

Missouri Specialty Crop Survey

Summary of Findings

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University of Missouri

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Introduction

The Missouri Specialty Crop Survey, which was funded by the Missouri Department of Agriculture's Specialty Crop Block Grant Program, was designed to better understand the farming operations and impact Missouri specialty crop producers have in Missouri. The survey asks farm producers growing specialty crops to provide information on their farm, their specialty crop sales, their distribution outlets, and the types of specialty crops they grow.

This report provides summary results from the survey. The first section focuses on overall findings across all types of specialty crop operations and includes data on farm characteristics, gross sales, and distribution outlets. This is followed by sections summarizing data for five main categories of specialty crops: 1) Fruits and berries, 2) Tree nuts, 3) Vegetables, potatoes, and melons, 4) Nursery and flowering plants, and 5) Horticultural goods.

Methods

In the summer of 2017, a team comprised of agricultural economists from MU Extension's Commercial Ag Program and researchers from the Assessment Resource Center (ARC) collaborated to develop the Missouri Specialty Crop Survey. After the initial drafting of the survey, it was sent out for review to MU Extension specialists across the state and revisions were made based on their suggestions. ARC programmed the electronic version of the survey into Qualtrics, a web-based survey platform.

The survey was distributed in late June 2017. MU Extension mailed the paper survey to a contact list of 2,543 specialty crop producers and included a link to the survey in an email that was sent to 1,086 separate addresses. There was some duplication across these two lists, with 835 contacts sent both a paper and an electronic survey. In all, the survey was sent to 2,794 unique contacts. The survey closed on Sept 1, 2017, with a response rate of 18.6%. In order to garner additional responses, the survey was reopened in November 2017, with a final response rate of 19.8% (Table 1).

Table 1. Survey Distribution and Response

Survey Format	Sent	Returned	Response Rate
Paper	2,543	324	12.7%
Electronic	1,086	230	21.2%
Total contacts	2,794	554	19.8%

Note: Total contacts discounts 835 duplicate contacts across lists.

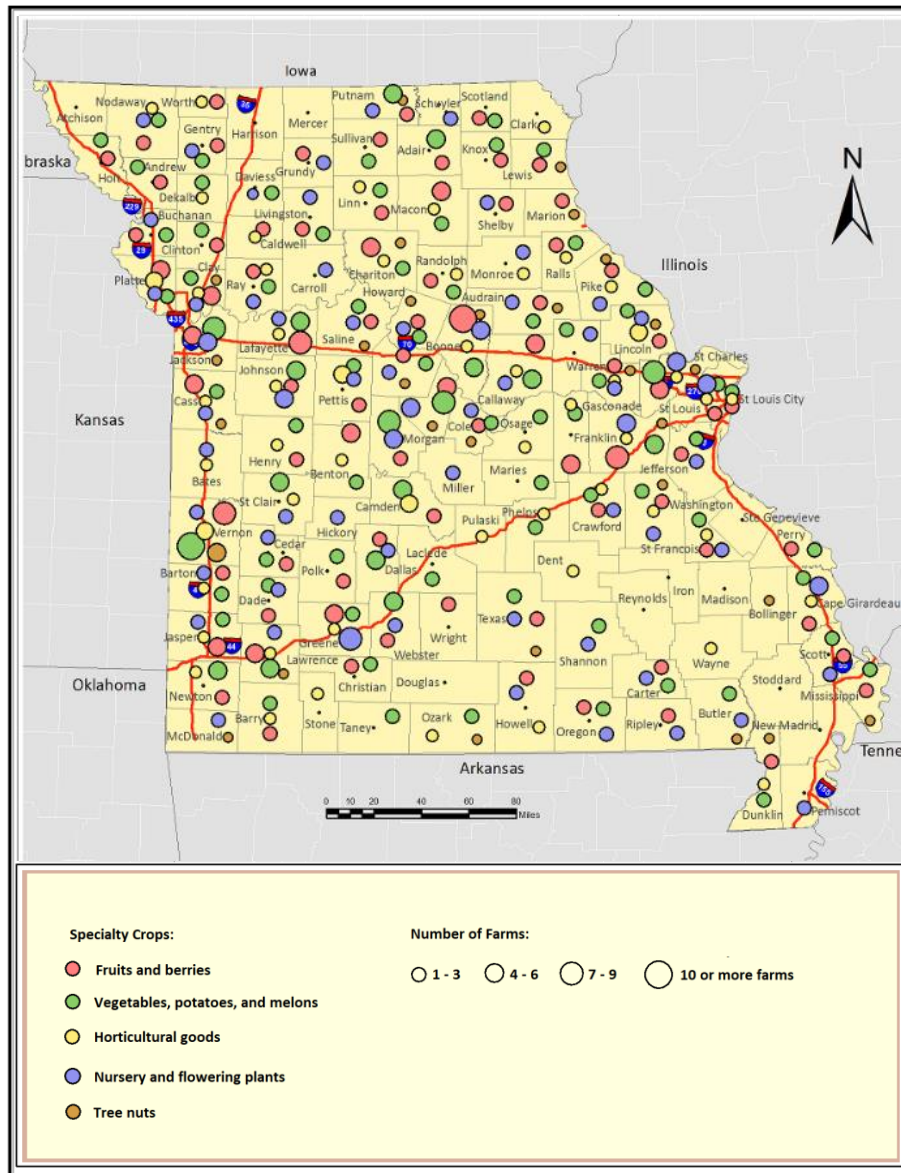
The data were downloaded/coded into IBM SPSS Statistics for analysis. Seventeen of the 554 contacts who returned a survey were no longer producing specialty crops and 35 respondents were not selling the crops that they were growing. These 52 respondents were not included in the findings of this report. The total number of respondents used for analysis was 502.

Overall Results

Counties Represented

As shown in Figure 1, the survey elicited responses from specialty crop producers across the state, with producers represented from 115 separate counties. When asked where their farm is primarily located, the most common counties (selected by at least 10 specialty crop producers) included: Boone, Callaway, Clay, Franklin, Greene, Jackson, Jasper, Lafayette, Lawrence, Moniteau, Morgan, Platte, St. Charles, and Vernon.

Figure 1. Primary Farm County



Years in Specialty Crop Production

Specialty crop producers were asked to indicate how many years they had been operating farms growing specialty crops. Most producers completing the survey had been farming specialty crops for at least five years; however, beginning farmers were also represented, with 11% of respondents having grown specialty crops for less than three years (Table 2).

