

Impacts of COVID-19 on U.S. aquaculture, aquaponics, and allied businesses located in the USDA North Central Aquaculture Region: Quarter 1 Results

March 23, 2020 to April 10, 2020

Authored by Matthew A. Smith, Extension Specialist, The Ohio State University; Jonathan van Senten, Assistant Professor and Extension Specialist Virginia Seafood AREC & Department of Agricultural and Applied Economics, Affiliate Faculty Center for Coastal Studies, Virginia Tech; and Carole R. Engle, Engle-Stone Aquatic\$ LLC, Adjunct Faculty, Virginia Seafood AREC, Virginia Tech; Charles Clark, Virginia Seafood AREC, Virginia Tech; Shannon Fluharty, Department of Agricultural and Applied Economics, Virginia Tech; Michael H. Schwarz, Virginia Seafood AREC

Introduction

On March 23rd, 2020 Virginia Tech Seafood AREC and The Ohio State University Extension initiated an online survey of the U.S. aquaculture, aquaponics, and allied businesses. This survey was designed to capture and quantify the effects of the coronavirus disease (COVID-19) on the aquaculture, aquaponics, and allied industries. The survey closed April 10th, 2020 at 11:59 pm. The survey will be distributed at the conclusion of every quarter for 2020, to attempt to capture the evolving impacts of COVID-19 over time.

Survey methods are detailed in the Virginia Cooperative Extension Fact Sheet VCE-AAEC-218, available at: https://www.arec.vaes.vt.edu/arec/virginia-seafood/research/Impacts_of_COVID19.html. This report is a supplemental report to the overall survey that summarizes results of the **USDA North Central Aquaculture Region** respondents.

The USDA North Central Aquaculture Region is comprised of the following states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri,

Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

Methods

For a detailed description of the methods for this study, please consult the factsheet summarizing the Q1 results (AAEC-218NP). Data for this study were collected through an online survey distributed through Qualtrics. It should be noted that respondents self-selected for participation in the study and there was no specific sampling protocol followed due to time constraints and challenges with obtaining contact lists. It is therefore possible that responses are skewed towards those farms and businesses that have been more affected by the coronavirus (COVID-19) disease pandemic. This study is being conducted for the duration of 2020, with a survey being administered quarterly to capture the evolving effects and impacts of the coronavirus diseases (COVID-19) pandemic on U.S. aquaculture, aquaponics, and allied businesses. The responses summarized in this fact sheet were collected during the Q1 survey, between March 23rd and April 10th, 2020.

Results

Characterization of Respondents

Quarter 1 survey results showed that there were **49 participants from the North Central Aquaculture Region** as defined by USDA. Twenty-nine percent of North Central respondents sold their products directly to customers, 18% sold to other, uncategorized channels, 16% to distributors, 12% to other aquaculture/aquaponic farms, 10% to restaurants, 8% grocery stores/supermarkets, and 4% to processors (Table 1). Two percent did not respond to the question.

Table 1. Primary marketing channel for North Central respondents.

Category	Percentage
Direct to customers	29%
Other	18%
Distributors	16%
Other aquaculture/aquaponic farms	12%
Restaurants	10%
Grocery stores/supermarkets	8%
Processors	4%

Scale of farms/businesses

Respondents in the North Central region varied in terms of their reported scale of production. Respondents to the survey included those with scales of production from sales of \$1,001 to \$25,000 a year up to those with annual sales greater than \$1 million (Table 2). The greatest percentage (20%) of respondents had sales from \$100,001 to \$250,000, followed by those with sales greater than \$1 million (14%), \$250,001 to \$500,000 (14%), \$1 to \$1,000 (10%), \$50,001 to \$100,000 (8%), \$10,001 to \$25,000 (6%), \$25,001 to \$50,000 (4%), \$500,001 to \$1 million (4%), and \$1,001 to \$5,000 (2%). No respondents had sales less than \$5,001 to \$10,000. Sixteen percent did not respond to this question.

Table 2. Scale of North Central respondent farms/businesses.

Category	Percentage
\$100,001 - \$250,000	20%
No response	16%
\$250,001 - \$500,000	14%
> \$1 million	14%
\$1 - \$1,000	10%
\$50,001 - \$100,000	8%
\$10,001 - \$25,000	6%
\$25,001 - \$50,000	4%
\$500,001 - \$1 million	4%
\$1,001 - \$5,000	2%
\$5,001 - \$10,000	0%

Key Findings

Eighty-two (82%) percent of survey respondents from the North Central Aquaculture Region reported that their farm or business had been impacted by the COVID-19 pandemic. Six percent said that their farm or business had not been impacted, and 12% were uncertain or unsure whether their farm or business had been impacted. Those who reported that their farm or business had not been impacted, were asked if their farm or business expected to be impacted in 2020; 67% said “probably yes”, while another 33% said “probably not”. No respondents said that their business would “definitely not” be impacted.

When asked whether their farm or business would survive the next 3 months without external intervention (such as government assistance), 59% said, “yes”. Thirty-seven percent reported that their farm or business would “maybe” survive 3 months without external assistance, and 4% said that their farm or business would not survive 3 months without external assistance. When asked the same question, but for the next 6 months, only 39% said that their farm or business would survive, 46% said “maybe,” and **15% said that their farm/business would not survive the next 6 months without external assistance.** Increasing the term to 12 months without external assistance, **33% of respondents in the North Central Aquaculture Region indicated that they would not survive,** 33% said that their farm or business would “maybe” survive, and another 33% said that they would survive (2% did not respond to this question).

Lost Sales

Seventy percent of North Central Aquaculture Region farm or businesses indicated that they had lost sales due to the COVID-19 pandemic.

Twenty-six percent of survey respondents indicated that they had lost sales to international or export markets outside the U.S. In terms of the volume of sales that had been lost, 29% could not estimate the value of lost sales at the time of the survey. Seventeen percent indicated that they had lost between \$25,001 and \$50,000 in sales. Fourteen percent indicated that had lost between \$10,001 and \$25,000 and another 14% indicated lost sales between \$50,001 and \$100,000. Nine percent of responding farms or businesses had lost between \$5,001 and \$10,000; followed by 6% of survey respondents who reported lost sales values between \$1,001 and \$5,000. A three-way tie at 3% exists for respondents that had lost between \$100,001 and \$250,000, \$250,001 and \$500,000, and \$500,001 and \$1 million. Three percent did not respond to the questions an 0% reported lost sales of greater than \$1 million.

Reported lost sales included canceled private and government contracts; **73% percent of survey respondents reported losing private contracts** for sales and 18% reported losing government (state or federal) contracts for sales.

Survey participants were asked what challenges they expected to experience on their farms or businesses as a result of the coronavirus pandemic in 2020.

Seventy-eight (78%) percent of responding North Central Aquaculture Region farms or businesses indicated that they expected to lose sales in 2020, with 25% expecting to lose sales to international markets. Thirty-six (36%) percent of respondents could not estimate the value of expected lost sales at the time of the survey. Of the respondents that could estimate expected lost sales, 17% indicated they expected to lose between \$100,001 and \$250,000. That was followed by 14% of responding farms or businesses that expected to lose between \$10,001 and \$25,000. Eleven percent expected to lose between \$50,001 and \$100,000, followed by 8% of respondents expected to lose between \$25,001 and \$50,000. Six percent expected to lose between \$1,001 and \$5,000, and another 6% expected to lose between \$5,001 and \$10,000. Of the respondents

who could estimate their expected losses at this time, 0% stated greater than \$1 million.

When asked how long their farm or business could survive without sales before suffering longer term cash flow effects, 24% of North Central respondents said 4 to 6 months, 22% said 1 to 3 months, 17% said more than 10 months, 17% did not respond to this question, 13% said less than 1 month, and 7% said 7 – 10 months. **It should be noted that data collection through the survey was open for a period of 3 weeks (March 23rd to April 10th), meaning that more than 1 month had already eclipsed between respondent participation and the preparation of this report.**

Labor

Twenty-five percent of respondents reported that they had laid off employees as a result of the COVID-19 pandemic, and 20% of respondents indicated that they “will have to soon”. Fifty-five percent of responding farms and businesses had not laid off employees at the time of the Quarter 1 survey. Ninety percent of North Central region farm or business respondents indicated that they had laid off between 1 and 3 employees. The remaining 10% had laid off between 16 to 20 employees. Of those employees who had been laid off, 33% of North Central region respondents indicated that these were “Short-Time” or “Shared-Work” employees. Forty-four percent stated that none of the workers laid off were in this category. Twenty-two percent chose not to respond to this question.

Respondents were also asked how many weeks before they would have to decide whether to lay off employees. **Fifty percent of survey respondents indicated that they would have to decide within 1 to 3 weeks whether to lay off employees.** Twenty-five percent said they had 4 to 6 weeks to make a decision and 13% said they had 7 to 10 weeks. Zero percent said they could wait more than 10 weeks to make a decision about laying off employees, and 13% said they had less than one week to make a decision. **Again, it should be noted that the data collection period was open for 3 weeks, which means that some respondents completed the survey more than a month before the preparation of this report.** North Central Aquaculture Region

respondents were further asked how many employees they would need to lay off at that time. Sixty-three percent said that they would have to lay off from 1 to 3 employees, and 38% said that they would have to lay off between 4 and 6 employees.

Forty-three percent of respondents had experienced some type of labor challenge. A quarter of respondents reported employees to have missed work due to the COVID-19 pandemic. Those who missed work included those who were instructed to self-quarantine at home due to symptoms exhibited by themselves or family members. **Forty percent of responding farms or businesses indicated that employees had missed work between 11 and 14 days, followed by 30% reporting employees had missed between 4 and 6 days, 20% who reported employees missing between 7 and 10 days, and 10% has missed between 1 and 3 days.**

Respondents commented on labor challenges related to being unable to afford to hire seasonal workers, while others indicated they could not hire needed seasonal workers but did not specify the reasoning. One respondent noted that only a limited amount of work is being done on the farm due to both self-quarantining by employees as well as social distancing. Another respondent recognized the inefficiencies related to caring for their fish due to self-quarantine. One respondent stated social distancing, washing hands, and disinfecting common areas is time consuming and expensive, which has led to a decline in efficiency and another respondent indicated it has been difficult to rearrange work schedules to accommodate social distancing.

One respondent noted that their annually occurring broodstock programs were canceled due to COVID-19, which directly led to them having to put seasonal hiring on an indefinite hold. One respondent stated it has been difficult to achieve sales with their reduced workforce, and another respondent noted a concern that each week product is delivered they are putting their labor at risk of COVID-19. One North Central Aquaculture Region farm or business indicated they were growing and looking to retire before the pandemic. Many respondents expect continued future labor shortages due to COVID-19, and one respondent indicated business had increased but they cannot get the labor required at this time.

Challenges to the farm/business

Over half (52%) of respondents had experienced production challenges not related to labor. Those production challenges include production input challenges (46% of respondents), challenges with repair, construction, consultant or engineering services (42%), and challenges with financial services (33%). Seventeen percent responded there were “other” production challenges not provided. Respondents noted production difficulties, which includes not being able to afford to pay for feed or electricity. Multiple respondents noted they have had challenges obtaining feed or obtaining feed on time, and one farm or business noted therapeutants were difficult to obtain. One farm noted they could not financially support the stocking of fingerlings in empty ponds until market-ready fish were sold, whereas one farm has experienced difficulty in receiving fish eggs. An increase in cost of feed and utilities was mentioned by a respondent, as well as an increased cost of biosecurity.

Mandated business closures and inability to receive shipments from overseas has hampered production by some respondents. Multiple North Central Aquaculture Region farm and business respondents noted that they were currently under construction or upgrading and all projects have been put on hold. Respondents noted that common production services, such as repairs and construction, are shut down, leading them to either not be able to conduct repairs or forcing them to do the repairs in house. One respondent noted that their system is down, and this has given them an opportunity to conduct necessary upgrades and repairs. Another respondent stated the new construction of a facility was scheduled to be operational in late 2020 but they have had to put the construction on hold for now.

Of the approximate one-third of respondents (33%) who reported challenges with financial services, respondents mentioned difficulty paying for the lease on the farm, as well as the inability to access new season operating capital until the last season’s loan is paid off. The respondent cannot pay off last season’s loan since they cannot currently move their market-ready fish. North Central Aquaculture Region respondents discussed that local banks are unable to file the government forms correctly due to

confusion related to the requirements, and one respondent stated the uncertainty of the sector has made lenders very uncertain.

Of the 17% of respondents who noted there were “other” production challenges, comments included that their facility was not considered essential and were required to self-quarantine. One farm or business stated they were attempting to keep their personnel safe but could not access sanitation supplies and appropriate PPE.

Survey participants were asked what challenges they expected to experience on their farms or businesses as a result of the coronavirus pandemic in 2020. Farms or businesses overwhelmingly stated that they expect to have difficulty in obtaining products and supplies vital to their operations (e.g. feed, oxygen, fish eggs, therapeutants, raw materials). Respondents also stated that they expect construction and repairs to continue to be put on hold. A conservation agency indicated they were not able to collect wild gametes for their production this year and in turn expected limited production. One North Central Aquaculture Region farm or business stated that they expected delays with research grants, which support their business. Respondents also expected there to be limited production due to fewer fee fishing stockings as well as fewer open farmers’ markets.

