Impacts of COVID-19 on U.S. aquaculture, aquaponics, and allied businesses located in the USDA Southern Aquaculture Region:

Quarter 1 Results

March 23, 2020 to April 10, 2020

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

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, VSG-20-02 available at: https://www.pubs.ext.vt.edu/AAEC/AAEC-218/AAEC-218.html
This report is a supplemental report to the overall survey that summarizes results of the USDA **Southern Aquaculture Region** respondents.

The USDA Southern Aquaculture Region is comprised of the following states and territories: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virginia Islands, and Virginia.

Results

Characterization of Southern Aquaculture Region Respondents

Quarter 1 survey results showed that there were **218 Southern Aquaculture Region participants (41% of total respondents)**, which represents approximately 13% of the aquaculture farms located in the Southern region, based on the number of farms reported in the 2018 Census of Aquaculture (USDA, 2019). Thirty percent of Southern region respondents sold their products to a processor, with 24% selling to a distributor, 16% direct to consumers, 9% selling to restaurants, and 9% to other aquaculture farms (Table 1).

Table 1. Primary marketing channel for survey respondents.

Category	Percentage
Processor	30%
Distributor	24%
Direct to consumers	16%
Other	11%
Restaurants	9%

Other aquaculture farms	9%
Grocery stores / supermarkets	1%

Responding Southern region farms varied in their scales of production. Respondents reported annual sales from $1 to $1,000 to in excess of $1 million (Table 2). The greatest percentage (22%) of respondents reported sales in excess of $1 million, this was followed by farms or businesses with sales between $500,001 and $1 million (15%), $250,001 to $500,000 (13%), $100,001 to $250,000 (12%), and $50,001 and $100,000 (11%). Annual sales for $25,001 to $50,000 and respondents who chose not to answer this question were tied at 8%. Twelve percent of respondents reported annual sales between $1 and $25,000.

Table 2. Scale of survey respondent farms/businesses.

Category	**Percentage**
> $1 million	22%
$500,001 - $1 million	15%
$250,001 - $500,000	13%
$100,001 - $250,000	12%
$50,001 - $100,000	11%
$25,001 - $50,000	8%
No response	8%
$10,001 - $25,000	5%
$1 - $1,000	3%
$5,001 - $10,000	2%
$1,001 - $5,000	2%

The largest portion (34%) of Southern region respondents produced mollusks as their primary product (Table 3). This was followed by 29% of respondents that produced foodfish, 13% “other”, 12% ornamental fish, 6% aquaponics, 2% crustaceans, while baitfish, aquatic plants, and allied businesses were tied at 1%. Amongst the “other” category were aquatic organisms such as alligators, turtles, micro algae, and corals.

Table 3. Primary product of survey respondent farms/businesses.

Category	**Percentage**
Mollusks	34%
Foodfish	29%
Other	13%
Ornamental Fish	12%
Aquaponics	6%
Crustaceans	2%
Aquatic Plants	1%
Baitfish	1%
Allied businesses	1%

Amongst the Southern region producers of foodfish, catfish was the most common species reported by respondents (66%); followed by tilapia (26%), "other" (4%), hybrid-striped bass (3%), and trout (1%). Respondents that selected "other", specified a variety of marine finfish.

Key Findings

Ninety-three (93%) percent of survey respondents from the Southern Aquaculture Region reported that their farm or business had been impacted by the COVID-19 pandemic. Two percent said that their farm or business had not been impacted, and 5% 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; 38% said "probably yes", while another 38% said "probably not". A quarter (25%) of those who said their farm or business had not been affected expected that they would "definitely" be impacted in 2020. 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), only 28% said, "yes". Fifty-five percent reported that their farm or business would "maybe" survive 3 months without external assistance, and **16% said that their farm or business would not survive 3 months without external assistance** (<1% of respondents did not respond to this question). When asked the same question, but for the next 6 months, only 17% said that their farm or business would survive, 46% said "maybe," and **37% said that their farm/business would not survive the next 6 months without external assistance** (<1% did not respond). Increasing the term to 12 months without external assistance, **55% of respondents in the Southern Aquaculture Region indicated that they would not survive**, 37% said that their farm or business would "maybe" survive, and only 7% said that they would survive (<1% did not respond to this question).