Table 2. Years Growing Specialty Crops

Years Growing	Number	Percent
2017 is my first year	19	3.8%
1 - 2 years	38	7.6%
3 - 4 years	81	16.2%
5 - 9 years	135	27.1%
10 or more years	226	45.3%
Total	499	100.0%

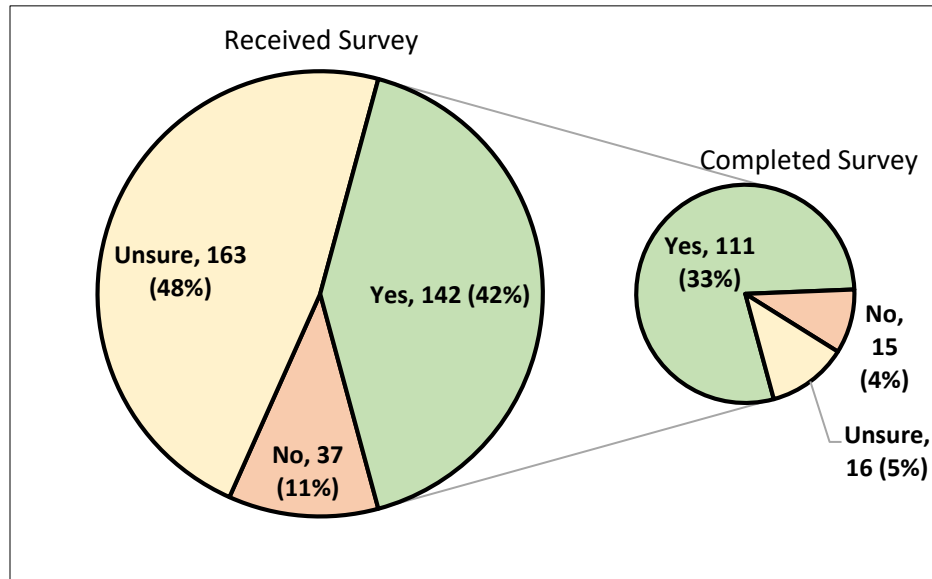
Not reported: 3

USDA Census of Agriculture Survey Participation

Every five years, the USDA Census of Agriculture Survey collects county-level agricultural data on all commodities produced in the US, including specialty crops. The survey was last conducted in 2013, asking producers to report on their 2012 farming operation. Part of the motivation for the Missouri Specialty Crop Survey was a concern that specialty crop producers might be underrepresented by the agricultural census because they tend to operate on a smaller scale in less traditional markets. For this reason, the Missouri survey asked respondents if they received the 2012 Census of Agriculture Survey and if, yes, whether or not they had completed it.

Among the producers who had been farming specialty crops at least 5 years, over half either reported that they had not received the USDA Census of Agriculture survey or were unsure if they had. Although the majority of respondents who remember receiving the survey reported that they had completed it, just under one-third reported that they had both received and completed the survey (Figure 2).

Figure 2. Participation in 2012 USDA Missouri Census of Agriculture Survey



N=342

Area in Specialty Crop Production

Specialty crop producers were asked to estimate their total area in specialty crop production over the past three years. They were provided a table that included space to indicate total acres in the open and total square feet under glass or other protection. Producers were also given the opportunity to describe other area in specialty crops that were not measured in acres or square feet. The “other” category did not produce enough meaningful data to report.

In all, 447 respondents completed the table asking about area in specialty crop production. Of these respondents, 416 provided the number of acres of specialty crops they had in the open and 194 respondents provided the number of square feet under protection for at least one of the three years asked about on the survey. Thirty-seven percent of the 447 respondents reported both acres in the open and square feet under protection.

The data collected on acres/square feet farmed were not normally distributed but were positively skewed due to a few respondents reporting very large areas in production. For this reason, the mean area is inflated and not a good representation of the “average” specialty crop producer. The median area is a more meaningful statistic in this case.

As shown in the tables below, the median acreage in specialty crops was relatively small (3 acres) across the three years asked about on the survey. The total acreage across all respondents exceeded 11,000 acres in 2017 (Table 3). The same pattern was true for square feet under protection, with the median being from 3,000 to 4,000 square feet (less than one-tenth of an acre) across the three years.

Respondents reported over 1.5 million square feet under glass or other protection, which translates to roughly 37 acres (Table 4).

Table 3. Acres of Specialty Crops in the Open (2015 – 2017)

Year	Min	Max	Mean	Median	Total Acreage	Number reporting
2015	.01	1025	28.3	3	10,725	379
2016	.01	1000	25.1	3	9,244	369
2017	.01	3200	31.0	3	11,766	379

Table 4. Square Feet of Specialty Crops under Protection (2015 – 2017)

Year	Min	Max	Mean	Median	Total Sq. Ft	Number reporting
2015	13	152,460	8,712	3,000	1,402,662	161
2016	13	152,460	9,577	4,000	1,494,044	156
2017	4	152,460	9,216	3,400	1,594,349	173

Specialty Crop Sales

Respondents were asked to consider the last three complete years (2014-2016) and select from a list of sales ranges the one that best estimates their average yearly gross sales. Over 80% of respondents selected one of the three lowest sales ranges, with the most commonly selected range being \$1,000 - \$9,999. Ten producers had gross sales of at least one million dollars (Table 5).

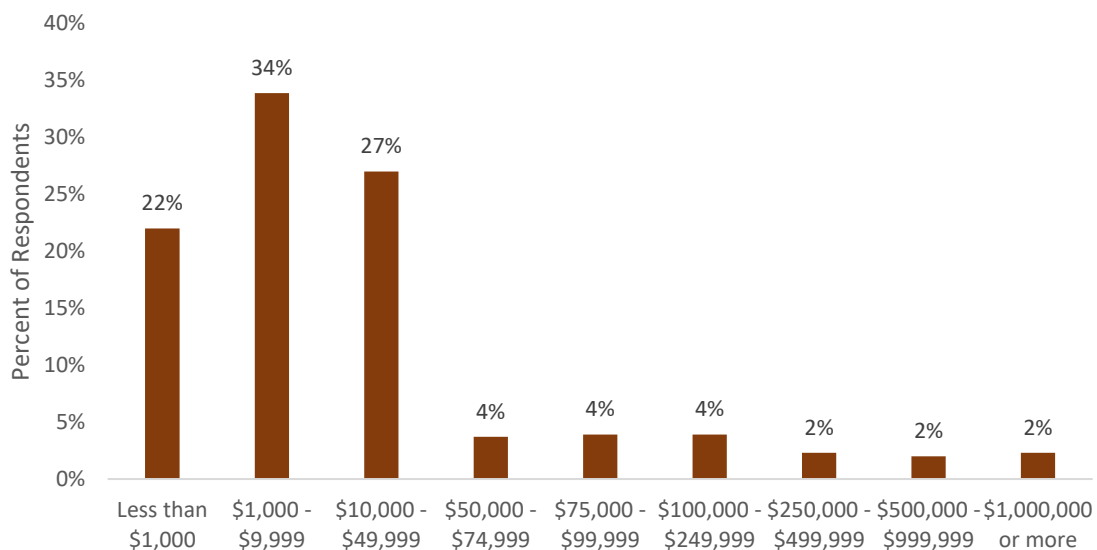
Table 5. Specialty Crop Annual Gross Sales

Annual Gross Sales	Number	Percent
Less than \$1,000	104	22.4%
\$1,000 - \$9,999	156	33.5%
\$10,000 - \$49,999	123	26.5%
\$50,000 - \$74,999	19	4.1%
\$75,000 - \$99,999	19	4.1%
\$100,000 - \$249,999	17	3.7%
\$250,000 - \$499,999	10	2.2%
\$500,000 - \$999,999	7	1.5%
\$1,000,000 or more	10	2.2%
Total	465	100.0%

Not reported: 37

As illustrated in Figure 3, the data on gross sales were positively skewed, similar to the data on area in production.