Twenty-eight percent of respondents said they could only hold market-ready product for less than 1 month before there would be an issue for new crops. Thirty percent said problems would arise between 1-3 months, and only 30% said they could hold crops for more than 4 months before there would be an issue for new crops. Eleven percent of respondents did not respond to the question. One respondent believed they can hold product for 12 months before interfering with future crops and another respondent stated they could hold the product for up to 18 months without interference.

Marketing of products

Forty-one percent of respondents indicated that holding market-ready product would make it less marketable in the future, and over one-quarter (28%) did not know if holding the product would make it less marketable. Sixty-three percent responded that holding product would result in a reduced quantity sold and 63% responded it

would result in a reduced price for products.

Respondents noted the difficulty in managing and marketing fish that had outgrown their preferred size. One respondent noted their marketing strategy is related to freshness and holding market-ready product will diminish the quality. Catering to lower-priced markets was discussed as something that is expected to occur as higher-priced markets continue to be shut down. Another respondent mentioned that their sales are primarily to the live markets and with those shut down they are unable to move their product. The same respondent recognized that another traditional market, pond and lake management, was a difficult avenue to navigate as many people are reluctant to spend money on a hobby. Lastly, it was mentioned that if market-ready fish cannot be moved there will not be space for the following cohorts.

Increased Demand for Products

Thirteen percent responded they have seen an increase in demand for their products. Of the 13% who noted they have seen an increase in demand, 67% could not estimate the value at this time, and 17% did not respond. Seventeen percent reported an increase in demand for their products in excess of \$1 million. None of the respondents who stated they had seen an increase in demand for their products offered accompanying text. Increase in demand was noted by 13% of respondents when asked about expected experiences due to COVID-19 in 2020.

Assistance to Farms/Businesses

The survey also included questions on the types of assistance that might be helpful to the farm or business of respondents. Forty-six percent of North Central Aquaculture Region respondents indicated that federal assistance would increase the likelihood of survival of their farm or business. Thirty percent of respondents said there were no steps or types of assistance that would help. Thirty percent said that assistance from the state would help, and another 22% from associations, and 13% said local assistance would be helpful.

When asked more specifically about the types of assistance that would be helpful to their farm or business, 24% of respondents said that loan guarantees would be helpful, 17% said assistance identifying new markets, another 17% said specialty crop insurance, 13% said waiving or delaying of

State fees, and 9% said tariff relief. Thirteen percent of respondents suggested other assistance that would be helpful to their farm or business.

Amongst the comments regarding request for what type of assistance might be helpful to the North Central Aquaculture Region farm or business, one respondent indicated reducing the regulatory burden from states would be helpful, another respondent indicated non-loan financial support was needed, and another respondent indicated that assistance from the state for health testing and regulatory fees would be appreciated. Regarding assistance identifying new markets, one respondent would like to see a clearer way to enter into the food market, another respondent mentioned they need help identifying customers willing to buy market-ready fish, and another respondent stated they need help pivoting to other markets as their restaurant and wholesale markets are not available. One respondent stated that if they are denied traditional markets due to a government shutdown that the government should help to identify what to do with the product that is ready.

Comments regarding loan guarantees and the necessity for lending in order to survive longer than a month, and another respondent stated that being able to stretch their SBA loan to a lower monthly payment would provide support. Another comment mentioned that a short-term loan would help them, but only if this is a short-term problem. One respondent indicated that their associations should help by advocating for SBA loans and forgiveness as well as transferring technology. A respondent stated specialty crop insurance would be welcomed for mortality due to sickness from overcrowding since market-ready product cannot be moved. For the 13% of respondents who indicated that “other” assistance would be helpful, one comment was that more skilled labor, specifically veterinary technicians, is needed. One response was that feed-buying assistance would help, and another response indicated that buying USA products would increase the likelihood of survival of the farm or business. A lone response indicated that any help would be appreciated, regardless of the type of assistance.

When asked if there were existing programs for which their farm or business does not currently qualify that would be of assistance during the

pandemic, only 4% said “Yes”, with 13% saying “No”, and 83% not responding to this question.

Discussion and Conclusion

Responses by the North Central Aquaculture Region farms and businesses to the Quarter 1 survey show that the aquaculture, aquaponics, and allied businesses within the region have been severely impacted by the COVID-19 pandemic. Eighty-two percent of responding farms or businesses indicated that they had been affected by the pandemic. Seventy percent had experienced lost sales, and 73% have had orders from private companies canceled (18% had government orders canceled). While lost sales were the immediate challenge and concern for farms and businesses, other challenges related to production, financing, and other essential services that are critical to survival of the farm or business were also mentioned. Forty-one percent indicated that holding market ready product would make it less marketable in the future; with resulting consequences for the quantity of product sold (63%), and reduced prices for products (63%).

Comments provided by respondents suggest longer term consequences to production and financial positions that will likely extend beyond 2020. Forty-one percent of North Central Aquaculture Region farm and business respondents indicated that their farm or business would maybe or would not survive the next 3 months without external assistance. Longer-term effects on the region’s aquaculture, aquaponics, and allied industry should be of concern. Thirty-three percent stated they could survive 12 months without external intervention; however, another 33% will not be able to survive, and 33% might be able to survive.

Key findings from North Central Aquaculture Region and business respondents include:

- *82% have been impacted by COVID-19*
- *73% have had private orders/contracts canceled*

- *45% have or will soon have to lay off employees*
- *70% have experienced lost sales*
- *59% can survive 3 months without external intervention*

References

United States Department of Agriculture. 2019. 2018 Census of Aquaculture. National Agricultural Statistics Service, USDA, Washington, District of Columbia, USA. Accessed April 2020 at: https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Aquaculture/index.php. (last accessed, April 12th, 2020)

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2020

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VSG-20-19

Appendix

Summary of COVID-19 impacts on U.S. aquaculture, aquaponics, and allied businesses located in the USDA North Central Aquaculture Region

Quarter 1 Results

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Q4. Has your farm or business had to lay off any employees due to the coronavirus disease (COVID-19)? 7

Q4.1. Are any of the employees that your farm or business had to, or will have to, lay off due to the coronavirus disease (COVID-19) designated as "Short-Time" or "Shared-Work" employees?..... 7

Q4.2. How many employees has your farm or business had to lay off in response to the coronavirus disease (COVID-19)? 8

Q4.3. How many weeks before your farm or business will have to make a decision to lay off employees, in response to the coronavirus disease (COVID-19)? 8

Q4.4. How many employees do you estimate your farm or business will have to lay off in response to the coronavirus disease (COVID-19)? 9

Q5. Has your farm or business had any employees miss work due to the coronavirus disease (COVID-19)? 9

Q5.1. In total, approximately how many days have any employees in your farm or business missed work due to the coronavirus disease (COVID-19)?..... 10

Q6. Does your farm or business make use of H2A or H2B workers?..... 10

Q6.1. Has your farm or business been able to secure H2A and H2B workers during the coronavirus disease (COVID-19) pandemic?..... 11

Q6.2. Is your farm or business currently at risk of losing H2A or H2B workers due to the coronavirus disease (COVID-19) pandemic?..... 11

Q7. Has your farm or business experienced any of the following as a result of the coronavirus disease (COVID-19) in 2020? Please select all that apply..... 12

Q7.1. Has your farm or business experienced lost sales to international or export markets (outside of the United States), as a result of the coronavirus disease (COVID-19)?..... 12

Q7.2. If your farm or business has experienced lost sales as a result of the coronavirus disease (COVID-19), please estimate the value of lost sales? 13

Q7.3. If your farm or business has experienced production challenges (not related to labor) as a result of the coronavirus disease (COVID-19), can those challenges be specified? Please select all that apply. 14

Q7.6. If your farm or business has experienced increased demand for products as a result of the coronavirus disease (COVID-19), please estimate the value of those effects on sales? 15

Q8. Does your farm or business expect to experience any of the following as a result of the coronavirus disease (COVID-19) in 2020? Please select all that apply. 16

Q8.1. Does your farm or business expect to experience lost sales to international or export markets (outside of the United States), as a result of the coronavirus disease (COVID-19)? 16

Q8.2. Does your farm or business expect to experience lost sales as a result of the coronavirus disease (COVID-19), please estimate the value of lost sales? 17

Q8.3. Does your farm or business expect to experience production challenges (not related to labor) as a result of the coronavirus disease (COVID-19), can those challenges be specified? Please select all that apply. 18

Q8.6. Does your farm or business expect to experience increased demand for products as a result of the coronavirus disease (COVID-19), please estimate the value of those effects on sales? 19

Q9. Without external intervention (for example, governmental assistance), will your farm or business survive in the next 3 (three) months? 20

Q10. Without external intervention (for example, governmental assistance), will your farm or business survive in the next 6 (six) months?..... 20

Q11. Without external intervention (for example, governmental assistance), will your farm or business survive in the next 12 (twelve) months?..... 21

Q12. How many months can your farm or business survive without sales, as a result of the coronavirus disease (COVID-19), before suffering longer term cash flow effects?..... 21

Q13. Will holding market ready product, as a result of the coronavirus disease (COVID-19), make it less marketable?..... 22

Q13.1. Will holding market ready product, as a result of the coronavirus disease (COVID-19), result in: Please select all that apply. 22

Q14. How many months can your farm or business hold market ready product, as a result of the coronavirus disease (COVID-19), before it becomes an issue for new crops or planting?..... 23

Q16. Are there specific steps or types of assistance that would increase the likelihood for your farm or business to survive? Please select all that apply. 23

Q17. Would assistance with any of the following be helpful to your farm or business right now? Please select all that apply. 24

Q18. Are there any existing programs that your aquaculture, aquaponics, or allied business does not currently qualify for, that would increase the likelihood of survival of your farm or business?..... 24

Q19. What is the primary product that your farm or business produces? 25

Q19.1. Please indicate which is the major species of foodfish raised by your farm or business: 26

Q20. How does your farm or business primarily market or sell aquaculture / aquaponics products? 27

Q21. Please indicate the scale of your farm or business by annual sales volume before the effects of coronavirus disease (COVID-19): 28

Q22. In which USDA defined Aquaculture Region is your farm or business located? 29

Overview

On March 23rd, 2020 Virginia Tech Seafood AREC and The Ohio State University Extension initiated an online survey of the U.S. aquaculture, aquaponics, and allied businesses. This survey was designed to capture and quantify the effects of the coronavirus disease (COVID-19) on the aquaculture, aquaponics, and allied industries. The survey closed April 10th, 2020 at 11:59 pm. The survey will be distributed at the conclusion of every quarter for 2020, to attempt to capture the evolving impacts of COVID-19 over time.

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The USDA North Central Aquaculture Region is comprised of the following states:

- Illinois
- Indiana
- Iowa
- Kansas
- Michigan
- Minnesota
- Missouri
- Nebraska
- North Dakota
- Ohio
- South Dakota
- Wisconsin

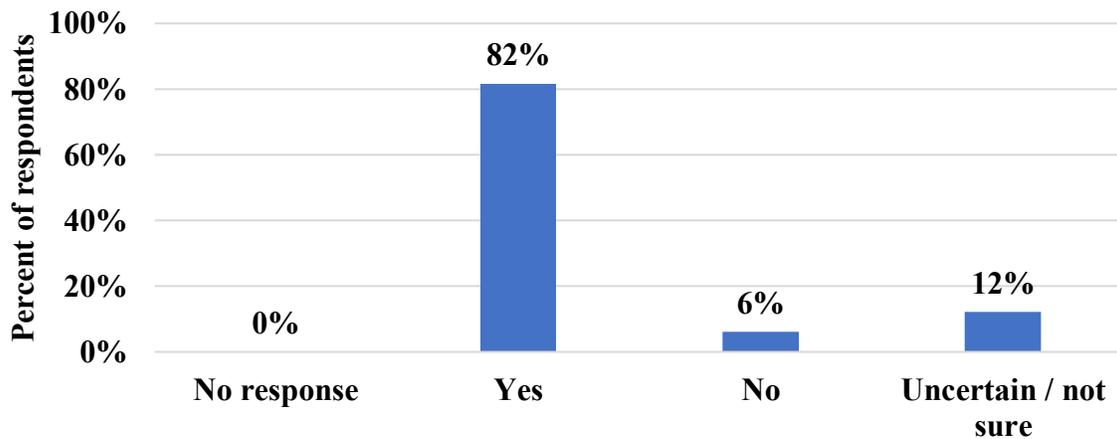
Survey results for each question

The number of respondents to each question presented in this summary is denoted as (n =).

Q1. Has your farm or business been impacted by the coronavirus disease (COVID-19)?

