



516 South Main St., Suite D  
Frankenmuth, MI 48734

STANDARD  
U.S. POSTAGE  
**PAID**  
LANSING, MI  
PERMIT NO. 37



Spring 2021

## Michigan Bean Commission COMMISSIONERS

### DISTRICT #1

Kevin Noffsinger  
*Treasurer*

### DISTRICT #2

Ted Bauer

### DISTRICT #3

Greg Ackerman  
*Chairman*

### DISTRICT #4

Clinton Stoutenburg  
*Vice Chairman*

### DISTRICT #5

Allen Bischer

### DISTRICT #6

Ross Voelker

### DISTRICT #7

Jessica Rader

### AT LARGE

Steve Ewald

### SHIPPER REPRESENTATIVE

Neil French

### MSU DRY BEAN SPECIALIST

Scott Bales

### EXECUTIVE DIRECTOR

Joe Cramer

## 2021 DRY BEAN PRODUCTION PRACTICES SURVEY

*Scott Bales, MSU Dry Bean Specialist & Joe Cramer, MBC Executive Director*

A major focus of The Michigan Bean Commission (MBC) and the Production Research Advisory Board (PRAB) is the continued improvement in the sustainability and profitability of dry bean production in Michigan. This continued advancement requires an active dedication to research. The Michigan Bean Commission has successfully authored and executed Michigan Department of Agriculture and Rural Development (MDARD) Specialty Crop Block Grants (SGBG) since 2010. In total this has leveraged over \$1,200,000 in funding for agronomic and market research. These projects also often assist in the funding of MSU Specialist when addressing issues such as bean breeding / variety development, herbicides use, and disease management. Key projects since 2010 have included: Narrow Row Testing, 'Project North' which tested dry beans in non-traditional areas, Black Bean Color Retention, Direct Harvest, Sustainability and now Fertility and Nutrient Management.

Research projects that were performed in 2020 focused in three main categories: Fertility, Variety Development, and Integrated Pest Management. While these topics are not independent from each other they have been focused on in different approaches. Since 2019 MBC has authored MDARD grants specifically focused on the first category: Fertility and Nutrient Management. All of these research findings and reports from the 2020 growing season are available in the '2020 Michigan Dry Bean Research Report' under the Research tab on Michiganbean.com. As we move into the 2021 field season the focus of research projects now intensifies onto fertility and large-plot (strip trial) research. While we did have valuable findings in 2019 and 2020 it is important that we do not make decision or recommendations based on these trials alone. In 2021 we will apply what we have learned in small plot projects and expand it across many acres in Michigan's dry bean production region.

As we look back on the past and see advancements in production it is clear that MBC research has been well timed, focused, and applicable to Michigan's dry bean producers. As we move into the future and incorporate a new generation of dry bean growers it is important that we maintain this status as the leading edge of industry innovation. In the modern age of farming, production practices, tools, and technology are advancing rapidly. To keep up with this evolving industry PRAB implemented a digital grower survey in 2018. The purpose of this survey is to document common production practices, as well as the shift in production practices as the industry progresses. This survey was distributed and taken electronically with a total of 50 questions in December 2020-March 2021. All participants were completely anonymous. The 2021 survey had tremendous response from both growers and crop advisors, we would like to thank all who participated.

The 2021 Dry Bean Production Practices Survey had 107 total completed responses. Through the series

of questions participants were categorized by occupation (Farmer or Crop advisor) and production type (conventional, organic, or both). Of the 107 participants 66% were conventional, 27% organic, and 7% produced both organic and conventional dry beans. The individuals who participated in the survey were also questioned about what part of Michigan they primarily worked in, the most common responses were Huron, Tuscola, Bay and Montcalm County. However, 9 different locations in Michigan

### In the past five years my farm has \_\_\_\_ nitrogen rates and average yields have \_\_\_\_?

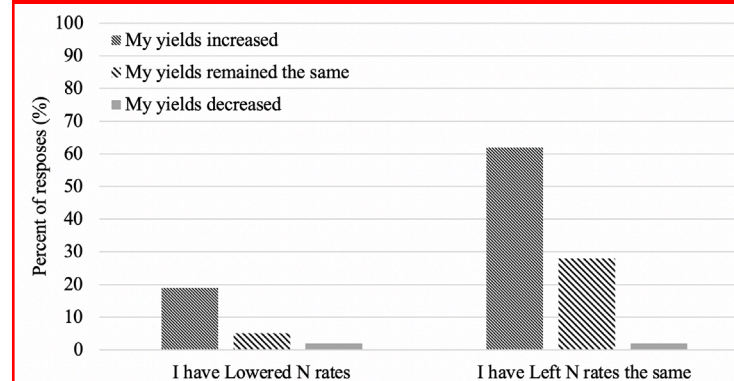


Figure 1. Farmers nitrogen use trends and corresponding dry bean yields over the past five years (N=77)

