Cornell Cooperative Extension
AGRICULTURAL WORKFORCE DEVELOPMENT

COVID-19 prevention efforts by New York farmers

A survey of farm managers conducted during summer 2020

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Introduction

New York farmers confronted a massive, new challenge in 2020 from the global pandemic caused by the novel coronavirus and the disease it causes in humans, COVID-19. This research was designed to capture a snapshot of the actions that farmers took in their businesses to prevent the spread of the coronavirus among the farm workforce, customers, and other farm visitors, and in the local community. As essential businesses, New York farmers were faced with the unenviable task of maintaining operations, while at the same time being responsive to numerous infection prevention directives.

Towards the end of March 2020, farmers received an avalanche of information about COVID-19 prevention. This information came in the form of scientific information and best practices from several organizations, including: Cornell University, the New York Center for Agricultural Medicine and Health (NYCAMH), Cornell Cooperative Extension (CCE), and from various medical organizations. It came from federal and New York State government agencies in the form of best practices, scientific information, recommended guidelines, and legally-binding executive orders. Even farm organizations and worker advocacy groups were engaged in various forms of outreach to farms. Farm managers grappled with the task of absorbing this avalanche of information to identify the relevant aspects for their farm and to implement practices into their daily operations.

Methodology

The “COVID-19 producer actions” survey measured the extent of producer action in adopting COVID-19 prevention measures that were widely recommended by government agencies, scientists, and management experts. Items in the survey were drawn directly from publications and educational materials intended to teach best practices to farmers. A draft of the survey was reviewed by experts from Cornell College of Agricultural and Life Sciences and by a panel of five farm managers. Researchers incorporated the changes and suggestions provided by experts and farm managers into the final survey.

Sections of the survey included: farm and manager demographics, general prevention measures, and specific prevention measures for employee housing, transportation, and retail operations. Respondents were asked to rate the extent of their adoption of particular measures using the four response categories shown in the following example:

Management action	Response categories			
Provided training for employees about the coronavirus and how to prevent its spread	Not at all	Some, but more could be done	A lot, we are doing all that we can	Not applicable to my business

