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2020 AG INNOVATION SURVEY RESULTS

December 2020

Thank you for taking time to review the results from Thompson Coburn's 2020 Ag Innovation Survey, and a special thank you to those who responded to the survey.

The inaugural Ag Innovation Survey was conducted in cooperation with the Donald Danforth Plant Science Center's AgTech NEXT conference from August to October 2020 and sent to the virtual conference attendees to provide feedback on the questions provided.

The results of this survey provide high-level benchmarking responses with interesting perspectives on a variety of subjects that impact AgTech, from a variety of people working in the AgTech community. With a limited sample size of 26 respondents, it is important to note that the AgTech Innovation Survey is not a rigorous statistical analysis where broad generalizations can be made.

KEY TAKEAWAYS:

- **88.5%** of respondents think the **recent legal actions** brought by consumer groups pose **challenges to the development and marketing of AgTech products**.
 - This relates to the Ninth Circuit's June 2020 decision vacating the EPA's registration of three dicamba-based herbicides (*Nat'l Family Farm Coal. v. U.S. Eenvtl. Prot. Agency, No. 19-70-115 (9th Cir. 2020)*)
- **65.4%** of respondents said that they anticipate working on or **funding crop quality improvements** over the next few years. The majority of these respondents are large companies.
- **38.5%** of respondents believe that **redevelopment of vacant buildings** is the future of indoor farming, while another **38.5%** said they thought **mixed-use development** with farm and ag innovation in one space is the future.
- When asked about business opportunities that the COVID-19 pandemic revealed in the AgTech industry, **84.6%** of respondents identified **supply chain adaption** as a new area of opportunity for them, followed by **73.1% identifying food security** as a new opportunity area.

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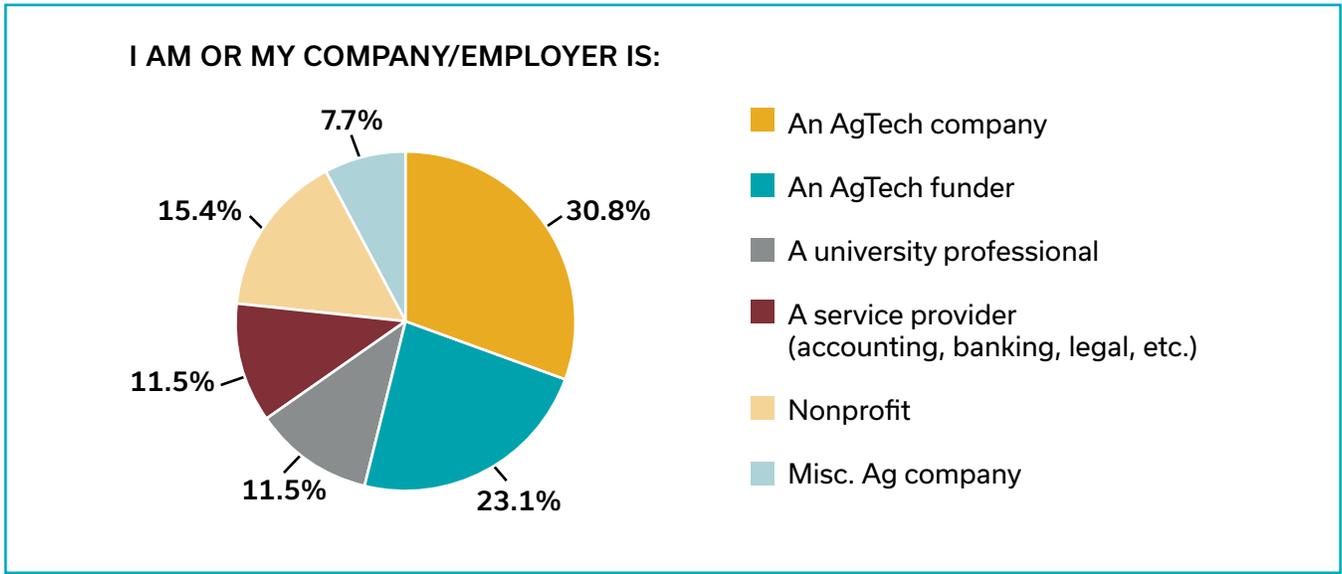


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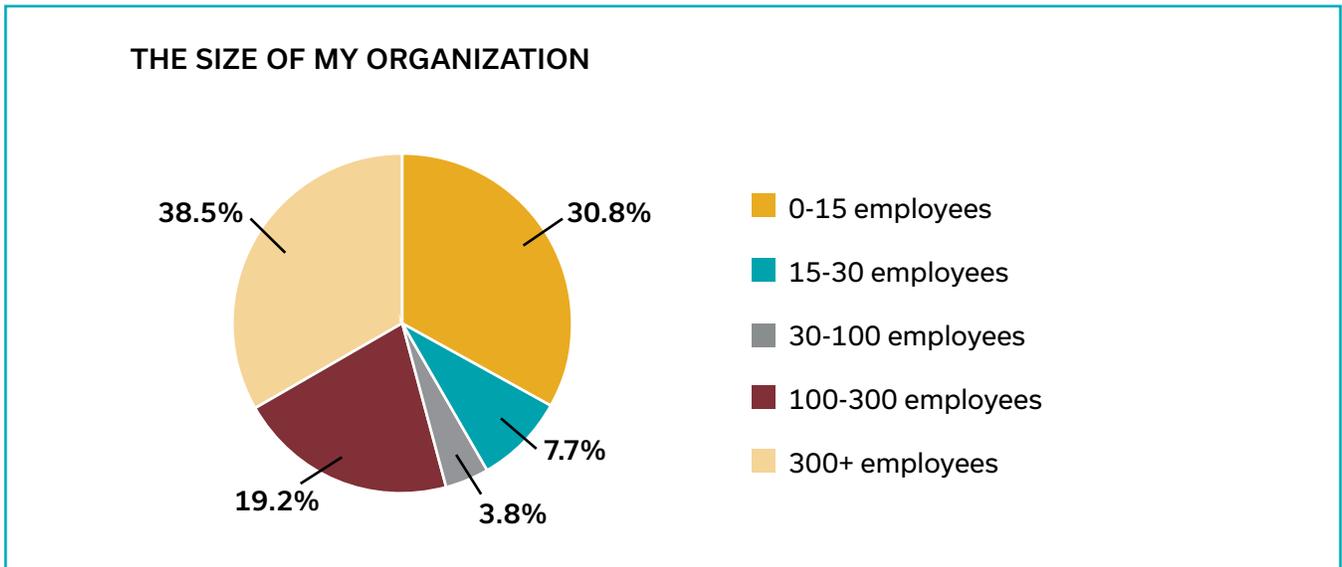
> Ag Innovation Survey

Below is a summary of the survey responses received from the 2020 AgTech Next Survey. We have provided summaries and in some cases analysis on a number of the responses.

SURVEY DEMOGRAPHICS:

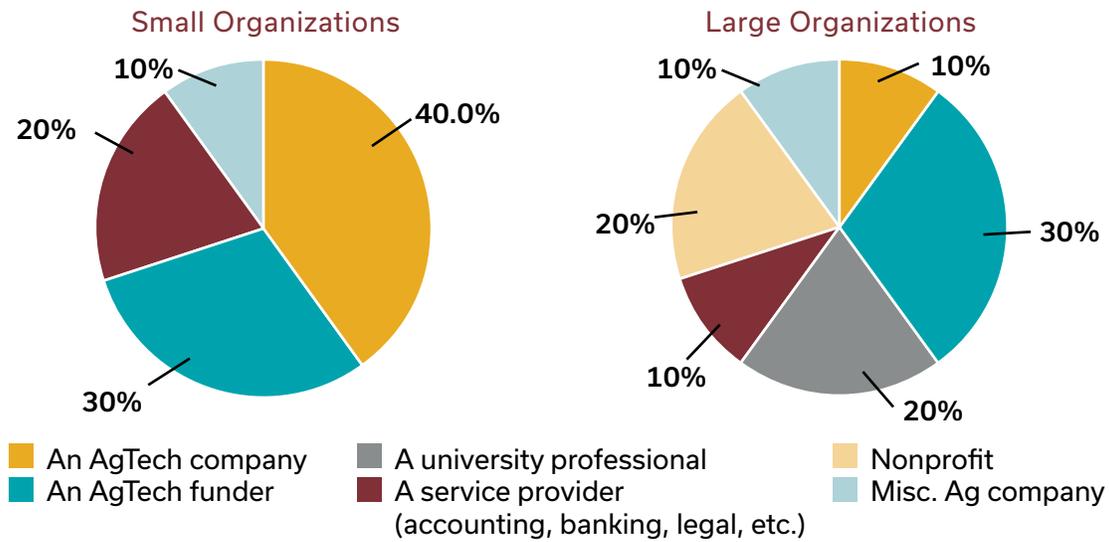


Summary: The majority of survey respondents identify themselves as working for an AgTech company or an AgTech funder.



