

**The Massachusetts Department of Agricultural Resources' Survey Report on the Impact
of COVID-19 on the Massachusetts Agricultural Community**

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Introduction

The Department of Agricultural Resources (DAR) distributed a survey to the farming community on May 5th, 2020 to investigate the effects of COVID-19 on Massachusetts agriculture. The survey was distributed via Survey Monkey and mail. The online survey was closed to respondents on June 1st, and paper surveys distributed by DAR's Produce Safety Team have since trickled in the mail weekly. The survey was designed with various input from DAR team members.

The total number of respondents is 311. This represents 4.29% of farms in Massachusetts. The survey is organized in the following manner:

Questions 1-5 focus on farm characteristics	Pages 2-6
Questions 6-7 focus on employment	Pages 7-11
Questions 8-10 focus on production questions	Pages 12-14
Question 11 focuses on produce donations	Pages 15-16
Questions 12-13 focus on costs	Page 17
Questions 13-14 are open ended and focus on assistance and support	Pages 18-19
Question 16 asked for contact information	Page 20

Farm Characteristics

Question 1: What County is your farm located in?

Farm locations are representative of Massachusetts agriculture with the exception of an over representation from Barnstable County. Barnstable County represents 11.6% of total survey respondents while Barnstable County represents only 4.4% of total farms in Massachusetts. This is a 7.2% deviation. No other county representation deviates from their respective Massachusetts farm representation by more than 4%. The table below summarizes response proportions for the survey relative to actual Massachusetts farm representation.

MDAR COVID-19 Farm Survey Response Representation by County

Massachusetts County	Survey		Actual		% difference
	n	%	N	%	
Barnstable	36	11.6%	321	4.4%	7.2%
Berkshire	12	3.9%	475	6.6%	-2.7%
Bristol	20	6.5%	688	9.5%	-3.0%
Dukes	15	4.8%	108	1.5%	3.3%
Essex	18	5.8%	419	5.8%	0.0%
Franklin	27	8.7%	830	11.5%	-2.8%
Hampden	13	4.2%	523	7.2%	-3.0%
Hampshire	27	8.7%	692	9.6%	-0.8%
Middlesex	35	11.3%	620	8.6%	2.7%
Nantucket	1	0.3%	21	0.3%	0.0%
Norfolk	6	1.9%	197	2.7%	-0.8%
Plymouth	42	13.5%	758	10.5%	3.1%
Suffolk	2	0.6%	21	0.3%	0.4%
Worcester	56	18.1%	1,568	21.7%	-3.6%
Total*	310	100.0%	7241	100.0%	0.0%

Source: MDAR COVID-19 survey; USDA 2017 Census of Agriculture

*One farm did not share its location

Question 2: How many acres are on your farm?

Question 3: How many acres do you plan to have in production this year?

Total Massachusetts Farm Acreage and Production			
	Total Farm Acreage	Planned Acres for Production This Season	Utilization Proportion
Average	79	53	67.1%
Median	21	10	47.6%
Total	24,661	16,398	66.5%
Source: MDAR 2020 survey on COVID-19			
Total Farm Acreage n=309; Planned Acres for Production This Season = 308			

The table above includes all surveyed farms. Some farms may not be appropriate to include in “acres planned for production.” For example, an equine farm may report a large amount of acreage on the farm, but zero acres in production this season. Aquaculture farms have difficulty

measuring acreage. For this reason, the table has been revised below and excludes farms that report having equine and aquaculture operations.

