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

March 23, 2020 to April 10, 2020

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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 **Tropical and Subtropical Aquaculture Region** respondents.

The USDA Tropical and Subtropical Aquaculture Region is comprised of the following states and U.S. allied Pacific islands: American Samoa, Commonwealth of the North Mariana Islands, Federated States of Micronesia, Guam, Hawaii, Palau, and the Republic of the Marshall Islands.

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 **12 participants from the Tropical and Subtropical Aquaculture Region** as defined by USDA. Forty-two percent of Tropical and Subtropical respondents primarily sold their products to "other" market channels. Comments provided by respondents indicated that products went to community outreach, conservation, research contracts to government and other producers, and broodstock. Based on the comments provided by respondents it would appear that a few of the respondents to the Quarter 1 survey from the Tropical and Subtropical Aquaculture Region were not strictly for-profit producers, but affiliated with a university or non-profit organizations. Market channels for direct to retail, grocery stores/supermarkets, and other aquaculture/aquaponics producers were tied at 17%. Eight percent of respondents chose not to answer this question (Table 1).

Table 1. Primary marketing channel for Tropical and Subtropical respondents.

Category	Percentage
Other	42%
Direct to customers	17%
Grocery stores/supermarkets	17%
Other aquaculture/aquaponic farms	17%
No response	8%
Processor	0%
Distributor	0%
Restaurants	0%

Scale of farms/businesses

Respondents in the Tropical and Subtropical region varied in terms of their reported scales of production. Survey respondents ranged from a production scale of $5,001 to $10,000 in annual sales (8%) to in excess of $1 million in annual sales (Table 2). Thirty-three percent of respondents reported annual sales in the $500,001 to $1 million range, followed by those with sales of $50,001 to $100,000 (17%). Another 17% of respondents chose not to respond to this question. It should also be noted that respondents that indicated their production scale to be in excess of $1 million annually, did not specify a value.

Table 2. Scale of Tropical and Subtropical respondent farms/businesses.

Category	Percentage
$500,001 - $1 million	33%
$50,001 - $100,000	17%
No response	17%
> $1 million	8%
$100,0001 - $250,000	8%
$10,001 - $25,000	8%
$5,001 - $10,000	8%
$250,0001 - $500,000	0%
$25,001 - $50,000	0%
$1,001 - $5,000	0%
$1 - $1,000	0%

Key Findings

Ninety-two (92%) percent of survey respondents from the Tropical and Subtropical Aquaculture Region reported that their farm or business had been impacted by the COVID-19 pandemic. One respondent (8%) was uncertain or unsure whether their farm or business had been impacted. The one respondent indicated that they expected their farm would "probably not" be affected by the coronavirus disease pandemic in 2020.

When asked whether their farm or business would survive the next 3 months without external intervention (such as government assistance), 55% of respondents said, "yes". Thirty-six percent reported that their farm or business would "maybe" survive 3 months without external assistance, and 9% chose not to answer this question. When asked if the farm or business could survive the next 6 months without external intervention, 27% said that their farm or business would survive, 64% said "maybe". **No respondents from the Tropical and Subtropical Aquaculture Region indicated that their farm would not survive 3 months or 6 months without external intervention.** Increasing the time frame in the question to 12 months without external assistance, **27% of respondents in the Tropical and Subtropical Aquaculture Region indicated that they would not survive**, 45% said

that their farm or business would "maybe" survive, and 18% said that they would survive.

Lost Sales

Forty-five percent of Tropical and Subtropical Aquaculture Region farms or businesses indicated that they had lost sales due to the COVID-19 pandemic. Twenty-five percent of respondents indicated that they had lost sales to international or export markets outside the U.S. Thirty-eight percent of respondents were not able to estimate the value of lost sales in the first quarter of 2020. A quarter of respondents indicated they had lost between $100,001 and $250,000. Thirteen percent of respondents said that they had lost between $25,001 and $50,000, $5,001 and $10,000, and $1,001 and $5,000.

Reported lost sales included canceled private and government contracts; **73% percent of survey respondents reported losing private contracts** for sales and 9% reported losing government (state or federal) contracts for sales. Only one specific comment was provided with regard to lost sales, which has been excluded from this summary to preserve confidentiality of respondents.

Survey participants were asked what challenges they expected to experience on their farms or businesses as a result of the coronavirus pandemic in 2020. **Sixty-four (64%) percent of responding Tropical and Subtropical Aquaculture Region farms or businesses indicated that they expected to lose sales in 2020**, with 29% expecting to lose sales to international markets. Twenty-nine (29%) percent of respondents could not estimate the value of expected lost sales at the time of the first quarter survey. Of the respondents that did estimate expected lost sales, 29% indicated they expected to lose between $25,001 and $50,000; with 14% expecting to lose in excess of $1 million, between $100,001 and $250,000, and between $5,001 and $10,000. Respondents did not elaborate on the value in excess of $1 million.

When asked how long the farm or business could survive without sales before suffering longer term cash flow effects, 36% of respondents did not answer this question. Twenty-seven percent said between 1 to 3 months, and 18% percent said more than 10 months. Nine percent said their farm or business could survive 4 to 6 months or less than one month without sales. **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 approximately 2 months have eclipsed between respondent participation and the preparation of this report.**

Labor

Eighteen percent of respondents reported that they had laid off employees as a result of the COVID-19 pandemic, and 36% of respondents indicated that they "will have to soon" at the time they completed the survey. Forty-five percent of responding farms and businesses had not laid off employees at the time of the Quarter 1 survey. All of the Tropical and Subtropical region farm or business respondents that had laid off employees, indicated that they had laid off between 1 and 3 employees. Of those employees who had been laid off, 17% of Tropical and Subtropical region respondents indicated that these were "Short-Time" or "Shared-Work" employees. Sixty-seven percent stated that none of the workers laid off were in this category. Seventeen percent chose not to respond to this question. One respondent reported having lost labor time having to implement COVID-19 safety measures throughout the work day. Another respondent indicated limiting employee hours to minimize contact in both the field and office.

Respondents were also asked how many weeks before they would have to decide whether to lay off employees. **Half (50%) of the respondents who answered this question indicated that they would have to decide within 4 to 6 weeks whether to lay off employees.** A quarter (25%) said they had between 1 and 3 weeks to make a decision, and another 25% said that they had between 7 and 10 weeks to make a decision**. It should be noted that the data collection period was open for 3 weeks, which means that some respondents completed the survey approximately 2 months before the preparation of this report.** Tropical and Subtropical Aquaculture Region respondents were further asked how many employees they would need to lay off at that time. Seventy-five percent said that they will have to lay off from 1 to 3 employees and another 25% said from 4 to 6 employees.

Forty-five percent of respondents had experienced some type of labor challenge. Thirty-six percent of respondents reported that employees have missed work due to the COVID-19 pandemic. The labor shortage due to sickness or self-quarantine has resulted in challenges with production. **Fifty (50%) percent of responding farms or businesses indicated that employees had missed work between 7 and 10 days, followed by 25% who reported employees missing between 11 and 14 days, and another 25% who reported employees missing more than 14 days.**

There were not many comments regarding specific labor challenges provided by respondents. One respondent noted that a shortage of labor was affecting the operation of their farm or business.

Challenges to the farm/business

Eighteen percent of respondents noted production challenges and increased costs of production. Twenty-seven percent noted "other" challenges; namely, a lack of shipping services, restricted access to land, and lost research contracts. Two respondents indicated that they had experienced challenges with production inputs and challenges with repair, construction, consultant, or engineering services. Respondents specifically noted production input difficulties with seeds for aquaponics due to a shut-down of non-essential businesses. Respondents also noted that scheduled repair work was on hold as a result of COVID-19. One respondent noted that access to their site of operations was restricted, resulting in having to cease their work activities. Respondents noted no challenges with financial services or "other" challenges affecting production.

Survey participants were asked what challenges they expected to experience on their farms or businesses as a result of the coronavirus pandemic in 2020. Twenty-seven percent of farms expected challenges with production inputs (e.g. feed and seed), another 27% expected to experience increased costs of production. Thirty-three percent could not identify specific production challenges that they expected to experience at the time they completed the survey.

Marketing of products

Thirty-two percent of respondents stated they could hold market ready product for less than one month before it becomes an issue for new crops or plants, 27% said 1 to 3 months, 11% 4 to 6 months, and 9% said more than 10 months. Twenty percent did not respond to the question.

Forty-eight percent of respondents said "yes" holding market ready product would make it less marketable. Twenty-three percent said "no" and 25% said "don't know." Sixty-two percent of respondents stated that holding market ready product would lead to reduced quantity sold, 62% stated that holding market ready product would lead to reduced price, and 33% stated that holding market ready product would lead to "other". Respondents reported that, since processors were not taking their fish, that they would have to reduce feeding to maintain the fish in a marketable size range. Further comments indicated that holding fish longer at higher stocking densities may stress fish and create animal welfare issues that lead to disease and greater mortality. Overall, the lost sales were resulting in higher density of fish in the ponds that leads to a poorer feed conversion ratio and slower growth.

Cash flow problems, increased costs of production, interrupted flow of hatch to market, and missed seasonal hatches were reported as effects of the loss of sales. One respondent reported that their product was live trout eggs that have a shipping window of around 10 days; they cannot be held any longer than that. Another respondent reported that by the time that restaurants reopen, their fish will be too large for the size requirement. A respondent reported that, with reduced number of orders, that they were individually flash freezing fillets, but that they have only so much capacity in their freezer, since they have been moving mostly fresh product. Another respondent reported that the disruptions to the supply process from hatching through growout will result in a gap or reduced supply 14 months from now. Oysters will become too large to meet the high value of the half shell market. Another respondent reported that the shelf life of their product is 3 days on ice.

Other respondents commented on an expected glut on the market when everyone begins reselling at once, with the backlog of seafood product making producers want to dump product on the market.

Thirty-six percent of respondents did not respond when asked how long they could hold market ready product before it becomes an issue for new crops or plants. Nine percent of respondents said they could hold market ready product for less than 1 month before it would interrupt future crops, in addition to 9% of respondents who said between 7 and 10 months or greater than 10 months. Eighteen percent of respondents stated between 1 and 3 months or 4 to 6 months.

Thirty-six percent of respondents said "yes" holding market ready product would make it less marketable. Eighteen percent said "no" and 45% were unsure if holding market ready product would make it less marketable. Half of the respondents who indicated holding product would make it less marketable, indicated doing so would lead to a reduced quantity sold, with another 50% stating it would lead to reduced price. A quarter of respondents stated that holding market ready product would lead to "other"; namely there would be less demand for larger fish. This same respondent indicated that holding market ready product would also result in the increased risk of product losses and diminished ROI.

Increased Demand for Products

Eighteen percent of respondents reported an increase in demand for their products. With one respondent estimating between $50,001 and $100,000 and another estimating between $5,001 and $10,000 in increased sales.

Twenty-seven percent of respondents reported that they expected to experience an increase in demand. Of these, 29% said that they expected increased demand of $25,001 to $50,000. Another 29% could not estimate the value of increased sales at the time of completing the survey. Fourteen percent of those who expected to experience an increase in demand estimated either a greater than $1 million increase, between $100,001 and $250,000, or between $5,001 and $10,000 increase in sales.

Assistance to Farms/Businesses

The survey included questions on the types of assistance that might be helpful to farm or business respondents. Sixty-four percent of Tropical and Subtropical Aquaculture Region respondents indicated that federal assistance would increase the likelihood of survival of their farm or business.

Thirty-six percent of respondents said that state assistance would help, and 27% said local assistance would help. Only 9% said assistance from associations would be helpful. Twenty-seven percent said there were other steps or types of assistance that would increase the likelihood for the farm or business to survive. Eighteen percent said none.