Summary: The majority of survey respondents either work for a very small organization (0-15 employees) or a very large organization (300+)

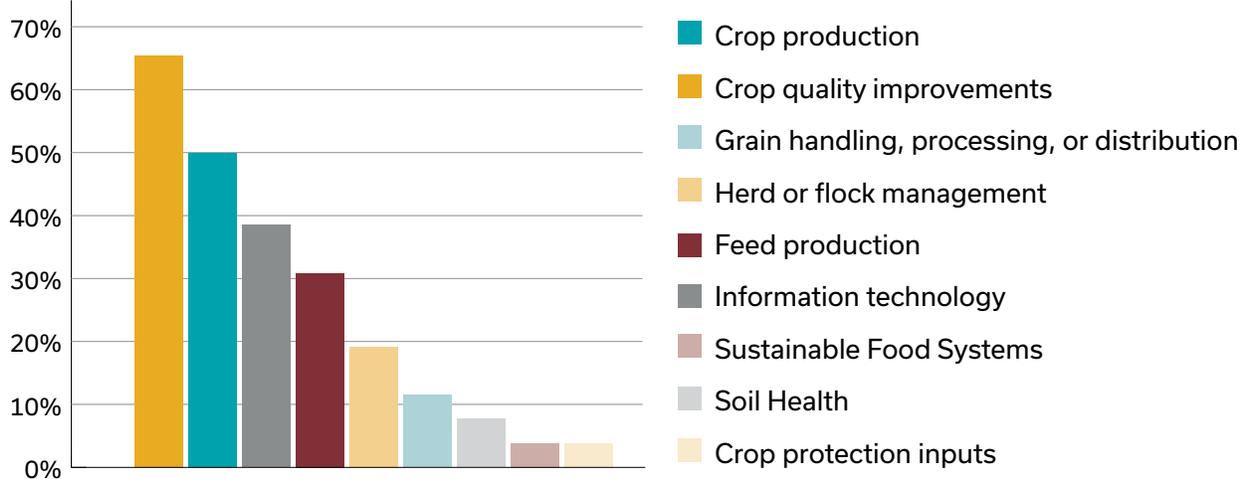
I AM OR MY COMPANY/EMPLOYER IS:



OUR ANALYSIS: If we take a look at organizations by size, we see that the majority of smaller organizations (1-30 employees) represented also identify as either an AgTech company or an AgTech funder. However, the large companies represented in the survey are much more diverse with respondents coming from every segment in virtually even numbers.

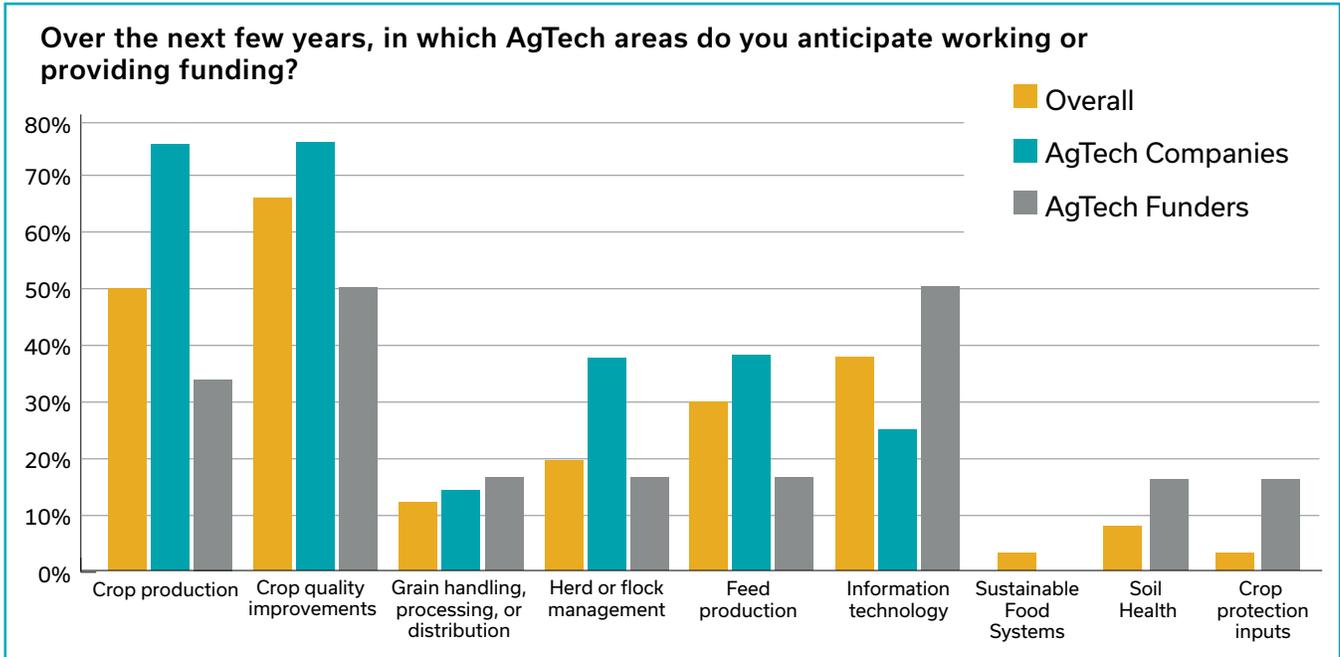
TRENDSPOTTING

Over the next few years, in which AgTech areas do you anticipate working or providing funding?

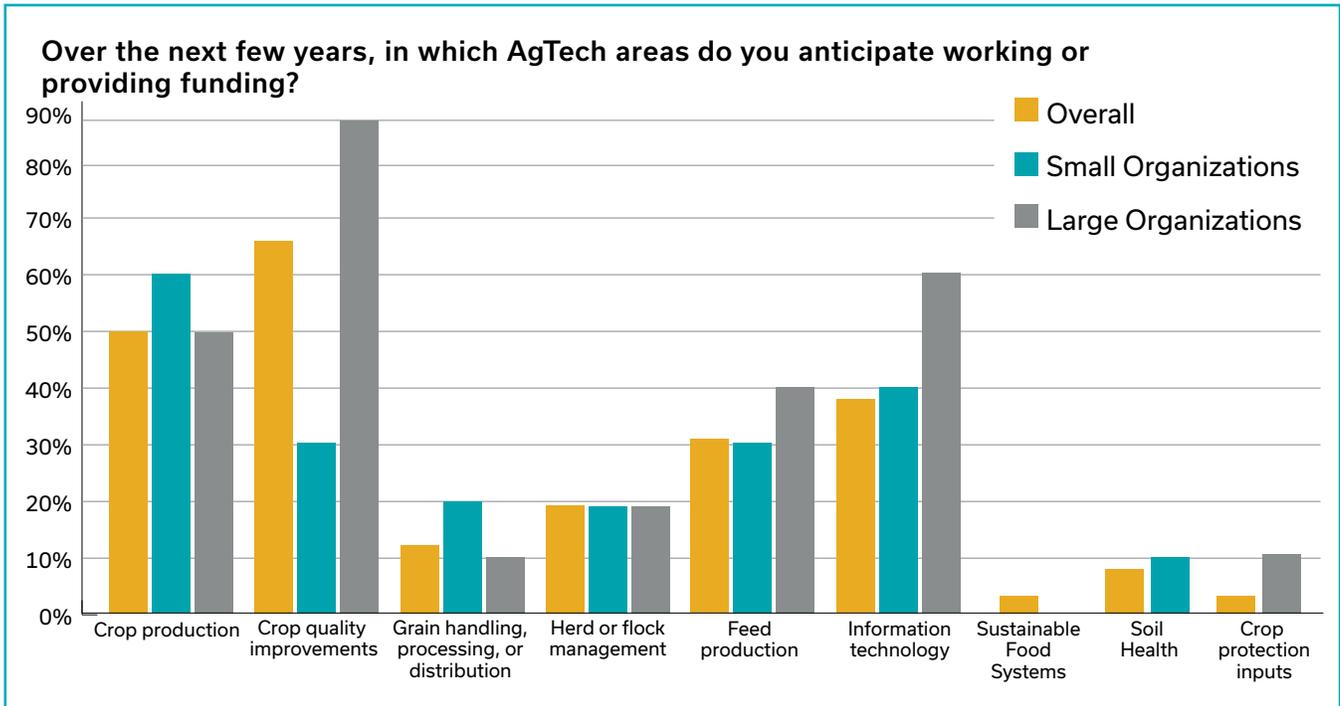


Summary: 65.4% of the respondents named crop quality improvements as the area in which they expect to be working in or providing funding for. This was followed by crop production projects and information technology. Sustainable food systems, crop protection inputs, and soil health were the three areas that were the least frequently named by respondents.

THE NEXT TWO GRAPH SETS DETAIL THE SAME QUESTION AS ABOVE BUT ARE BROKEN OUT BY TYPE AND SIZE OF RESPONDENT'S ORGANIZATION:

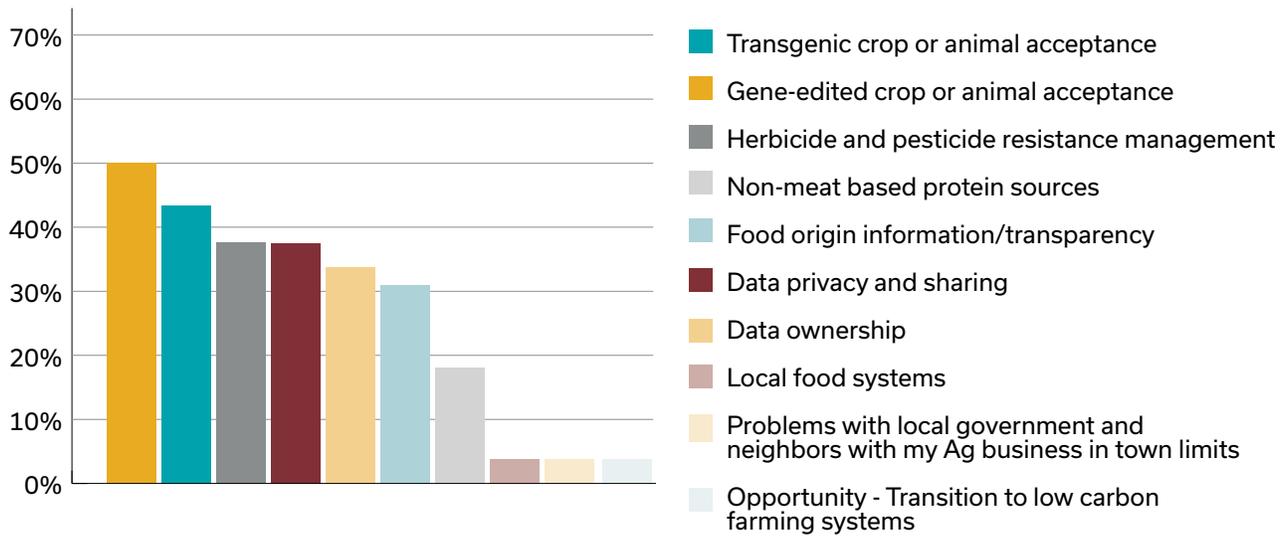


Summary: AgTech funders surveyed anticipate funding more information technology projects rather than crop production projects, an area that was more frequently named by AgTech companies.



