STRENGTHENING MICHIGAN'S VEGETABLE INDUSTRY

2,074
individual stakeholders were consulted with on vegetable production issues.

$2,289,628
grant dollars were leveraged for vegetable research and education.

PRIORITY AREAS

- Vegetable production takes place on over 3,000 farms, generating cash receipts of $442 million dollars, according to the 2017 USDA NASS Census of Agriculture.
- Michigan leads the nation in production of asparagus, pickling cucumbers, winter squash, and turnips, and it is among the top five states in the production of celery, squash, fresh market cucumbers, summer squash, fresh market pumpkins, carrots, fresh sweet corn, bell peppers, and processing tomatoes, according to the Michigan Ag Council.

IMPACTS

The MSU Extension educators help vegetable growers learn about and incorporate new practices to help them reduce the risk posed by pests, improve their efficiency through new horticultural practices, and increase revenue through improved product quality and marketing. A survey of growers and crop consultants who attended an MSU Extension vegetable event revealed:

80% learned something new and useful to help them manage risks.

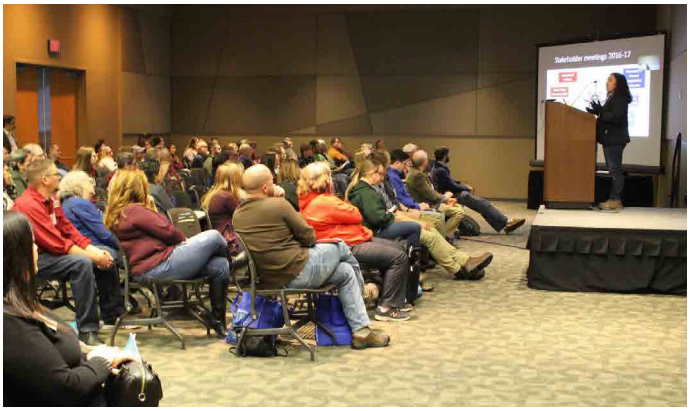
67% learned useful information about increasing efficiency on the farm.

75% applied something they learned to their farm.

** Data compiled 2017–2019*

To find out more information or to find an expert near you, visit https://www.canr.msu.edu/vegetables/

> ***"Very prompt with texts and phone calls. Does a great job of working with us to figure out problems each year. I have several specific examples of when he really improved our yields."***
>
> • *Participant from the Bay Thumb Vegetable Meetings, 2014-2019*



EVIDENCE-BACKED EDUCATION FOR A DIVERSE INDUSTRY

The variety of crops produced in Michigan necessitate varied educational offerings that focus on local issues. To address this need, the team's educators organized 24 regional meetings in 2019. These meetings delivered the latest findings of both MSU and national researchers to 490 vegetable growers, helping them sustainably and successfully manage pests.

The largest event, the annual Great Lakes EXPO, attracts over 3,500 attendees from 82 Michigan counties to learn about fruit, vegetable, and greenhouse production, as well as farm marketing. The 2019 EXPO attracted 1,044 vegetable growers. These attendees hail largely from Michigan, but vegetable producers from 26 states and three Canadian provinces were also in attendance. The event also attracts growers of all experience levels, from multi-generation family farmers to beginning growers.

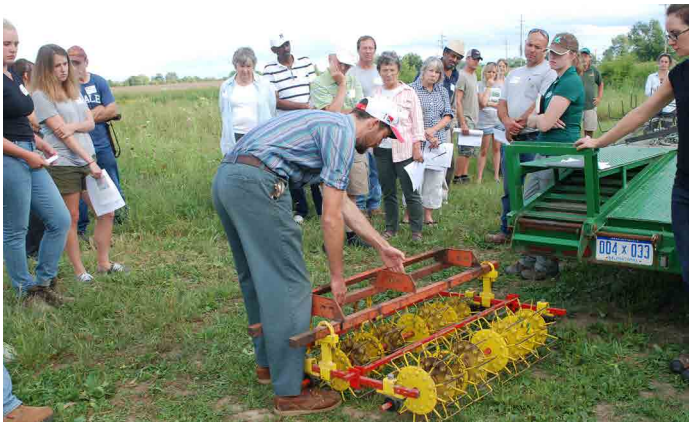
The vegetable team puts together a varied program with over 20 sessions on specific crops, as well as on critical issues such as labor, food safety, and farm stress. Experts from Michigan and across the country share cutting-edge research. This keeps the Michigan vegetable industry strong. Over 90% of individual session reviews (702 of 779) state that the grower learned something new and useful.