(n = 49)

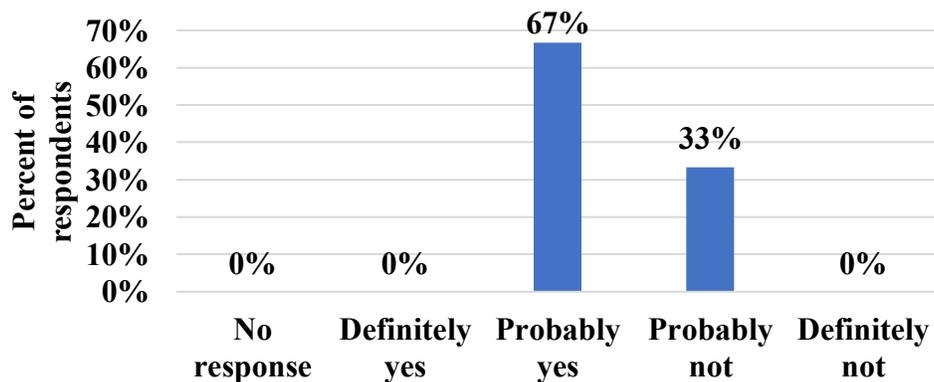
- No response : 0%
- Yes : 82%
- No : 6%
- Uncertain / Not Sure : 12%



Q1.1. Does your farm or business expect to be affected by the coronavirus disease (COVID-19) in 2020?

(n = 9)

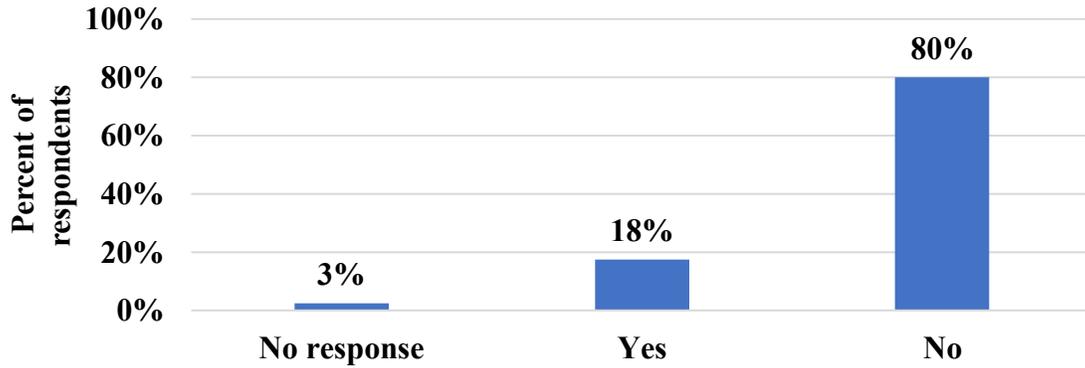
- No response : 0%
- Definitely yes : 0%
- Probably yes : 67%
- Probably not : 33%
- Definitely not : 0%



Q2. Has your farm or business had government (state or federal) contracts canceled for 2020 because of the coronavirus disease (COVID-19)?

(n = 40)

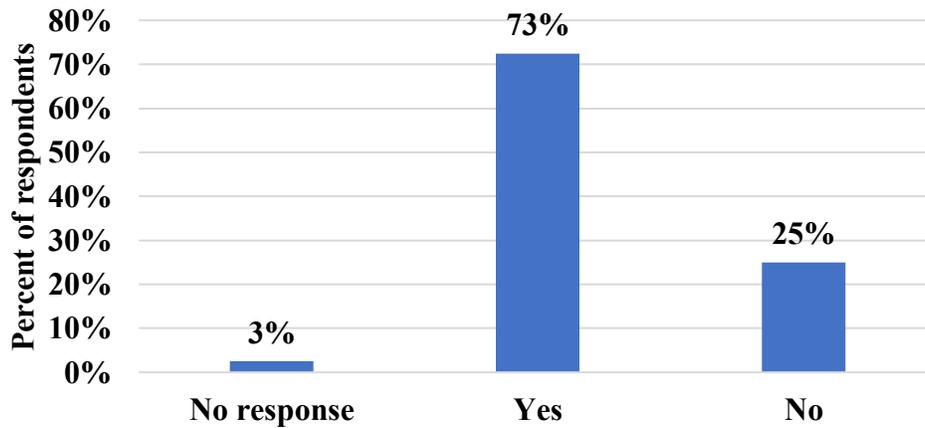
- No response : 3%
- Yes : 18%
- No : 80%



Q3. Has your farm or business had private contracts / orders canceled for 2020 because of the coronavirus disease (COVID-19)?

(n = 40)

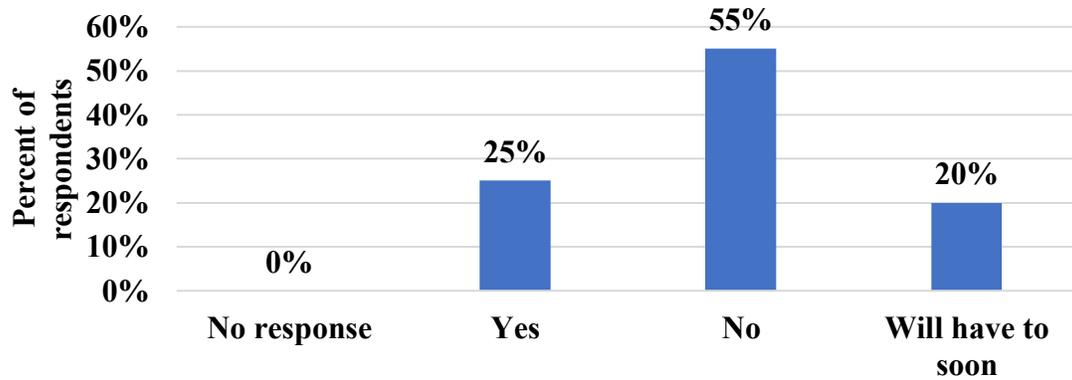
- No response : 3%
- Yes : 73%
- No : 25%



Q4. Has your farm or business had to lay off any employees due to the coronavirus disease (COVID-19)?

(n = 40)

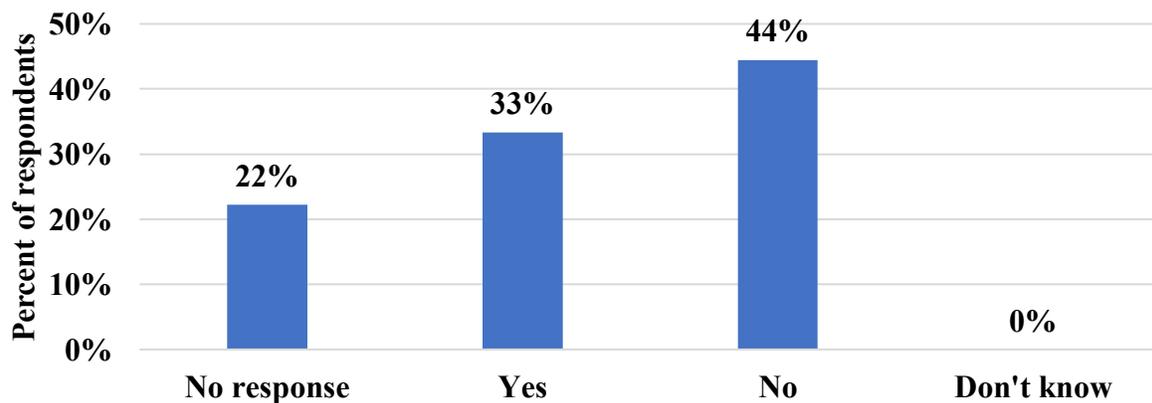
- No response : 0%
- Yes : 25%
- No : 55%
- Will have to soon : 20%



Q4.1. Are any of the employees that your farm or business had to, or will have to, lay off due to the coronavirus disease (COVID-19) designated as "Short-Time" or "Shared-Work" employees?

(n = 18)

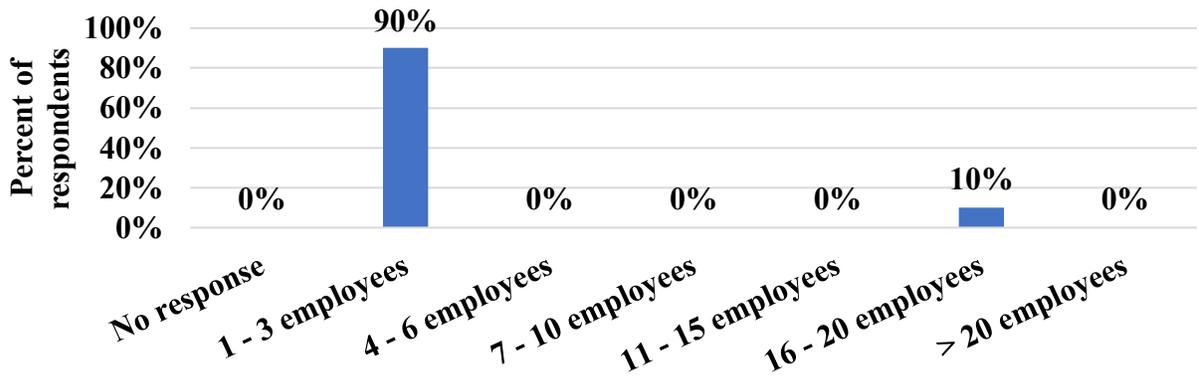
- No response : 22%
- Yes : 33%
- No : 44%
- Don't know : 0%



Q4.2. How many employees has your farm or business had to lay off in response to the coronavirus disease (COVID-19)?

(n = 10)

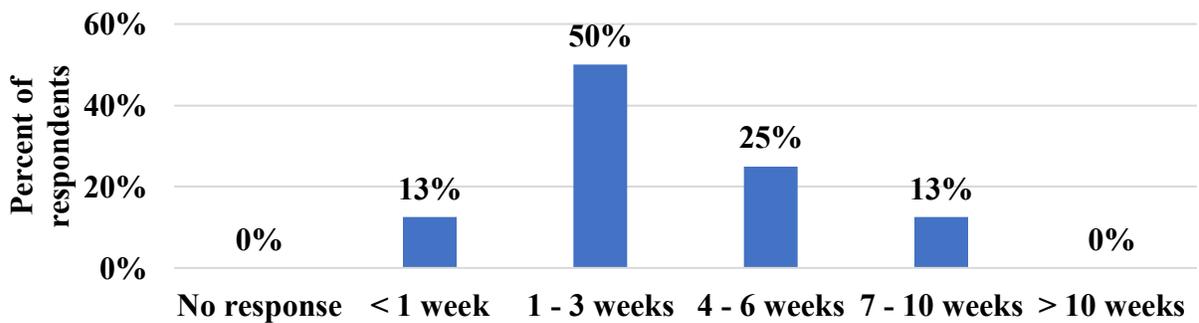
- No response : 0%
- 1 – 3 employees : 90%
- 4 – 6 employees : 0%
- 7 – 10 employees : 0%
- 11 – 15 employees : 0%
- 16 – 20 employees : 10%
- More than 20 employees : 0%



Q4.3. How many weeks before your farm or business will have to make a decision to lay off employees, in response to the coronavirus disease (COVID-19)?

(n = 8)

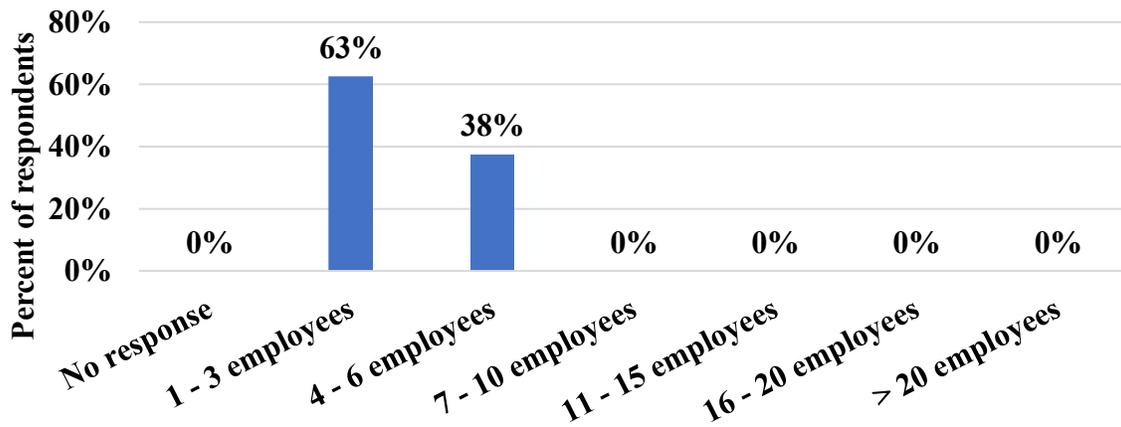
- No response : 0%
- Less than 1 week : 13%
- 1 – 3 weeks : 50%
- 4 – 6 weeks : 25%
- 7 – 10 weeks : 13%
- More than 10 weeks : 0%



Q4.4. How many employees do you estimate your farm or business will have to lay off in response to the coronavirus disease (COVID-19)?