*Continued on page 3*

Published by the:  
Michigan Bean Commission  
516 South Main Street, Suite D, Frankenmuth, MI 48734  
Office: 989-262-8550  
Email: [jcramer@michiganbean.com](mailto:jcramer@michiganbean.com)  
Website: [www.michiganbean.org](http://www.michiganbean.org)

The official broadband supplier of the MBC:  
**Air Advantage, LLC.**  
465 North Franklin St., Suite C, Frankenmuth, MI 48734  
Phone: 989-652-9500 Ext 2224  
Fax: 989-652-4959  
<http://airadvantage.net>



# MICHIGAN BEAN COMMISSION DRY BEAN CANNING EVALUATIONS: A FULL YEAR IN THE MAKING

Scott Bales, MSU Dry Bean Specialist & Joe Cramer, MBC Executive Director

On February 23, 2021 the Michigan Bean Commission hosted a virtual meeting with end users and plant breeders from across four different continents (North America, South America, Europe, and Africa). The purpose of this meeting was to discuss unique end use traits of all varieties tested in the 2020 Michigan Dry Bean Performance Trials. This year we were able to share/ demonstrate differences and outcomes with the group virtually. This meeting covered the entire process required to complete this testing of dry bean quality, a process that takes nearly one full year start to finish. This process required engagement by all segments of the supply chain (dry bean breeders, seed producers, farmers, researchers, elevators, and canners). Each year this process starts in early March:

### March

In early March dry bean breeders from across North America are solicited for entry into the Michigan Dry Bean Performance Trials. This consist of both public and private institutions. These trials have been conducted on-farm here in Michigan for over 50 years. Annually six locations are utilized for this testing across the dry bean production region. At this time local growers are also contacted about hosting trials with MBC and are an essential component to this testing and evaluations.

### April

In April the entry list is set for the upcoming years testing. In 2020 148 entries were submitted across 10 separate market classes for both agronomic testing (yield and disease) as well as quality evaluations post-harvest (canning).



### May

Seed is due to the Saginaw Valley Research and Extension Center in Frankenmuth, MI on May 1. Seed is needed this early in the growing season as advanced preparation is needed. All seed is treated with an industry standard seed treatment and packed into small seed packs that are precisely counted to seed exactly one plot each. For most market classes this is 100-seeds per pack equaling a 20-foot row that is seeded at 130,000 seeds per acre. For all trials planted in 2020 nearly 5,000 individual seed packs were printed, filled, and organized in seed boxes according to the planting design. Packs can be seen ready for plating in the Montcalm County plot image to the left.



### June

In June all dry bean trials in Michigan are planted. Each on-farm location is 1.5-2.0 acres in size. Within that area 70-80 varieties are tested each with distinct 4 replications. The standard design used is a 'Randomized Complete Block Design', this randomizes the replications across

the entire area, but does so in a manor to test each entry on an equal playing field accounting for changes in soil type, elevation, compaction, etc. The planter use is specially designed for the accurate seeding of multiple market classes and complete plate clean out between plots. This ensures that varieties are not mixed as the planter moves to a new plot/variety every 25 feet without stopping.



### July - August

Dry bean trials are than managed utilizing standard production practices for the remainder of the growing season. During this time rigorous evaluations are also performed on each replication of each entry in every location to account for variability both between locations, and within locations. These evaluations include but are not limited to stand counts, vigor ratings, disease resistance or tolerance, lodging, dry down, plant height, flowering and maturity date. Each year these plots are also marked and toured by local growers in each area on an evening tour hosted by the Michigan Bean Commission where agronomic traits are discussed as well as other questions and practices about dry bean production.