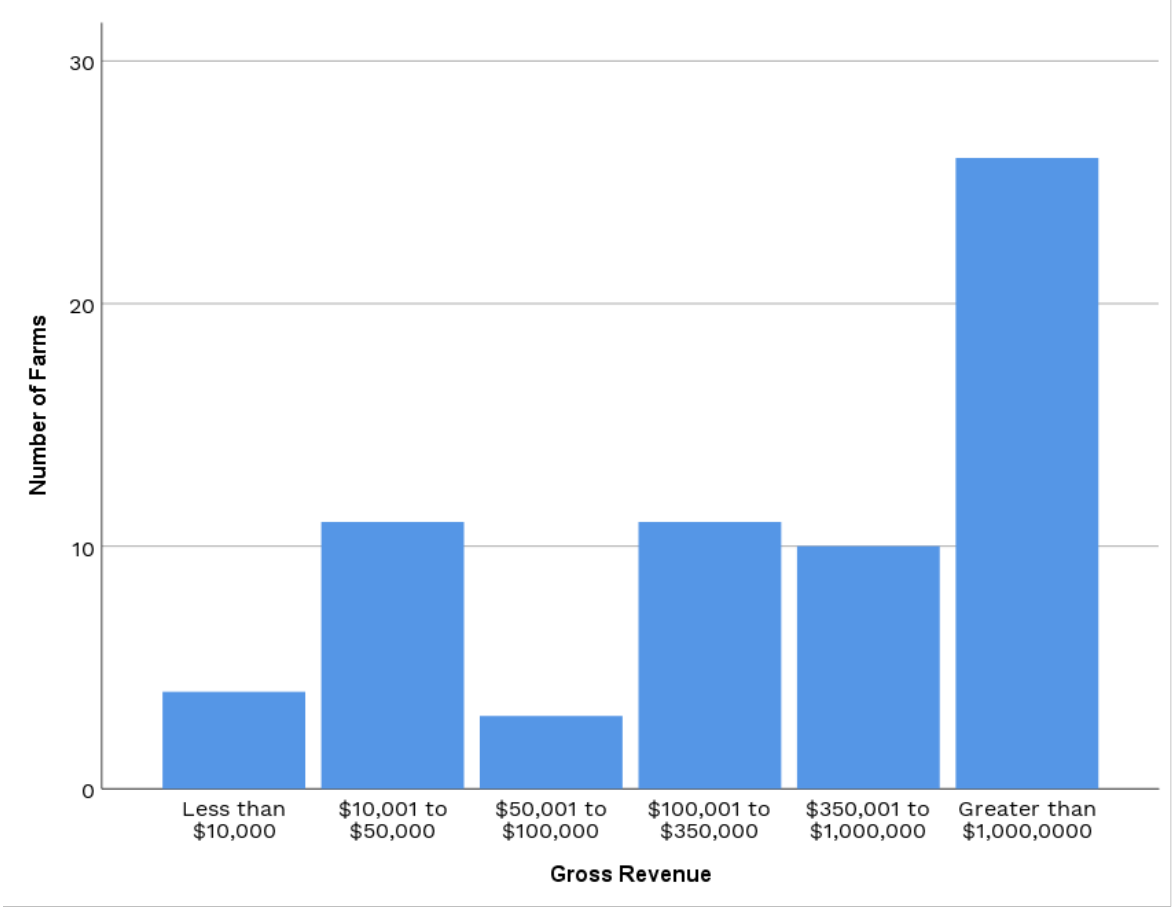
The response "not applicable to my business" was included because some prevention measures might be irrelevant to a particular business. In the example above, providing training for employees is very important if a farm has employees but not applicable if it does not.

The survey was developed and distributed in a format that was readily accessible through computers and mobile devices using Cornell University's online survey software. Cornell Agricultural Workforce Development distributed a survey link to farmers and encouraged other organizations to further distribute the survey for farmers to access. The survey was available from July 30, 2020 to August 18, 2020. This timeframe was used to record information from farmers while they were still actively managing COVID-19 prevention and while many farmers had their seasonal employees in place. Unfortunately, this period is also a very busy time for farmers, making it difficult to get their attention to complete a survey. 120 total responses were received, 46 were removed as incomplete, and several others were removed because they were not from active farmers based in New York. The final dataset included 70 complete responses from active New York farmers. Researchers analyzed the data using SPSS to prepare simple descriptive and summary information.

Respondent Demographics

Larger, commercial farms submitted the most usable survey responses. We asked farmers to report their maximum number of employees throughout the year. The mean number of employees was 30, with the range extending from 0 employees to a maximum of 325. In another measure of scale, farms with greater than $1,000,000 in annual gross revenue represented the largest category. **Figure 1** shows the distribution of farms by gross revenue.

Figure 1. Size distribution of farms by annual gross revenue



Respondent farms were quite diverse in their type of production. We allowed farmers to select multiple production types to describe their farms and the results reflect the diversity of New York agriculture commodities within the industry and of enterprises within individual farm businesses. The largest New York production types: dairy, vegetables, tree fruit, and field crops, were well represented as shown in **Table 1**.

Table 1. Types of farm production indicated by participants (n=70)

Farm production type	Count	Percent*
Other (agritourism, Christmas trees, winery, poultry, etc.)	17	24%
Dairy	15	21%
Vegetables	15	21%
Field crops/forages	14	19%
Tree fruit	12	17%
Landscape or green industry	10	14%
Vineyard	10	14%
Other livestock	7	10%
Beef cattle	4	6%
Forest products	3	4%

* Column totals to more than 100 percent because respondents could choose multiple production types.