(n = 8)

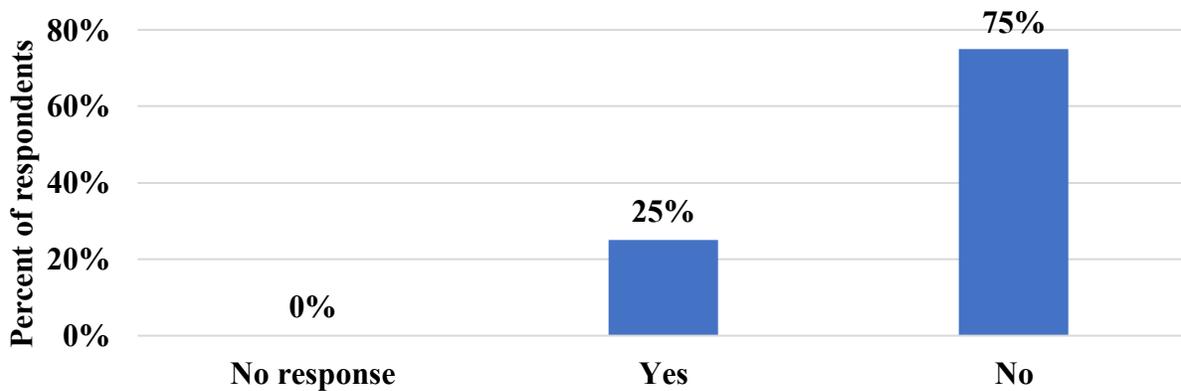
- No response : 0%
- 1 – 3 employees : 63%
- 4 – 6 employees : 38%
- 7 – 10 employees : 0%
- 11 – 15 employees : 0%
- 16 – 20 employees : 0%
- More than 20 employees : 0%



Q5. Has your farm or business had any employees miss work due to the coronavirus disease (COVID-19)?

(n = 40)

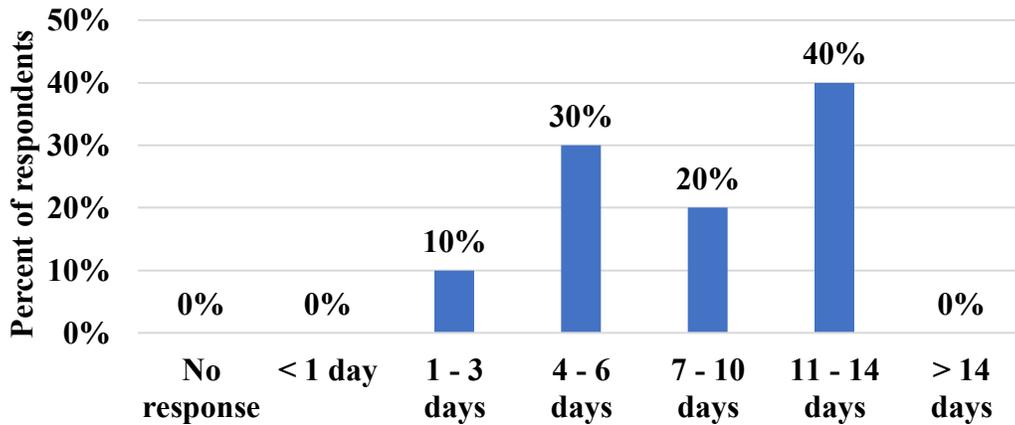
- No response : 0%
- Yes : 25%
- No : 75%



Q5.1. In total, approximately how many days have any employees in your farm or business missed work due to the coronavirus disease (COVID-19)?

(n = 10)

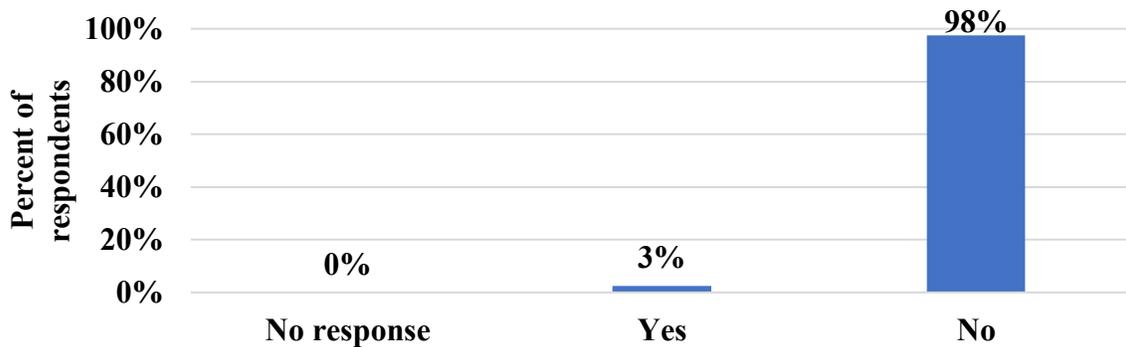
- No response : 0%
- Less than a day : 0%
- 1 -3 days : 10%
- 4 – 6 days : 30%
- 7 – 10 days : 20%
- 11 – 14 days : 40%
- More than 14 days : 0%



Q6. Does your farm or business make use of H2A or H2B workers?

(n = 40)

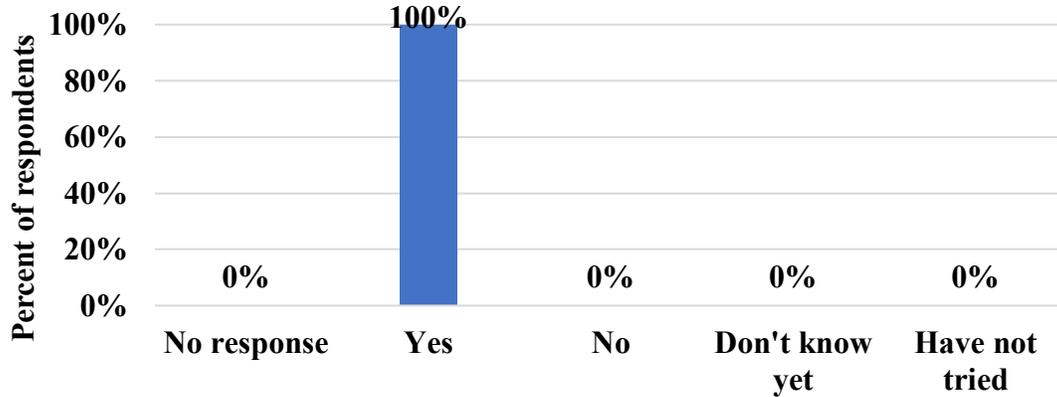
- No response : 0%
- Yes : 3%
- No : 98%



Q6.1. Has your farm or business been able to secure H2A and H2B workers during the coronavirus disease (COVID-19) pandemic?

(n = 1)

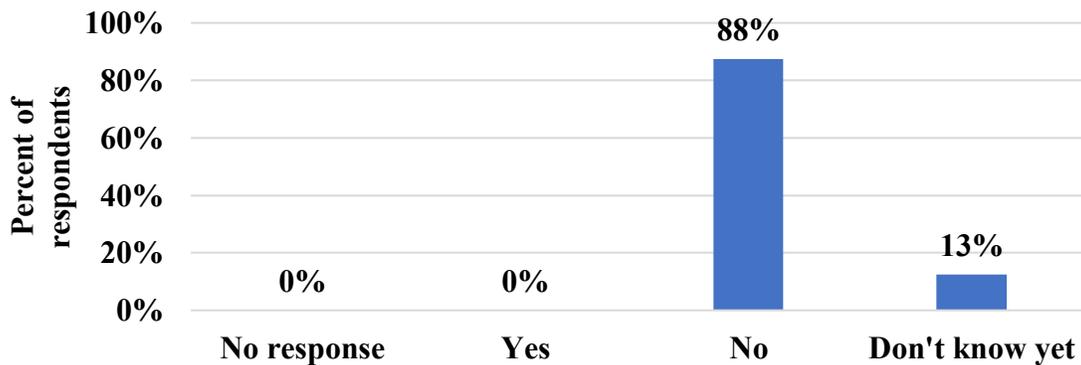
- No response : 0%
- Yes : 100%
- No : 0%
- Don't know yet : 0%
- Have not tried : 0%



Q6.2. Is your farm or business currently at risk of losing H2A or H2B workers due to the coronavirus disease (COVID-19) pandemic?

(n = 40)

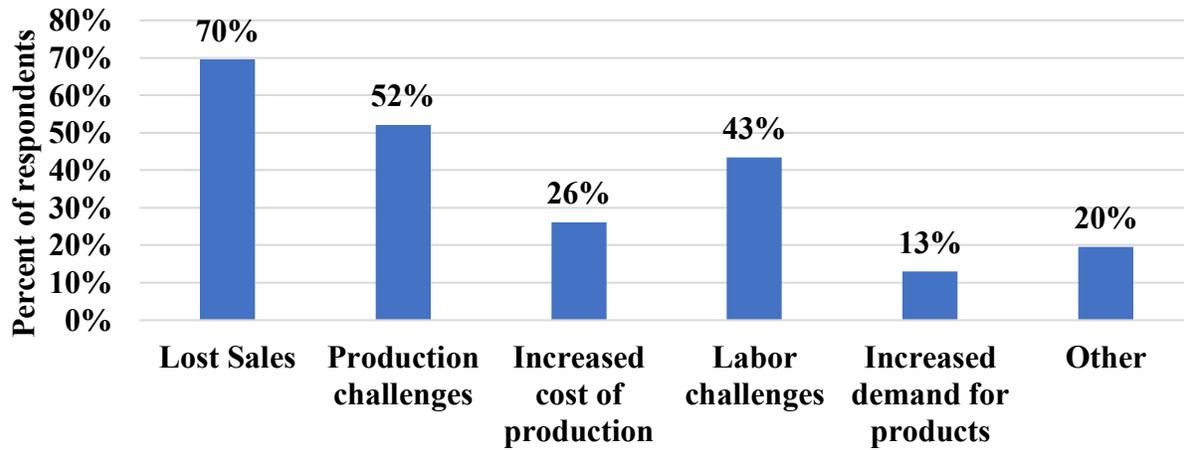
- No response : 0%
- Yes : 0%
- No : 88%
- Don't know yet : 13%



Q7. Has your farm or business experienced any of the following as a result of the coronavirus disease (COVID-19) in 2020? Please select all that apply.

(n = 46)

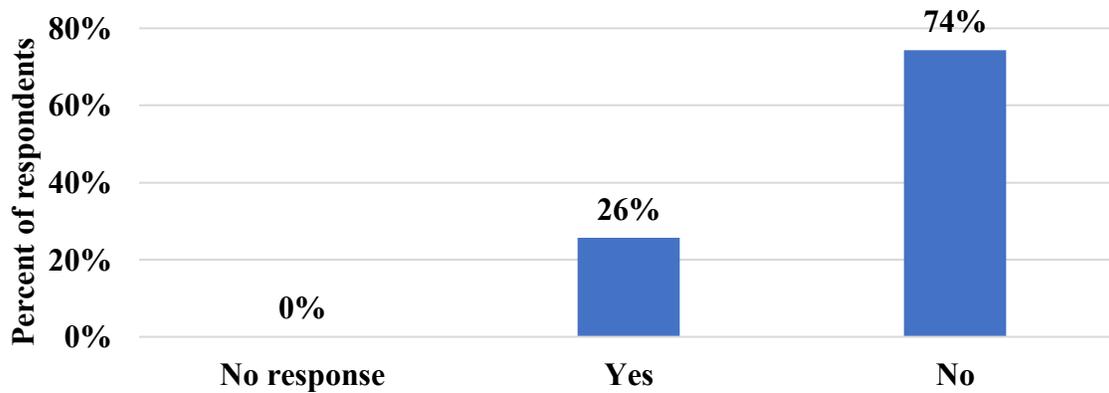
- Lost sales : 70%
- Production challenges (not related to labor) : 52%
- Increased cost of production : 26%
- Labor challenges : 43%
- Increased demand for products : 13%
- Other : 20%



Q7.1. Has your farm or business experienced lost sales to international or export markets (outside of the United States), as a result of the coronavirus disease (COVID-19)?