When asked more specifically about the types of assistance that would be helpful to their farm or business, 27% said waiving or delaying of state fees would be helpful, 18% said tariff relief and assistance identifying new markets. Twenty-seven percent also said "other"; with one respondent pointing out that assistance for their clients would help to support the research performed by the business. Other comments about specific assistance that would help farms and allied businesses were grants or direct payments to cover lost sales, offering zero interest loans, renewable energy credits, shipping or feed rebates, and relief or delaying of state and federal taxes. One respondent noted that an extension of PPP would be helpful to their business.

All participating respondents (100%) did not answer the question asking if there were existing programs for which their farm or business does not currently qualify that would be of assistance during the pandemic.

Discussion and Conclusion

Responses by the Tropical and Subtropical 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. Ninety-two percent of responding farms or businesses indicated that they had been affected by the pandemic. Forty-five percent had experienced lost sales, and 73% have had orders from private companies canceled (9% had government orders canceled). While lost sales were the immediate challenge and concern for farms and businesses, other challenges related to production included labor challenges, challenges with production inputs, repair services, and access to work sites. Thirty-six percent of respondents indicated that holding market ready product would make it less marketable in the future; with resulting consequences for the quantity of

product sold (50%), and reduced prices for products (50%). A majority (55%) of respondents from the Tropical and Subtropical Aquaculture Region indicated that their farm or business would survive the next 3 months without external assistance; that percentage decreasing as the term was increased to 6 months (27%) and 12 months (18%). Key findings from Tropical and Subtropical Aquaculture Region and business respondents include:

- *92% have been impacted by COVID-19*
- *73% have had private orders/contracts canceled*
- *81% have or will soon have to lay off employees*
- *45% have experienced lost sales*
- *55% 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 VCE-AAEC-240NP
VSG-20-22

Appendix

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

Quarter 1 Results

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Overview

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- Guam
- Hawaii
- Palau
- Republic of the Marshall Islands

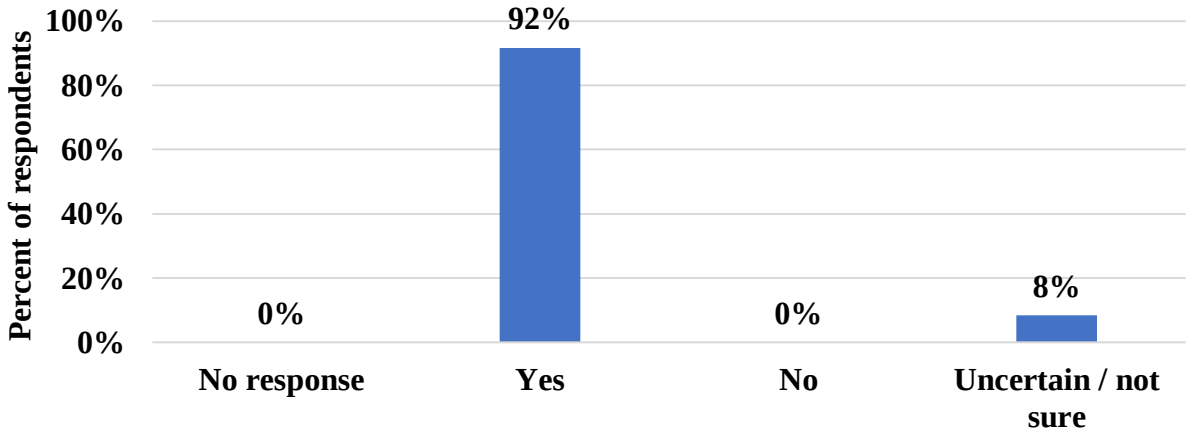
Survey results for each question

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 = 12)

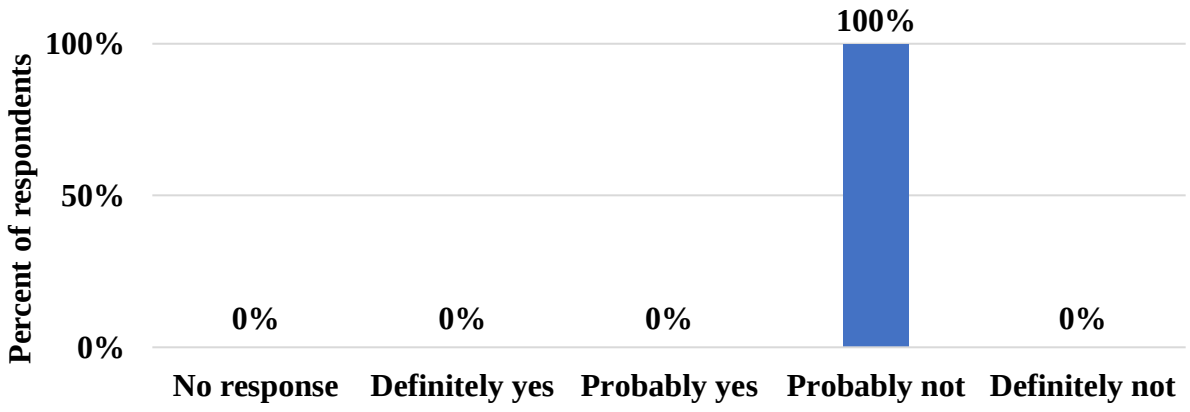
- No response : 0%
- Yes : 92%
- No : 0%
- Uncertain / Not Sure : 8%



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

(n = 1)

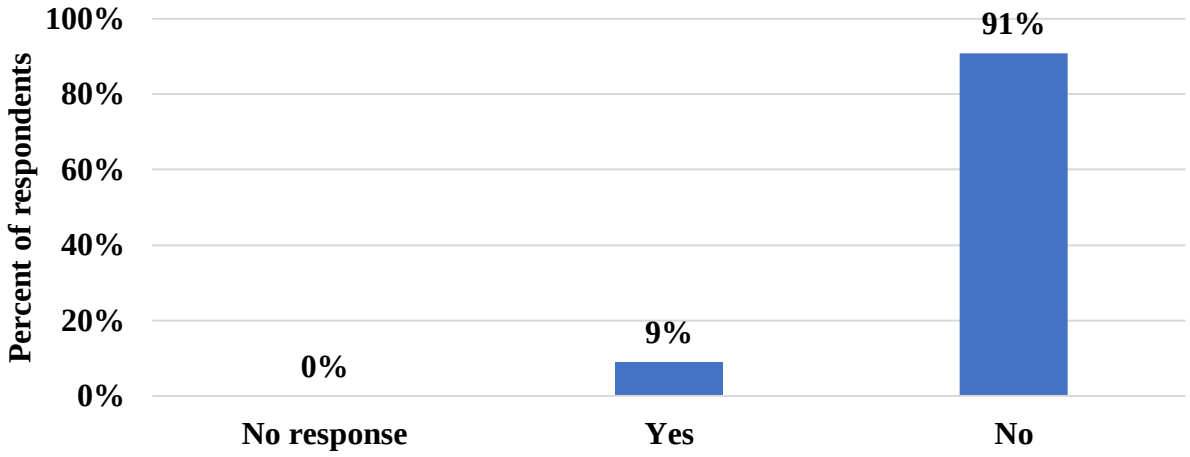
- No response : 0%
- Definitely yes : 0%
- Probably yes : 0%
- Probably not : 100%
- Definitely not : 0%



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

(n = 11)

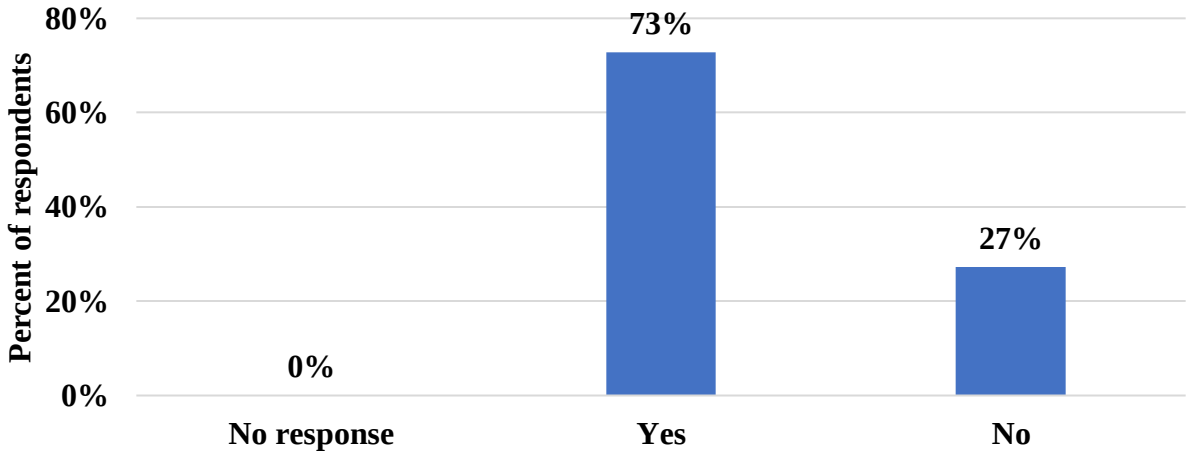
- No response : 0%
- Yes : 9%
- No : 91%



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

(n = 11)

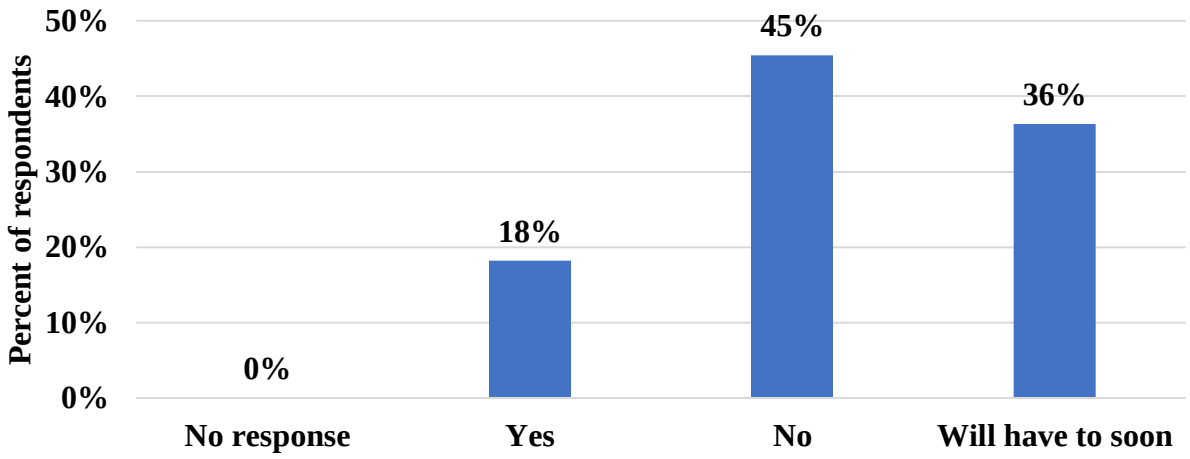
- No response : 0%
- Yes : 73%
- No : 27%



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

(n = 11)

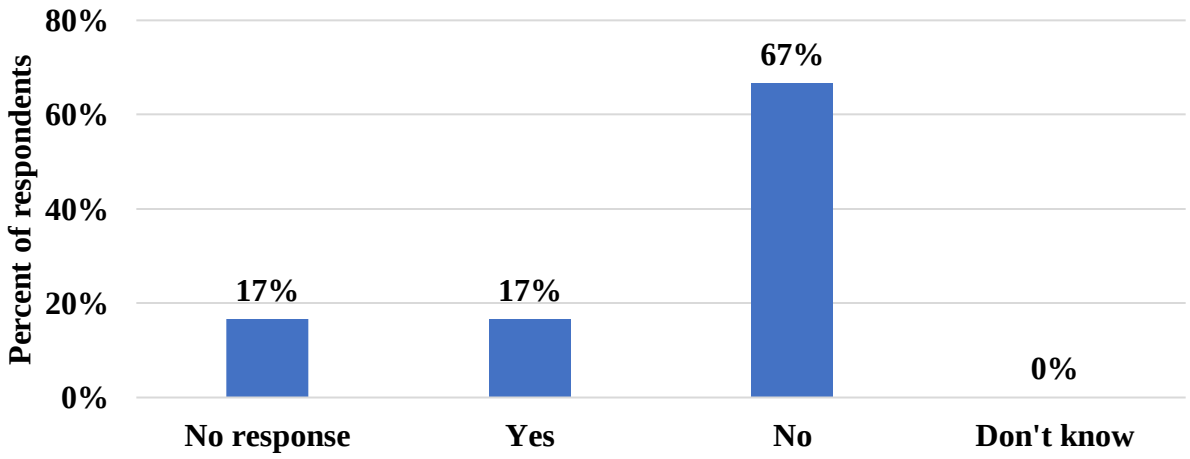
- No response : 0%
- Yes : 18%
- No : 45%
- Will have to soon : 36%



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 = 6)

- No response : 17%
- Yes : 17%
- No : 67%
- 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)?