Total Massachusetts Non-Equine and Non- Aquaculture Farm Acreage and Production			
	Total Farm Acreage	Planned Acres for Production This Season	Utilization Proportion
Average	94	63	67.0%
Median	35	13	37.1%
Total	23,688	15,813	66.8%

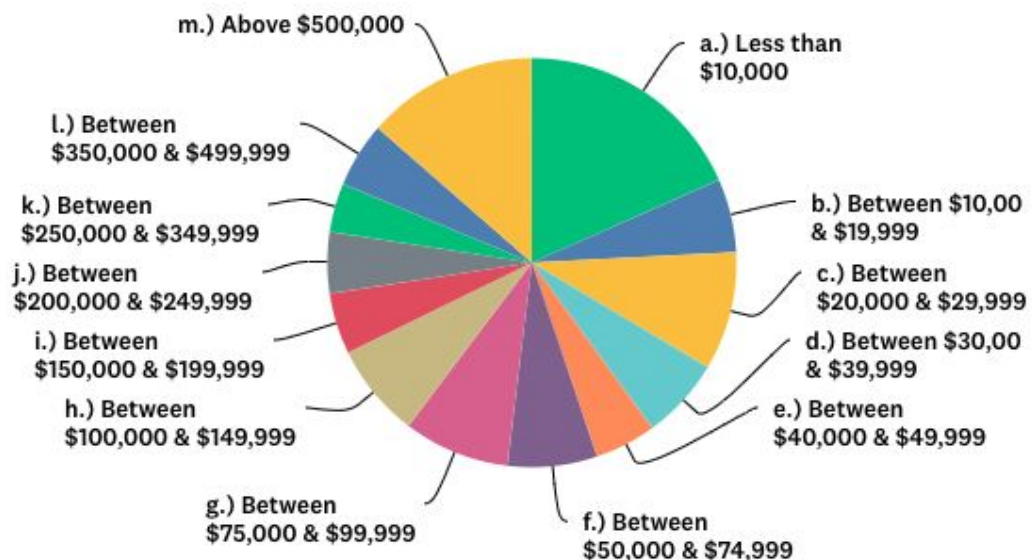
Source: MDAR 2020 survey on COVID-19

Total Farm acreage n=252; Planned Acres for Production This Season = 251

Both total farm acreage, and planned acres for production this season are larger for both median and average sized farms when excluding equine and aquaculture farm operations. It is interesting to note that the median farm utilization proportion differs by 10.5 percentage points between the two tables.

Question 4: Please estimate approximately what were your agricultural sales in 2019?

Answered: 310 Skipped: 1



There are two sales categories that are significantly under and overrepresented in the survey. Those two categories are farms earning less than \$10,000, and farms earning above \$500,000. One explanation for this is that farms who earn more have more contact with MDAR in general, and therefore are more likely to respond to this survey. It is noteworthy that farms earning between \$75,000-\$99,999 and \$100,000-\$149,999 also are overrepresented by 5.6% and 5.8%, respectively

Massachusetts Farm Survey Response Representation

Revenue Sales Category	Survey		Actual		% difference
	n	%	N	%	
Less than \$10,000	57	18.4%	4777	66.0%	-47.6%
Between \$10,000 and \$19,000	18	5.8%	599	8.3%	-2.5%
Between \$20,000 and \$29,999	29	9.4%	366	5.0%	4.3%
Between \$30,000 and \$39,999	20	6.5%	191	2.6%	3.8%
Between \$40,000 and \$49,000	15	4.8%	145	2.0%	2.8%
Between \$50,000 and \$74,999	22	7.1%	203	2.8%	4.3%
Between \$75,000 and \$99,999	26	8.4%	203	2.8%	5.6%
Between \$100,000 and \$149,999	23	7.4%	114	1.6%	5.8%
Between \$150,000 and \$199,999	15	4.8%	114	1.6%	3.3%
Between \$200,000 and \$249,999	15	4.8%	114	1.6%	3.3%
Between \$250,000 and \$349,999	12	3.9%	80	1.1%	2.8%
Between \$350,000 and \$499,999	16	5.2%	121	1.7%	3.5%
\$500,000+	42	13.5%	217	3.0%	10.6%
Total	310	100.0%	7241	100.0%	0.0%