(n = 35)

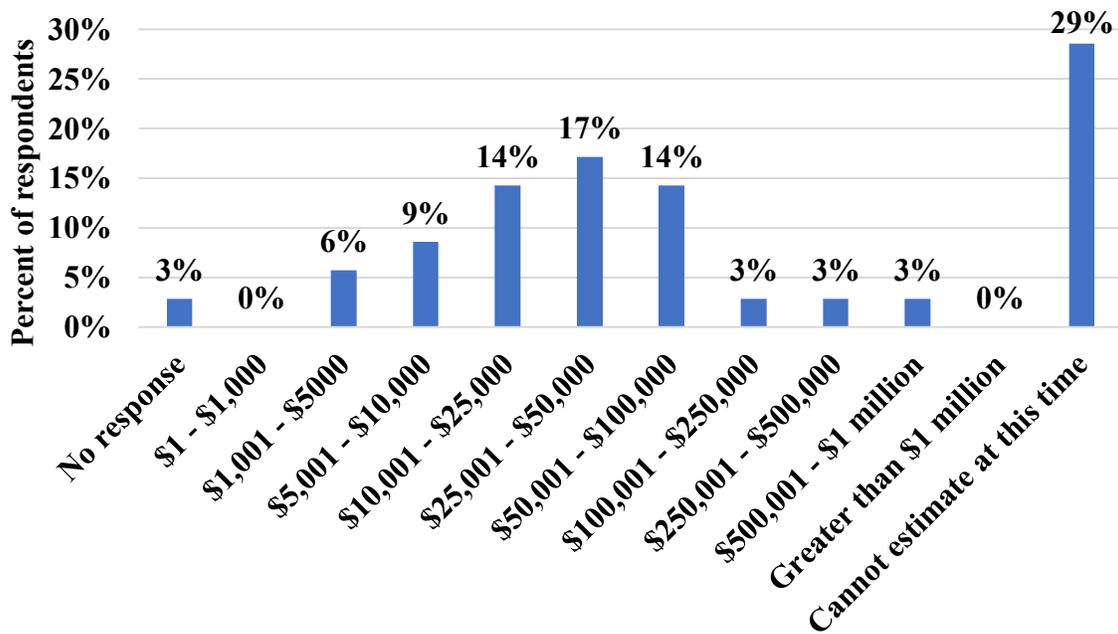
- No response : 0%
- Yes : 26%
- No : 74%



Q7.2. If your farm or business has experienced lost sales as a result of the coronavirus disease (COVID-19), please estimate the value of lost sales?

(n = 35)

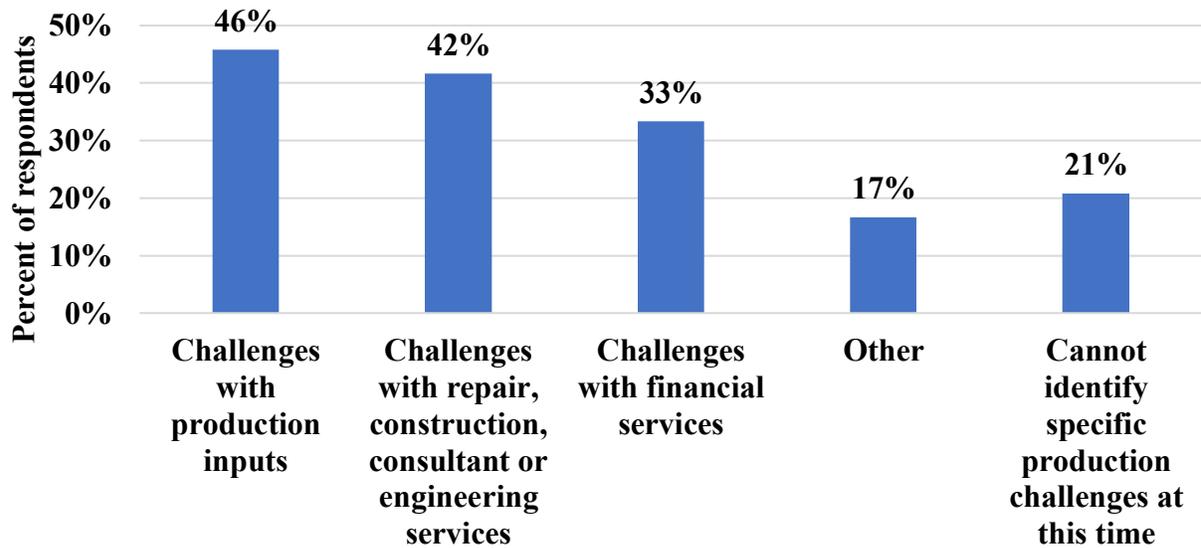
- No response : 3%
- \$1 - \$1,000 : 0%
- \$1,001 - \$5,000 : 6%
- \$5,001 - \$10,000 : 9%
- \$10,001 - \$25,000 : 14%
- \$25,001 - \$50,000 : 17%
- \$50,001 - \$100,000 : 14%
- \$100,001 - \$250,000 : 3%
- \$250,001 - \$500,000 : 3%
- \$500,001 - \$ 1million : 3%
- Greater than \$1 million : 0%
- Cannot estimate at this time : 29%



Q7.3. If your farm or business has experienced production challenges (not related to labor) as a result of the coronavirus disease (COVID-19), can those challenges be specified? Please select all that apply.

(n = 24)

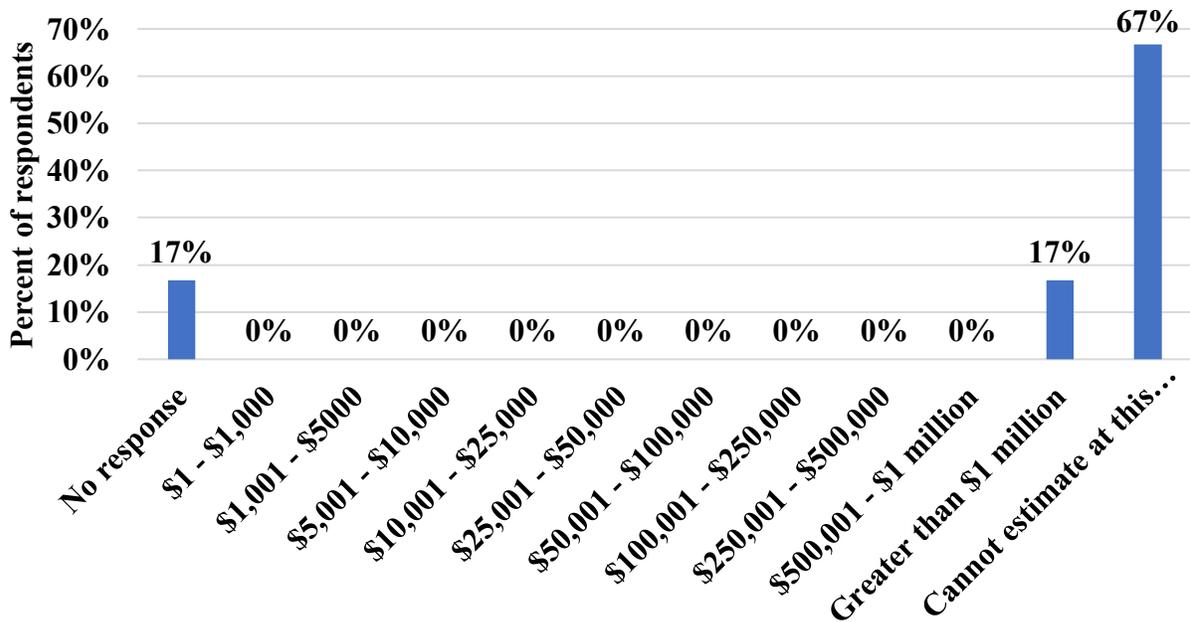
- Challenges with production inputs (feed, chemicals, therapeutants, etc.) : 46%
- Challenges with repair, construction, consultant or engineering services : 42%
- Challenges with financial services (operating loans, leases, etc.) : 33%
- Other : 17%
- Cannot identify specific production challenges at this time : 21%



Q7.6. If your farm or business has experienced increased demand for products as a result of the coronavirus disease (COVID-19), please estimate the value of those effects on sales?

(n = 6)

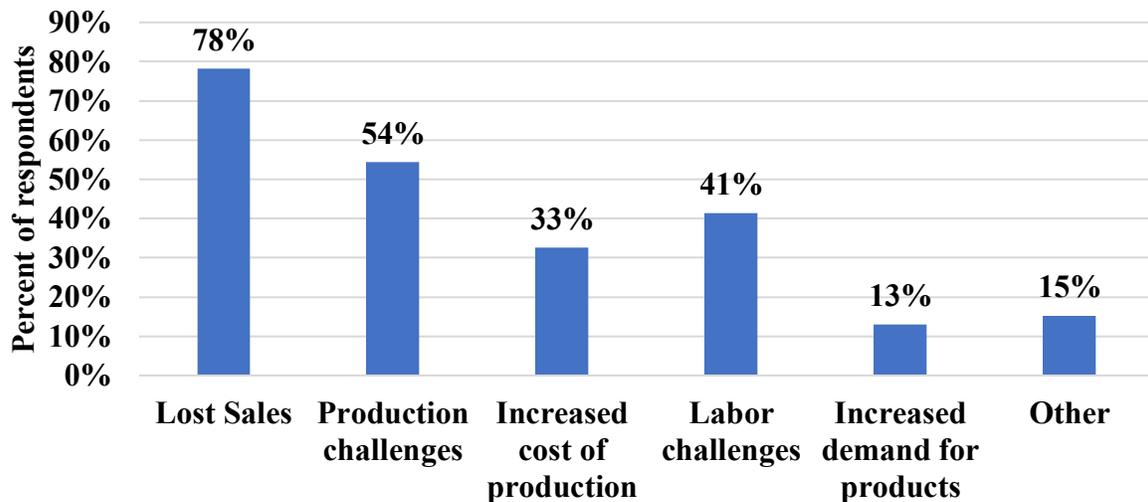
- No response : 17%
- \$1 - \$1,000 : 0%
- \$1,001 - \$5,000 : 0%
- \$5,001 - \$10,000 : 0%
- \$10,001 - \$25,000 : 0%
- \$25,001 - \$50,000 : 0%
- \$50,001 - \$100,000 : 0%
- \$100,001 - \$250,000 : 0%
- \$250,001 - \$500,000 : 0%
- \$500,001 - \$ 1million : 0%
- Greater than \$1 million : 17%
- Cannot estimate at this time : 67%



Q8. Does your farm or business expect to experience any of the following as a result of the coronavirus disease (COVID-19) in 2020? Please select all that apply.

(n = 46)

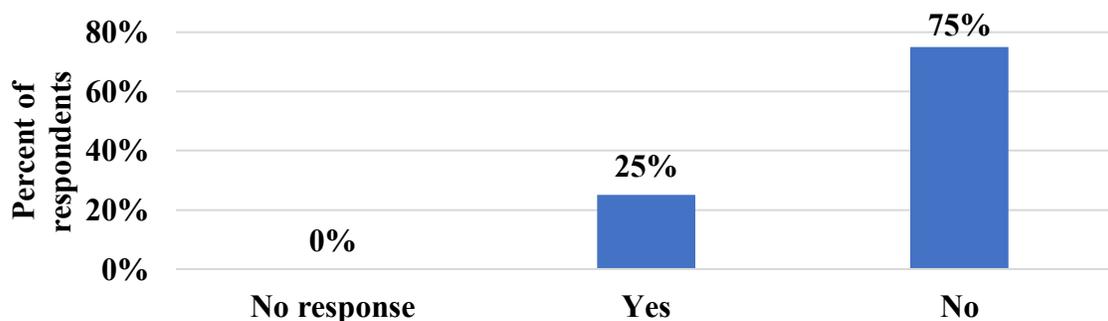
- Lost sales : 78%
- Production challenges (not related to labor) : 54%
- Increased cost of production : 33%
- Labor challenges : 41%
- Increased demand for products : 13%
- Other : 15%



Q8.1. Does your farm or business expect to experience lost sales to international or export markets (outside of the United States), as a result of the coronavirus disease (COVID-19)?

(n = 36)

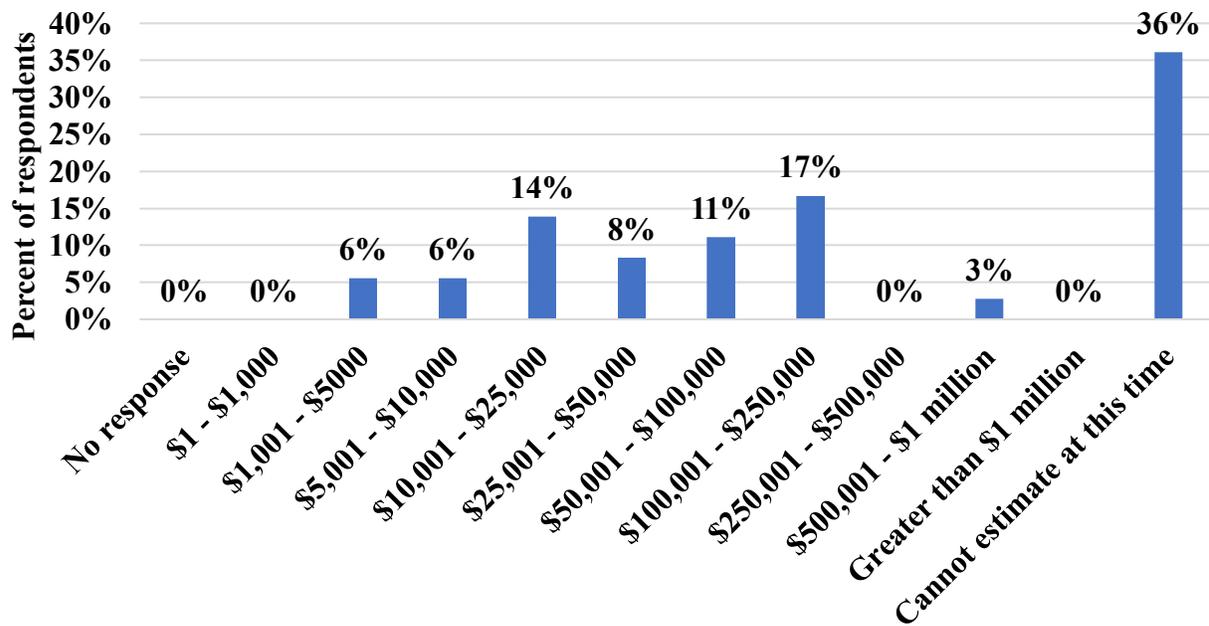
- No response : 0%
- Yes : 25%
- No : 75%



Q8.2. Does your farm or business expect to experience lost sales as a result of the coronavirus disease (COVID-19), please estimate the value of lost sales?