Summary: Larger organizations are anticipating working/funding crop quality improvements and information technology projects over the next few years. This contrasts with smaller organizations who are not as focused on these areas.

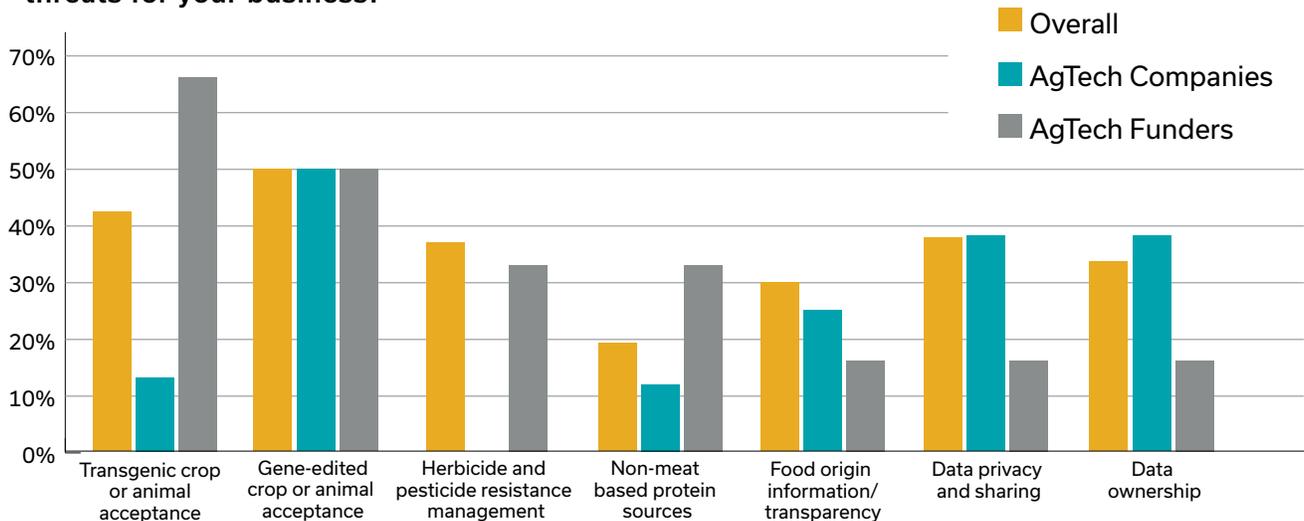
Which public acceptance issues represent the greatest opportunities or threats for your business?



Summary: Overall, the AgTech sector is most interested in/concerned with gene-edited crop or animal acceptance followed by transgenic crop or animal acceptance.

THE NEXT TWO GRAPHS DETAIL THE SAME QUESTION AS ABOVE BUT ARE BROKEN OUT BY TYPE AND SIZE OF RESPONDENT'S ORGANIZATION:

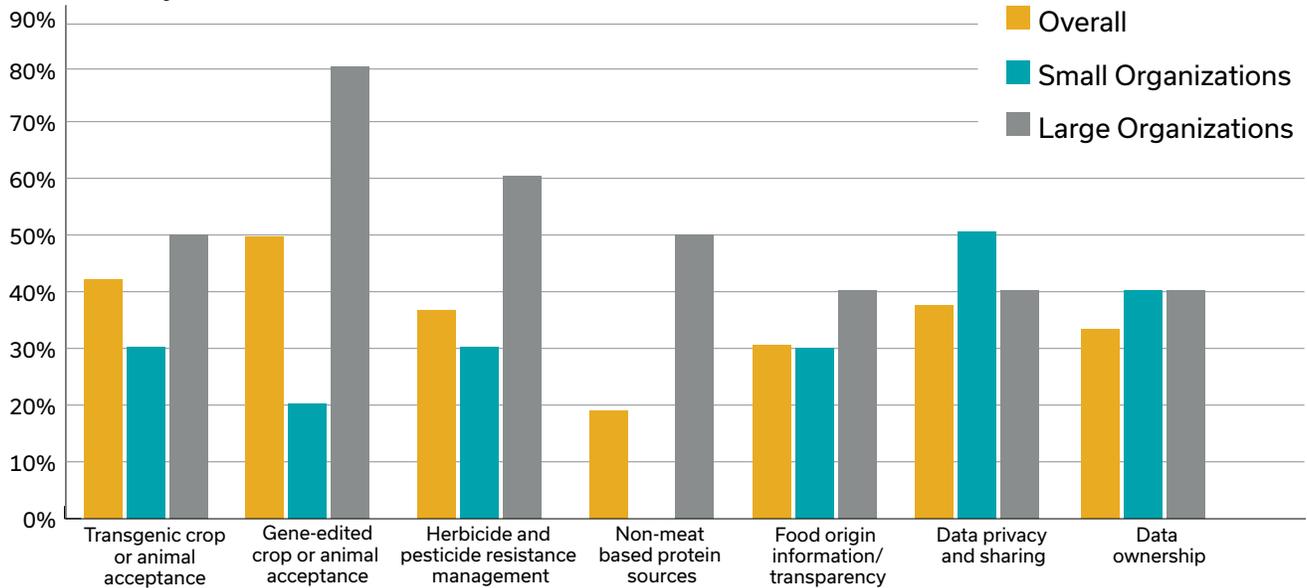
Which public acceptance issues represent the greatest opportunities or threats for your business?



OUR ANALYSIS: It's interesting to note that sentiment among the two segments, AgTech companies and AgTech funders, is disparate. While AgTech companies are more interested in data privacy and data sharing issues, AgTech Funders are more interested in transgenic crop or animal acceptance and non-meat based protein sources.

Represents a differing opinion between two segments on where threats/opportunities lie (i.e., areas that companies want to research are not necessarily lining up with the areas that funders want to fund).

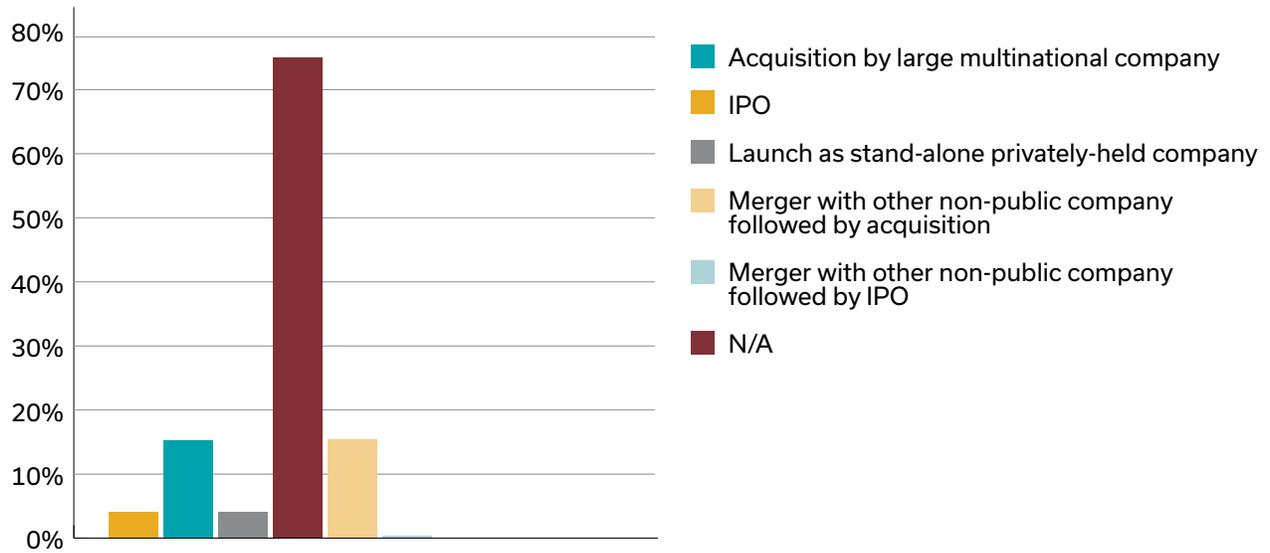
Which public acceptance issues represent the greatest opportunities or threats for your business?



Summary: While sentiment surrounding gene-edited crop or animal acceptance was equal among AgTech companies and funders, it is split between small and large organizations with large organizations seeing it as a greater threat/opportunity. This difference in opinion is also seen with herbicide and pesticide resistance management and non-meat based protein sources with larger companies more focused on these areas. These opposing attitudes were also observed when looking at the results to this question in relation to AgTech companies vs. AgTech funders with funders being more interested in these same areas. There is an equal number of funders in both the small organizations and large organizations segment, so why is it that larger organizations share the same opinion as AgTech funders?