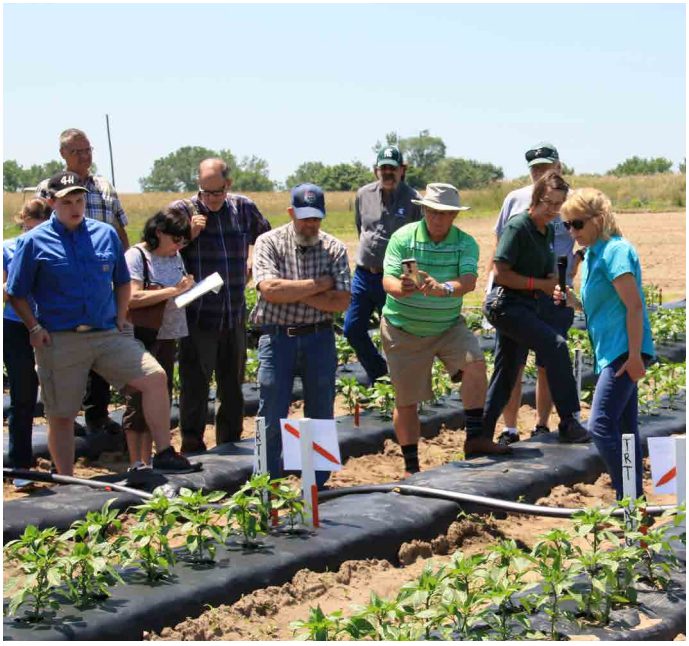
> ***"I found the scouting on my farm a great asset and advantage to control bugs and disease. Thank you for your help."***
>
> - *Participants from the Bay Thumb Vegetable Meetings, 2014–2019*

PARTNERING WITH GROWERS FOR TIMELY RESEARCH TO ADDRESS LOCAL ISSUES

Michigan is the second most agriculturally diverse state in the nation as evidenced in the wide variety and regional variation in vegetable crops. This diverse industry has diverse needs, and MSU Extension works to address local issues with critical new information as growers require it. This evidence-backed, one-on-one work with growers is something only MSU Extension provides.

In southeastern Michigan, cabbage is a key vegetable crop. The region is home to much of the state's 4,000 cabbage acres. To assist growers with managing this crop in a profitable and sustainable way, MSU Extension has collaborated with multiple growers to perform timely on-farm research. Local MSU Extension vegetable educator Marissa Schuh leveraged $10,000 of MSU AgBioResearch Project GREEEN (Generating Research and Extension to meet Economic and Environmental Needs) funding to partner with a local cabbage grower. They worked to trial a new practice to control one of the most damaging and costly cabbage pests, onion thrips. MSU also performed research with both organic and conventional growers in the region to better understand cabbage insect pest dynamics. Through a grant from the Southern IPM (Integrated Pest Management) Center, MSU student interns scouted cabbage fields weekly to monitor insect populations. This information was shared with growers so they could make wise management decisions while the data collected will also be used to better inform extension research and recommendations in the future. This work helps growers raise healthy crops while minimizing their impact on the environment.





A single farm visit can lead to long-term collaborations that help growers overcome tough on-the-farm issues. Such a visit occurred in 2016. MSU Extension vegetable educator Ben Werling visited one of the major red beet and turnip growers in Grant, Michigan. These crops have become important to this intensive, vegetable-growing community, replacing the loss of the local fresh-market carrot industry. The grower mentioned he had an entire field where he could no longer grow any vegetable. A decade ago, the grower had gotten a diagnosis of a disease issue, but the grower was not sure this diagnosis was correct. After a decade, he was still applying fungicide based on this old diagnosis. Fast forward to 2019, and successful grant applications have funded three years of on-farm research by Werling and four MSU specialists. The disease was correctly identified as an entirely new-to-Michigan pathogen. Three fungicide trials have identified two potential treatments, and the grower has dedicated an entire field to this work for three years. As an industry leader, this grower is poised to share what he learns with others to make a difference.

73% Of 165 growers,73% implemented or modified at least one food safety practice since attending the training.

31% Of 166 growers, 31% added or modified on-farm infrastructure or equipment to improve food safety practices.