(n = 36)

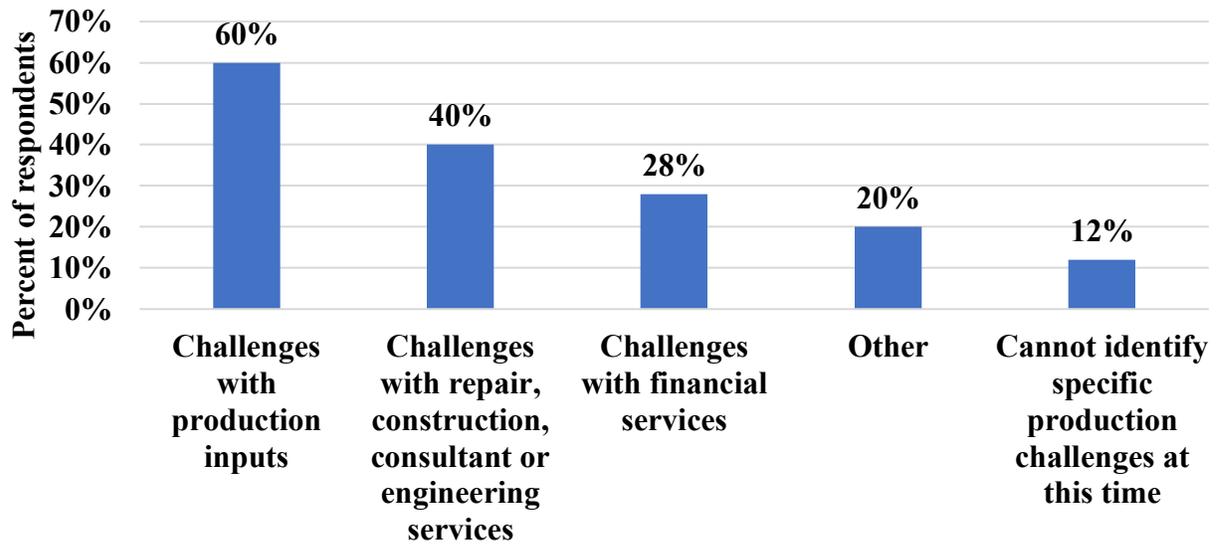
- No response : 0%
- \$1 - \$1,000 : 0%
- \$1,001 - \$5,000 : 6%
- \$5,001 - \$10,000 : 6%
- \$10,001 - \$25,000 : 14%
- \$25,001 - \$50,000 : 8%
- \$50,001 - \$100,000 : 11%
- \$100,001 - \$250,000 : 17%
- \$250,001 - \$500,000 : 0%
- \$500,001 - \$ 1million : 3%
- Greater than \$1 million : 0%
- Cannot estimate at this time : 36%



Q8.3. Does your farm or business expect to experience production challenges (not related to labor) as a result of the coronavirus disease (COVID-19), can those challenges be specified? Please select all that apply.

(n = 25)

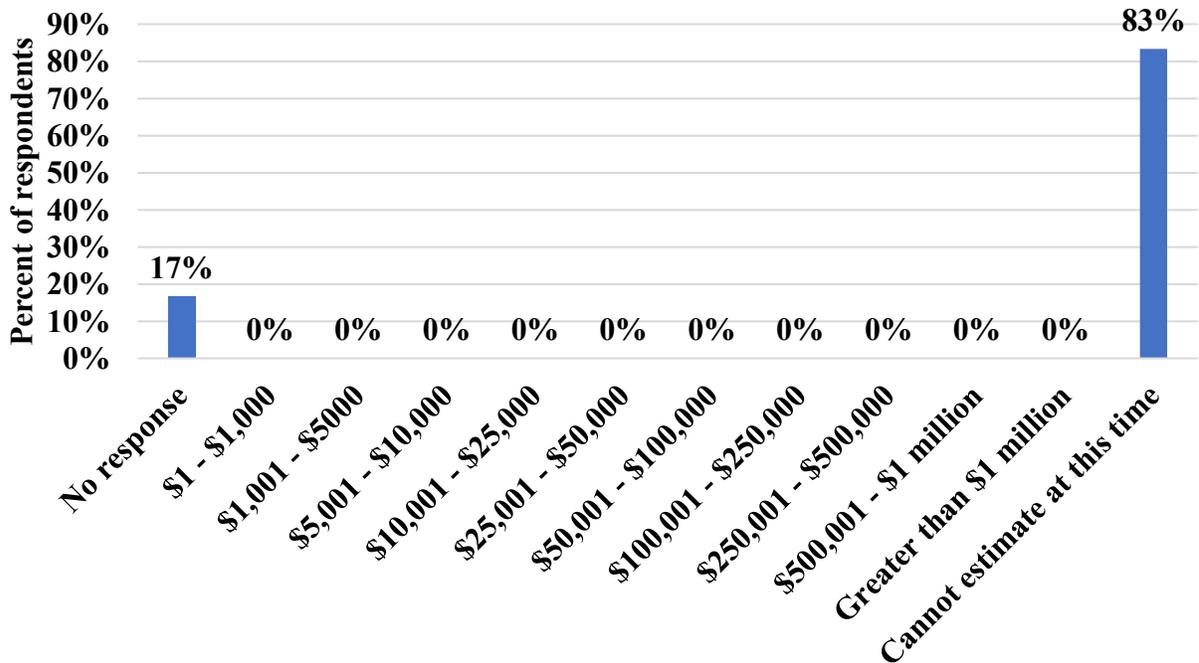
- Challenges with production inputs (feed, chemicals, therapeutants, etc.) : 60%
- Challenges with repair, construction, consultant or engineering services : 40%
- Challenges with financial services (operating loans, leases, etc.) : 28%
- Other : 20%
- Cannot identify specific production challenges at this time : 12%



Q8.6. Does your farm or business expect to experience increased demand for products as a result of the coronavirus disease (COVID-19), please estimate the value of those effects on sales?

(n = 6)

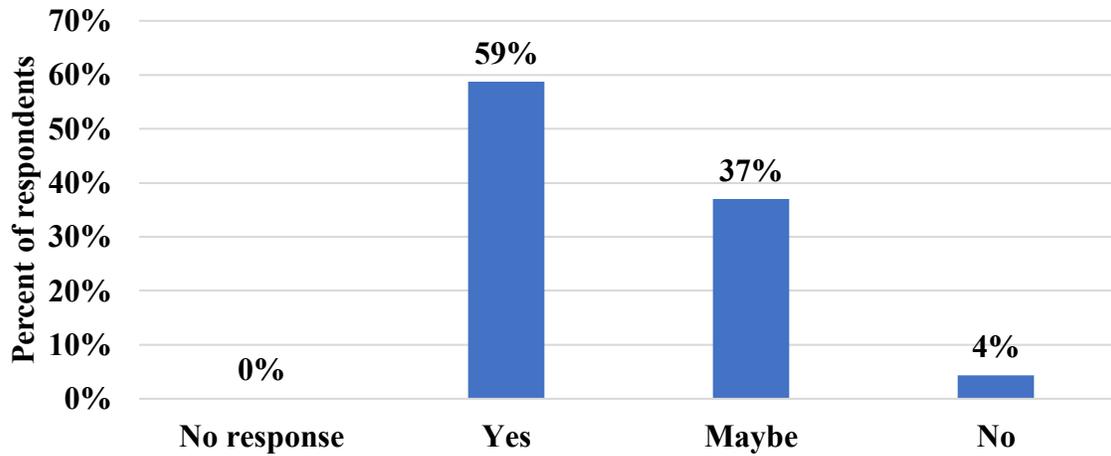
- No response : 17%
- \$1 - \$1,000 : 0%
- \$1,001 - \$5,000 : 0%
- \$5,001 - \$10,000 : 0%
- \$10,001 - \$25,000 : 0%
- \$25,001 - \$50,000 : 0%
- \$50,001 - \$100,000 : 0%
- \$100,001 - \$250,000 : 0%
- \$250,001 - \$500,000 : 0%
- \$500,001 - \$ 1million : 0%
- Greater than \$1 million : 0%
- Cannot estimate at this time : 83%



Q9. Without external intervention (for example, governmental assistance), will your farm or business survive in the next 3 (three) months?

(n = 46)

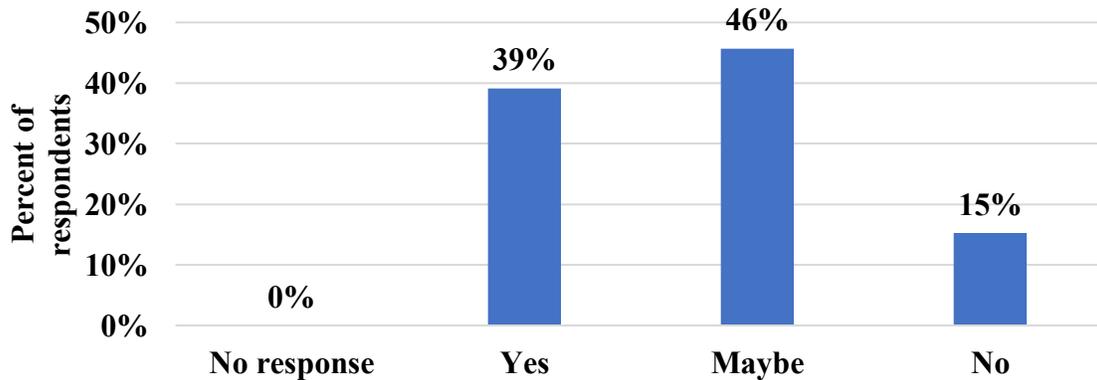
- No response : 0%
- Yes : 59%
- Maybe : 37%
- No : 4%



Q10. Without external intervention (for example, governmental assistance), will your farm or business survive in the next 6 (six) months?

(n = 46)

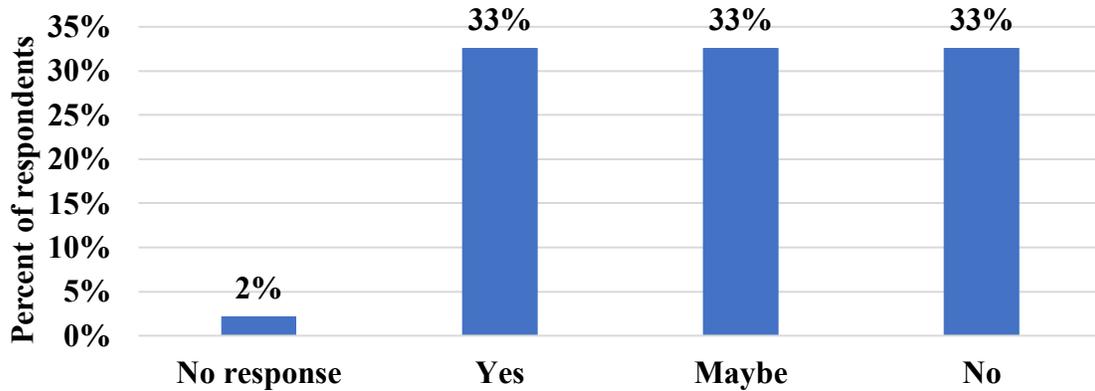
- No response : 0%
- Yes : 39%
- Maybe : 46%
- No : 15%



Q11. Without external intervention (for example, governmental assistance), will your farm or business survive in the next 12 (twelve) months?