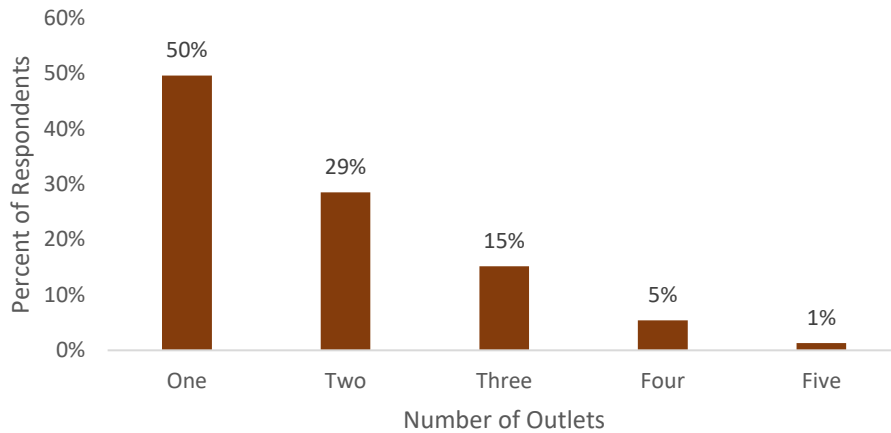
Figure 3. Specialty Crop Annual Gross Sales



Distribution Outlets for Specialty Crops

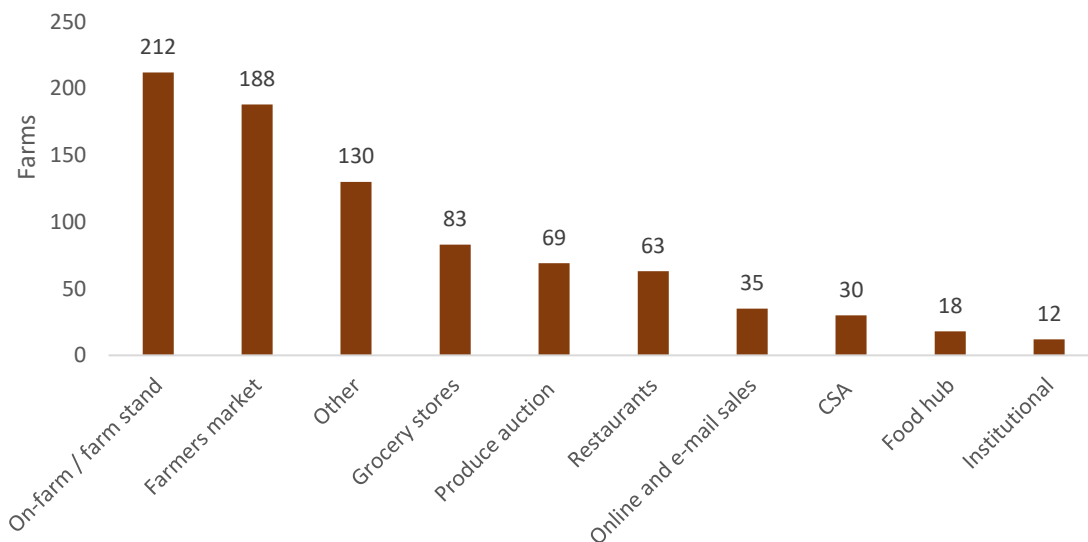
The survey asked respondents to indicate where they sold their products by providing percentage of sales for 10 separate locations, including an “other” category. Half of all respondents selected just one distribution outlet (Figure 4).

Figure 4. Number of Distribution Outlets



The most commonly selected distribution outlet was sales on-farm or a farm stand, followed by farmers markets, and other (Figure 5). The category of “other” included a wide variety of distribution sites. Among the most commonly reported were wineries, nurseries, festivals, social networks, wholesale, and face-to-face.

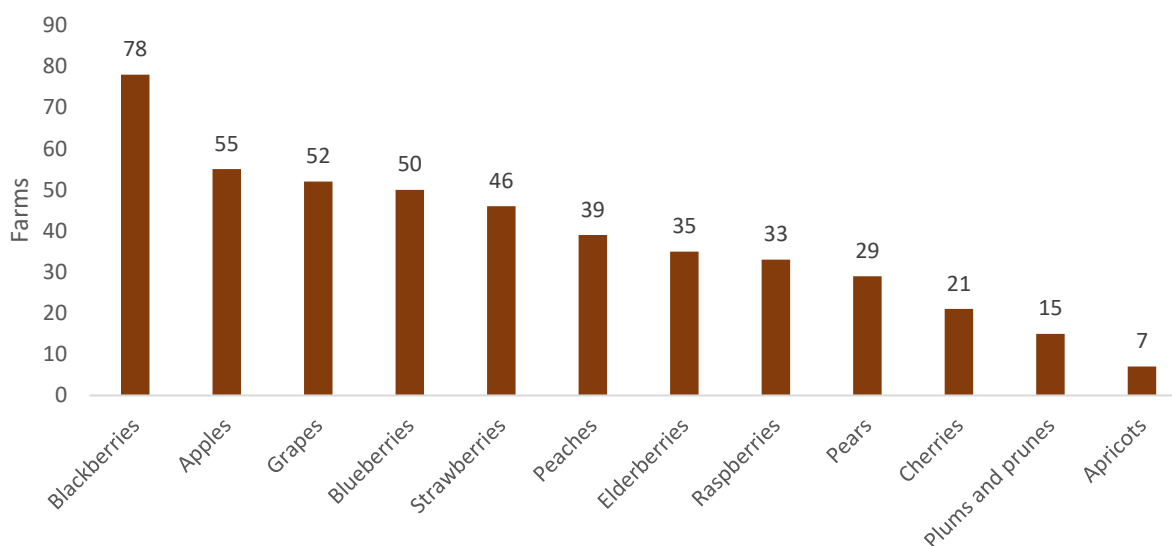
Figure 5. Use of Distribution Outlets



Fruits and Berries

Among the 502 specialty crop producers who completed the survey, 193 respondents (38%) reported growing fruits and/or berries in 2016. Blackberries were the most commonly grown fruit/berry, followed by apples, grapes, and blueberries (Figure 6).