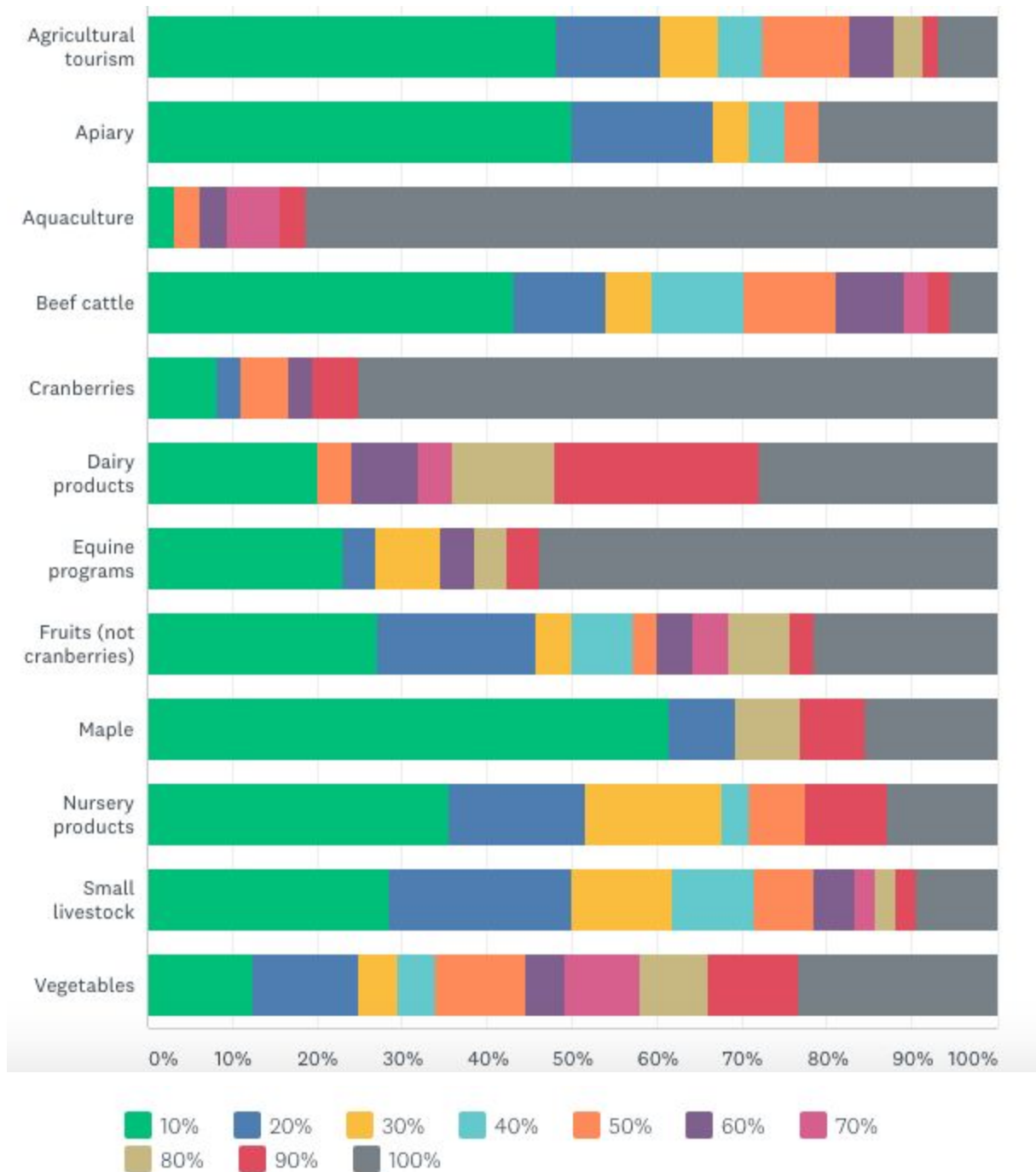
Source: MDAR COVID-19 Survey; 2017 USDA Census of Agriculture

Question 5: Please indicate below approximately what percentage of income each product is responsible for on your farm. Example, if you only produce dairy products, please fill in 100% for dairy products. If you do not produce a product, leave it blank.