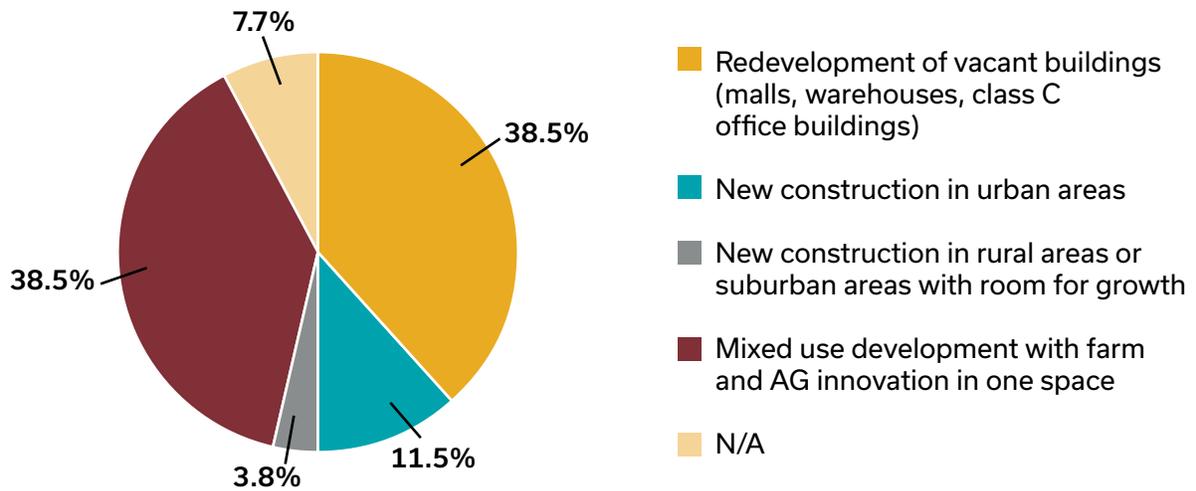


Which of the following exit strategies are the most realistic for your business?



Summary: 76.9% of respondents are not anticipating an exit strategy for their business.

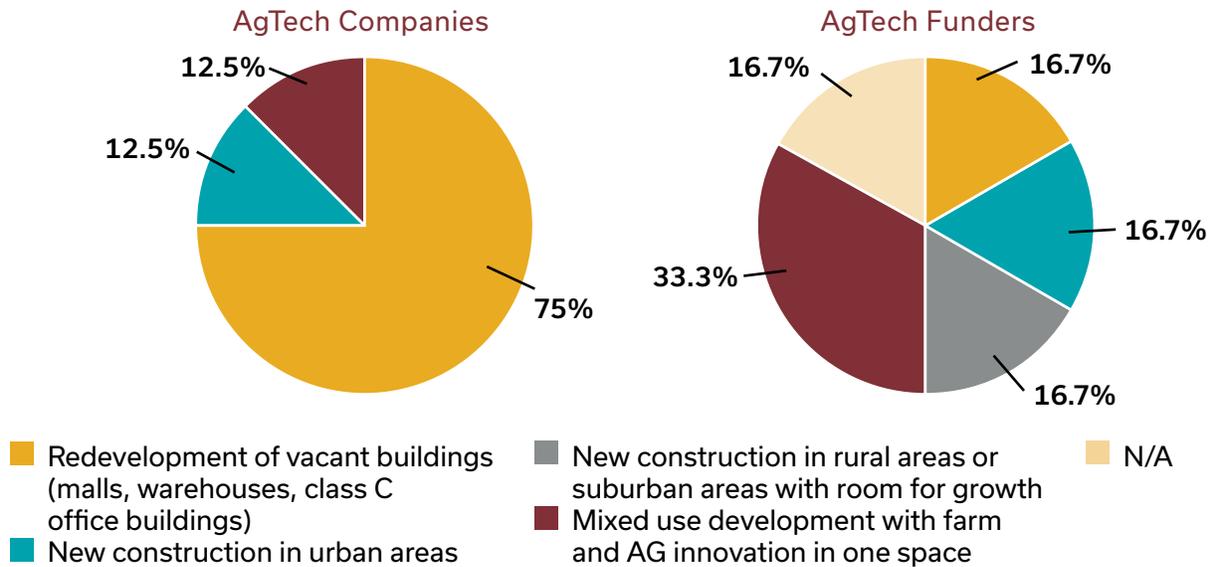
Regarding the future of indoor farming as an alternative to greenhouses and traditional farming, where do you see the greatest opportunities for investment?



Summary: Survey respondents see the greatest opportunity for real estate investment in the redevelopment of vacant buildings and mixed-use development with farm and ag innovation in one space.

THE NEXT TWO GRAPH SETS DETAIL THE SAME QUESTION AS ABOVE BUT ARE BROKEN OUT BY TYPE AND SIZE OF RESPONDENT'S ORGANIZATION:

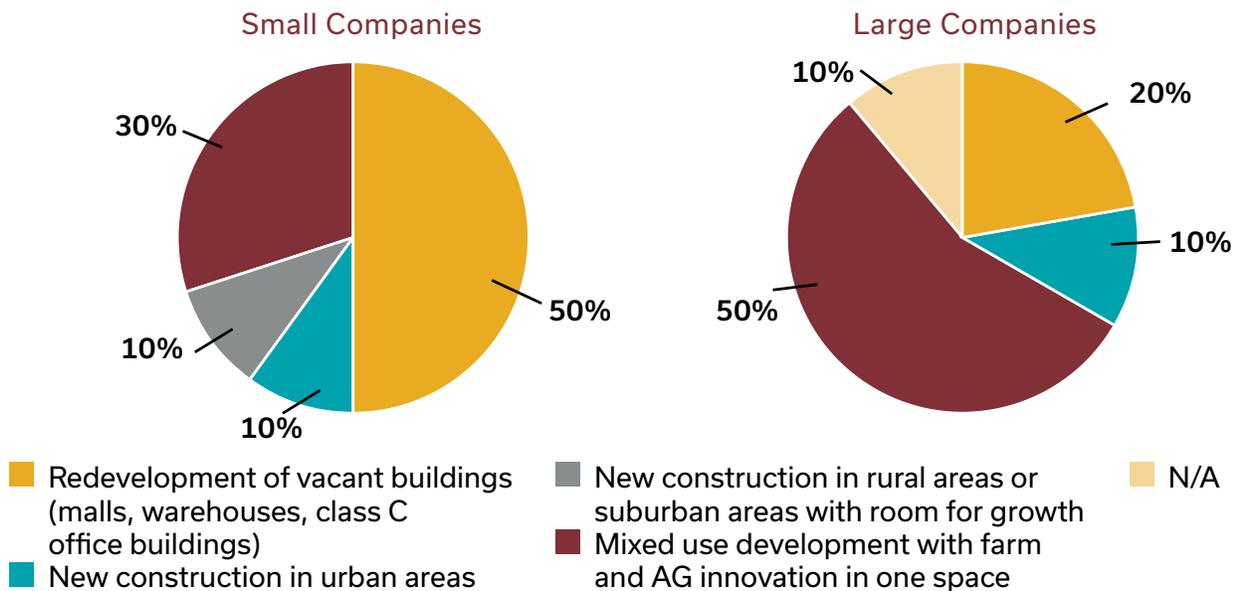
Regarding the future of indoor farming as an alternative to greenhouses and traditional farming, where do you see the greatest opportunities for investment?



OUR ANALYSIS: If we look at AgTech companies, you can see that while they recognize the greatest opportunity for investment is in redevelopment of vacant building, AgTech funders are more interested in mixed-use development with farm and ag innovation in one space.

Again, represents a differing opinion between two segments on where to develop real estate (i.e., properties that companies may want to develop are not necessarily the properties that funders want them to develop).

Regarding the future of indoor farming as an alternative to greenhouses and traditional farming, where do you see the greatest opportunities for investment?



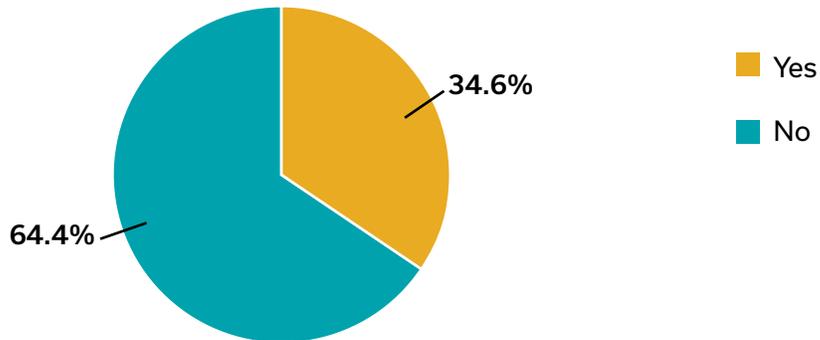
Summary: When posing this question to small organizations, they are more likely to see opportunity in redevelopment of vacant buildings, but a substantial percentage see opportunity in a mixed-use development scheme. However, large company respondents saw the greatest opportunity in mixed-use developments.

OUR ANALYSIS: Perhaps this is because a mixed-use space is more interesting to a larger organization that has multiple innovation areas in disparate space? Also, remembering that AgTech funders were more interested in this type of development, this could be another case of larger organizations listening to funders vs. funders listening to larger organizations.