General COVID-19 prevention measures

Some COVID-19 prevention measures were possible for most, if not all, farms. Six farms in the group of 70 respondents had no employees. These farms represent most of the "not applicable to my business" responses shown in **Table 2**. The possible management actions are listed in descending order based on the percent of respondents who indicated the extent of their adoption of each action was: "a lot, we are doing all that we can." Respondent farms took basic COVID-19 prevention measures very seriously with over 70 percent indicating they were doing "a lot" with respect to hand sanitation and providing face coverings. Around 60 percent of farms indicated they did "a lot" to provide training for employees about coronavirus and place signs in the workplace. When "a lot" and "some, but more could be done" are combined, over 70 percent of farms were taking actions on: hand washing, providing face coverings, training, signs, new cleaning, and required face coverings.

Table 2. COVID-19 management actions by all farms (n=70)

Management action	A lot, we are doing all that we can	Some, but more could be done	Not at all	Not applicable to my business
Improved employee access to hand washing stations or provided hand sanitizer.	74.3%	11.4%	5.7%	8.6%
Provided face coverings/masks for employees.	74.3%	8.6%	8.6%	8.6%
Provided training for employees about the coronavirus and how to prevent its spread.	62.9%	24.3%	4.3%	8.6%
Placed signs or posters in the workplace to help warn and educate employees about COVID-19.	58.6%	12.9%	14.3%	14.3%
Established new procedures for regular cleaning of high-touch places in the workplace. (doorknobs, bathrooms, tools, equipment, etc.)	55.7%	24.3%	11.4%	8.6%
Required face coverings/masks be worn at work when social distancing (6 feet apart) cannot be maintained.	54.3%	18.6%	20.0%	7.1%
Changed meetings, trainings or other group events to increase social distancing.	51.4%	12.9%	14.3%	21.4%
Notified employees about sick leave time to prevent infected or potentially infected employees from coming to work.	44.3%	30.0%	8.6%	17.1%
Changed work areas or work flow to increase distance between employees or reduce numbers of workers in an area.	44.3%	18.6%	24.3%	12.9%
Established a log or other tracking system to ensure that virus prevention tasks are completed consistently.	38.6%	14.3%	32.9%	14.3%
Changed employee break or lunch spaces to increase social distancing.	27.1%	22.9%	21.4%	28.6%
Changed work schedules to reduce contact among employees.	25.7%	10.0%	41.4%	22.9%
Modified work areas or equipment with plastic screens or other measures to prevent spread of the virus.	21.4%	12.9%	42.9%	22.9%

Another subset of COVID-19 prevention actions involved planning and preparation rather than immediate workplace actions. While all farms could implement some of these actions, they were most appropriate for farms with employees, so **Table 3** presents results for only farms with two or more employees. Over 84 percent indicated "a lot" or "some" effort focused on developing written farm business safety plans. Considerably fewer respondents, about 62 percent, reported doing "a lot" or "some" to implement daily screening of employees, while 23 percent implemented it "not at all" and almost 15 percent said it was not applicable. Technically, all New York businesses were required to implement daily screening questions but the process was frequently confusing, and for some farms it was impractical because the whole farm workforce was essentially sheltering in place together.

Table 3. Other actions taken by farms with two or more hired employees (n = 61)

Management action	A lot, we are doing all that we can	Some, but more could be done	Not at all	Not applicable to my business
Developed a written farm business safety plan to clearly document and communicate your management actions.	63.9%	21.3%	9.8%	4.9%
Established a visitor log or other system to track visitors in case contact tracing is needed.	47.5%	14.8%	26.2%	11.5%
Planned for precautionary quarantine measures at work for new employees arriving from a foreign country or U.S. state with a high rate of virus spread.	39.3%	13.1%	6.6%	41.0%
Implemented daily screening of all employees to identify those who are infected or at high risk of being infected.	39.3%	23.0%	23.0%	14.8%
Communicated with the local health department about management practices, testing, or employee housing issues.	29.5%	18.0%	36.1%	16.4%

We asked farmers if they "planned for precautionary quarantine measures at work for new employees arriving from a foreign country or U.S. state with a high rate of virus spread" as shown in **Table 3**. Fully 41 percent (29 farms) indicated this management action was not applicable to them. If we remove these 29 farms from the analysis, we find that among the 38 remaining farms: 63 percent said they did "a lot," 21 percent did "some," and about 16 percent indicated "not at all."