This question presented farmers with a matrix of farm products in the y-axis and production percentages on the x-axis. The x-axis has choices of 0% to 100% in increments of 10%. There were 289 respondents to this question with 22 survey takers skipping this question. It is important to note that not all individual responses tally to 100%. Some tallies exceeded 100% while others fell short of 100%. This makes analysis by agricultural sector difficult. There was an “other” category provided which many individuals responded that they produced hay.

The graph below shows the proportions of farm production. For example in the first bar, almost 50% of farms reported that agri-tourism represented 10% of their sales. Aquaculture, cranberry, and equine farms have relatively many respondents reporting that 100% of their business are in

these respective fields. The graph provides a useful guideline that shows how Massachusetts farmers diversify their production.



Employment

Question 6a: At the beginning of 2020, were you or a family member (who works on the farm) gainfully employed in a non-farming operation, or paid for off-farm work unrelated to your farm operation? (Y/N)

There are 306 responses to this question, and 152 reported yes (49.6%). Approximately 50% of responses indicated themselves or a family member who works on the farm had off-farm income at the beginning of 2020.

Many farmers both nationally and in Massachusetts have off-farm jobs. Off-farm income has become an increasingly important resource for farmers. According to the 2017 USDA Census of Agriculture, 63% of Massachusetts farmers report having off-farm jobs, and 55% of Massachusetts farmers report that a non-farming job is their primary job.

Question 6b: If yes, what was the occupation(s)? More analysis must be done on this.

This answer was open ended and a variety of answers were provided:

Accountant	First Responder	pet maintenance
Agricultural fair	floral designer	Plumber, Ag Member Svc
assembly tec	Food systems consultant	Police chief
Audio Technician	Freelance writer	Practice Administrator
Automotive technician	Furrier	Probation Officer
baker	Gas Station Manager / Oil Truck Driver	Programmer
Barista at starbucks	Golf Course Owner	Property management
Biologist, Landscaper, Mechanic	Grounds & LCO	Psychotherapist in private practice
Biologist	Health care worker	QA master tech
Bookkeeping	Healthcare and design	real estate management
bowling alley mechanic	Higher ed staff	research admin
candle maker	Hotel Management	Research Associate
card shop	Stonemason contractor	Research lab tech
Chem engineer	I am a sales rep selling jams to other farms	restaurant
commercial fisherman	Ice Rink employee	Restaurants
Commercial Fisherman	Information Technology, education	Retail Sales
commercial fishing	insurance	retired teacher
commercial real estate rental	IT Director	sales
conservation administrator	Landscaping, Farmers Market Manager	Sales; lawyer
Construction	Legal secretary	Sales/svc Ag related company
Construction	Library	School aid

Consultant	machine shop	SE
Consulting	Maintenance at a Voke School	Self employed food business
Consulting	Manufacturing / Accounting	Self employed Retail
consulting	marine and server	self-employed constructor
consulting forestry	marine field	Semi-retired real estate appraiser
counseling (myself), transportation (son)	marine scientist	Tattoo Artist
Cranberry growing manager, hairdresser	Marketing agency director	tax preparation
crop insurance adjuster	Math professor	Teacher
Custom Hire Ag field services	Mechanic	Teacher
Day care worker	Military, education	Teacher
Dog Boarding/Kennel	Mortgage Processing Manager	Teacher
Education	Motor coach driver	Teacher
Energy related	Municipal	Teacher
engineer	Music Teacher	Teacher; consultant
Engineer	musician	Teaching
engineer	NA	Teaching
Engineering, farmers market manager	Nat gas utility-electric supply co	Teaching and Landscaping
Equine Dentistry	Neuropsychologist	Therapist
Farm director for non-profit	Non-Profit	Trucking
farm owner	non-profit administrator	United States postal service
farm store/ kitchen	Nursing	utility worker
Farmer for another farm	odd jobs, laborer types	Venture capital
Feed and landscape retail store	Organic Inspector	video production
Field Agent, Land For Good - & Office Manager, Foxbard Farm	owner	Warehouse Manager
Finance	Owner	writer
Finance and engineering	owner	
Financial services	Oyster farming	
Firefighter	Painter	
Firefighter	PCA & Truck Driver	

Question 6c: Have you or your family member(s) (who works on the farm) been let go or furloughed from any of these jobs as a result of COVID-19? (Y/N)

There were 54 out of 269 respondents who reported that themselves and or a family member (who works on the farm) had off-farm jobs at the beginning of 2020. However, there were 9 individuals who responded no to question 6a, and 1 individual who did not answer 6a who responded yes to this question. This means that 10 individuals have inconsistent answers to this question 6c and 6a.