Figure 6. Fruit and Berry Production (2016)



Specialty crop producers were asked to provide acreage for crops that they grew in 2016 that were at least 0.1 acres. Fruit and berry producers reported a total of 898 acres of peaches, the largest combined crop. It should be noted that a large share of this acreage is represented by one large peach farm (750 acres). The median acreage across all fruits and berries ranges from 0.3 to 4.0 acres (Table 6).

Table 6. Fruit and Berry Acreage (2016)

Fruit/Berry	Min	Max	Mean	Median	Total Acreage	Number reporting
Apples	0.2	435.0	24.2	3.0	507.8	21
Apricots	1.0	1.0	1.0	1.0	1.0	1
Blackberries	0.1	4.0	0.7	0.3	17.6	25
Blueberries	0.1	100.0	4.9	1.0	137.6	28
Elderberries	0.1	32.0	5.1	2.0	91.4	18
Grapes	0.1	12.0	4.1	4.0	125.7	31
Peaches	0.1	750.0	69.1	3.0	898.1	13
Pears	0.2	1.5	0.7	0.5	4.0	6
Plums and Prunes	0.1	10.0	3.5	0.3	10.4	3
Raspberries	0.1	0.5	0.3	0.3	1.6	6
Strawberries	0.1	5.0	0.8	0.5	11.4	14

Sales and Distribution for Primary Fruit and Berry Producers

The remainder of this section focuses on 92 producers with at least 50% of their sales coming from fruits and berries. Seventy-one percent of these growers earned 100% of their specialty crop income from fruit and berry sales. As shown in Table 7, the most commonly reported sales range for fruit and berry growers was \$1,000-\$9,999. Six producers with at least 50% of their sales in fruits and berries had annual sales of at least \$100,000.

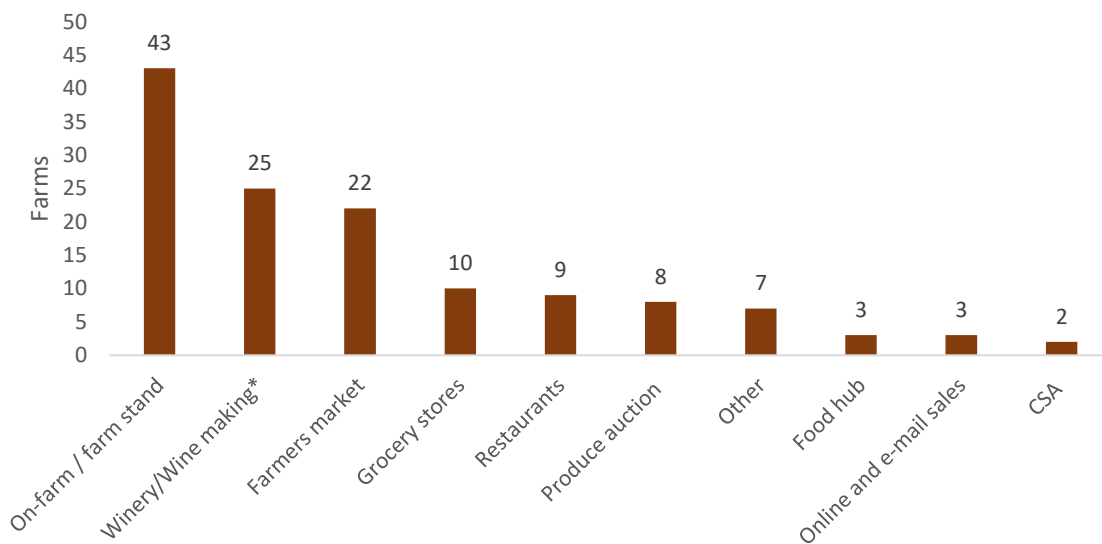
Table 7. Annual Gross Sales: Fruit and Berries (At Least 50% of Sales)

Annual Gross Sales	Number	Percent
Less than \$1,000	24	27.0%
\$1,000 - \$9,999	38	42.7%
\$10,000 - \$49,999	21	23.6%
\$50,000 - \$74,999	0	0.0%
\$75,000 - \$99,999	0	0.0%
\$100,000 - \$249,999	3	3.4%
\$250,000 - \$499,999	1	1.1%
\$500,000 - \$999,999	1	1.1%
\$1,000,000 or more	1	1.1%
Total	89	100.0%

Not reported: 3. Note: Annual gross sales was reported for all specialty crops, not exclusively fruits and berries.

Producers with at least 50% of their sales in fruits and berries were most likely to sell their specialty crops on-farm or at a farm stand. The significance of grape production is shown in the fact that wineries/wine making was the second most commonly reported distribution outlet (Figure 7).

Figure 7. Distribution Outlets: Fruit and Berries (At Least 50% of Sales)

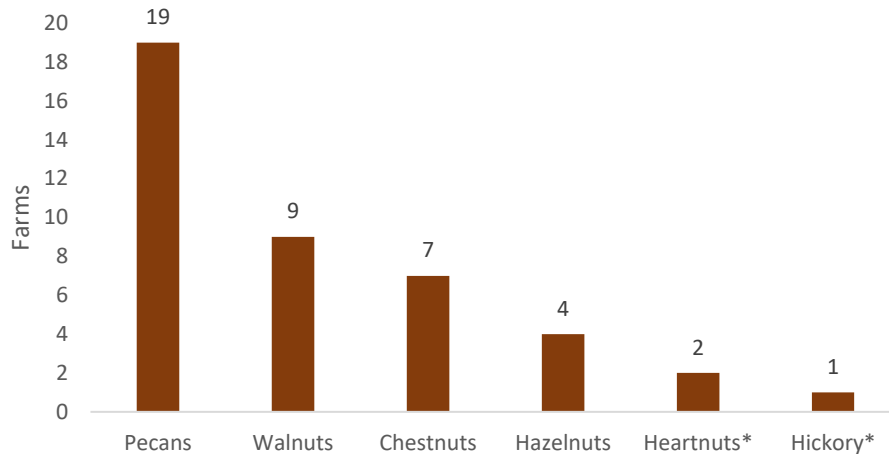


*Winery/wine making was written in as “other” by 25 fruit and berry growers.

Tree Nuts

Among the 502 specialty crop producers who completed the survey, 36 respondents (7%) reported growing tree nuts in 2016. Pecans were the most commonly grown tree nut (Figure 8).

Figure 8. Tree Nut Production (2016)



*Heartnuts and Hickory were written in by respondents in the “other” category.

Specialty crop producers were asked to provide acreage for crops that they grew in 2016 that were at least 0.1 acres. Tree nut producers reported a total of 752 acres of pecans, the largest combined crop. It should be noted that a large share of this acreage is represented by one large pecan grove (534 acres). No acreage was reported for hazelnuts or heartnuts. The median acreage across all tree nuts ranges from 4 to 10 acres (Table 8).