> AgTech Litigation

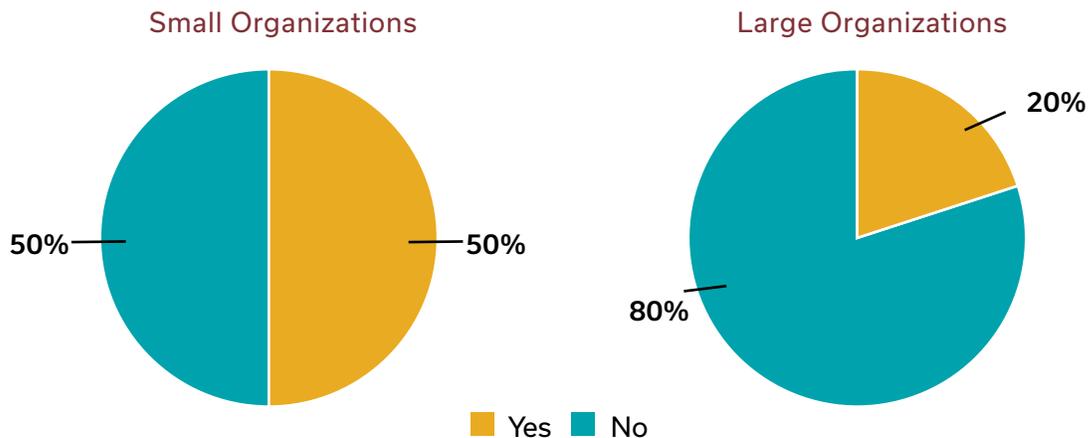
Are you familiar with the Ninth Circuit's June 2020 decision vacating the EPA's registration of three dicamba-based herbicides (*Nat'l Family Farm Coal. v. U.S. Env'tl. Prot. Agency*, No. 19-70-115 (9th Cir. 2020))?



Summary: The majority of survey respondents are not familiar with the National Family Farm Coal case.

THE NEXT GRAPH SET DETAILS THE SAME QUESTION BASED ON RESPONDENT'S ORGANIZATION SIZE:

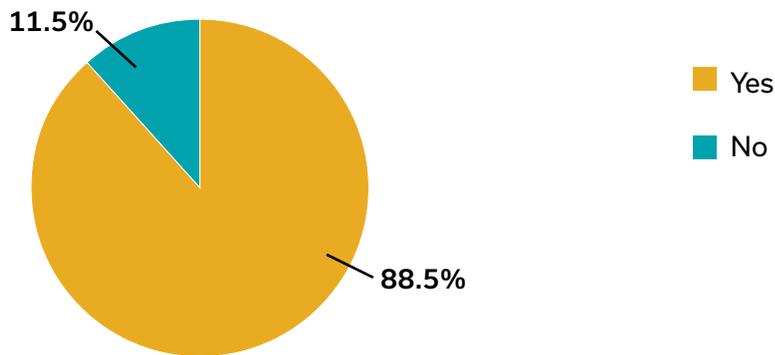
Are you familiar with the Ninth Circuit's June 2020 decision vacating the EPA's registration of three dicamba-based herbicides (*Nat'l Family Farm Coal. v. U.S. Env'tl. Prot. Agency*, No. 19-70-115 (9th Cir. 2020))?



OUR ANALYSIS: What is interesting is that half of the respondents from small organizations are familiar with the decision while only 20% of the respondents from large organizations were.

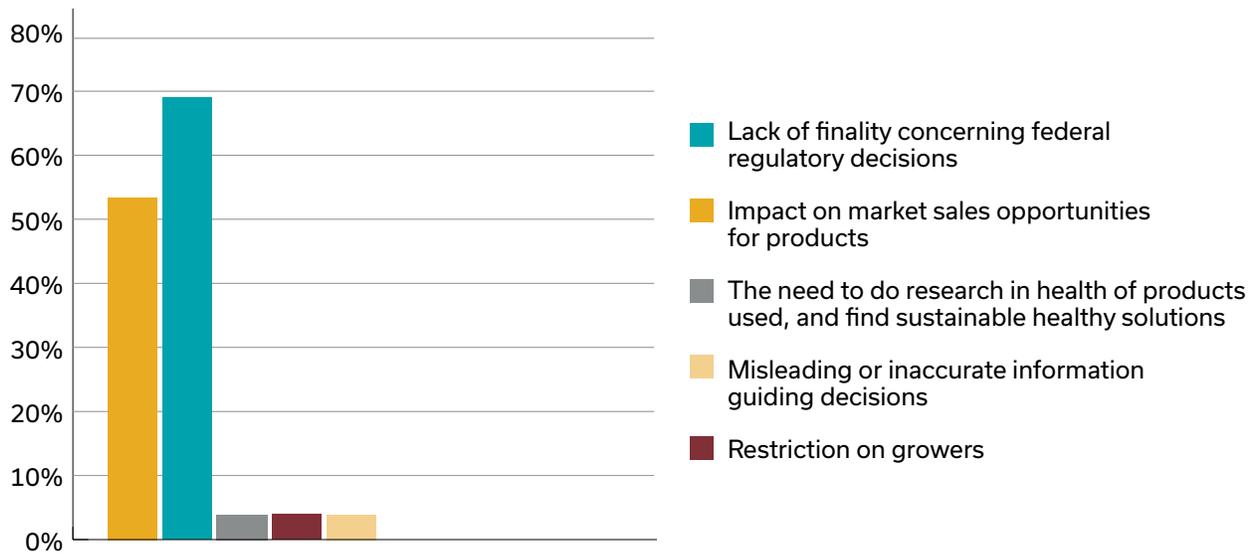
Perhaps this is because employees at smaller AgTech organizations are more closely involved with decisions made throughout the organization. In larger organizations, there are designated people.

Do you think the recent legal actions brought by consumer groups pose challenges to the development and marketing of AgTech products?



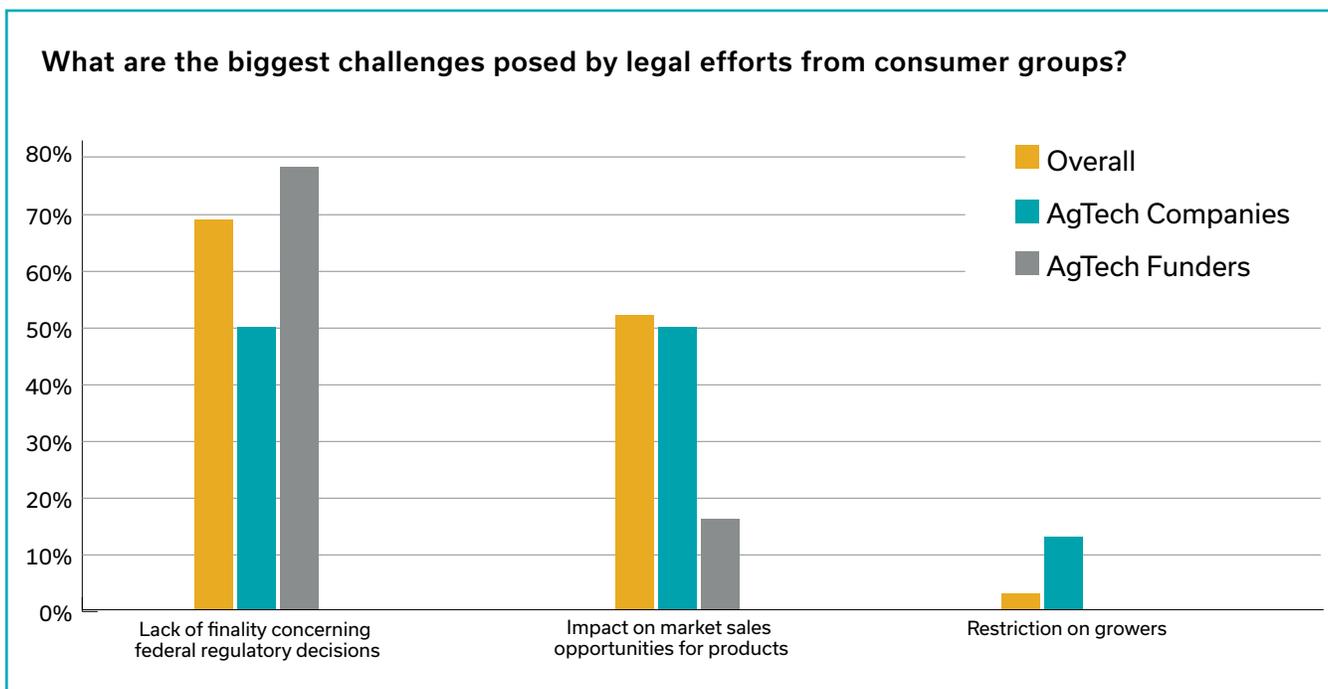
Summary: However, they are keeping tabs on the AgTech litigation environment and are wary of recent litigation.

If yes, what are the biggest challenges posed by these legal efforts?



Summary: When it comes to AgTech litigation, survey respondents are most concerned with the lack of finality concerning federal regulatory decisions and the impact on market sales opportunities for products.