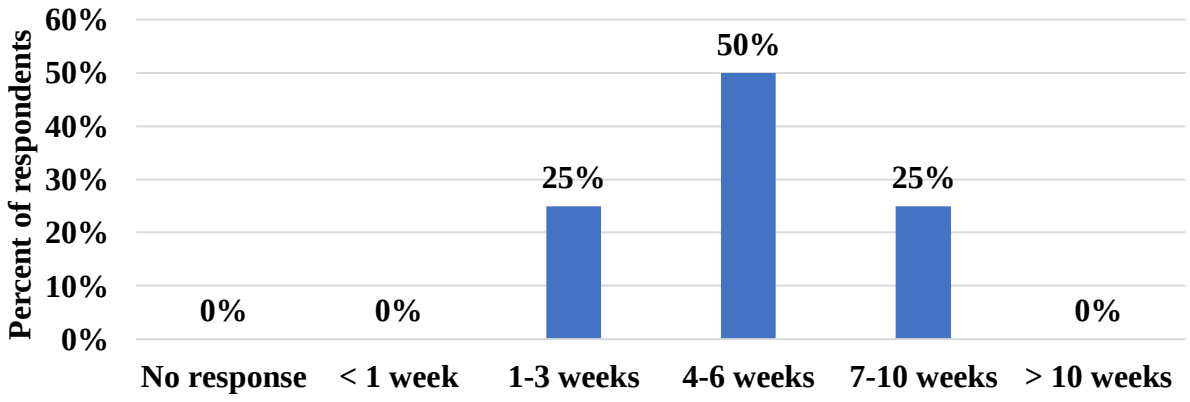
(n = 2)

- No response : 0%
- 1 – 3 employees : 100%
- 4 – 6 employees : 0%
- 7 – 10 employees : 0%
- 11 – 15 employees : 0%
- 16 – 20 employees : 0%
- 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 = 4)

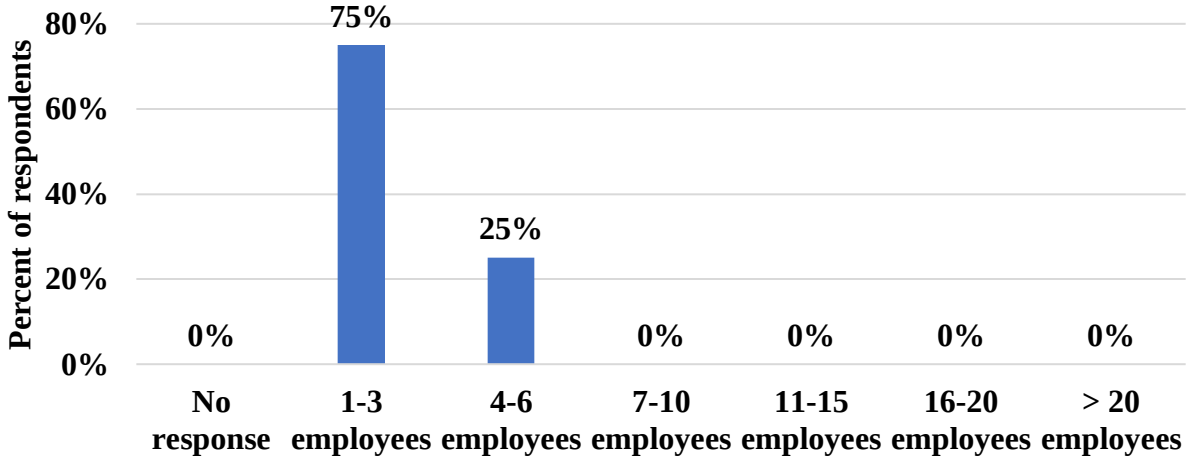
- No response : 0%
- Less than 1 week : 0%
- 1 – 3 weeks : 25%
- 4 – 6 weeks : 50%
- 7 – 10 weeks : 25%
- More than 10 weeks : 0%



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 = 4)

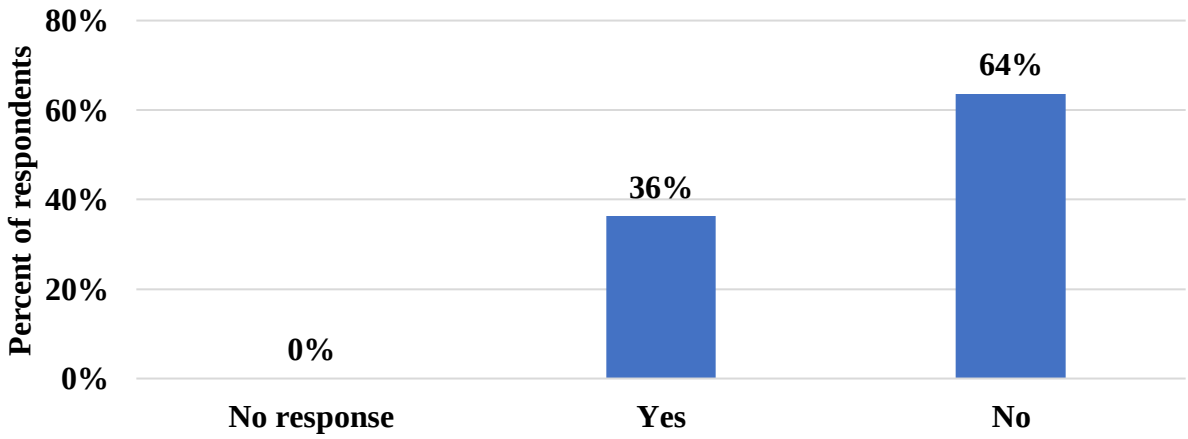
- No response : 0%
- 1 – 3 employees : 75%
- 4 – 6 employees : 25%
- 7 – 10 employees : 0%
- 11 – 15 employees : 0%
- 16 – 20 employees : 0%
- More than 20 employees : 0%



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

(n = 11)

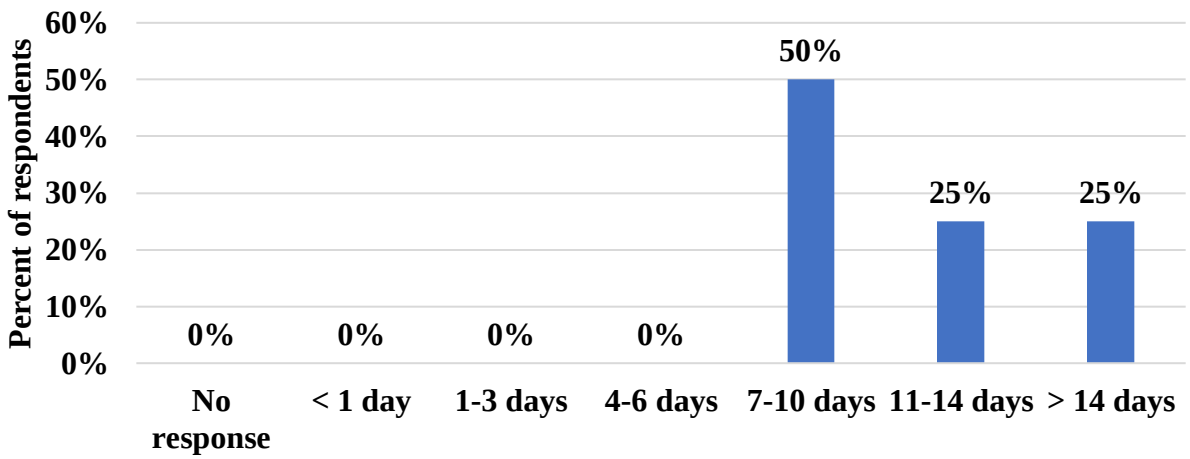
- No response : 0%
- Yes : 36%
- No : 64%



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 = 4)

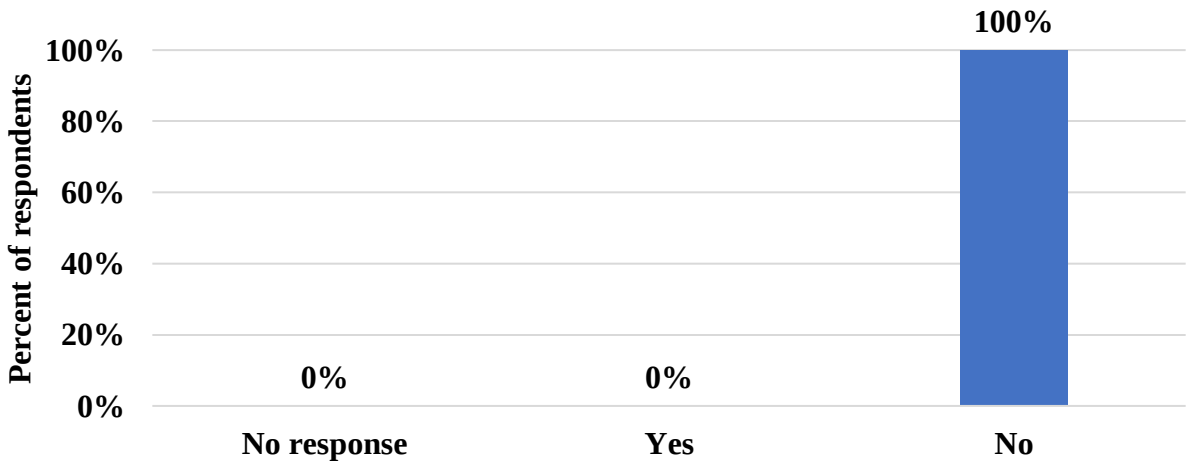
- No response : 0%
- Less than a day : 0%
- 1 -3 days : 0%
- 4 – 6 days : 0%
- 7 – 10 days : 50%
- 11 – 14 days : 25%
- More than 14 days : 25%



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

(n = 11)

- No response : 0%
- Yes : 0%
- No : 100%



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

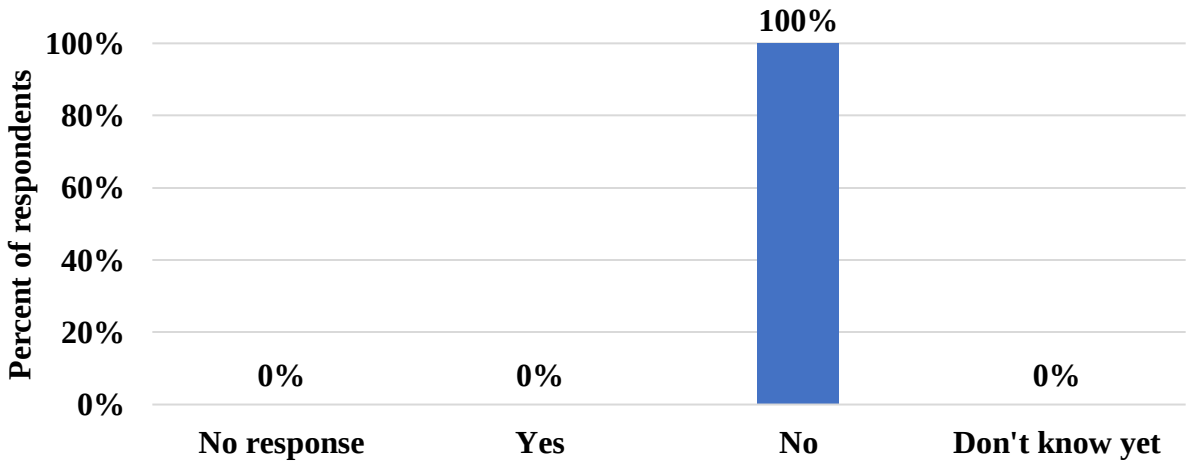
(n = 0)