Table 8. Tree Nut Acreage (2016)

Tree Nut	Min	Max	Mean	Median	Total Acreage	Number reporting
Chestnuts	1	17	8.3	4	41.5	5
Hickory	5	5	5	5	5	1
Pecans	1	534	107.4	10	752	7
Walnuts	5	5	5	5	5	1

Sales and Distribution for Primary Tree Nut Producers

The remainder of this section focuses on 11 producers with at least 50% of their sales coming from tree nuts. Forty-five percent of these growers earned 100% of their specialty crop income from tree nut sales. As shown in Table 9, the most commonly reported sales range for tree nut growers was \$1,000-\$9,999. Two producers with at least 50% of their sales in tree nuts had annual sales of \$250,000 - \$499,999.

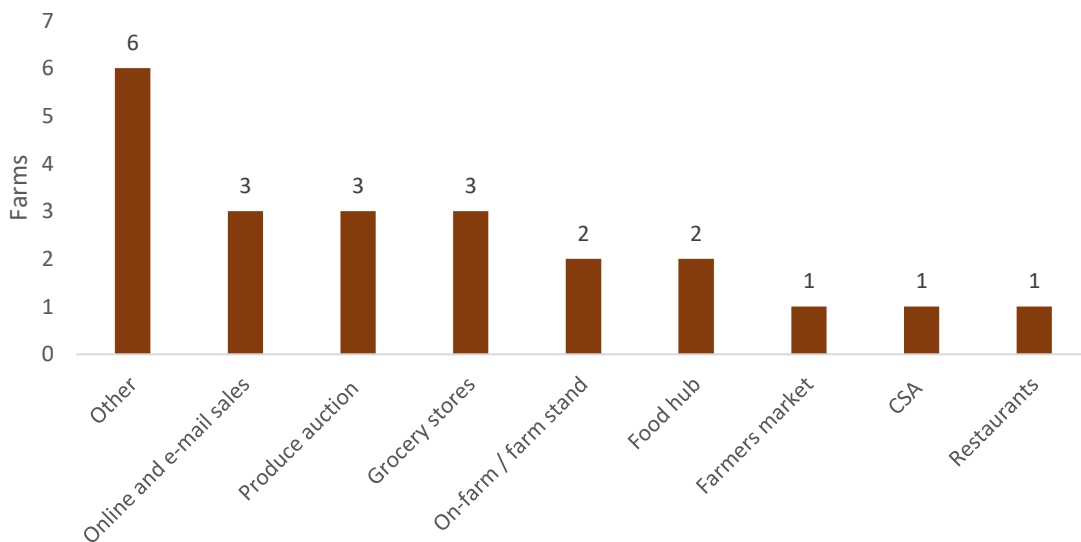
Table 9. Annual Gross Sales: Tree Nuts (At Least 50% of Sales)

Annual Gross Sales	Number	Percent
Less than \$1,000	2	18.2%
\$1,000 - \$9,999	4	36.4%
\$10,000 - \$49,999	3	27.3%
\$50,000 - \$74,999	0	0.0%
\$75,000 - \$99,999	0	0.0%
\$100,000 - \$249,999	0	0.0%
\$250,000 - \$499,999	2	18.2%
\$500,000 - \$999,999	0	0.0%
\$1,000,000 or more	0	0.0%
Total	11	100.0%

Note: Annual gross sales was reported for all specialty crops, not exclusively tree nuts.

Producers with at least 50% of their sales in tree nuts most commonly select “other” as a distribution outlet. The six producers selecting “other” listed the following outlets: chestnut roasts; growers group; my rental office/bakeries; negotiated contract sales; wholesale to nursery; wholesale/word of mouth (Figure 9).

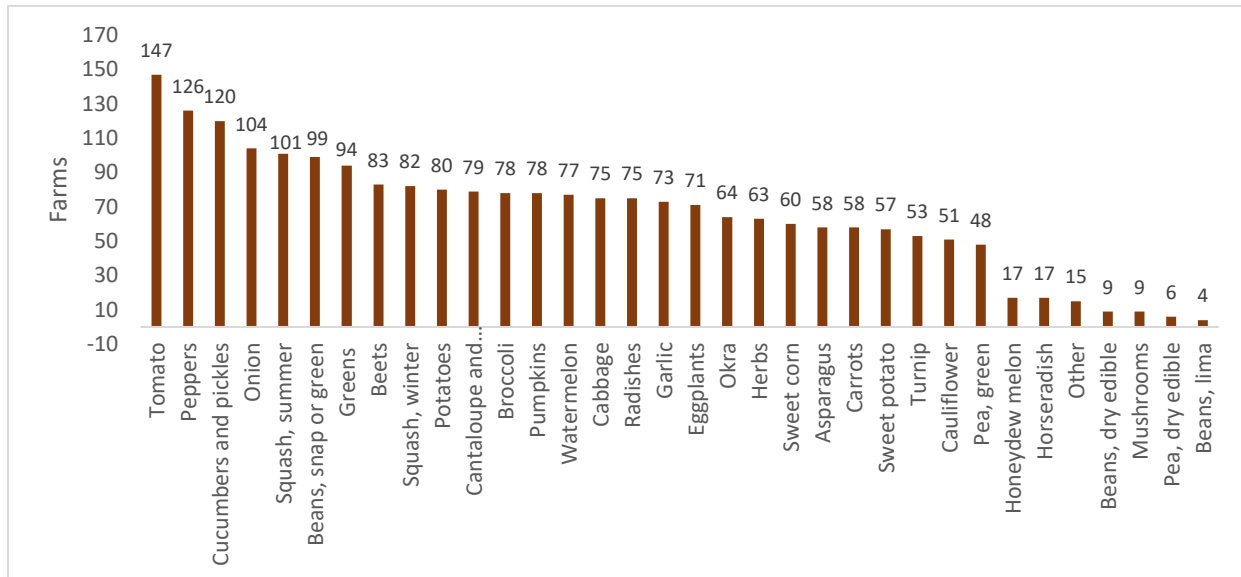
Figure 9. Distribution Outlets: Tree Nuts (At Least 50% of Sales)



Vegetables, potatoes, and melons

Among the 502 specialty crop producers who completed the survey, 217 respondents (43%) reported growing vegetables, potatoes, and/or melons in 2016. Tomatoes were the most commonly grown vegetable, followed by peppers, cucumbers/pickles, and onion (Figure 10).

Figure 10. Vegetable, Potato, and Melon Production (2016)



Other includes: Edible flowers, Gourds (4), Kohlrabi (2), Brussels sprouts, Microgreens (3), Popcorn, and Rhubarb (2).

Specialty crop producers were asked to provide acreage for crops that they grew in 2016 that were at least 0.1 acres. Vegetable, potato, and melon producers reported a total of 198.2 acres of watermelon, the largest combined crop. It should be noted that a large share of this acreage is represented by one large watermelon farm (145 acres). The median acreage across all vegetable, potato, and melon crops ranges from 0.1 to 2.0 acres (Table 10).