When we look only among individuals who responded yes to 6a, the number of individuals who responded yes to this question is 44 out of 150, or 29.3%. There were 2 individuals who responded yes to 6a and did not answer this question. The unemployment rate in May for Massachusetts was 16.3% or 576,100 individuals (Source: [Massachusetts Department of Unemployment Assistance](#), 2020; note that furloughed workers do not have to be looking for work to be classified as unemployed). This survey therefore suggests that the farming community experienced a high level of unemployment as a result of COVID-19.

Question 7a: How many workers do you usually employ during your peak season (including yourself and family)?

The total reported number of workers is 2,750. This represents approximately 10% of total Massachusetts farm labor. If respondents gave a number range, the lower bound was used. Example, the range “5-10” would count as 5 in the analysis to be conservative.

Question 7b: Do you plan to hire the same number of workers as usual this year?

There are 206 respondents out of 300 total respondents (68%) who said yes.

Question 7c: Have you hired any workers as a result of COVID-19? If so how many? Were these workers full-time or part-time or both?

There are 42 respondents out of a total 294 respondents (14.2%) that have hired new workers as a result of COVID-19. We cannot tell if the workers are part-time or full-time because many respondents simply responded “yes” without specifying.

Question 7d: Have you furloughed or let go of any workers as a result of COVID-19? If so, how many? Were these workers full-time, part-time, or both?

There are 43 respondents out of a total of 299 responding farms (14.3%) that have furloughed or let go of workers as a result of COVID-19. We cannot tell if the workers are part-time or full-time because many farms simply responded “yes” without specifying. Ideally, we would know if a farm uses outside family labor. This is because a farm that uses (often free) family help and answers “no” is not directly comparable to a farm that does hire outside help and also answers “no.” Ideally, we would only compare farms that pay for labor among each other.

Question 7e: Do you employ workers through the H2A program? If so, have they / will they arrive on time this year?

There are 10 farms out of a total 288 responding farms (2.8%) that report employing workers through the H2A program. We cannot tell when or if the workers will arrive this year because many farms simply responded “yes” without specifying.

Question 7f: Do you anticipate needing more farm labor than you will be able to find? If so, how many more farm workers do you need?

There are 53 farms out of 295 responding farms (17.9%) that report needing more farm labor this year than they will be able to find. It is difficult to measure how many total workers these farms will need because some farms simply responded “yes” to this question without specifying, while other farms specified the exact number. If we count the farms that responded “yes” as one to be conservative, then the total reported farm workers that will be needed is 223.5 (one farm responded “1.5”). Below is a table summarizing the results. Ideally, we would know if a farm only uses family for labor, and exclude this group from analysis. This is because these farms may respond “no” to this question simply because they never seek more farm labor. Ideally, we would only compare farms who hire outside farm help among each other.

Number of Massachusetts Farm Workers Employed Reported in MDAR COVID-19 Survey		
Number of Workers Employed	Frequency	Percent of Total
0	242	82.09%
1	20	6.76%
2	13	4.39%
3	5	1.69%
4	2	0.68%
5	5	1.69%
6 or more	8	2.70%
Source: MDAR COVID-19 Survey		
Note: One individual responded "1.5" and is counted as 1 in this table.		

Question 7g: Do you anticipate needing additional housing for seasonal workers due to the need to quarantine workers if they become ill?