Prevention in farm-provided employee housing

Farm-provided employee housing is common in New York but very diverse in nature. Permanent employees, such as in dairy farms, are frequently provided housing as a benefit of employment. This housing includes old farmhouses converted to apartments, manufactured homes, bunkhouses designed for groups of individuals, and single-family homes provided for employees with their families. Occupancy in permanent employee housing is relatively stable year-round. Seasonal employees, such as in fruit and vegetable farms, also have a variety of housing situations but strict regulations and annual inspection requirements mean it is more consistent. Seasonal housing has low occupancy in winter, increasing occupancy through spring and summer, and high occupancy for late summer and fall harvest seasons.

Farm employers and their employees share responsibility for the maintenance and cleaning of worker housing. Cleaning was a high priority in most COVID-19 prevention recommendations, including cleaning employee housing. **Table 4** indicates that most farmers acted extensively to provide additional cleaning supplies. Most farmers also provided training and set new procedures and expectations for cleaning in employee housing, although with less intensity than providing cleaning supplies.

Over 55 percent of respondents took “a lot” of action in planning to provide quarantine housing for employees according to CDC guidelines, while another 26 percent did “some” planning for this. Planning for isolation of positive-tested or ill employees was somewhat less with 48 percent “a lot” and 22 percent “some.” About 26 percent said they increased inspection and overall management of employee housing “a lot” and another 52 percent said they increased it “some.” Actions to spread out employees, change ventilation, or otherwise modify housing to prevent virus spread were much less frequently carried out.

Table 4. Prevention actions taken by farms that provide employee housing (n = 27)

Management action	A lot, we are doing all that we can	Some, but more could be done	Not at all	Not applicable to my business
Provided additional cleaning supplies for use in employee housing.	74.1%	22.2%	0.0%	3.7%
Planned to provide quarantine housing for employees. (CDC: Quarantine is used to keep someone who might have been exposed to COVID-19 away from others.)	55.6%	25.9%	7.4%	11.1%
Established new procedures or expectations for cleaning employee housing.	48.1%	40.7%	7.4%	3.7%
Trained employees on how to better clean their housing.	48.1%	37.0%	7.4%	7.4%
Planned to provide isolation housing for employees. (CDC: Isolation is used to separate people infected with the virus [those who are sick with COVID-19 and those with no symptoms] from people who are not infected.	48.1%	22.2%	18.5%	11.1%
Increased inspection and overall management of employee housing.	25.9%	51.9%	18.5%	3.7%
Took steps to spread out employees to more housing as a way to reduce contact among employees.	22.2%	11.1%	40.7%	25.9%
Increased natural or mechanical ventilation.	11.1%	7.4%	63.0%	18.5%
Modified housing with equipment such as plastic screens between beds or other measures to prevent spread of the virus.	0.0%	3.7%	66.7%	29.6%

Prevention measures in farm-provided transportation

Only 17 respondents normally provided transportation for farm employees and those results are summarized in **Table 5**. Respondents generally took "a lot" or "some" action to prevent COVID-19 by requiring face coverings be worn in vehicles, increasing vehicle cleaning, and increasing ventilation. Most did not change transportation schedules for employees or physically alter the vehicles to prevent virus spread. Surprisingly, a large number of respondents answered "not at all" when asked if they had reduced the number of occupants in each vehicle.