Table 10. Vegetable, Potato, and Melon Acreage (2016)

Vegetable, potato, or melon	Min	Max	Mean	Median	Total Acreage	Number reporting
Asparagus	0.1	1.0	0.5	0.4	3.1	6
Beans, dry edible	0.1	0.1	0.1	0.1	0.1	1
Beans, snap or green	0.1	10.0	2.1	0.4	12.6	6
Beets	0.1	2.0	1.1	1.1	2.1	2
Broccoli	0.2	1.5	0.7	0.4	2.1	3
Cabbage	0.2	50.0	10.7	1.5	53.7	5
Cantaloupe & musk melon	0.2	7.0	1.9	1.0	49.3	26
Carrots	0.1	0.5	0.3	0.3	0.9	3
Cauliflower	0.4	1.5	1.0	1.0	1.9	2
Cucumbers & pickles	0.1	2.5	0.7	0.4	9.2	14
Eggplant	0.2	3.0	0.9	0.3	3.8	4
Garlic	0.2	0.6	0.3	0.2	1.3	4
Greens	0.1	9.0	1.6	0.5	11.5	7
Herbs	0.2	0.2	0.2	0.2	0.4	2
Okra	0.1	0.3	0.1	0.1	0.6	4
Onion	0.1	1.0	0.5	0.3	5.7	12
Pea, dry edible	1.5	1.5	1.5	1.5	1.5	1
Peppers	0.1	4.0	0.7	0.3	10.1	14
Potatoes	0.1	0.8	0.3	0.2	2.4	7
Pumpkins	0.1	30.0	3.5	2.0	123.1	35
Squash, summer	0.3	8.0	1.4	1.0	17.1	12
Squash, winter	0.1	15.0	2.1	1.5	39.8	19
Sweet corn	0.1	25.0	4.0	1.5	75.6	19
Sweet potato	0.1	2.0	0.6	0.5	5.8	9
Tomato	0.1	7.0	0.8	0.5	27.6	36
Turnip	0.2	5.0	1.6	1.0	9.7	6
Watermelon	0.1	145.0	7.3	0.8	198.2	27

Sales and Distribution for Primary Vegetable, Potato, and Melon Producers

The remainder of this section focuses on 127 producers with at least 50% of their sales coming from vegetables, potatoes, and melons. Forty-five percent of these growers earned 100% of their specialty crop income from vegetable, potato, or melon sales. As shown in Table 11, the most commonly reported sales ranges for vegetable, potato, and melon growers was \$10,000-\$49,999, with 35% of growers falling into this range. Seven producers with at least 50% of their sales in vegetables, potatoes, and melons had annual sales of at least \$100,000 (Table 11).

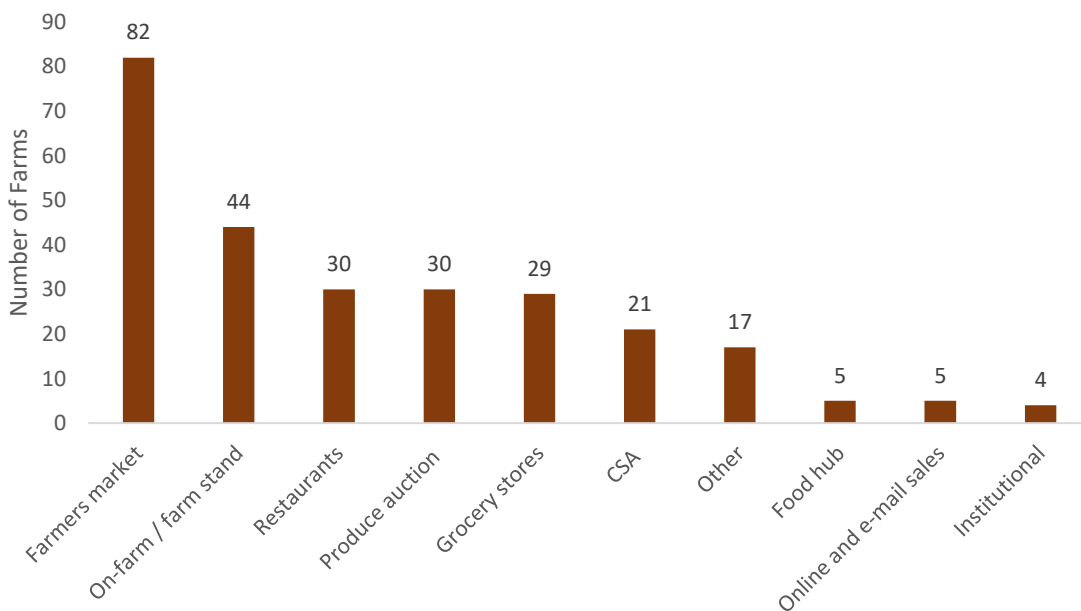
Table 11. Annual Gross Sales: Vegetables, Potatoes, and Melons (At Least 50% of Sales)

Annual Gross Sales	Number	Percent
Less than \$1,000	11	9.0%
\$1,000 - \$9,999	41	33.6%
\$10,000 - \$49,999	43	35.2%
\$50,000 - \$74,999	11	9.0%
\$75,000 - \$99,999	9	7.4%
\$100,000 - \$249,999	4	3.3%
\$250,000 - \$499,999	1	0.8%
\$500,000 - \$999,999	1	0.8%
\$1,000,000 or more	1	0.8%
Total	122	100.0%

Not reported: 5. Note: Annual gross sales was reported for all specialty crops, not exclusively vegetables, potatoes, and melons.

Producers with at least 50% of their sales in vegetables, potatoes, and melons were most likely to sell their specialty crops at farmers markets (Figure 11).

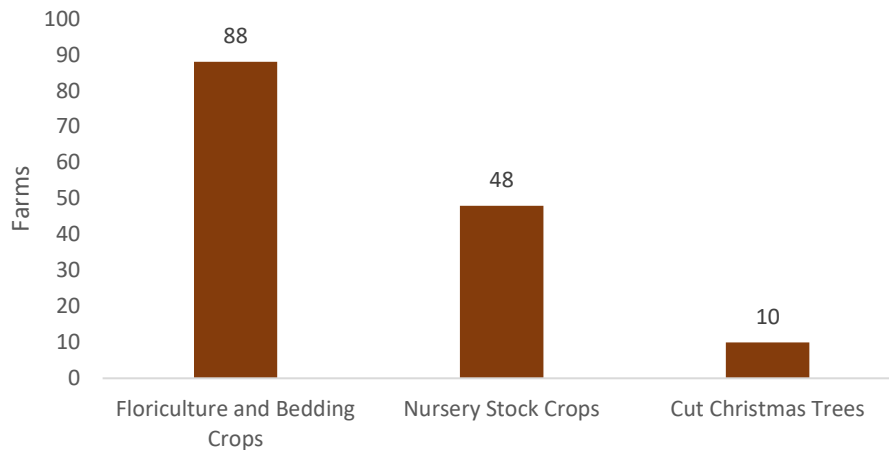
Figure 11. Distribution Outlets: Vegetables, Potatoes, and Melons (At Least 50% of Sales)



Nursery and Flowering Plants

The nursery and flowering plants category is comprised of three separate subgroups included on the survey: floriculture and bedding crops, nursery stock crops, and cut Christmas trees. Among the 502 specialty crop producers who completed the survey, 133 respondents (26%) reported growing nursery and flowering plants in 2016. Out of concern for survey length, growers were not asked about specific plant varieties; however, we do know that the most commonly grown subgroup in the nursery and flowering plant category was floriculture and bedding crops (Figure 12).