- No response : NA
- Yes : NA
- No : NA
- Don't know yet : NA
- Have not tried : NA

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 = 11)

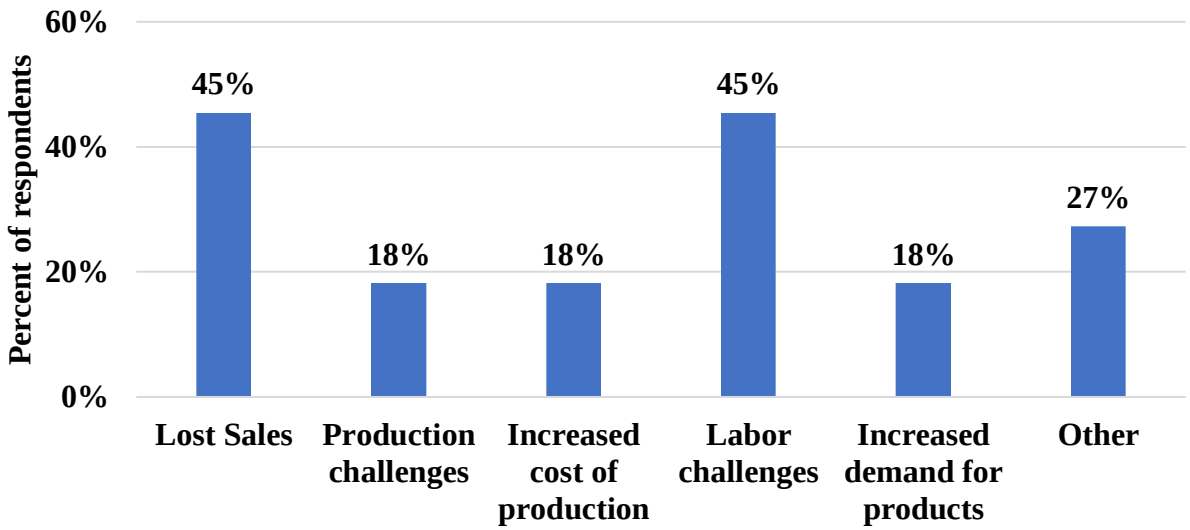
- No response : 0%
- Yes : 0%
- No : 100%
- Don't know yet : 0%



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

(n = 11)

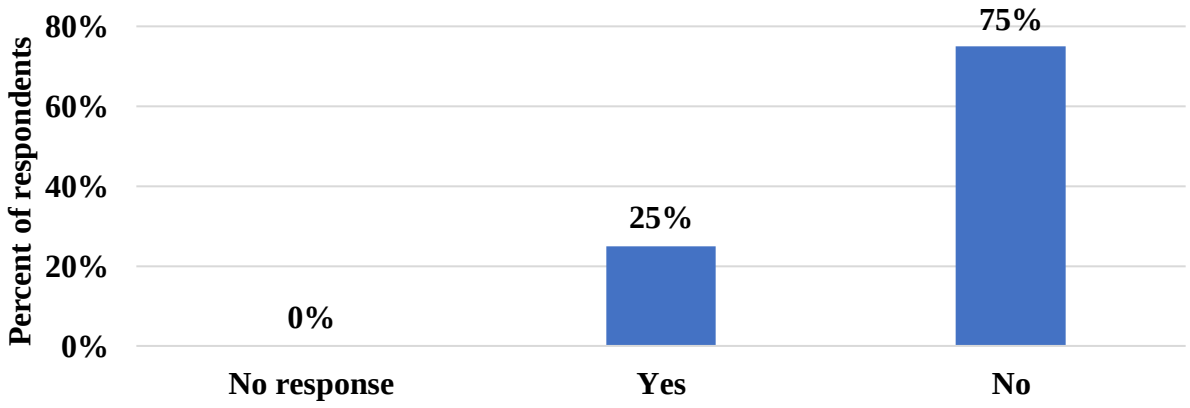
- Lost sales : 45%
- Production challenges (not related to labor) : 18%
- Increased cost of production : 18%
- Labor challenges : 45%
- Increased demand for products : 18%
- Other : 27%



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

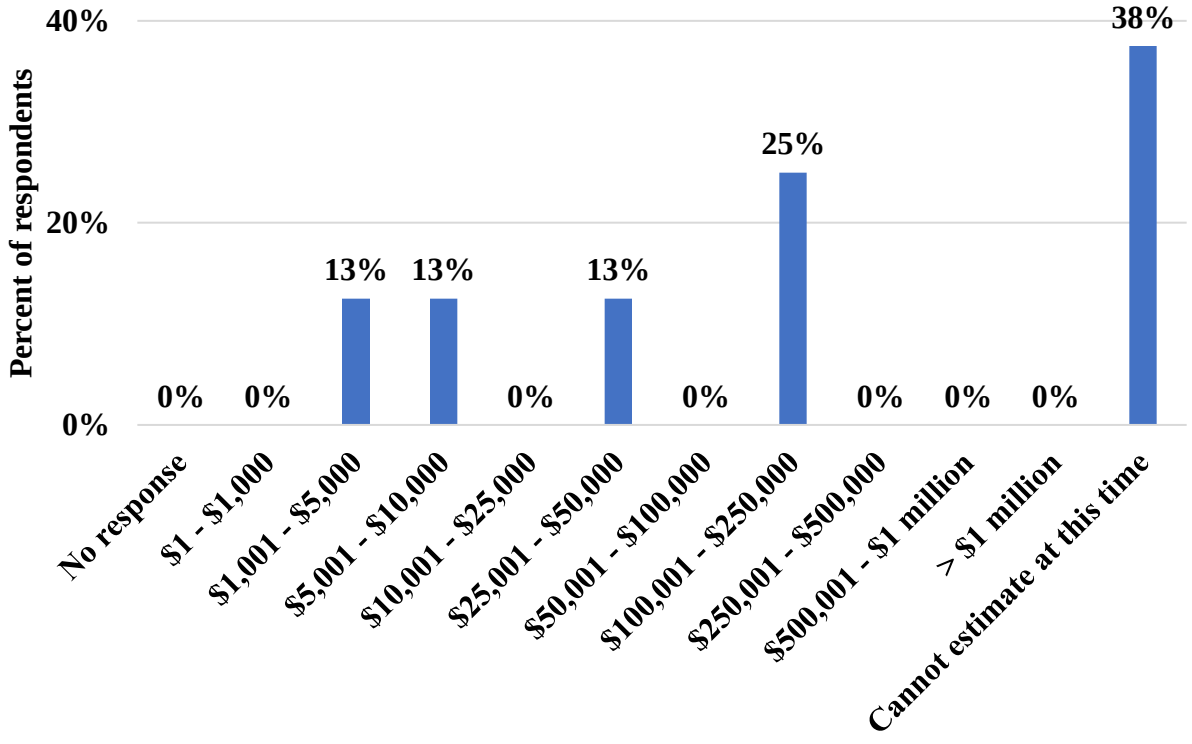
(n = 8)

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



Q7.2. If your farm or business has <u>experienced lost sales</u> as a result of the coronavirus disease (COVID-19), please estimate the value of lost sales?
(n = 8)

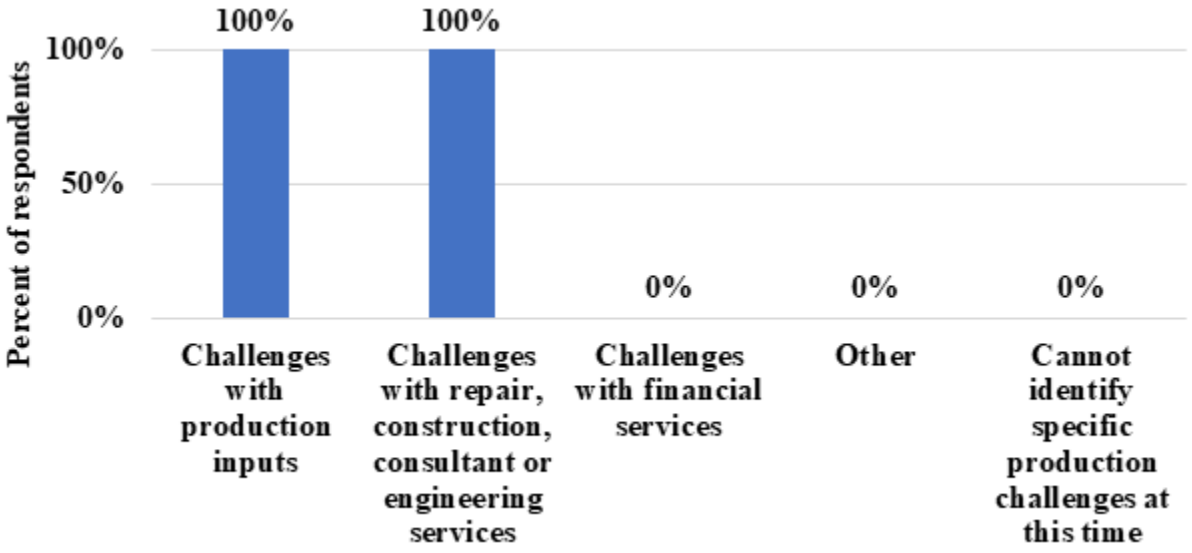
- No response : 0%
- $1 - $1,000 : 0%
- $1,001 - $5,000 : 13%
- $5,001 - $10,000 : 13%
- $10,001 - $25,000 : 0%
- $25,001 - $50,000 : 13%
- $50,001 - $100,000 : 25%
- $100,001 - $250,000 : 0%
- $250,001 - $500,000 : 0%
- $500,001 - $ 1 million : 0%
- Greater than $1 million : 0%
- Cannot estimate at this time : 38%



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

(n = 2)

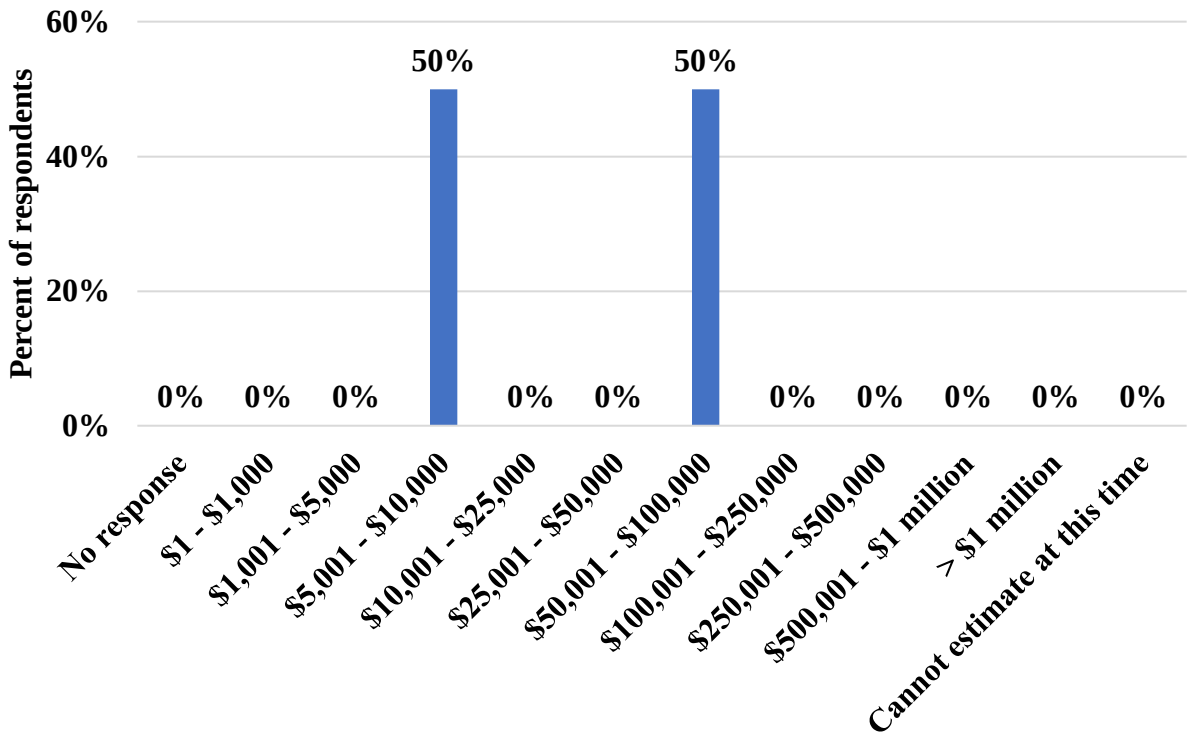
- Challenges with production inputs (feed, chemicals, therapeutants, etc.) : 100%
- Challenges with repair, construction, consultant or engineering services : 100%
- Challenges with financial services (operating loans, leases, etc.) : 0%
- Other : 0%
- Cannot identify specific production challenges at this time : 0%