Table 5. Prevention actions taken by farms that provide employee transportation (n = 17)

Management action	A lot, we are doing all that we can	Some, but more could be done	Not at all	Not applicable to my business
Required that face coverings or masks be worn in vehicles.	47.1%	29.4%	23.5%	0.0%
Increased cleaning of vehicles to reduce the spread of infection.	35.3%	52.9%	11.8%	0.0%
Increased ventilation in vehicles (by opening windows for example).	35.3%	41.2%	23.5%	0.0%
Changed transportation schedules to reduce contact among employees.	17.6%	17.6%	52.9%	11.8%
Reduced the number of occupants in each vehicle.	17.6%	29.4%	47.1%	5.9%
Altered vehicles by adding sneeze guards, plastic screens or other equipment to prevent spread of the virus.	0.0%	0.0%	88.2%	11.8%

Prevention measures used by farms with retail operations

Retail farms indicated they acted with particular intensity to prevent COVID-19. Five recommended actions had a combined indication of "a lot" and "some" that was over 80 percent, including: requiring face coverings when interacting with customers, improving customer access to hand sanitation, new cleaning procedures, employee training, and placing signs or posters about safe practices in the retail area. All of the recommended actions had "a lot" responses that were 50 percent or greater. Most "not at all" responses for preventive actions were quite low.

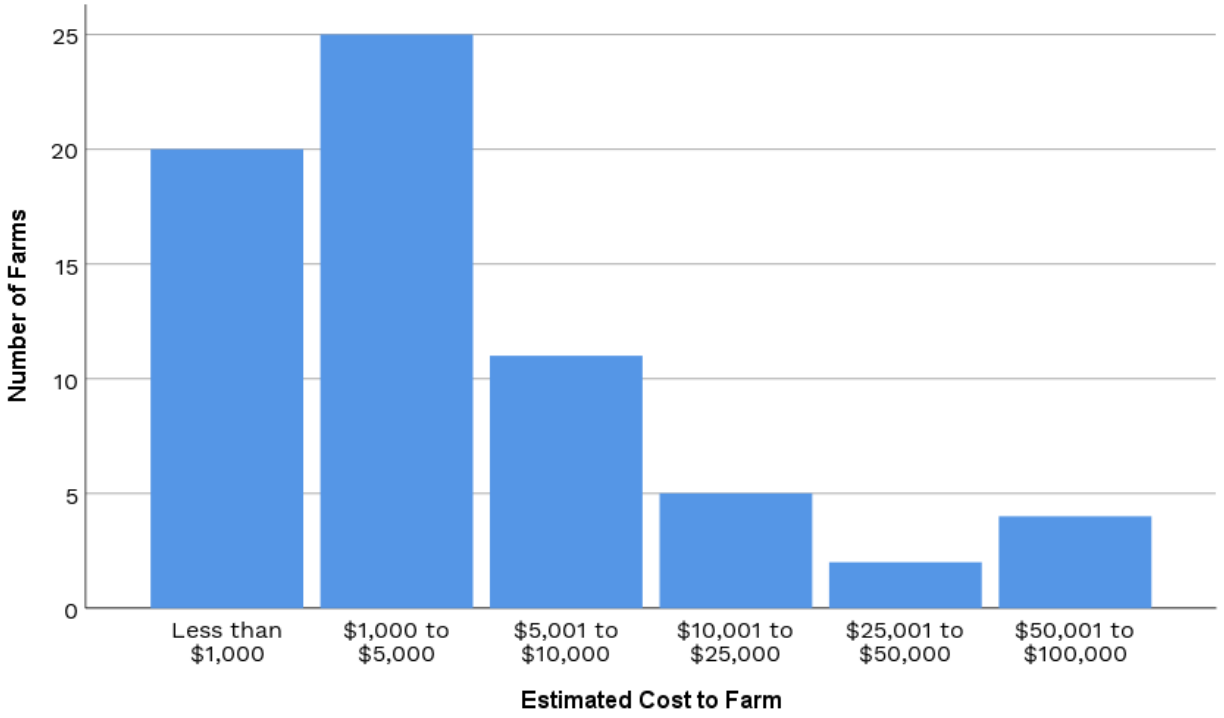
Table 2. Prevention actions taken by farms with retail operations (n = 36)