(n = 46)

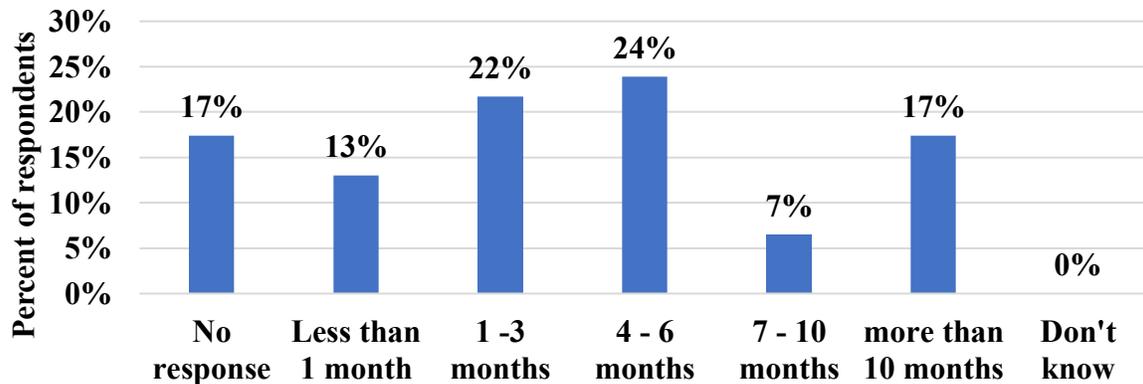
- No response : 2%
- Yes : 33%
- Maybe : 33%
- No : 33%



Q12. How many months can your farm or business survive without sales, as a result of the coronavirus disease (COVID-19), before suffering longer term cash flow effects?

(n = 46)

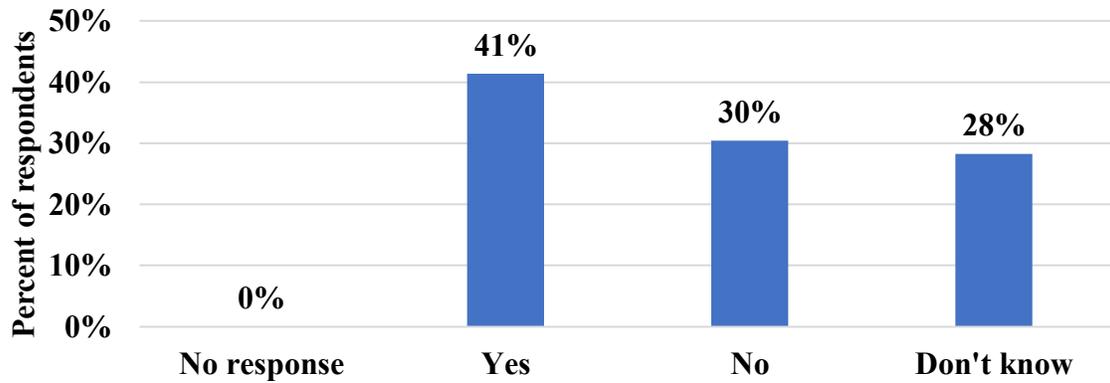
- No response : 17%
- Less than 1 month : 13%
- 1 – 3 months : 22%
- 4 – 6 months : 24%
- 7 – 10 months : 7%
- More than 10 months : 17%
- Do not know : 0%



Q13. Will holding market ready product, as a result of the coronavirus disease (COVID-19), make it less marketable?

(n = 46)

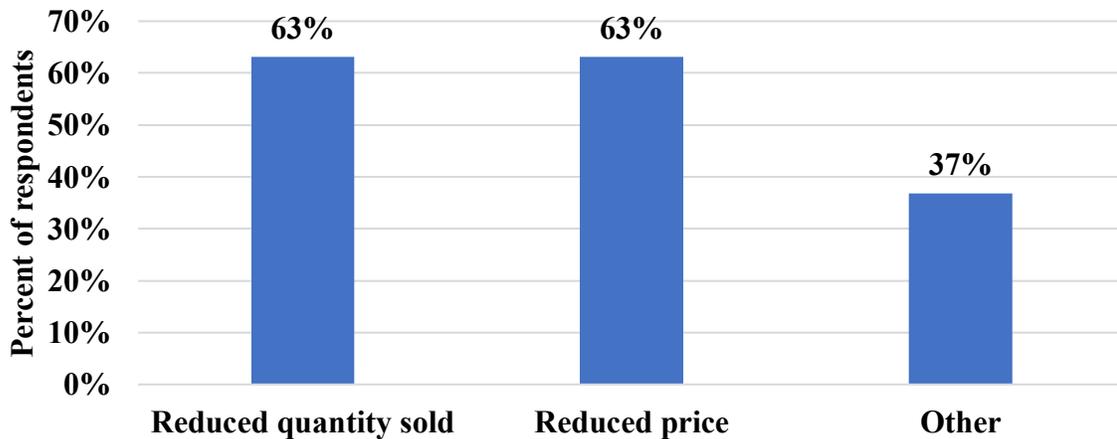
- No response : 0%
- Yes : 41%
- No : 30%
- Don't know : 28%



Q13.1. Will holding market ready product, as a result of the coronavirus disease (COVID-19), result in: Please select all that apply.

(n = 19)

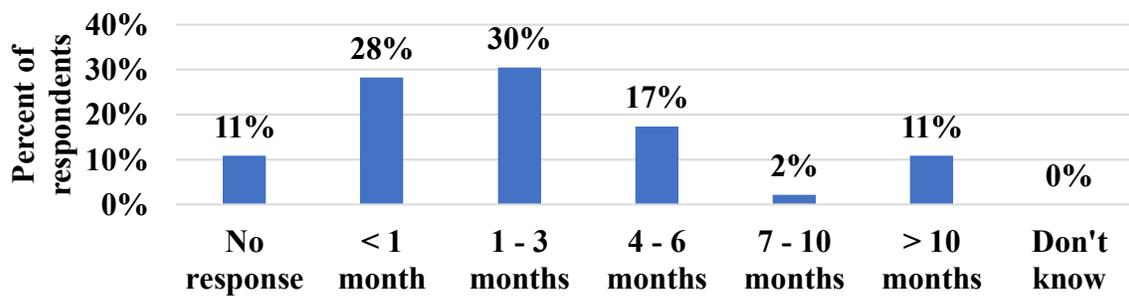
- Reduced quantity sold : 63%
- Reduced price : 63%
- Other : 37%



Q14. How many months can your farm or business hold market ready product, as a result of the coronavirus disease (COVID-19), before it becomes an issue for new crops or planting?

(n = 46)

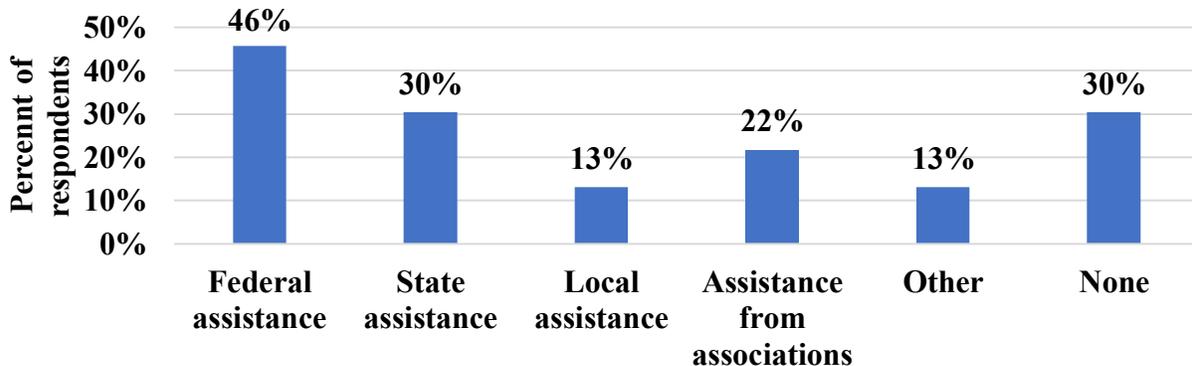
- No response : 11%
- Less than 1 month : 28%
- 1 – 3 months : 30%
- 4 – 6 months : 17%
- 7 – 10 months : 2%
- More than 10 months : 11%
- Don't know : 0%



Q16. Are there specific steps or types of assistance that would increase the likelihood for your farm or business to survive? Please select all that apply.

(n = 46)

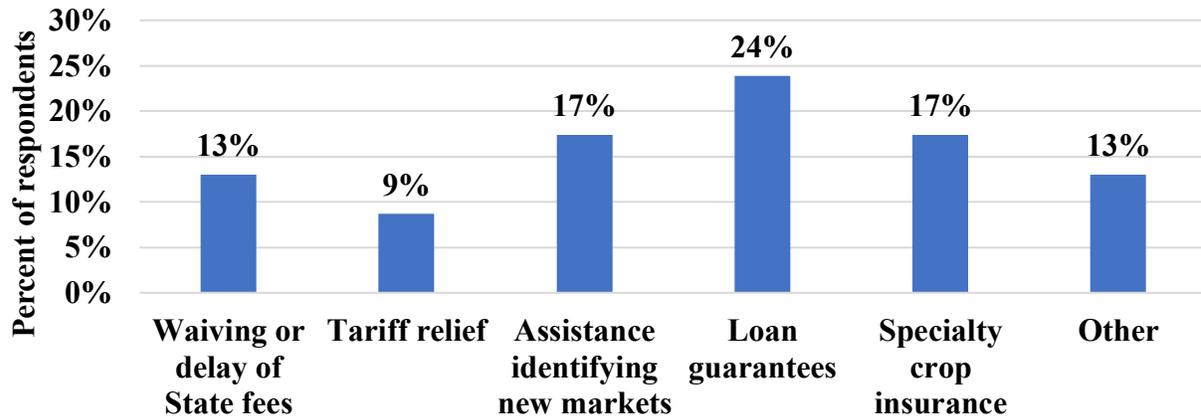
- Federal assistance : 46%
- State assistance : 30%
- Local assistance : 13%
- Assistance from associations : 22%
- Other : 13%
- None : 30%



Q17. Would assistance with any of the following be helpful to your farm or business right now? Please select all that apply.

(n = 46)

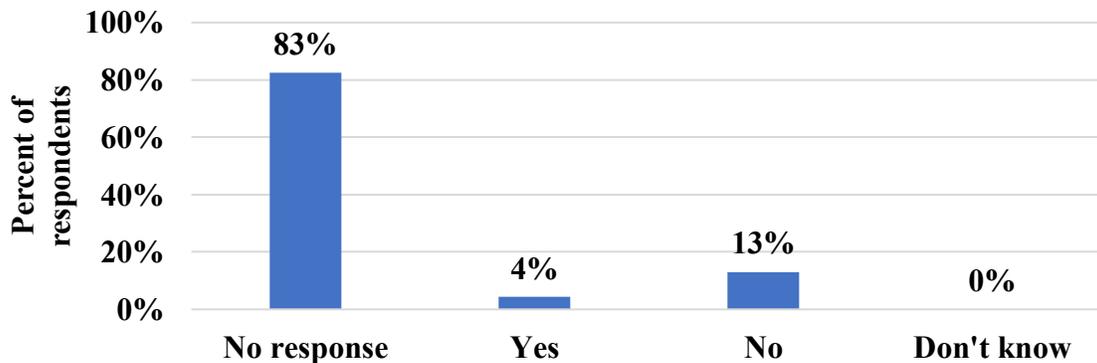
- Waiving or delay of state fees : 13%
- Tariff relief : 9%
- Assistance identifying new markets : 17%
- Loan guarantees : 24%
- Specialty Crop Insurance : 17%
- Other : 13%



Q18. Are there any existing programs that your aquaculture, aquaponics, or allied business does not currently qualify for, that would increase the likelihood of survival of your farm or business?

(n = 46)

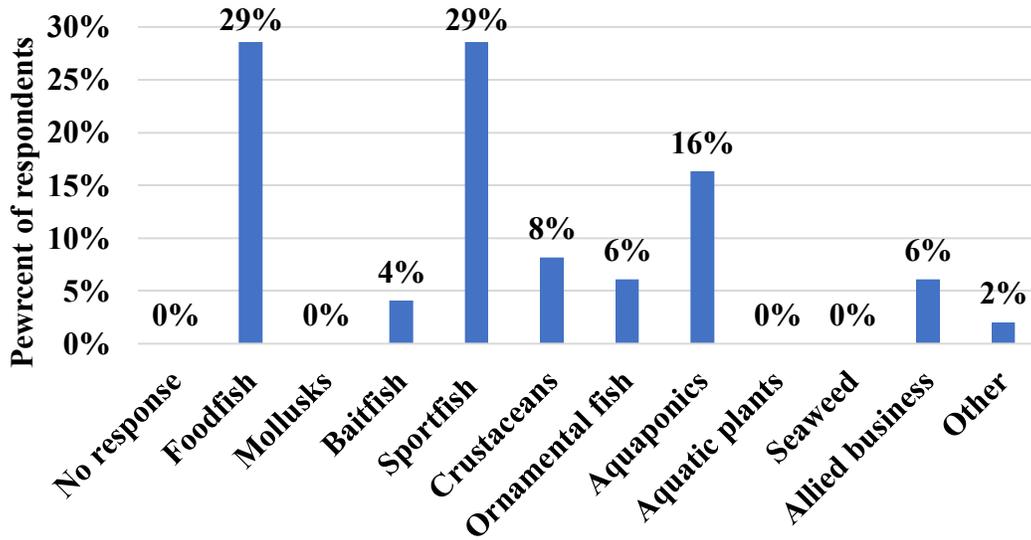
- No response : 83%
- Yes : 4%
- No : 13%
- Don't know : 0%



Q19. What is the primary product that your farm or business produces?