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

(n = 2)

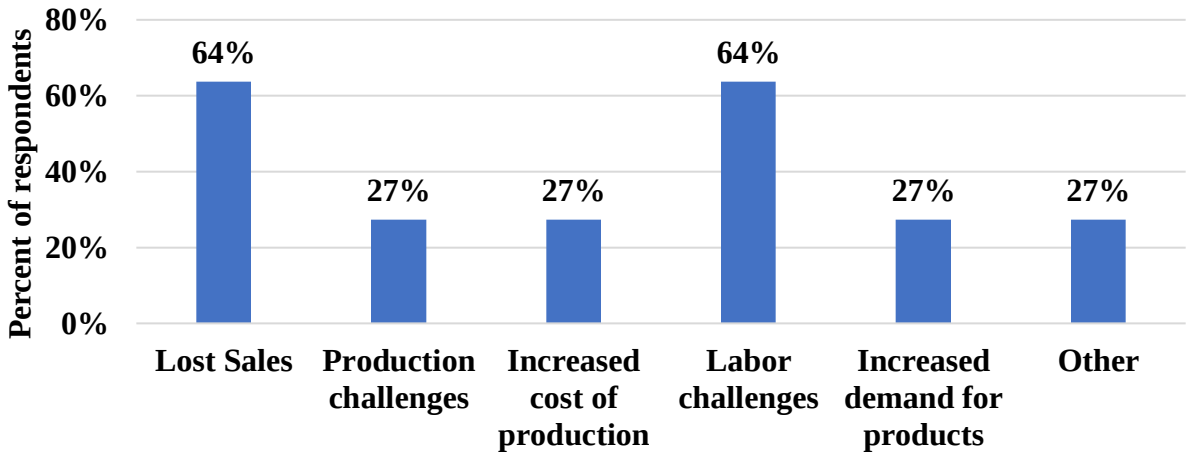
- No response : 0%
- $1 - $1,000 : 0%
- $1,001 - $5,000 : 0%
- $5,001 - $10,000 : 50%
- $10,001 - $25,000 : 0%
- $25,001 - $50,000 : 0%
- $50,001 - $100,000 : 50%
- $100,001 - $250,000 : 0%
- $250,001 - $500,000 : 0%
- $500,001 - $ 1million : 0%
- Greater than $1 million : 0%
- Cannot estimate at this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



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

(n = 11)

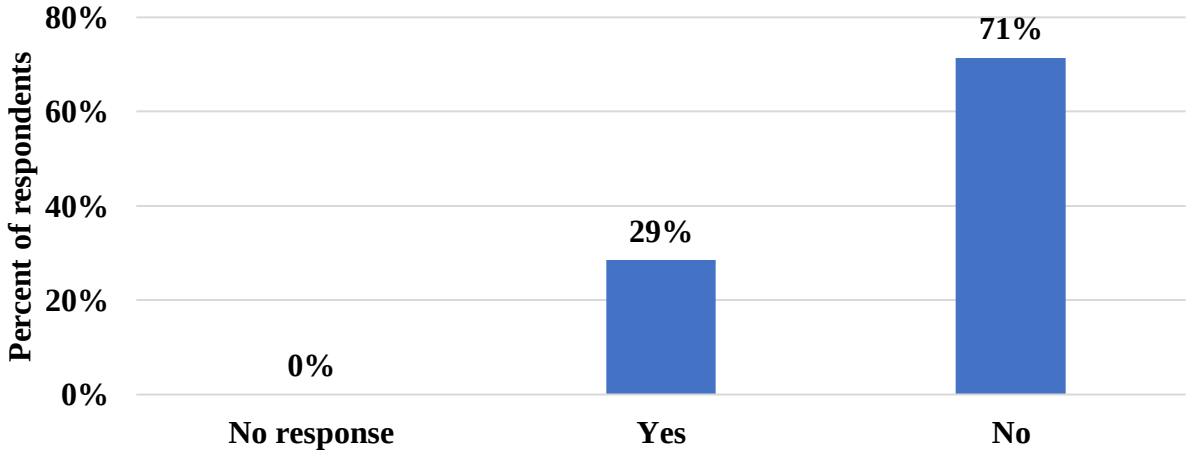
- Lost sales : 64%
- Production challenges (not related to labor) : 27%
- Increased cost of production : 27%
- Labor challenges : 64%
- Increased demand for products : 27%
- Other : 27%



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

(n = 7)

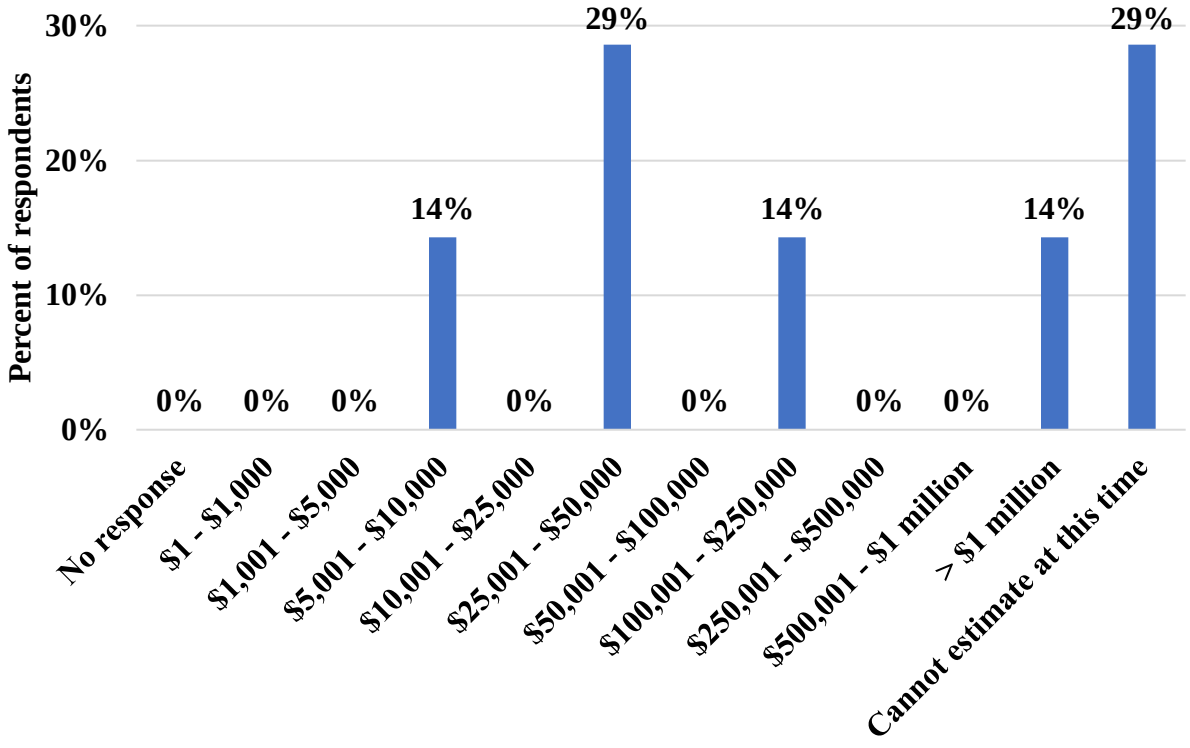
- No response : 0%
- Yes : 29%
- No : 71%



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

(n = 7)

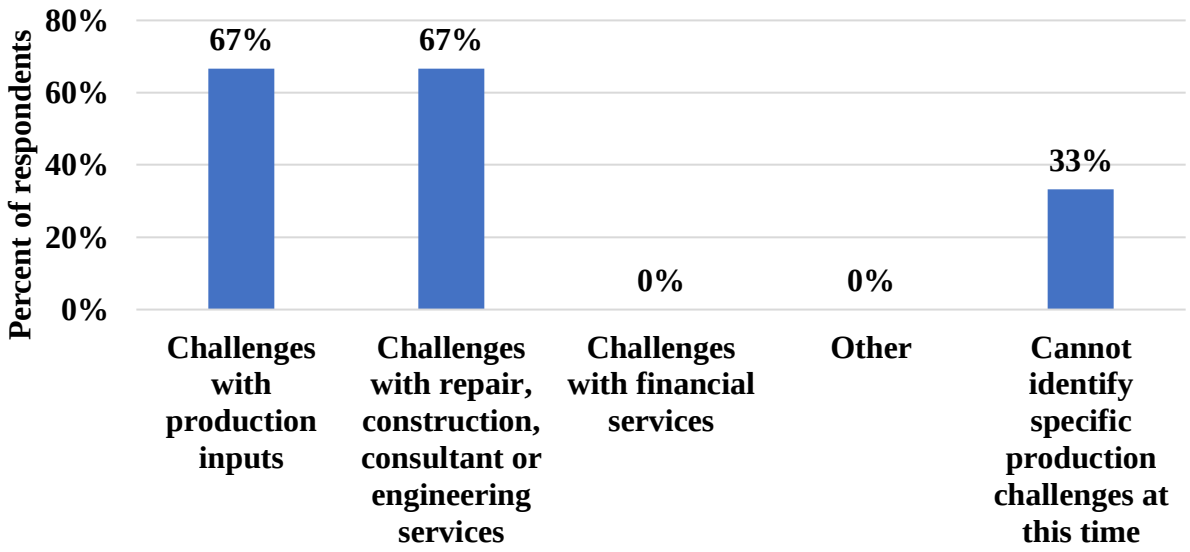
- No response : 0%
- $1 - $1,000 : 0%
- $1,001 - $5,000 : 0%
- $5,001 - $10,000 : 14%
- $10,001 - $25,000 : 0%
- $25,001 - $50,000 : 29%
- $50,001 - $100,000 : 0%
- $100,001 - $250,000 : 14%
- $250,001 - $500,000 : 0%
- $500,001 - $ 1million : 0%
- Greater than $1 million : 14%
- Cannot estimate at this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



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

(n = 3)