Lost Sales

Ninety percent of Southern Aquaculture Region farm or businesses indicated that they had lost sales due to the COVID-19 pandemic. Twenty-eight 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, 18% could not estimate the value of lost sales at the time of the survey. Fourteen percent indicated that they had lost between $100,001 and $250,000 in sales, followed by 13% that had lost between $25,001 and $50,000. Ten percent of responding farms or businesses had lost between $5,001 and $10,000 or $10,000 and $25,000; followed by 9% of survey respondents who reported lost sales values between $1,001 and $5,000 or $50,001 and $100,000. Seven percent of responding farms and businesses had lost between $250,0001 and $500,000, 5% between $500,001 and $1 million, while 2% reported losses greater than $1 million. Some respondents noted that March is normally a strong month for sales. Two respondents reported losses greater than $3 million for the first quarter.

Reported lost sales included canceled private and government contracts; **83% percent of survey respondents reported losing private contracts** for sales and 6% 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. **Ninety-five (95%) percent of responding Southern Aquaculture Region farms or businesses indicated that they expected to lose sales in 2020**, with 31% expecting to lose sales to international markets. Twenty 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, 13% indicated they expected to lose between $100,001 and $250,000. That was followed by 12% of responding farms or businesses that expected to lose between $25,001 and $50,000 or $50,001 and $100,000. A three-way tie exists at 9% for respondents that expected to lose $5,001 to $10,000, $10,001 to $25,000, and $250,0001 and $500,000. Six percent of respondents expected their farm or business to experience between $500,001 and $1 million in lost sales, followed by 4% expecting between $1,001 and $5,000, 3% expecting greater than $1 million, and 2% expecting between $1 and $1,000.

When asked how long their farm or business could survive without sales before suffering longer term cash flow effects, 48% of Southern Aquaculture Region respondents said 1 – 3 months, 18% said 4 – 6 months, 17% said less than 1 month, 9% did not respond to this question, 7% said between 7 and 10 months, while another 1% reported more than 10 months. **It should be noted that data collection through the survey was open for a period of 3 weeks (March 23rd – 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. While 28% of respondents indicated that they "will have to soon". Forty-eight percent of responding farms and businesses had not laid off employees at the time of the Quarter 1 survey. The majority (54%) of Southern region farm or business respondents indicated that they had laid off between 1 and 3 employees. Another 18% had laid off from 4 to 6 employees, 12% between 7 and 10 employees, 8% between 11 and 15 employees, and 8% greater than 20 employees. One respondent specified that they have already laid of in excess of 50 employees. **Forty-nine respondents chose not to specify how many more than 20 employees had been laid off.** Of those employees who had been laid off, 36% of Southern Aquaculture Region respondents indicated that these were "Short-Time" or "Shared-Work" employees.

Respondents were also asked how many weeks before they would have to decide whether to lay off employees. **Fifty-nine percent of survey respondents indicated that they would have to decide within 1 – 3 weeks whether to lay off employees.** Thirteen percent said that they had less than a week to decide whether to lay off employees, and another 21% said that they had between 4 to 6 weeks to make that decision. Only 2% of respondents indicated they had more than 10 weeks to make a decision about laying off employees. **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.** Southern Aquaculture Region respondents were further asked how many employees they would need to lay off at that time. Fifty-seven percent said that they would have to lay off from 1 to 3 employees, 21% said that they would have to lay off between 4 and 6 employees, 9% between 7

and 10 employees, 2% between 11 and 15 and between 16 and 20 employees, and 9% more than 20 employees. **Three respondents specified that they would have to lay off 75 or more employees**. One respondent noted that the dynamic situation meant there was great uncertainty about the exact number of employees that would have to be laid off.

Thirty-three percent of respondents had experienced some type of labor challenge. About a quarter (26%) 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. **Twenty-six percent of responding farms or businesses indicated that employees had missed work between 11 and 14 days, followed by 23% reporting employees had missed between 4 and 6 days, and 21% who reported employees missing more than 14 days of work.** Only 2% reported employees missing less than 1 day of work due to the COVID-19 pandemic.

Respondents commented on labor challenges related to being unable to manage or harvest crops due to illness or shelter-in-place orders. Respondents also noted the loss of highly specialized and trained labor, specifying that it can take many months to train a new person. One respondent noted having to split their employees into two teams working alternate shifts in order to reduce the risk of infection to their labor force. Another respondent noted that although their farm or business had no known case of COVID-19, the fear of infection amongst their employees was already having an impact on their ability to operate. A few respondents noted that employees were forced to stay home as a result of their children being out of school; with one respondent specifying that the safety of their employees and their families was important to them.

