you had to help you during the transitioning period?

About You

Q33. How many years have you been farming or ranching? *Please respond in number form (e.g., 17).* in organic survey

Number of years farming or ranching: _____

Q34. Where or how did you learn to farm? *Check all that apply.* in organic survey

- ❑ Farm apprenticeship
- ❑ On-farm training program
- ❑ Mentor farmer
- ❑ Family member
- ❑ Self-taught
- ❑ Work experience on a farm or ranch
- ❑ Higher education in an agricultural field
- ❑ Other, please specify: _____

Q35. In what year were you born? *Please respond in number form (e.g., 1957)* in organic survey

YEAR (YYYY): _____

Q36. Please specify your race/ethnicity *Please select Yes or No for each row.* in organic survey.

	Yes	No
Asian/Pacific Islander	○	○
Black or African American	○	○
Hispanic or Latinx	○	○
Native American or American Indian	○	○
White	○	○
Other, please specify: _____	○	○
Prefer not to say	○	○

Q37. Please specify your sex: in organic survey

- ○ Male
- ○ Female
- ○ Non-binary
- ○ Other, please specify:_____

Q38. What is the primary language you speak at home? in organic survey

- ○ English
- ○ Spanish
- ○ Mandarin
- ○ Other, please specify:_____

Thank you for your participation in the OFRF and OSA 2020 Survey of Transitioning Farmers and Ranchers.

To be entered into a drawing to win a $100 gift card to REI, please provide:
Email Address: _____

If you are interested in participating in a follow up organic seed producer survey, please provide:
Email Address: _____
Phone number: _____

If you are willing to be contacted for additional information, please provide:
Email Address: _____

Final Comments

If you have any final comments or concerns for the researchers, please add them here. Also, please provide any comments you have about organic farming or feedback regarding this survey. If you have any questions for the researchers, feel free to contact them at the email/phone numbers provided in your invitation. in organic survey

Appendix C: Focus Group Moderator's Guide

WARM UP QUESTION: If you are not certified organic, what is the biggest obstacle keeping you from transitioning? If you are certified organic, what was the biggest obstacle you faced when you transitioned to certified organic production?

PROBE: Who, if anyone, did you go to for help (e.g., other farmers, Extension personnel, specific organizations, etc)? What resources, if any, were of value to you?

PROBE: What are or would be your main reasons for becoming certified organic? What has/would motivate you to become certified?

**We are getting ready to move to the next topic, does anyone else want to chime in?

QUESTION 1: What are the main production challenges you currently face?

PROBE: How, if at all, have these challenges changed since you first started farming?

**We are getting ready to move to the next topic, does anyone else want to chime in?

QUESTION 2: What are the main non-production challenges you currently face?

PROBE: How, if at all, have these challenges changed since you first started farming?

**We are getting ready to move to the next topic, does anyone else want to chime in?

QUESTION 3: What research, information, or resources do you currently use to address the production and non-production challenges we just discussed?

PROBE: Where do you get this information or these resources, and from whom do you receive support?

PROBE: How could these resources be improved?

PROBE: Are there resources you think would be really helpful, but you don't currently have access to?

PROBE: What are the biggest obstacles you face when trying to obtain information or resources?

PROBE: Have agricultural extension personnel or resources been useful for you?

**We are getting ready to move to the next topic, does anyone else want to chime in?

—FIVE MINUTE BREAK—

QUESTION 4: We have been hearing from many farmers and ranchers that healthy soils are the foundation to successful production. To what extent do you agree with this perspective? If you tend to disagree, what do you see as your most important natural resource?

PROBE: What techniques do you use to build soil health?

PROBE: Do you have trouble balancing soil health with weed management, and if so how do you address this challenge?

PROBE: Certain organic techniques to build soil health, like cover cropping, require an upfront investment and the benefits are not realized immediately. How do you measure/determine whether these long-term investments are ultimately worth it?

PROBE: How do you cope with that upfront cost? Are there financial resources or programs that have helped you address this challenge? Are there financial resources or programs that don't exist that you wish did?

**We are getting ready to move to the next topic, does anyone else want to chime in?

QUESTION 5: In your experience, what has been the riskiest part of farming organically?

PROBE: What steps have you taken to manage that risk?

PROBE: What research, information, or resources were helpful?

PROBE: Are there resources you think would be really helpful, but you don't currently have access to or that don't exist?

**We are getting ready to move to the next topic, does anyone else want to chime in?

QUESTION 6: To what extent do you feel livestock and poultry play an integral role in the sustainability of farming systems?

[THANK PARTICIPANTS FOR COMING AND REMIND THEM TO COMPLETE THE SURVEYMONKEY SURVEY, IF THEY HAVE NOT ALREADY DONE SO. EXPLAIN WHEN/HOW THEY WILL RECEIVE THEIR $25 VISA GIFT CARD]