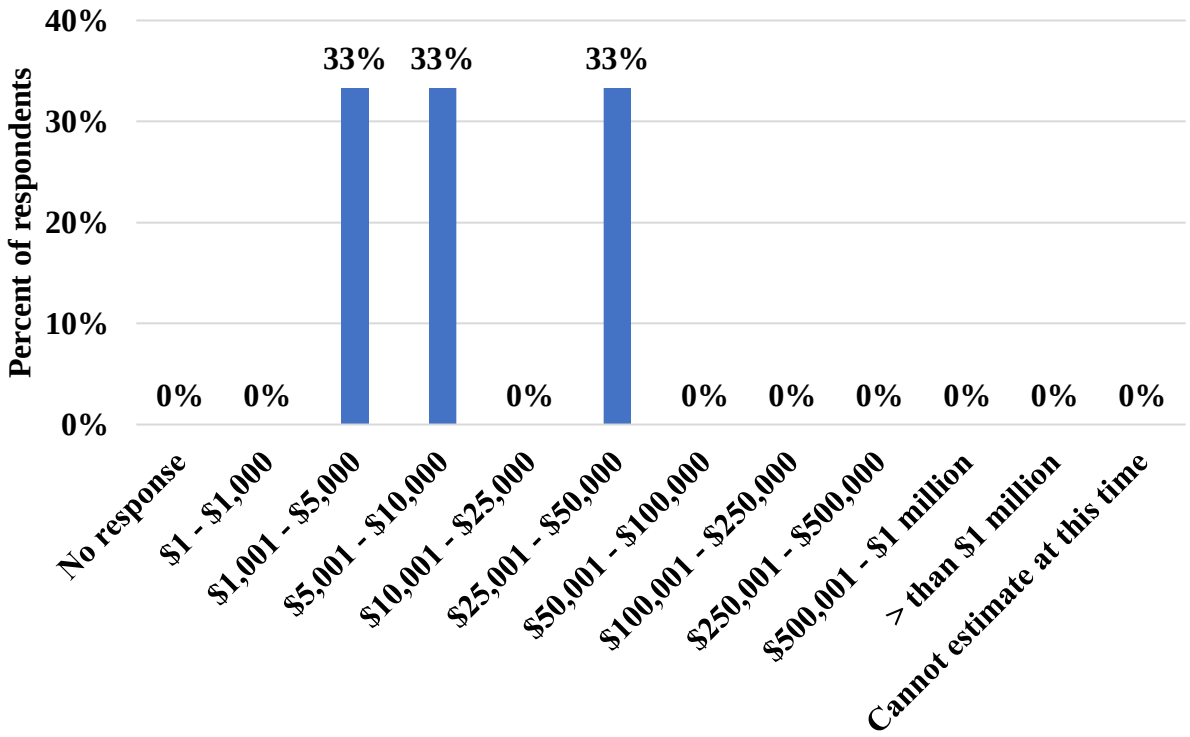
- Challenges with production inputs (feed, chemicals, therapeutants, etc.) : 67%
- Challenges with repair, construction, consultant or engineering services : 67%
- Challenges with financial services (operating loans, leases, etc.) : 0%
- Other : 0%
- Cannot identify specific production challenges at this time : 33%



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

(n = 3)

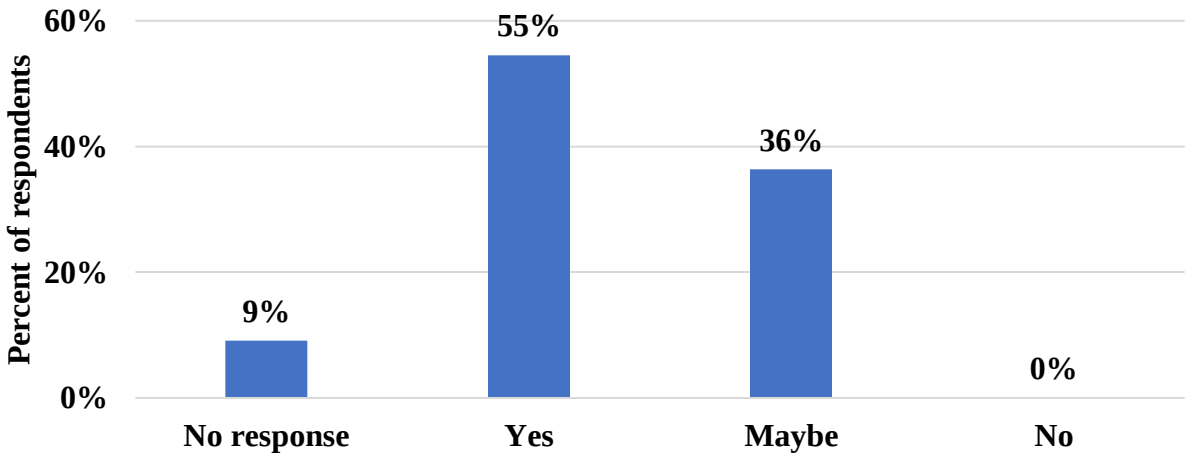
- No response : 0%
- $1 - $1,000 : 0%
- $1,001 - $5,000 : 33%
- $5,001 - $10,000 : 33%
- $10,001 - $25,000 : 0%
- $25,001 - $50,000 : 33%
- $50,001 - $100,000 : 0%
- $100,001 - $250,000 : 0%
- $250,001 - $500,000 : 0%
- $500,001 - $ 1million : 0%
- Greater than $1 million : 0%
- Cannot estimate at this time : 0%



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

(n = 11)

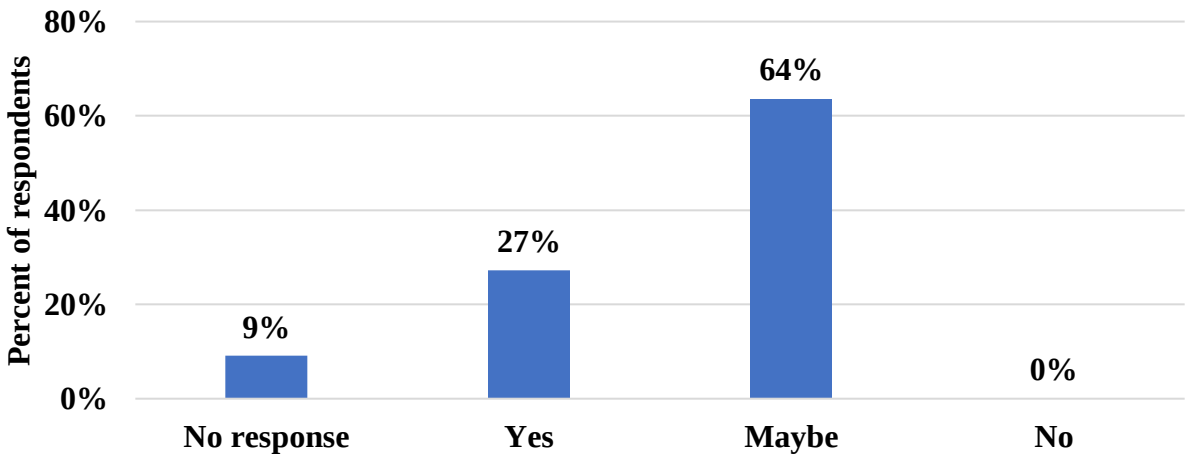
- No response : 9%
- Yes : 55%
- Maybe : 36%
- No : 0%



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

(n = 11)

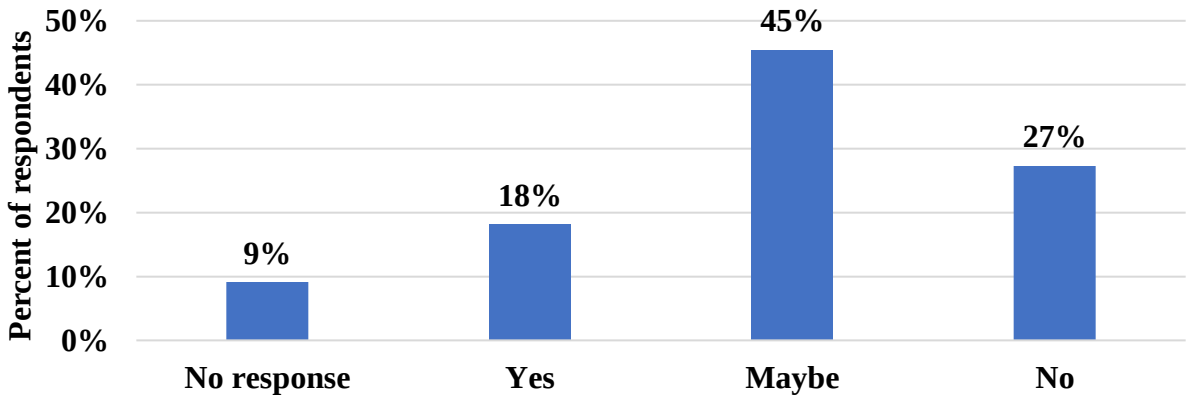
- No response : 9%
- Yes : 27%
- Maybe : 64%
- No : 0%



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

(n = 11)

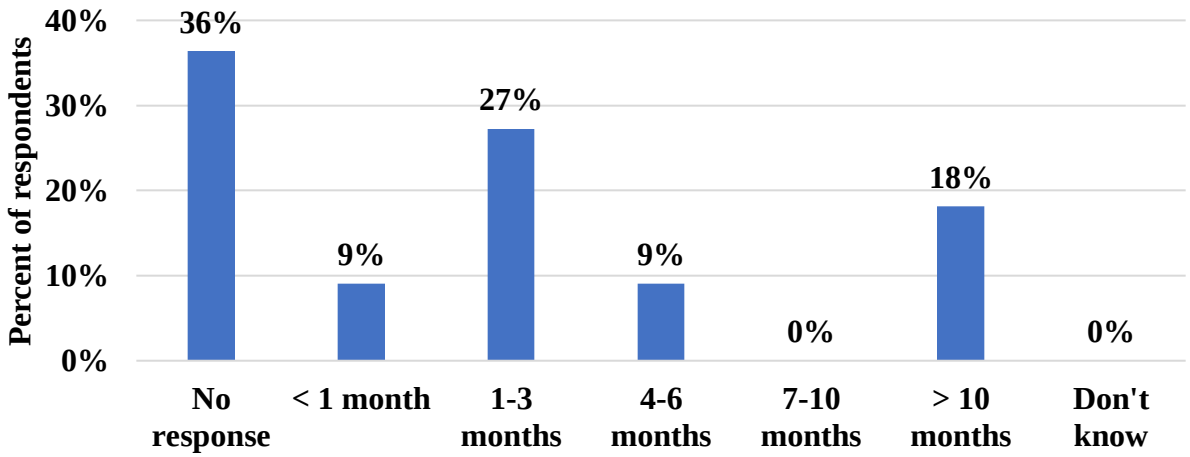
- No response : 9%
- Yes : 18%
- Maybe : 45%
- No : 27%



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 = 11)

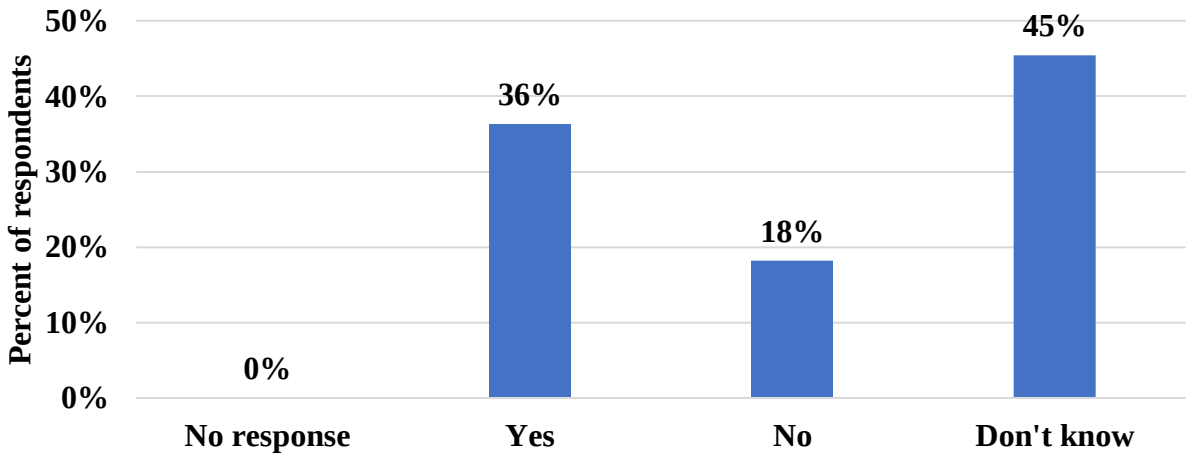
- No response : 36%
- Less than 1 month : 9%
- 1 – 3 months : 27%
- 4 – 6 months : 9%
- 7 – 10 months : 0%
- More than 10 months : 18%
- Do not know : 0%