There are 13 farms out of 291 responding farms (4.4%) that report anticipating needing additional housing for seasonal workers due to the need to quarantine workers if they become ill. It is difficult to interpret this result because some of the respondents who replied “no” may not provide housing for seasonal workers at all, or even have seasonal workers. These respondents should not be counted in analysis, but there is no way to tell if a farm hires seasonal workers or

not. Ideally, we would only compare farms who provide housing for seasonal workers among each other.

Production

Question 8: Please select all statements that best fit your situation:

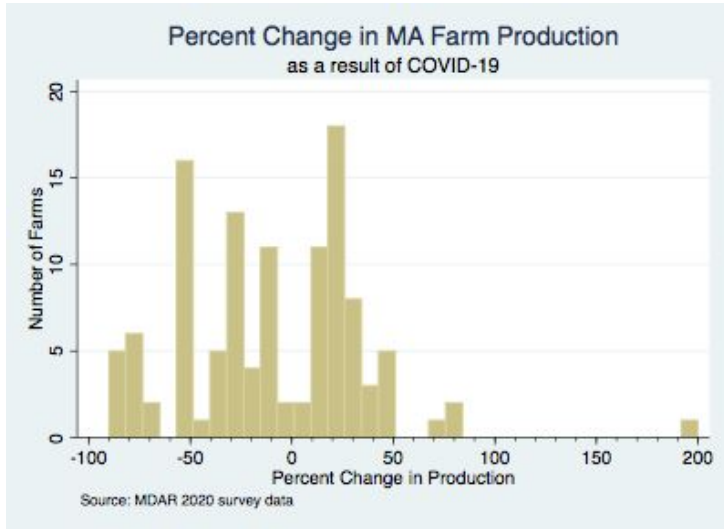
- a.) I will produce more than I was initially planning on producing this year as a result of COVID-19.
- b.) I will produce less than I was initially planning on producing this year as a result of COVID-19.
- c.) COVID-19 has no effect on my production decisions, and I will produce the same amount that I was initially planning.
- d.) If you select a.) or b.), approximately what percent change will you increase or decrease your production as a result of COVID-19:

The table below summarizes the results:

Question 8 Summary Statistics			
	Responses	Percentage	Number of Responses
A.) Increase	60	20%	300
B.) Decrease	88	29%	300
C.) No change	152	51%	300
Produce a different Crop	23	7.85%	300
%change production mean	-	-9.33%	116
%change production median	-	-10%	116

Source: MDAR COVID-19 Survey

Over half of respondents replied that they will not change their production as a result of the pandemic. There are 9% more respondents indicating that they would reduce their production than increase their production. Note that 32 respondents who indicated that they would either increase or decrease their production did not provide an estimate as to how much they would change production. Below is a distribution graph of respondents' estimated changes in production. There is one outlier who indicated that they would increase their production by almost 200%. Most of the data is banded between -50% and 50%.



Question 9: Before COVID-19, approximately what percentage of your farm income did you derive from each sales outlet?

Answered: 252 Skipped: 59



The coloured boxes on the chart indicate what proportion of farm sales are in the respective category. Selling through a distributor/aggregator is the most popular selling method as it has the most farms that 100% practices this method.

Question 10: As a result of COVID-19, have you engaged in any other new sales models (e.g delivery, curbside pick-up, institutional markets, farmers markets, new products, etc..)? If so, please list:

This question was open ended, and therefore provided a large variety of answers. There were 291 responses. The open ended answers are sorted into several categories. The categories and response rates are:

- Delivery -> 30 (10%)
- Curbside pickup -> 70 (24%)
- Online or virtual, but did not specify delivery or curbside pickup -> 9 (3%)
- Responded “yes” but did not specify further -> 3 (1%)
- Responded “no” -> 161 (57%)
- Other -> 37 (12%)

Farms may fall into multiple categories, so the totals do not sum to 291. For example, one respondent reported “Online ordering, curbside pick up, deliveries, csa, plant sale.” This individual is represented in the categories curbside pickup, deliveries, and other. This individual does not qualify for the “online” or “virtual category” because they specifically mentioned curbside pickup and delivery. This distinction was chosen because a customer could potentially order online, but delivery or curbside pickup would be the manner by which the customer receives the product. A common method in the “Other” category is selling through CSAs.