(n = 49)

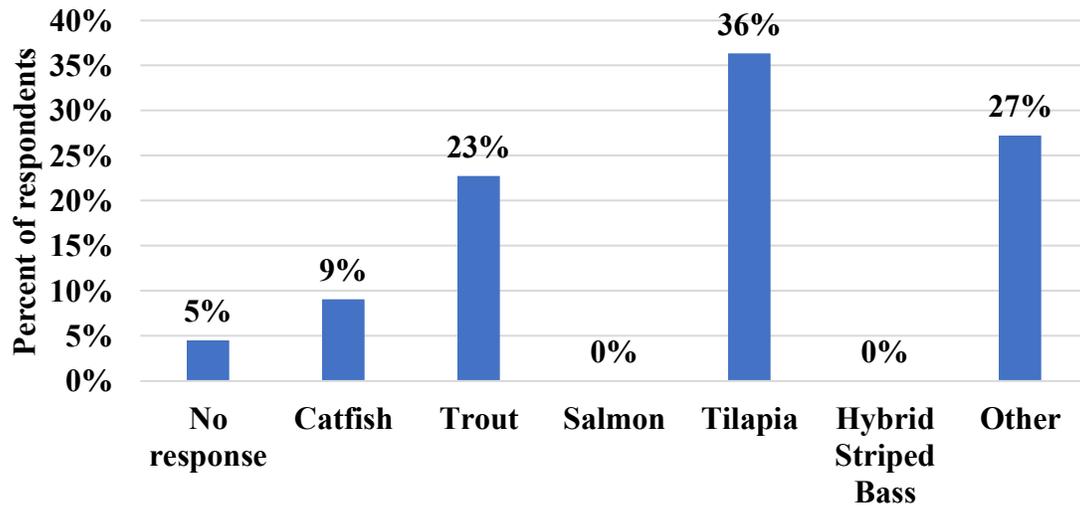
- No response : 0%
- Foodfish : 29%
- Mollusks (oysters, clams, mussels, etc.) : 0%
- Baitfish : 4%
- Sportfish / recreational fish, including trout : 29%
- Crustaceans (crawfish, soft crab, shrimp, etc.) : 8%
- Ornamental fish (aquarium or water garden) : 6%
- Aquaponics : 16%
- Aquatic plants : 0%
- Seaweed : 0%
- Allied business (equipment, chemicals, etc.) : 6%
- Other : 2%



Q19.1. Please indicate which is the major species of foodfish raised by your farm or business:

(n = 22)

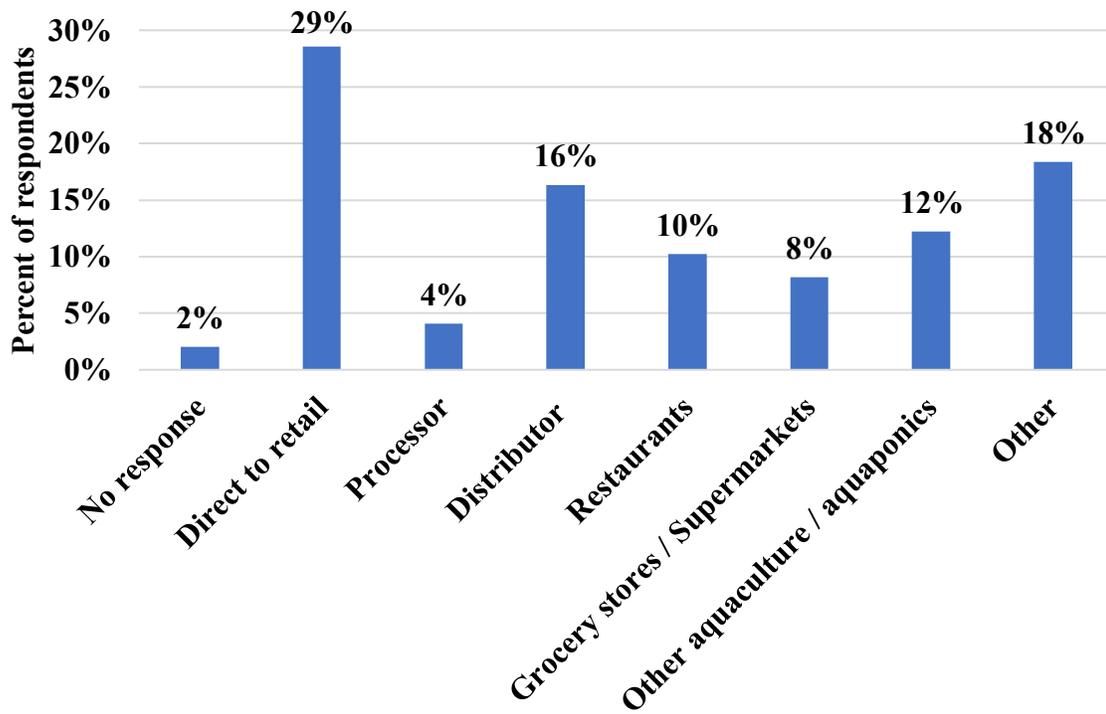
- No response : 5%
- Catfish : 9%
- Trout : 23%
- Salmon : 0%
- Tilapia : 36%
- Hybrid Striped Bass : 0%
- Other : 27%



Q20. How does your farm or business primarily market or sell aquaculture / aquaponics products?

(n = 49)

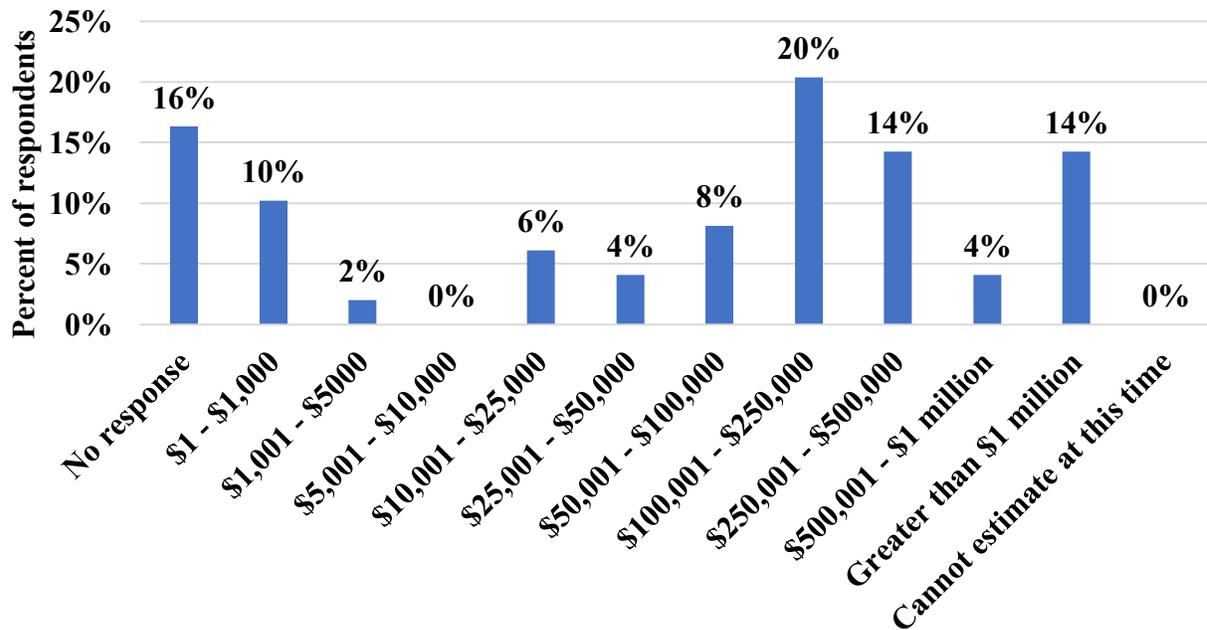
- No response : 2%
- Direct to retail (direct to consumers) : 29%
- Processor : 4%
- Distributor : 16%
- Restaurants : 10%
- Grocery Stores / Supermarkets : 8%
- Other aquaculture/aquaponics farms or businesses : 12%
- Other : 18%



Q21. Please indicate the scale of your farm or business by annual sales volume before the effects of coronavirus disease (COVID-19):

(n = 49)

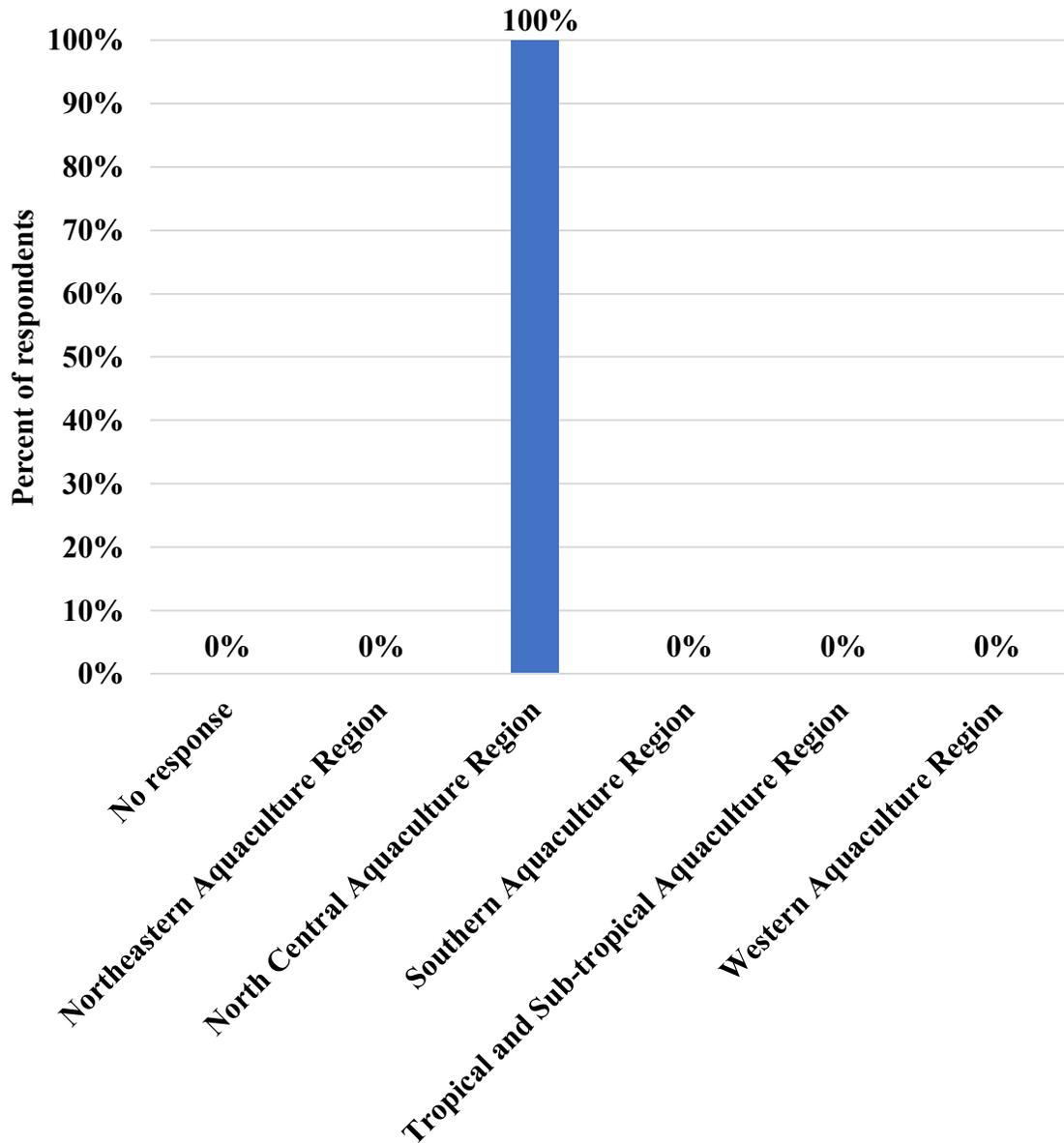
- No response : 16%
- \$1 - \$1,000 : 10%
- \$1,001 - \$5,000 : 2%
- \$5,001 - \$10,000 : 0%
- \$10,001 - \$25,000 : 6%
- \$25,001 - \$50,000 : 4%
- \$50,001 - \$100,000 : 8%
- \$100,001 - \$250,000 : 20%
- \$250,001 - \$500,000 : 14%
- \$500,001 - \$1 million : 4%
- Greater than \$1 million : 14%
- Cannot estimate at this time : 0%



Q22. In which USDA defined Aquaculture Region is your farm or business located?

(n = 49)

- No response : 0%
- Northeastern Aquaculture Region : 0%
- North Central Aquaculture Region : 100%
- Southern Aquaculture Region : 0%
- Tropical and Sub-Tropical Aquaculture Region : 0%
- Western Aquaculture Region : 0%



References

USDA (United States Department of Agriculture). 2019. 2018 Census of Aquaculture. National Agricultural Statistics Service, USDA, Washington, District of Columbia, USA.

Accessed April 2020 at:

https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Aquaculture/index.php.

Acknowledgements

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