PROVIDING CLASSROOM AND ON-FARM FOOD SAFETY EDUCATION

To help Michigan growers provide safe food for both the state and country, MSU Extension works to provide critical food safety information to growers around the state. Members of the MSU Extension vegetable team are part of a multi-disciplinary produce safety education team that has conducted 57 trainings in 22 counties. These trainings, offered in small classes, familiarize growers with the basics of food safety as well as new federal food safety regulations. To help growers apply what they learn to their farms, MSU Extension helped develop the On-Farm Readiness Review program. This program brings educators to the farm to help growers spot potential food safety risks while also arming them with information and potential solutions. MSU has pioneered this international program. To date, 77 On-Farm Readiness Reviews have helped protect at least 14,000 acres of Michigan produce.

The team also works to bring this critical information to underserved communities. This has involved bringing in bilingual experts from other states to provide education to the state's Spanish-speaking growers, as well as working with partners to bring trainings to Michigan's Amish and Mennonite grower communities.

57	22	1,368	77
Trainings	Counties	Participants	On-Farm Readiness Reviews

"[The training brought] to light what is needed to make as sure as possible we have noncontaminated produce."

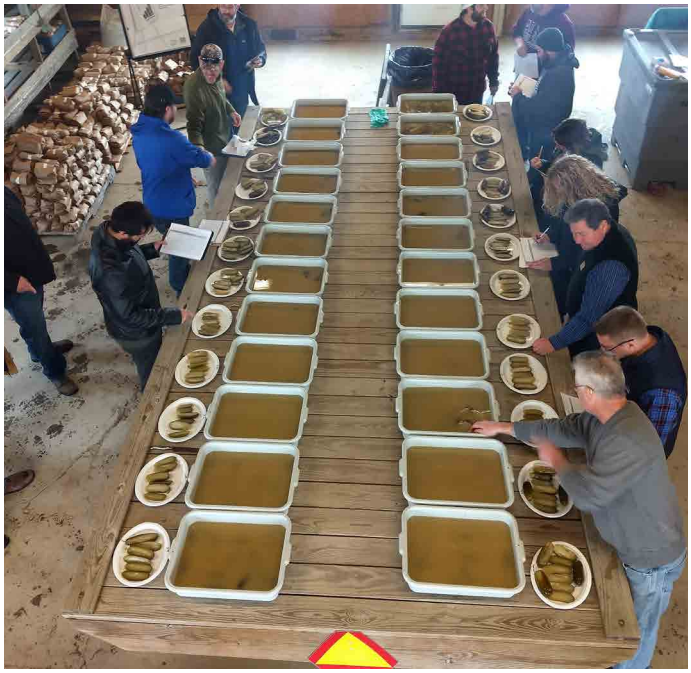
• Participant from the Produce Safety Alliance Trainings, 2017–2019

PARTNERING WITH GROWERS AND PROCESSORS TO DEVELOP MICHIGAN PRODUCTS

MSU Extension vegetable educator Ben Phillips conducts vegetable variety trials for production data as well as for post-harvest qualities such as flavor, texture, and structure after processing.

Number one in pickle acres, Michigan is home to at least 12 brineries, which start the pickling process. Not every variety of cucumber makes a good pickle. As new varieties become available, Ben Phillips helps both growers and pickle-makers select which varieties will work. The new varieties are grown in the field, where Phillips measures things growers care about, like yield. He then takes these cucumbers to the brineries, where they start the pickling process to see which varieties have what it takes to become marketable pickles. This work helps move the industry forward with varieties that can help growers sustainably increase yields while also helping processors make a perfect pickle.

MSU Extension also does work that can help new industries emerge. When a Flint-area enchilada sauce maker asked why she couldn't source dried peppers from Michigan, Phillips ran a trial of poblano peppers that took them from field to fork. Not only did he grow the peppers and evaluate them for yield and quality, he also worked to find novel drying solutions growers could use on their farms. Finally, the peppers were processed into sauces, and over 100 participants sampled the resulting enchiladas. This work found that Michigan-grown and dried peppers can compete culinarily with imports.



Above, 24 varieties of pickling cucumbers after the fermentation process in brine tanks.

> ***"The brine stock evaluation day has gotten better every year and it has helped us choose the best varieties for our company. I appreciate the opportunity to see varieties coming down the pipeline."***
>
> • *Participant from the brine stock evaluation day, 2019*