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

(n = 11)

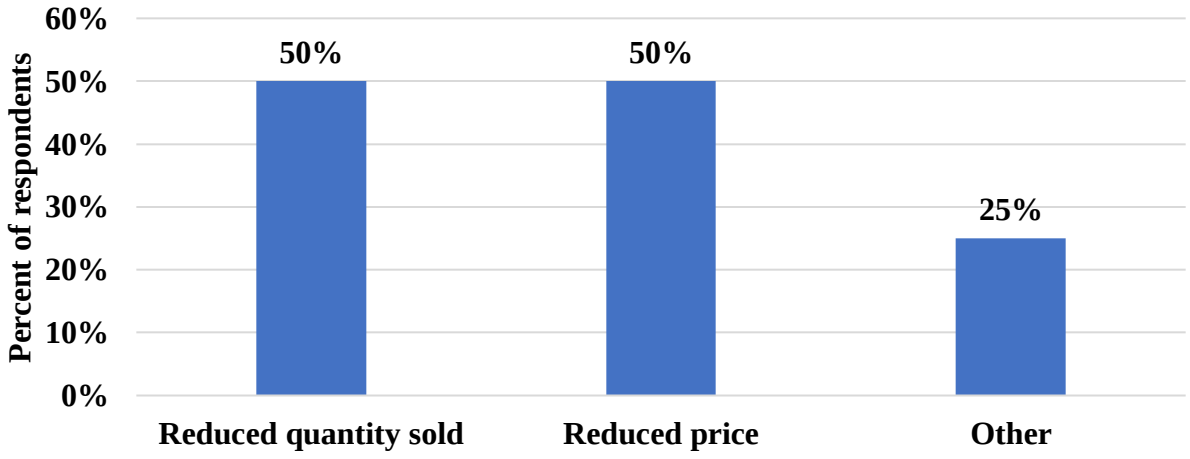
- No response : 0%
- Yes : 36%
- No : 18%
- Don't know : 45%



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

(n = 4)

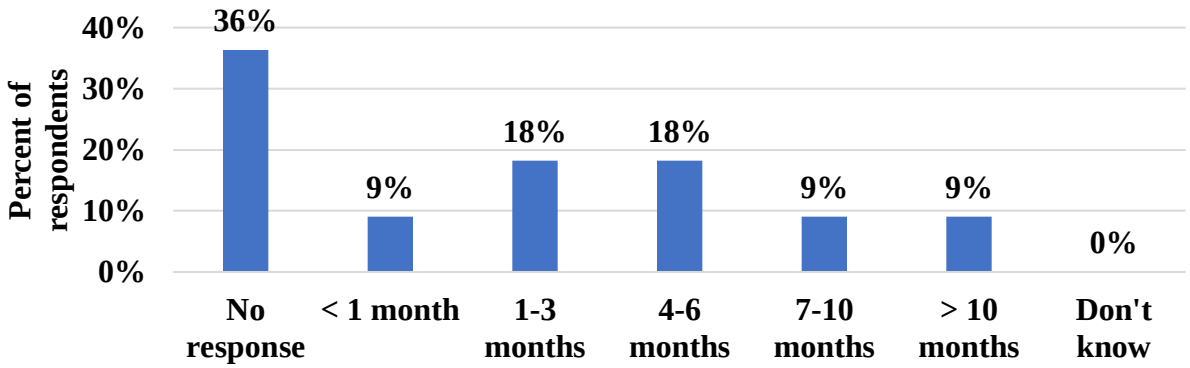
- Reduced quantity sold : 50%
- Reduced price : 50%
- Other : 25%



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 = 11)

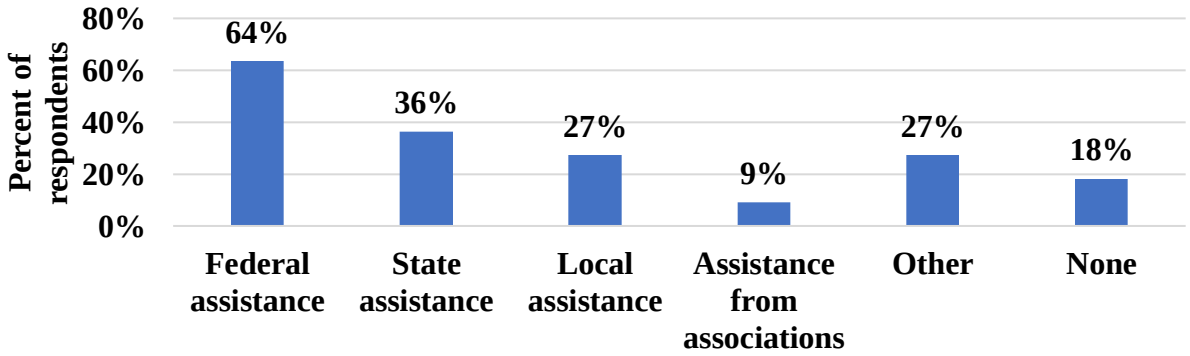
- No response : 36%
- Less than 1 month : 9%
- 1 – 3 months : 18%
- 4 – 6 months : 18%
- 7 – 10 months : 9%
- More than 10 months : 9%
- Don't know : 0%



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 = 11)

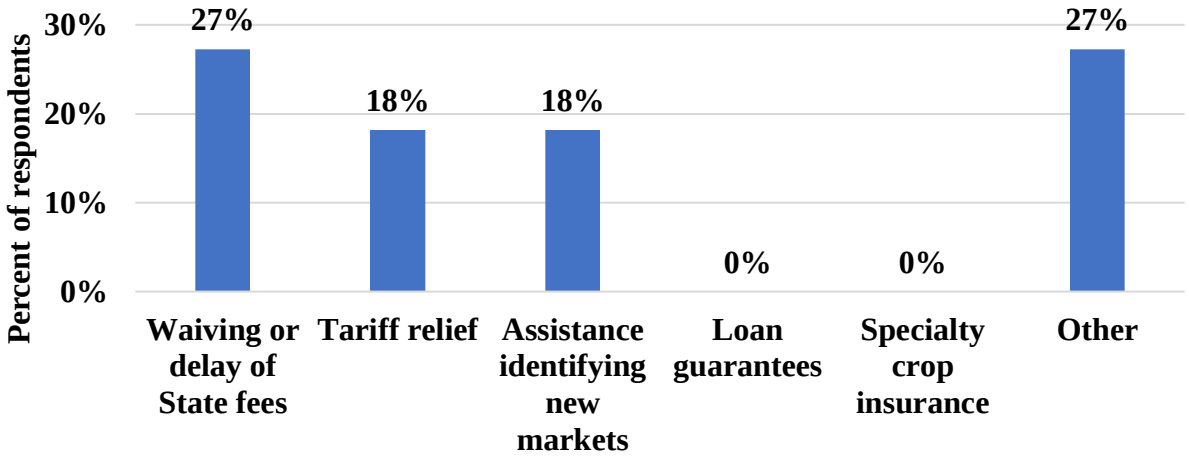
- Federal assistance : 64%
- State assistance : 36%
- Local assistance : 27%
- Assistance from associations : 9%
- Other : 27%
- None : 18%



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

(n = 11)

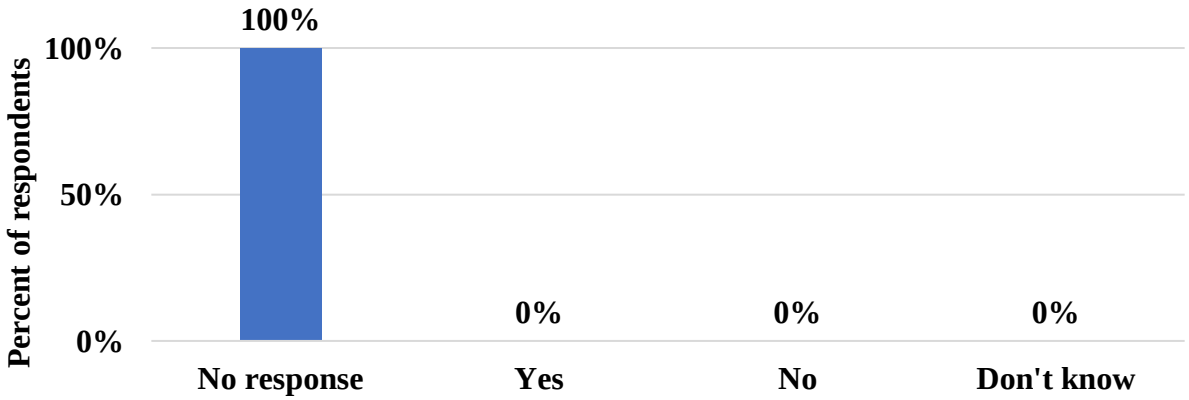
- Waiving or delay of state fees : 27%
- Tariff relief : 18%
- Assistance identifying new markets : 18%
- Loan guarantees : 0%
- Specialty Crop Insurance : 0%
- Other : 27%



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?

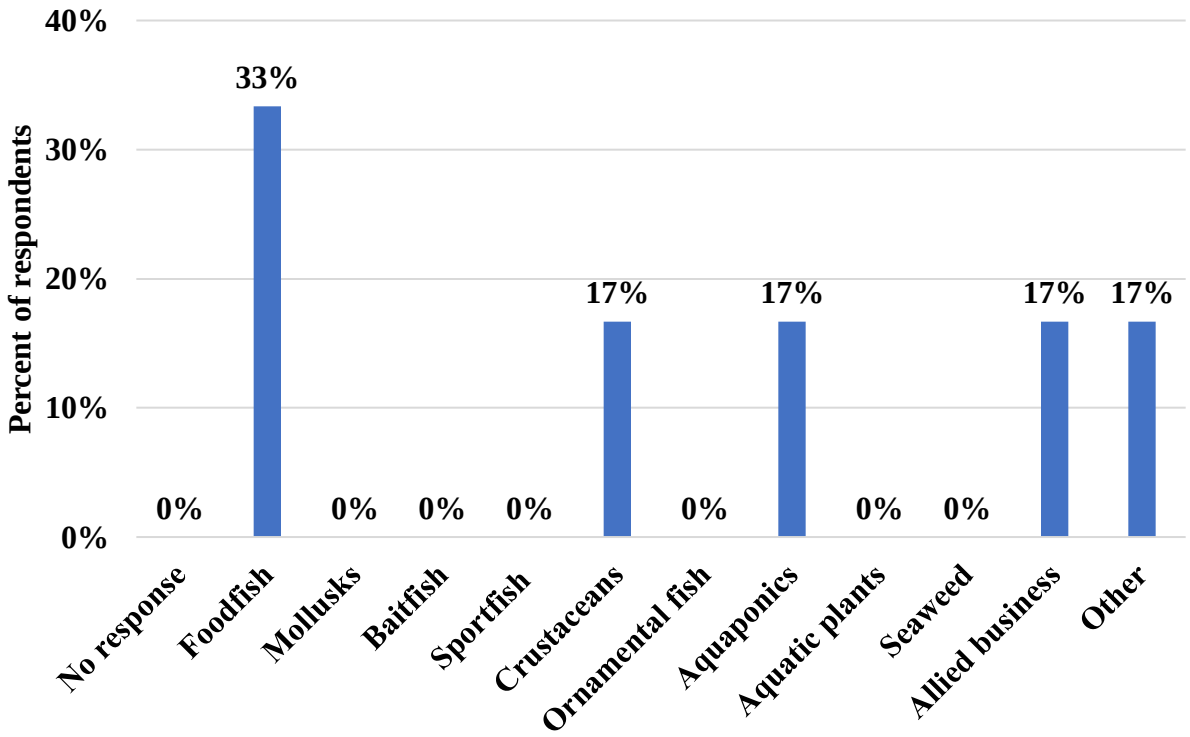
(n = 11)