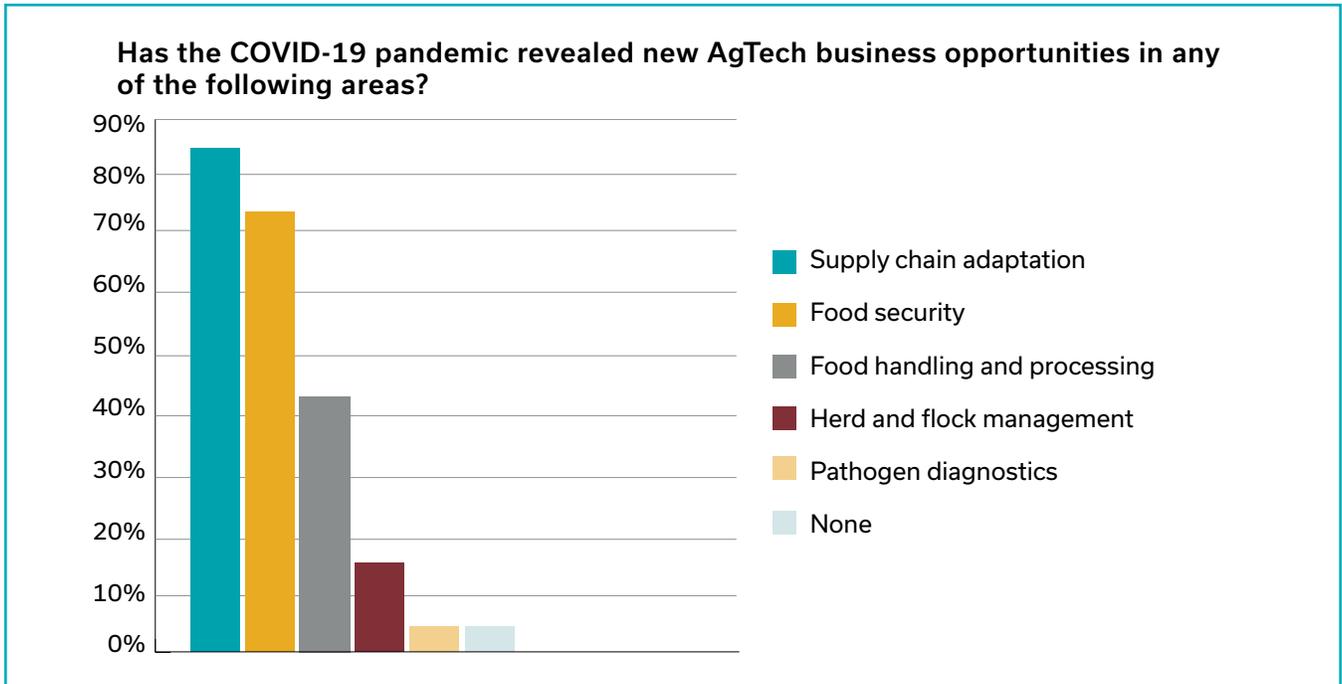
THE NEXT GRAPH DETAILS THE SAME QUESTION AS ABOVE BUT IS BROKEN OUT BY TYPE OF RESPONDENT'S ORGANIZATION:



Summary: Our two segments disagree on which of these is the larger challenge. While AgTech companies consider both of these issues an equal threat, AgTech funders are less concerned with the impact on market sales opportunities for products. *AgTech funders may be less concerned with the impact on product sales due to the fact that they are further removed from the sales process.*

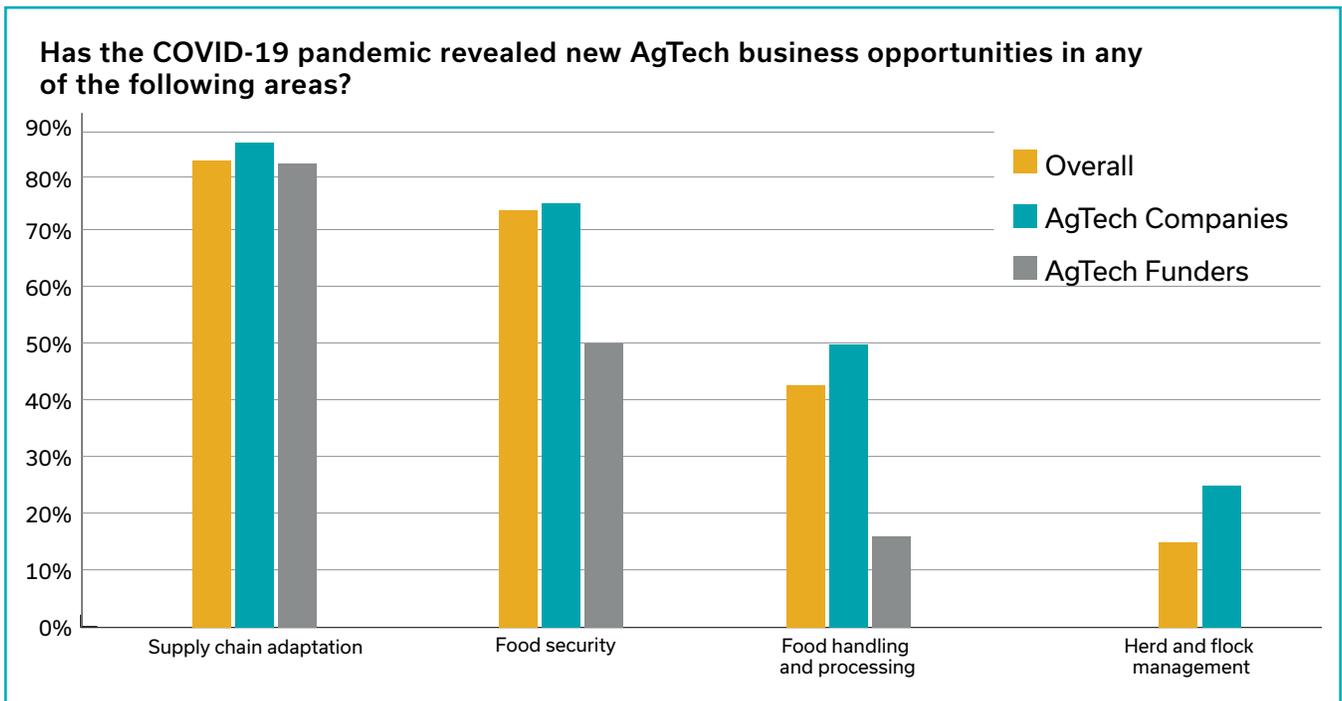


> How AgTech Companies are Handling COVID-19

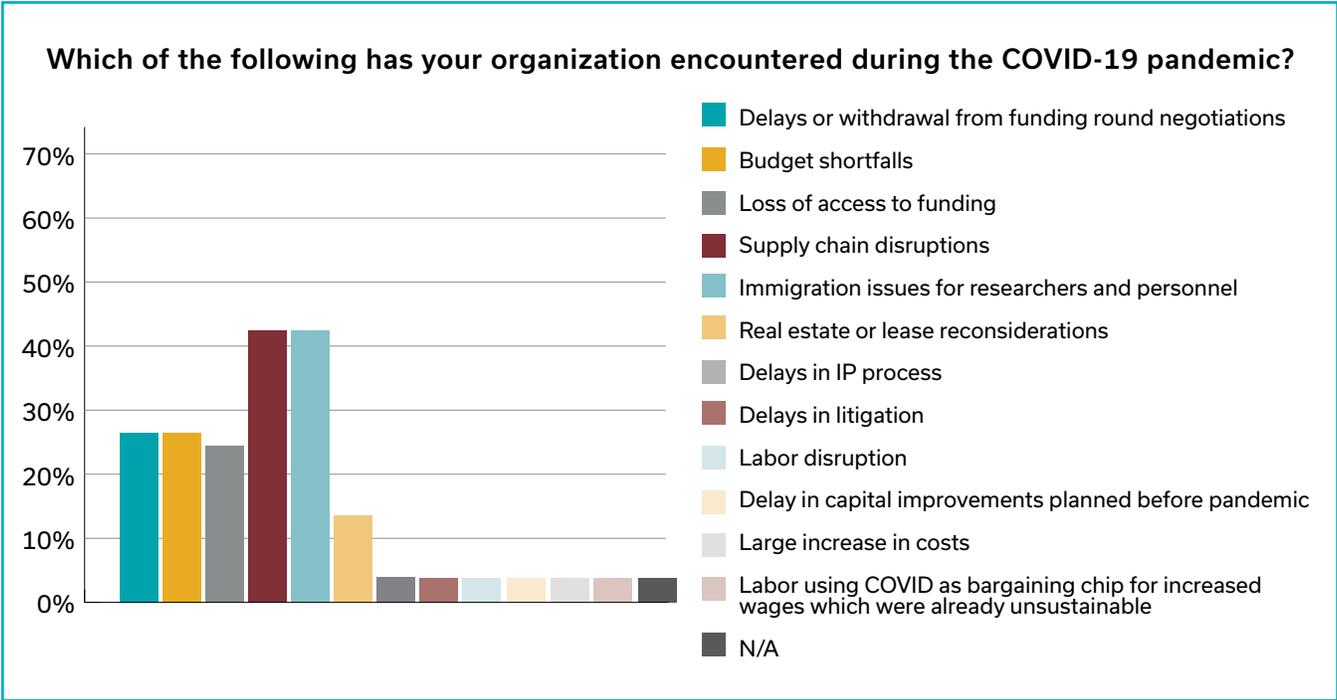


Summary: Survey respondents are identifying new areas that the pandemic has opened up for them. 84.6% of respondents identified supply chain adaptation as a new area of opportunity for them, followed by food security.