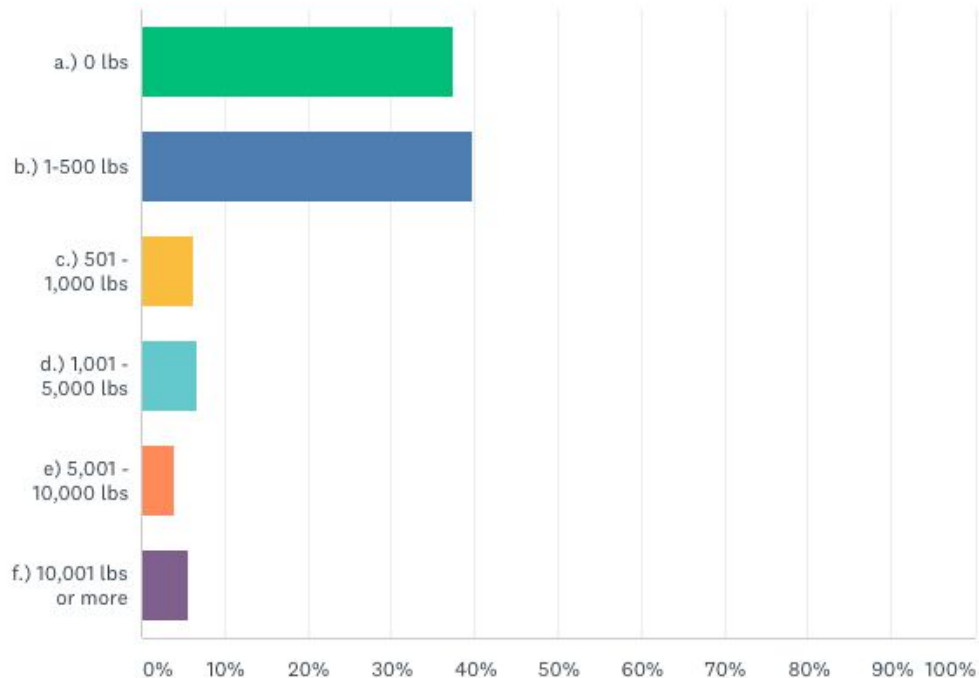
Produce Donations

Question 11: How many pounds of produce have you donated in the past?

The bar chart below shows the results. Most farms have either not donated or donated in the 1-500 lb category in the past.

How many pounds of food have you donated in the past?

Answered: 299 Skipped: 12



The table below accounts for only produce farmers based on responses to question 5. A farm is counted as a “produce farm” if they report that they grow either cranberries, non-cranberry fruits, or vegetables. The percent of a farm’s business that these categories are responsible for is not taken into account. For example, one farm could report that vegetables account for 10% of its operations, and another farm could report that vegetables account for 100% of its operations. Both of these farms will be counted as a “produce farm” in the table below. The same logic applies to column (3)’s non-cranberry produce farms with the exception that (3) excludes cranberry farms.

Pounds of Produce Donated in the Past by MA Farms			
	(1)	(2)	(3)
	All Farms	Produce Farms	Non-cranberry Produce Farms
0 lbs	112	29	12
1 lb to 500 lbs	119	20	10
501 lb to 1,000 lbs	19	3	3
1,001 lbs to 5,000 lbs	20	5	5
5,001 lbs to 10,000 lbs	12	4	4
10,001 lbs or more	17	4	4
Number of Farms	299	65	38
Source: MDAR COVID-19 Survey			
Produce Farms are farms that reported to produce fruits and vegetables			
Non-cranberry Produce Farms are farms that reported to produce non-cranberry fruits and vegetables			

Total responses are reported in column (1), farms that indicate that they grow produce are reported in column (2), and farms that produce non-cranberry produce are in column (3). This brings up an interesting issue. Because columns (1) and (2) are equal, the table reveals that there are farms who have donated food in the past, but no longer grow produce. There are several possible explanations. First, it is possible that some of these farms used to grow produce in the past and also used to donate the produce in the past. Second, farms that should have indicated that they grow produce in question 5 did not. Third, farms attained produce by other means (e.g purchase) besides growing and then donated the food. Fourth, farms donated other non-produce items, but counted these items as produce for the purpose of this question. The time period for the question “in the past” was not defined which may have caused additional inconsistencies among responses.