Challenges to the Farm or Business

Southern Aquaculture Region farm and business respondents reported a variety of different challenges that included production challenges not related to labor; including effects of holding market-ready product for extended periods of time, interruptions to inputs such as gear or seed, delays in permitting, inspections, a lack of training services to be able to access new markets, lower farm-gate prices, and challenges with financial services. Thirty-nine percent of farm or business respondents reported experiencing production challenges not related to labor. Forty-five percent of respondents reported challenges with production inputs. Twenty-nine percent of respondents noted that they had experienced "other" production challenges. Respondent comments for "other" challenges ranged from issues obtaining seed for shellfish to obtaining gear and equipment, parts and tools for repairs, construction services, and specialized diagnostic services. Twenty-seven percent of respondents noted specific challenges with repair, construction, or engineering services, tied with 27% who could not identify the specific challenges at the time of completing the survey. Twenty-four percent of respondents had experienced challenges with financial services. Comments related to financial services indicated challenges with bank hours and closures in response to the pandemic, challenges with operating loans, inability to pay off existing debts due to a lack of revenue, and issues with refinancing.

More than half (51%) of respondents indicated that they could hold market-ready product for 1 to 3 months before it would interfere with future crops. Twelve percent said that they could hold market-ready product for 4 to 6 months before it would become a problem for future crops or plantings, and 20% said that they could hold market-ready product for less than 1 month

before experiencing consequence for future crops. Only 3% of respondents could hold market-ready product for more than 10 months before experiencing issues with new crops or plantings. Comments noted issues with space for new seed and increasing densities of product in culture units; with increasing risk of disease outbreaks or mortality. Other comments discussed the price of fingerlings increasing and challenges with obtaining fingerlings.

When asked about expected challenges as a result of the COVID-19 pandemic, 50% of respondents expected to face challenges with production inputs, 36% expected challenges with financial services, 26% expected challenges with repair, construction, consultant, or engineering services, and 16% could not specify the production challenges they were expecting.

Marketing of Products

Sixty-seven percent of respondents indicated that holding market-ready product would make it less marketable in the future. Seventy-three percent responded that holding product would result in a reduced quantity sold and 69% responded it would result in a reduced price for products. Several respondents commented about concerns that their farm product would exceed the ideal market size; making it harder to sell and less valuable. Others noted that their level of risk had increased by keeping product in the water longer. More than one respondent noted concerns about consumers being unable to afford to buy their products as the overall loss of employment continued to grow. A few respondents expressed concerns about prices as farms and businesses rush to sell product when markets reopen. Several respondents expressed concerns that their product could not be held for extended periods of time and would instead be lost. A few noted challenges in switching to a new marketing channel.

Increased Demand for Products

Four percent of Southern region respondents reported increased demand for their products. Of those respondents that indicated an increased demand for their products, 44% could not estimate the value of increased sales at the time of completing the survey. The remaining respondents experienced between $1,001 and $5,000 in increased sales (22%), between $1 and $1,000 (11%), between $250,001 and $500,000 (11%), or chose not to respond to this question (11%).

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. Sixty-eight percent of Southern Aquaculture Region respondents indicated that federal assistance would increase the likelihood of survival of their farm or business. Forty-five percent said that assistance from the state would help, 22% from local government, and 14% said assistance from associations would be helpful.

When asked more specifically about the types of assistance that would be helpful to their farm or business, 31% of respondents said that loan guarantees would be helpful, 29% said assistance identifying new markets, 28% said specialty crop insurance, 26% said waiving or delaying of State fees, and 10% said tariff relief. Twelve percent of respondents suggested other measures that would be helpful to their farm or business. Amongst the comments for “other” programs, respondents mentioned that grant programs would be helpful to their farm or business. A few respondents specifically mentioned support for buying and planting seed. One respondent mentioned that support from Extension agents to stay informed of current financial, insurance,

and market opportunities was helpful. 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 12% said “Yes”, with 14% saying “No”, and 74% not responding to this question.

Discussion and Conclusion

Responses by Southern 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-three percent of responding farms or businesses indicated that they had been affected by the pandemic. Ninety percent had experienced lost sales, and 83% have had orders from private contracts canceled (6% 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. A majority of respondents (67%) indicated that holding market ready product would make it less marketable in the future; with resulting consequences for the quantity of product sold (73%), and reduced prices for products (69%). Several respondents also commented on challenges with future planting or stocking. Comments provided by respondents suggest longer term consequences to production and financial positions that will likely extend beyond 2020. Only 28% of Southern Aquaculture Region farm and business respondents indicated that their farm or business would survive the next 3 months without external assistance. Longer-term effects on the region’s aquaculture, aquaponics, and allied industry should be of concern; with only 7% of respondents indicating they were confident of surviving 12 months without external intervention.

Key findings from Southern region farm and business respondents include:

- 93% have been impacted by COVID-19
- 83% have had orders/contracts canceled
- 53% have or will soon have to lay off employees
- 90% have experienced lost sales
- 28% 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.