Figure 12. Nursery and Flowering Plant Subgroups



For each of the three subgroups of nursery and flowering crops, respondents were asked to provide both the number of acres in the open and number of square feet under glass or protection. Nursery stock crops represented the largest total combined acreage within this category; however, the cut Christmas tree growers had a higher median acreage (Tables 12).

Table 12. Nursery and Flowering Plant Acreage (2016)

Nursery and Flowering Plants	Min	Max	Mean	Median	Total Acreage	Number reporting
Floriculture and Bedding Crops	0.04	10	1.8	0.4	39.8	22
Nursery Stock Crops	0.3	85	11.5	1.4	264.4	23
Cut Christmas Trees	3.0	100	23.6	15.0	212.0	9

Floriculture and bedding crop growers more commonly reported their growing area in square feet, with 384,539 combined square feet (approximately 8.9 acres) reported across all growers (Table 13).

Table 13. Nursery and Flowering Plant Square Footage (2016)

Nursery and Flowering Plants	Min	Max	Mean	Median	Total Sq. Ft.	Number reporting
Floriculture and Bedding Crops	50	40,000	6,671	4,000	313,527	47
Nursery Stock Crops	120	25,000	3,382	1,000	71,012	21

Sales and Distribution for Primary Nursery and Flowering Plant Producers

The remainder of this section focuses on 69 producers with at least 50% of their sales coming from nursery and flowering plant sales. Seventy-three percent of these growers earned 100% of their specialty crop income from nursery and flowering plant sales. As shown in Table 14, the most commonly reported sales range for nursery and flowering plant growers was \$1,000-\$9,999, with 25% of growers falling into one of these two ranges. Seventeen producers with at least 50% of their sales in nursery and flowering plants had annual sales of at least \$100,000 (Table 14).

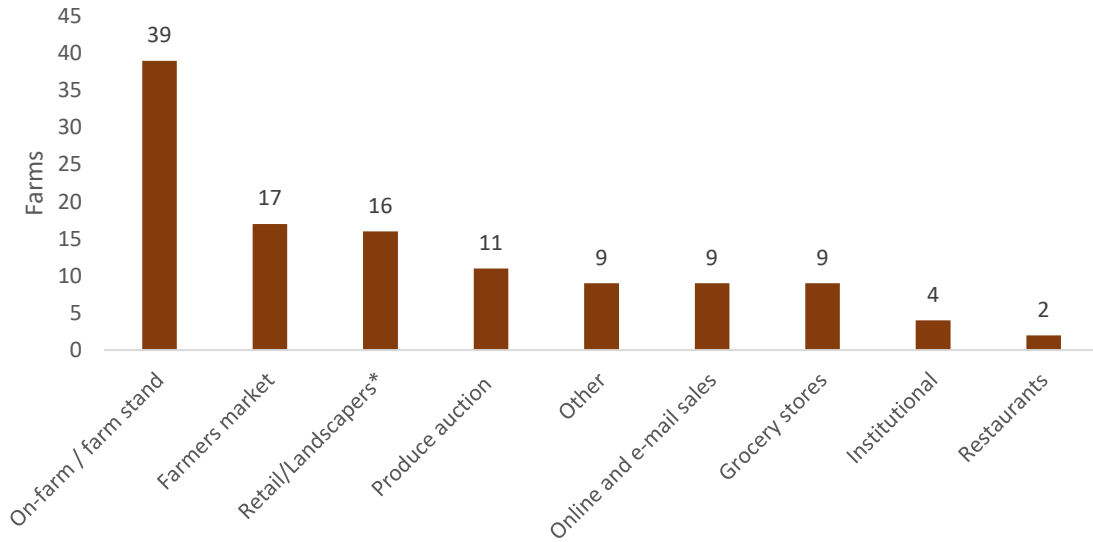
Table 14. Annual Gross Sales: Nursery and Flowering Plants (At Least 50% of Sales)

Annual Gross Sales	Number	Percent
Less than \$1,000	9	13.4%
\$1,000 - \$9,999	17	25.4%
\$10,000 - \$49,999	16	23.9%
\$50,000 - \$74,999	4	6.0%
\$75,000 - \$99,999	4	6.0%
\$100,000 - \$249,999	7	10.4%
\$250,000 - \$499,999	5	7.5%
\$500,000 - \$999,999	2	3.0%
\$1,000,000 or more	3	4.5%
Total	67	100.0%

Not reported: 2. Note: Annual gross sales was reported for all specialty crops, not exclusively nursery and flowering plants.

Producers with at least 50% of their sales in nursery and flowering plants were most likely to sell their specialty crops on-farm or at a farm stand (Figure 13).

Figure 13. Distribution Outlets: Nursery and Flowering Plants (At Least 50% of Sales)