THE NEXT GRAPH DETAILS THE SAME QUESTION AS ABOVE BUT IS BROKEN OUT BY TYPE OF RESPONDENT'S ORGANIZATION:

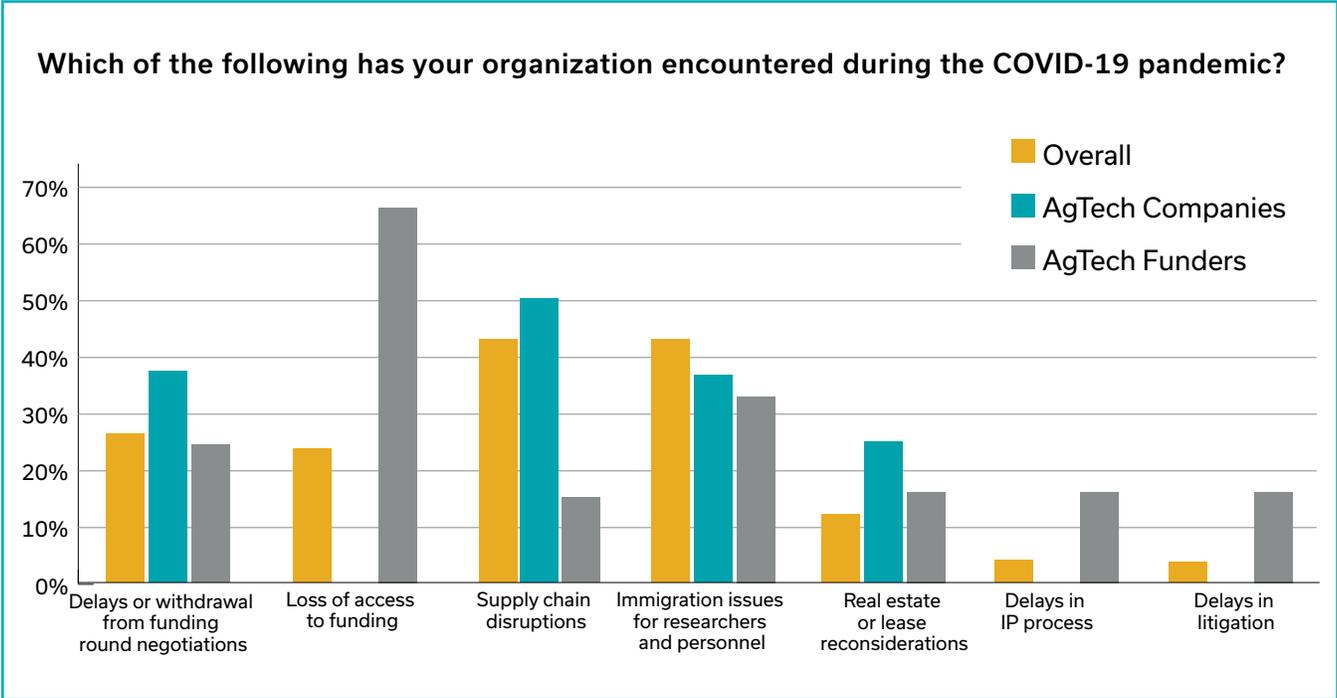


Summary: It does appear, though, that AgTech companies are identifying more areas of opportunity than AgTech funders.



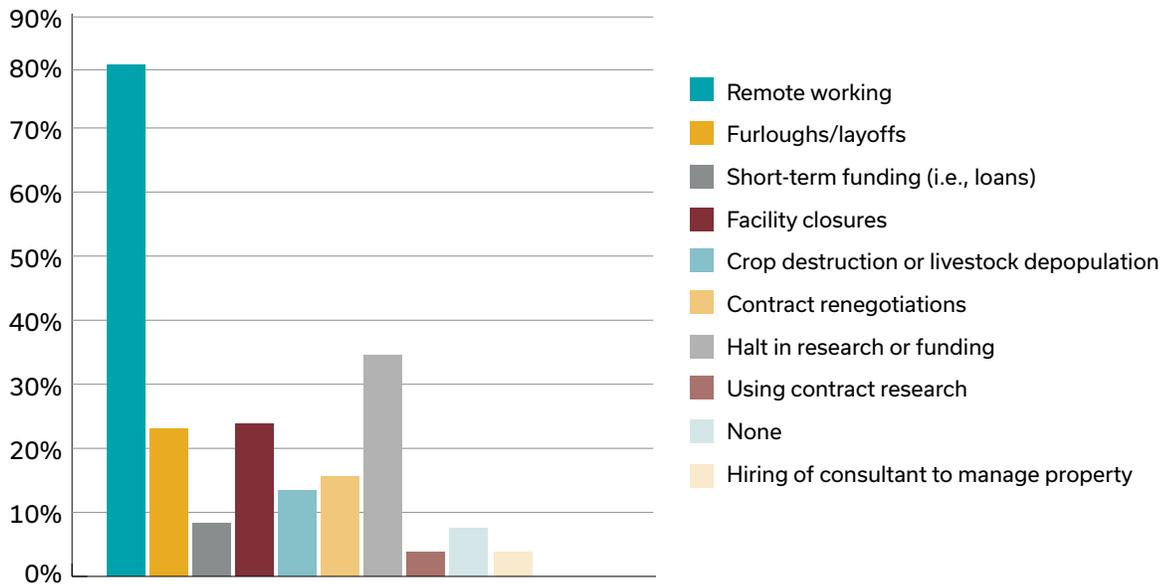
Summary: 42.3% of survey respondents have run into supply chain disruptions and immigration issues during the pandemic.

THE NEXT GRAPH DETAILS THE SAME QUESTION AS ABOVE BUT IS BROKEN OUT BY TYPE OF RESPONDENT'S ORGANIZATION:



Summary: These supply chain disruptions are being felt primarily by AgTech companies while AgTech funders are going through loss of access to capital and delays in IP process and litigation.

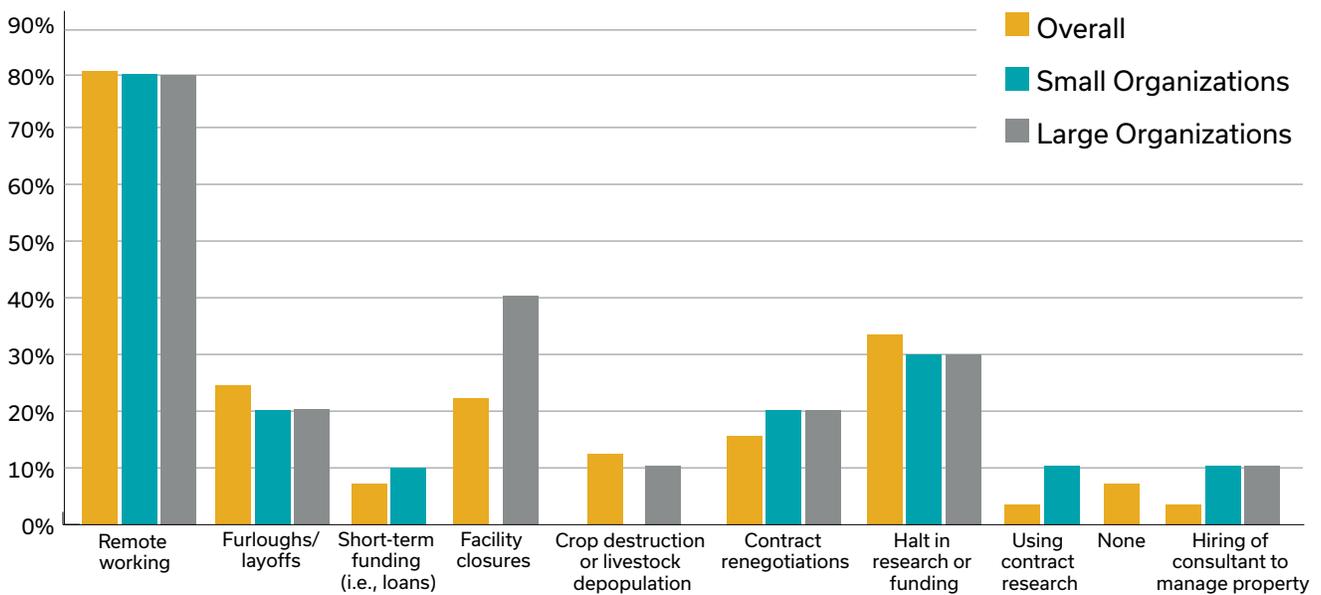
Which of these short-term measures have you enacted as a result of the COVID-19 pandemic?



Summary: Remote working is the most popular short-term measure that respondents took/are taking during the pandemic with halt in research or funding coming in at a distant second.

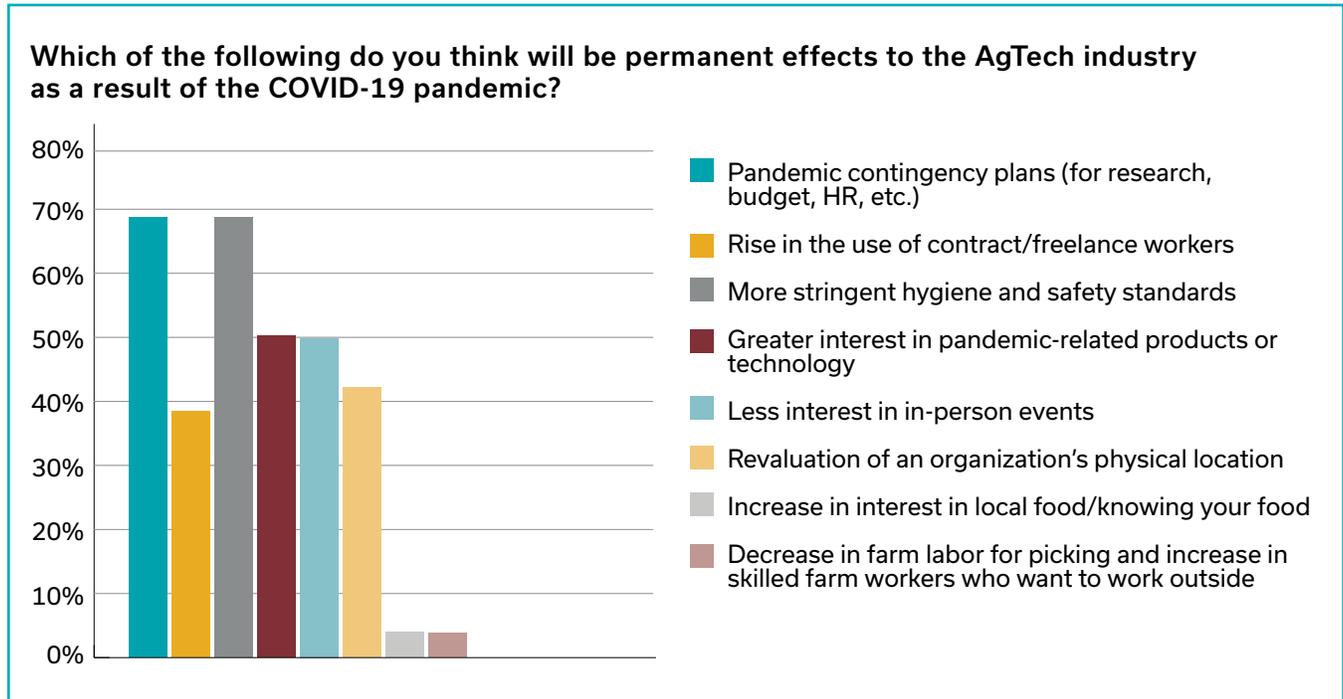
THE NEXT GRAPH DETAILS THE SAME QUESTION AS ABOVE BUT IS BROKEN OUT BY TYPE OF RESPONDENT'S ORGANIZATION:

Which of these short-term measures have you enacted as a result of the COVID-19 pandemic?