Costs

Question 13: What are your top 3 cost increases due to COVID-19? Please list:

This question was open ended, and a large spectrum of answers was provided by respondents. There are 252 responses with 59 respondents who skipped this question. The open ended answers are sorted into several categories below:

- None -> 73 (29.6%)
- Safety materials (PPE- personal protective equipment) -> 49 (19.9%)
- Labour -> 50 (20.3%)
- Materials and capital -> 130 (52.8%)

The totals do not sum to 252 because farms may fit into multiple categories. Materials and capital is the broadest category. This category includes things such as seed, general supplies, chemicals, hay, gas, shipping, fertilizer, and other costs that are necessary for business operations.

Assistance and Support

Question 14: Since COVID-19 has affected operations, have you received any support from the following groups? If so please explain what type of support:

- a.) Community (e.g. neighbors, friends, family)
- b.) Private sector (e.g. banks, mortgage lender, rent, suppliers)
- c.) State government (e.g. grants, loans, technical)
- d.) Federal government (e.g. stimulus, technical)

This was an open ended question with a total of 271 farmers answering this question and 40 respondents who skipped this question. Below is a summary of each section:

Section a.): 102 farmers report support of any kind, and 109 farmers report no support. Responses ranged from “Community is eager to buy local,” “Warm wishes,” and other responses involving family volunteering on the farm.

Section b.): 38 farmers report support of any kind, and 148 farmers report no support. Responses ranged from “CISA has been helpful, as has been Farm Bureau,” to responses about banking assistance (more credit, lower interest rate).

Section c.): 44 farmers report support of any kind, and 151 farmers report no support. Responses ranged from “yes” without further explanations, “webinars,” “MA” without clarification of this meaning, MDAR grants, and unemployment benefits.

Section d.): 99 farmers report support of any kind, and 132 farmers report no support. Most answers involved PPP, loans/grants, or stimulus. There was one answer “Ine” that is counted towards the 98 responses of support, but the meaning is unclear. All responses that were not a “no,” “n/a,” or “none” counted toward the 98.

Some wrote PPP loans for private, and state support. The federal PPP loans are administered by private institutions, so it may be unclear to some if PPP should count as federal or private support.

Question 15: What further support or assistance would you find most helpful?

This question was open ended, and a variety of answers were provided by respondents. There are 250 responses with 61 farms who skipped this question. The open ended answers are sorted into several categories:

- Money/funding/grants/loans - 98 (40%)
- COVID safety guidelines - 18 (7.3%)
- Safety equipment - 18 (7.3%)

- Industry specific - 23 (9.3%)
- Less regulation - 29 (11.8%)
- Other - 71 (28.9%)

Many of the “COVID safety guidelines” category involved pick-your-own operations. The “safety equipment” category involved many comments that said “PPE” or “safety if we do markets.” Industry specific refers to a comment that is only applicable to one industry. For example, many aquaculture growers commented on regulations that prevent them from selling directly to consumers. This particular comment would qualify not only for the industry specific category, but also the less regulation category. Less regulation ranged from “restart lesson programs when it safe” to “retract restriction so that sales can stabilize and maintain” to “Opening the market backup.” The other category contains many different unrelated comments. Examples include:

“Don't know”

“We need to sell Oysters!”

“Just worried our agritourism will be shutdown this year. It has become a large portion of our farm”

“Publicity to encourage people to attend farmers markets and shop at farm stands this summer and fall.”

“Babysitters”

“?”

“Assistance”

“Would appreciate any info as it becomes available.”

Question 16: This question asked farms to provide contact information. There are 200 farms which provided some information, and 104 who skipped this.