- No response : 100%
- Yes : 0%
- No : 0%
- Don't know : 0%



Q19. What is the primary product that your farm or business produces?
(n = 12)

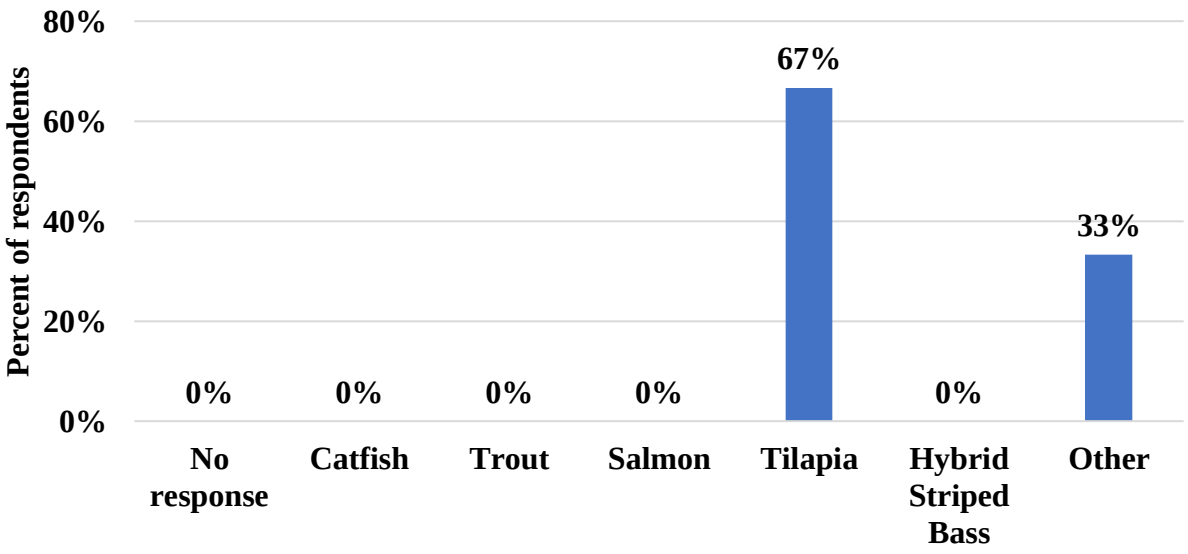
- No response : 0%
- Foodfish : 33%
- Mollusks (oysters, clams, mussels, etc.) : 0%
- Baitfish : 0%
- Sportfish / recreational fish, including trout : 0%
- Crustaceans (crawfish, soft crab, shrimp, etc.) : 17%
- Ornamental fish (aquarium or water garden) : 0%
- Aquaponics : 17%
- Aquatic plants : 0%
- Seaweed : 0%
- Allied business (equipment, chemicals, etc.) : 17%
- Other : 17%



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

(n = 6)

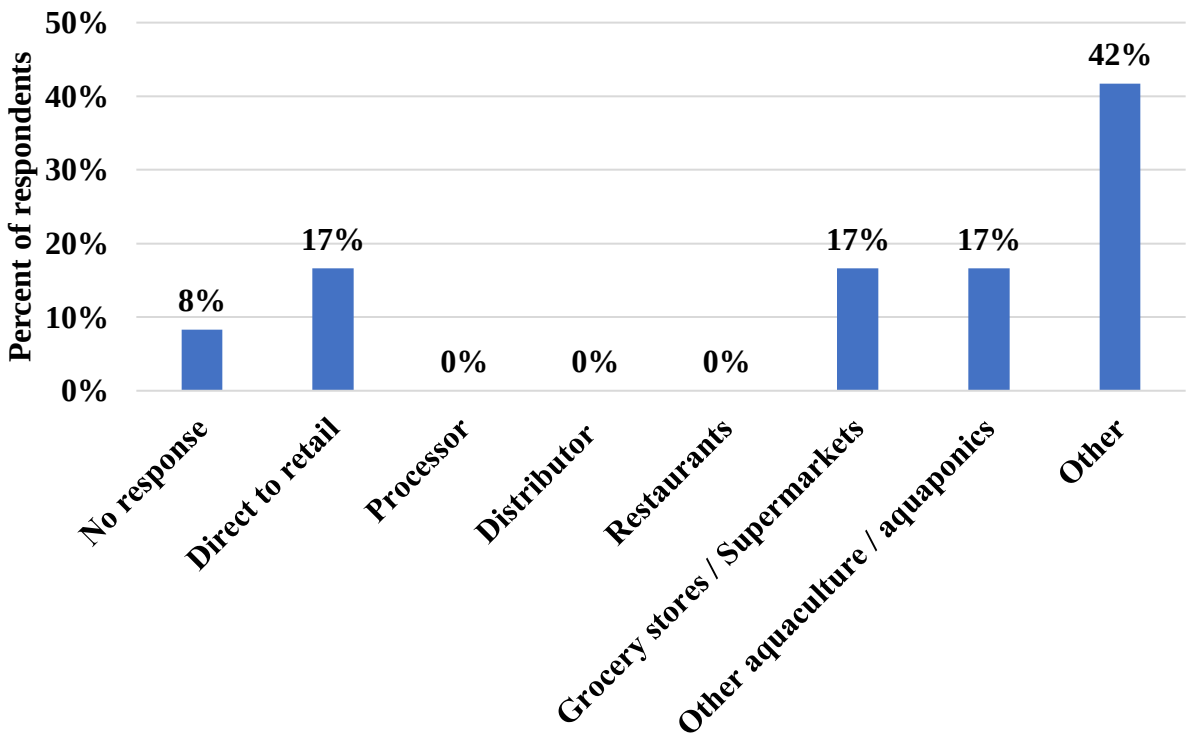
- No response : 0%
- Catfish : 0%
- Trout : 0%
- Salmon : 0%
- Tilapia : 67%
- Hybrid Striped Bass : 0%
- Other : 33%



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

(n = 12)

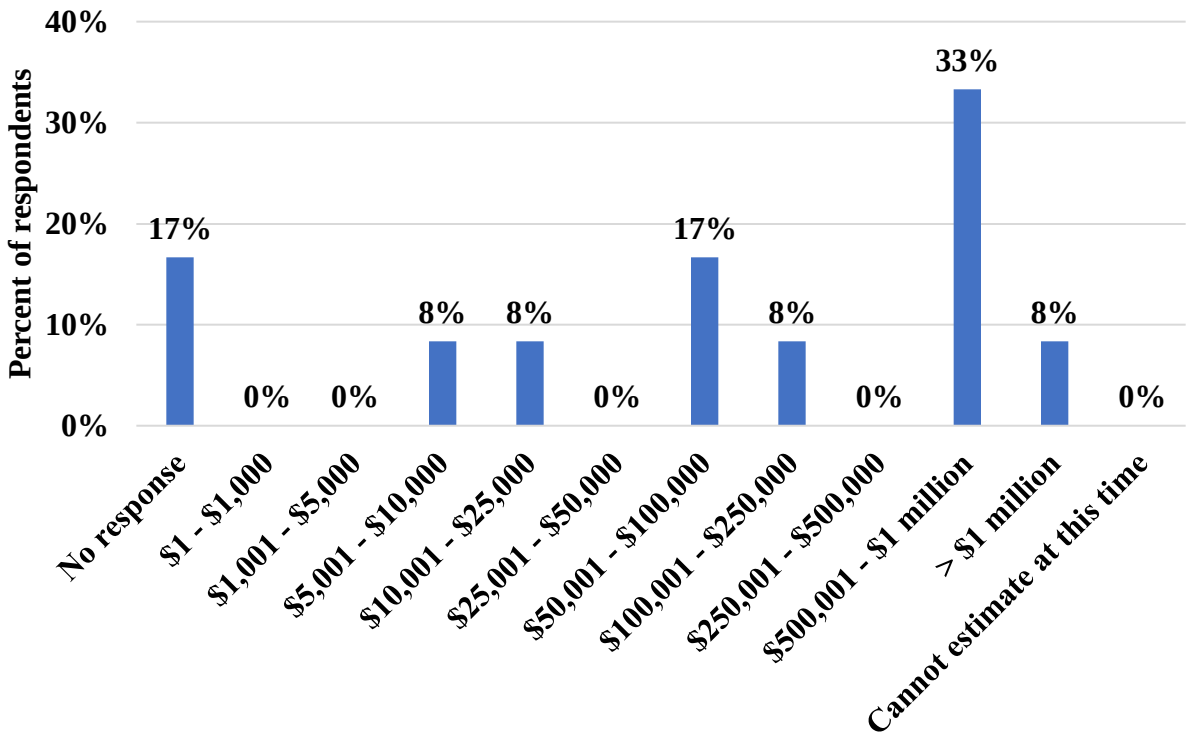
- No response : 8%
- Direct to retail (direct to consumers) : 17%
- Processor : 0%
- Distributor : 0%
- Restaurants : 0%
- Grocery Stores / Supermarkets : 17%
- Other aquaculture/aquaponics farms or businesses : 17%
- Other : 42%



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

(n = 12)

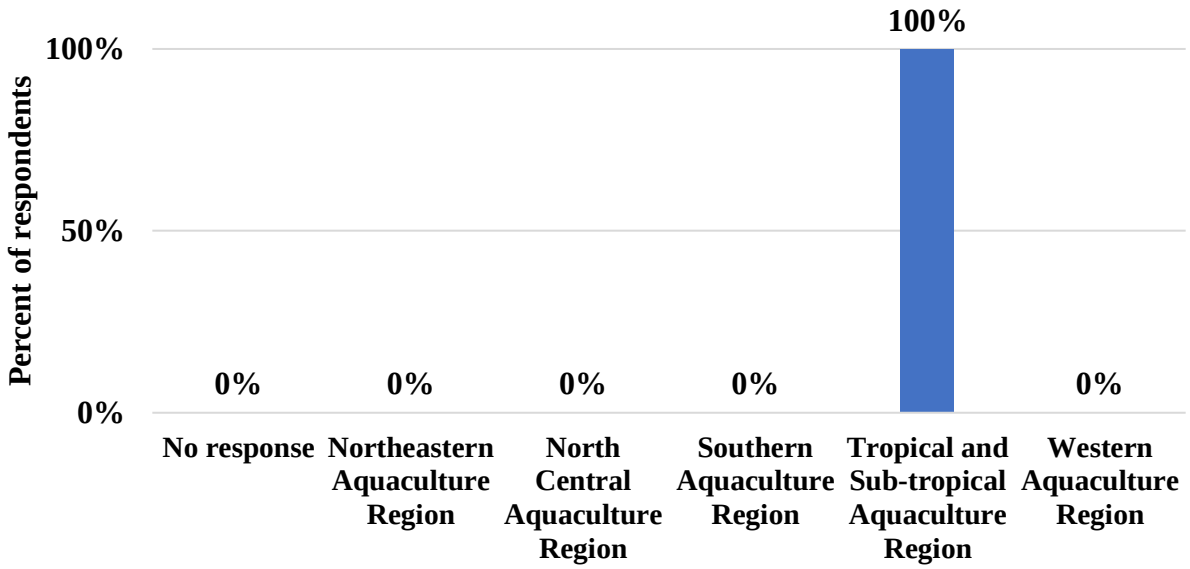
- No response : 17%
- $1 - $1,000 : 0%
- $1,001 - $5,000 : 0%
- $5,001 - $10,000 : 8%
- $10,001 - $25,000 : 8%
- $25,001 - $50,000 : 0%
- $50,001 - $100,000 : 17%
- $100,001 - $250,000 : 8%
- $250,001 - $500,000 : 0%
- $500,001 - $ 1 million : 33%
- Greater than $1 million : 8%
- Cannot estimate at this time : 0%



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

(n = 12)

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

Thank you to all respondents who participated in this study. Also, thank you to all of the national, regional, and state associations, agencies, Extension, and all others who helped us disseminate the survey. There are simply too many names to list, thanks to all of you.