Summary: When looking at what short-term measures organizations are enacting, by size of organization, there is one area that sticks out: facility closures. 40% of larger organizations enacted facility closures as a response to the pandemic versus 0% of smaller organizations taking this measure.

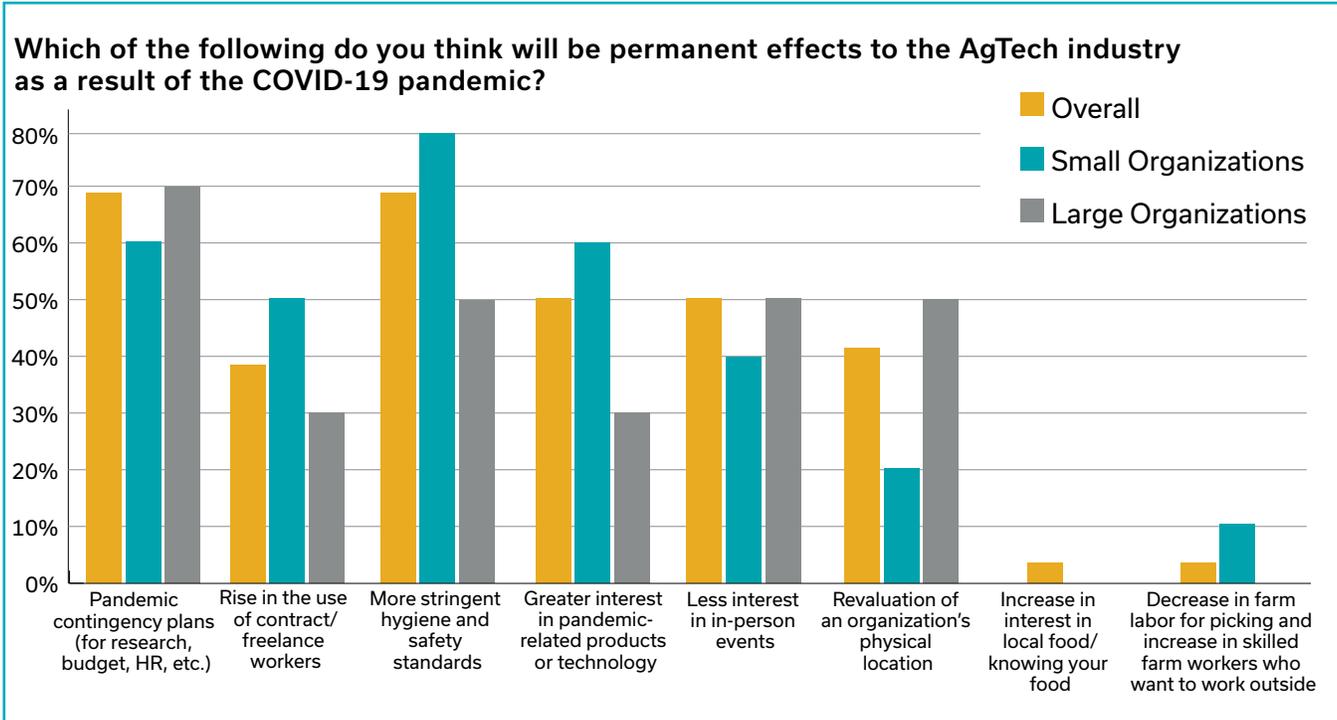
OUR ANALYSIS: This is probably due to the fact that larger organizations are more likely to have multiple facilities that they have the option of closing while still being able to operate.



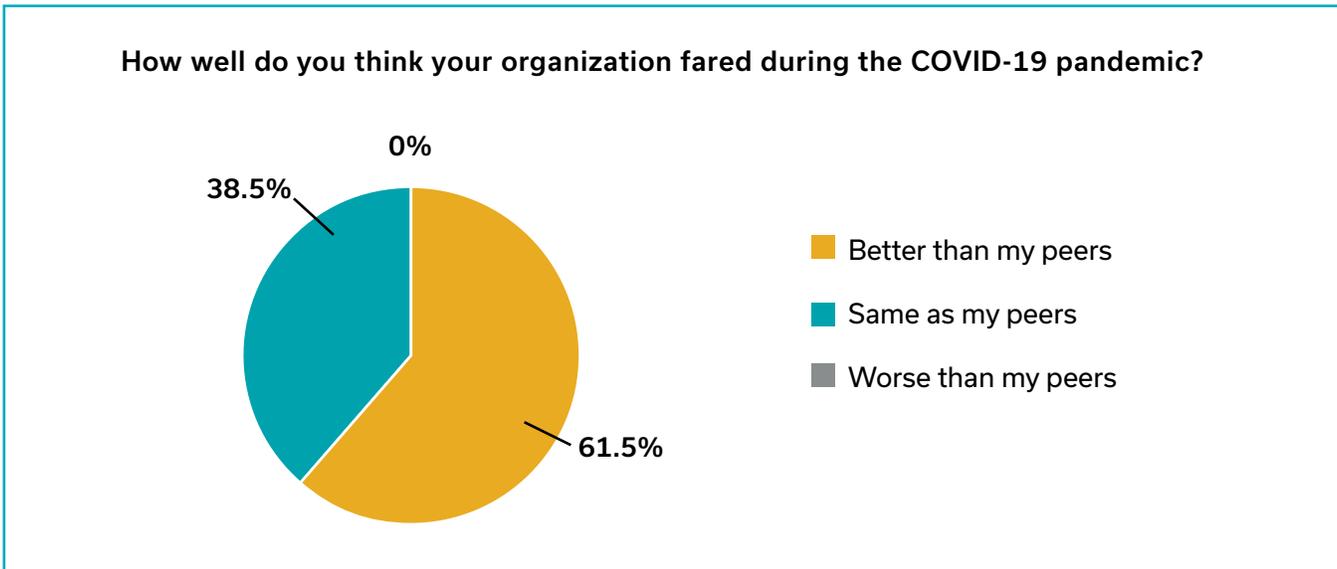
Summary: Survey respondents see pandemic contingency plans and more stringent hygiene and safety standards to be permanent effects of the pandemic.



THE NEXT GRAPH DETAILS THE SAME QUESTION AS ABOVE BUT IS BROKEN OUT BY TYPE OF RESPONDENT'S ORGANIZATION:



Summary: There was some disparity in the way that large and small organizations answered this question. Small organizations believe that, as a result of the pandemic, more stringent hygiene and safety standards will be implemented and that there will be a greater interest in pandemic-related products or technology. Large companies, on the other hand, believe that we will see organizations reevaluating their physical location.



Summary: All of the survey respondents believe they have fared either the same or better than their peers during the pandemic.

For this section, we asked respondents open-ended questions with the opportunity to provide personal insights.

WHAT DO YOU BELIEVE WILL BE THE EFFECTS OF THE COVID-19 PANDEMIC ON AGTECH IN THE NEXT 2 YEARS?

Selected answers provided by respondents:

- "More automation of farming activities, especially for harvesting."
- "More pressure on the labor challenges in specialty crop industry and food processing, greater focus on the issue of food waste."
- "The notice of more need of local food systems with local processing on a smaller scale in addition to supply chain management that allows for more flexibility on packaging and such to allow for food to be able to transfer to different buyers easier."
- "Increased regulation around food handling and processing."
- "COVID-19 pandemic will slow down basic research and will have great effects on the way people perform their research."
- "The need for genetically superior food sources is going to be the research focus, to ensure there will be enough food to feed the world. Sustainability is the number one goal."
- "It will be impose restrictions and more time, testing, research and distribution of agricultural products from one region to another within US and also internationally. Man power needs, for people to work in AG Tech due to COVID is also impacted at this time."

WHAT DO YOU BELIEVE WILL BE THE EFFECTS OF THE COVID-19 PANDEMIC ON AGTECH 3 YEARS OUT AND BEYOND?

Selected answers provided by respondents:

- "More robots on the fields, remote controls, digitalization."
- "More resilience in the supply chain and more elaborate contingency planning."
- "The need to reduce efficiency in exchange of better sustainably and quality of products to consumers."
- "Adaptation of cropland and food supply distribution; increased acceptance of transgenic and gene-edited crops."
- "Focus on environmental sustainability."
- "Increases in "touchless" opportunities to work with growers; also more localized market opportunities for specialty type crops traditionally only grown in small regions and marketed across the US."

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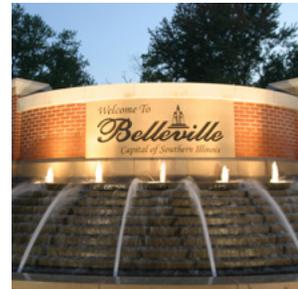
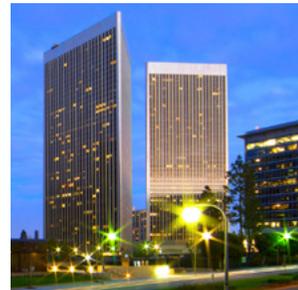
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