Management action	A lot, we are doing all that we can	Some, but more could be done	Not at all	Not applicable to my business
Required face coverings/masks be worn at work when interacting with customers.	83.3%	5.6%	2.8%	8.3%
Improved customer access to hand washing stations or hand sanitizer.	75.0%	11.1%	2.8%	11.1%
Established new procedures for regular cleaning of high-touch places in the retail area (doorknobs, bathrooms, tools, equipment, etc.).	72.2%	16.7%	2.8%	8.3%
Provided training for employees about managing customers to reduce the spread of COVID-19.	66.7%	16.7%	0.0%	16.7%
Placed signs or posters in the retail area to emphasize safe practices about COVID-19 for customers.	63.9%	22.2%	5.6%	8.3%
Changed your outreach (website, social media, phone messages) to share new practices related to COVID-19 with customers.	58.3%	19.4%	13.9%	8.3%
Reduced the number of customers allowed in retail areas at any one time.	55.6%	5.6%	16.7%	22.2%
Modified check out areas with plastic screens or other measures to reduce employee-customer contact.	50.0%	22.2%	5.6%	22.2%
Changed retail layout to increase distance and reduce numbers of customers in any area.	50.0%	13.9%	11.1%	25.0%

Cost to farms of COVID-19 prevention actions

We asked farm managers to estimate the direct cost of COVID-19 prevention actions, including changes to equipment, processes, and staffing, but excluding indirect costs such as lost sales or price changes in the market. The largest group of managers estimated this cost at between $1,000 and $5,000, while the next largest group said it was less than $1,000. Smaller numbers estimated their costs as much higher, including a few large livestock operations indicating it ran over $50,000 in costs to the farm.

Figure 2. Estimated cost to farms for equipment, process, staffing, and management changes to prevent COVID-19



Open-ended comments from farm managers

We asked managers in an open-ended response to identify any barriers they faced in taking action to prevent the spread of the coronavirus (COVID-19). Several patterns of repeated answers emerged from the written responses. Farm managers struggled to get cooperation with prevention measures from members of the public, from neighboring farmers, and from service providers who visited the farm. Perhaps more importantly, managers struggled with compliance from their own employees. Farm employees were often misinformed about the virus and didn't take it seriously. Because of the difficulty in finding farm employees and the need to keep high morale, managers felt limited in their ability to enforce prevention policies.

Farm managers frequently mentioned the inconsistent messages and leadership from government authorities, and difficulty in obtaining personal protective equipment and sanitizing materials, especially early in the pandemic. This was balanced by several mentions of appreciation of hand sanitizer distribution efforts by New York's Department of Agriculture and Markets and Cornell Cooperative Extension.

Managers described the nature of farm tasks that require close cooperation among farm employees as a barrier to maintaining social distance. They also mentioned the overwhelming amount of information they received, and its sometimes rapidly changing nature, as barriers to effectively implementing prevention measures.

Summary

The farm managers who responded to this survey gave us some glimpses of the significant struggle they had with implementing COVID-19 prevention actions on their farms. In spite of the difficulties, it appears that respondent farms widely recognized the seriousness of the pandemic and took robust action to prevent spread of the virus in their farm businesses.

These research findings are limited due to the small response size which limits their generalization to all New York farms. More research is needed, especially in-depth interviews and case studies with farms, to better understand the experiences and decision processes of farm managers during this unprecedented pandemic.

Findings from this and future research can be used to train farm managers to better prepare for and respond to public health and other widespread emergencies. Similarly, government, public health, and educational institutions can use this information to plan for more effective industry support, guidance and outreach.