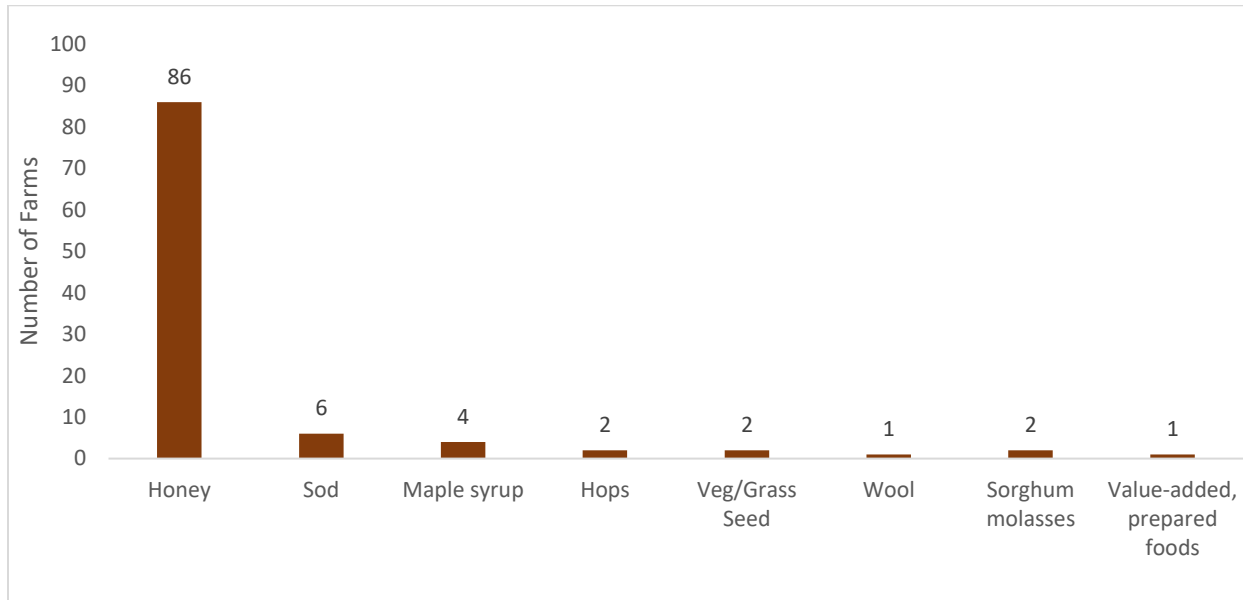


* The Retail/Landscapers category was created from written in “other” outlets and includes landscapers, nurseries and florists.

Horticultural Goods

The horticultural goods category is comprised of three separate subgroups included on the survey: honey, maple syrup, and sod. It also includes some agricultural products written in by respondents, including hops, vegetable or grass seed, wool, and sorghum. Among the 502 specialty crop producers who completed the survey, 103 respondents (21%) reported growing horticultural goods in 2016. The majority of these were beekeepers (Figure 14).

Figure 14. Horticultural Goods Subgroups



Beekeepers in Missouri who responded to the survey managed a total of 7,494 bee colonies, 6,000 of which were part of one operation (Table 15).

Table 15. Honey Colonies (2016)

Number of Honey Colonies	Min	Max	Mean	Median	Total Colonies	Number reporting
	1	6,000	90	9	7,494	83

Not reported: 3

Sales and Distribution for Primary Horticultural Goods Producers

The remainder of this section focuses on 45 producers with at least 50% of their sales coming from horticultural goods. Ninety-five percent of these growers earned 100% of their specialty crop income from horticultural goods. As shown in Table 16, the most commonly reported sales range for producers of horticultural goods was less than \$1,000. Four producers with at least 50% of their sales in horticultural goods had annual sales of at least \$100,000 (Table 2).

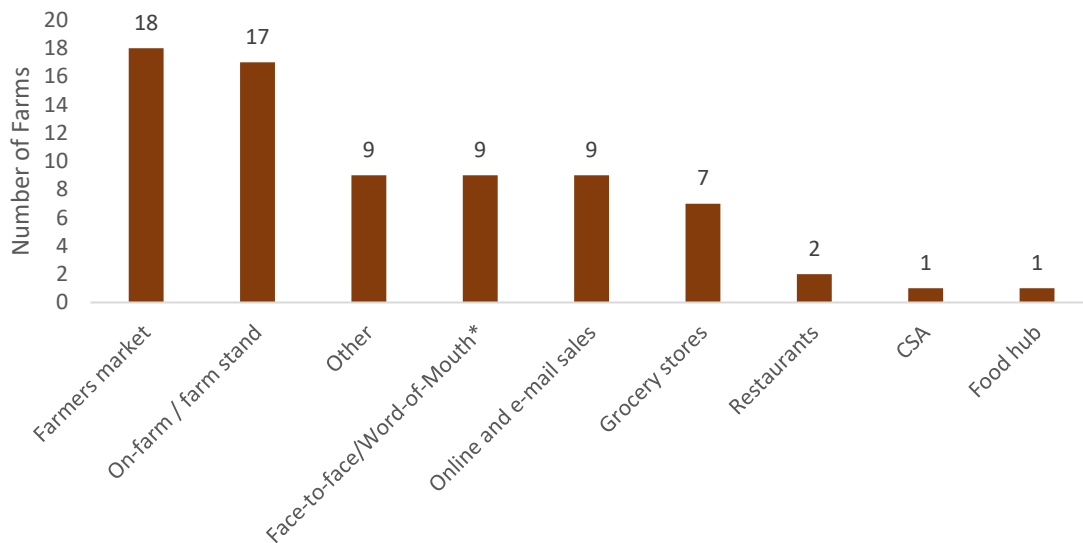
Table 16. Annual Gross Sales: Horticultural Goods (At Least 50% of Sales)

Annual Gross Sales	Number	Percent
Less than \$1,000	20	44.4%
\$1,000 - \$9,999	13	28.9%
\$10,000 - \$49,999	6	13.3%
\$50,000 - \$74,999	0	0.0%
\$75,000 - \$99,999	1	2.2%
\$100,000 - \$249,999	0	0.0%
\$250,000 - \$499,999	1	2.2%
\$500,000 - \$999,999	2	4.4%
\$1,000,000 or more	2	4.4%
Total	45	100.0%

Note: Annual gross sales was reported for all specialty crops, not exclusively horticultural goods.

Producers with at least 50% of their sales in goods were most likely to sell their specialty crops on-farm or at a farm stand, followed closely by farmers markets (Figure 15).

Figure 15. Distribution Outlets: Horticultural Goods (At Least 50% of Sales)



Summary Findings

There were 554 respondents to the specialty crop survey, representing 114 Missouri counties and one independent city. This is a 20% response rate for the survey. Summary findings are provided here:

- ❖ **Missouri specialty crop farmers may be underrepresented in the US Census of Agriculture.** Only one-third of farmers in this study remember receiving and completing the US Census of Agriculture survey in 2013.
- ❖ **Survey participants tended to be experienced specialty crop farmers.** Nearly half (45%) of participants had 10 or more years of experience. Another 27% had 5-9 years of experience.
- ❖ **Survey participants represented five general categories of specialty crop farms.**

Survey Respondents' Specialty Crop	%	Most common sub-crops in each category
Fruits and/or berries	38%	Blackberries, apples, grapes, blueberries
Tree nuts	7%	Pecans
Vegetables, potatoes & melons	43%	Tomatoes, peppers, cucumbers/pickles, onions
Nursery and flowering plants	26%	Floriculture, bedding crops
Horticultural Goods	21%	Bees (honey)

- ❖ **Acreage for specialty crops was relatively small.** The median acreage for specialty crops among farmers surveyed was 3.0 acres with less than 1/10 acre under protection such as glass. The largest acreage was among tree nut farmers with a median range of 4-10 acres.
- ❖ **Gross sales for specialty farmers tended to be relatively low.** Over half (56%) of farmers in this study had gross sales of less than \$10,000, with another 27% in the \$10,000-\$49,999 range.
- ❖ **On-farm sales and farm stands were the most common distribution outlets for specialty farmers overall (43%).** Vegetable/potato/melon farmers, however, reported farmers' markets as their most common outlet, while tree nut farmers sold in various small venues such as chestnut roasts.
- ❖ **Half of all specialty crop farmers sold product through more than one distribution outlet.**