### September - October

When tours are finished final preparations for harvest are made. All upright short vine varieties are direct harvested. These include Black, Navy, Small Red, etc. Determinate bush type beans are pulled and harvested in a more traditional harvest method to limit harvest lost. For both harvest methods

a Wintersteigher small plot combine is used for cutting and/ or thrashing. This combine has a head width that allows for the direct harvest of two 20-inch rows and internal components that utilize air and conveyers for the movement of beans through the machine with limited mechanical damage. As beans are threshed the first stop on the machine is an internal scale systems that takes a raw weight and moisture reading on beans from each plot. This weight is accurate to the one hundredth of a pound on each measurement even while moving. Once the scale reading is digitally recorded beans are transported to the cab for sampling and storage. Each plot is than placed in a pre-labeled bag and ready for transport out of the field and back to the Saginaw Valley Research and Extension Center. On an average year this accounts for 60 threshing hours on the combine that produces 6.5 tons of samples that are each represent a distinct variety and replication within the field (average sample weight is 2.5lb each).



### November - December

Once harvest is complete samples are cleaned utilizing a 'clipper' seed cleaner and re-weighed and moisture tested. This produces a clean weigh and moisture for each sample that is than used to calculate an average yield per acre when averaged across replications. Data is than analyzed to determine differences between varieties entered into a trial using the analysis of variance procedure. When combined with evaluations from the season these results are published on Michiganbean.com and presented at grower meetings in December. Recordings of this year's meetings are available on the Michigan Beans YouTube channel. However, once this yield data is released and meetings are held the research does not stop. Subsamples from each variety are taken and weighed out to precisely the correct amount for a standard can of beans that one would buy in the grocery store. These beans are than

placed into individual labeled mesh bags that can be soaked and blanched. Once prepared for soaking beans are transported to the MSU Food Processing and Innovation Center (FPIC) in Okemos, MI. Here a strict protocol (directions) are followed to replicate commercial canners. Each market class is handled independently as they move through a soak, blanch, seal, and cook process developed for that seed type. Close collaboration with USDA and MSU has existed for many years in the establishment and continuation of this process. Currently This partnership offer the most comprehensive dry bean quality test anywhere on the globe.



### January - February

Once cans are allowed to rest for four weeks evaluations begin. Cans are opened and evaluated for appearances, textures, and colors by a panel of trained evaluators. Specialized evaluations scales and training methods have been implemented to ensure that ratings done by the panel conform to the industry trends and standard for what is acceptable and desired by the consumer in each market class. This meeting is

Continued from page 1

were represented within the survey results. This type of response on location is validated by annual USDA reports as well, in a given year up to 80% of Michigan's dry bean acres can be located in the Thumb and Saginaw Valley. As the survey transitioned into asking producers how they specifically manage dry beans on their farm a few key changes from the past are evident. Questions that display these changes in production include: Row widths planted (5% < 15", 45% in 20-22", and 44% in 28-30"), Planted populations (112,000/A for black and navy, 100,000/A for small red, and 77,000/A for kidney and cranberry), and harvest method (78% Direct harvest). Major agronomic shifts have taken place in dry bean production that are clearly demonstrated by the responses to these three questions in the past 10-15 years. In the interest of sustainability and the profitability of production, fertilizer use was a major area of interest. Producers were asked about Macro- and Micro-nutrient applications, rates, and methods. Of the producers who applied nitrogen, phosphorus, and potassium rates averaged 58, 29, and 48 lb/acre of actual nutrient applied, respectively. However, 43% of growers responded that they only apply phosphorus and potassium if recommended by a soil test. Micro-nutrients were applied to dry beans by all of the respondents. The most common micronutrients that were applied to dry beans were zinc and manganese. Growers were also asked directly how their practices and production has changed over the past five years of bean production. Staying on the focus of fertilizer use growers were asked if they have altered the amount of nitrogen they apply to dry beans in the past five years? And how/if what have average dry bean yields responded over the past five years? Results document that of the total number of respondents, the majority (85%) have left nitrogen rates the same, or reduced them from their previous standard. As a result 19% have documented increased production with less inputs (lower N

also open to all who wish to attend to see the samples in-person and discuss varietal differences. This year the meeting needed to be pivoted to a virtual platform due to current restrictions on the size of public gatherings. However, this has proven to be a beneficial transition. By moving to a virtual meeting attendance from Europe, Africa, and South America was achieved. Additional benefits are that the meeting now is available to all who wish to view the recording that is available on Michiganbean.com/ research. In the hour long meeting samples of all black, navy and small red beans were presented visually along with the scores that were assigned by the trained panel of evaluators. Select varieties of kidney beans were also included in recorded report. In conclusion the testing of dry bean end-use quality is an activity that has long been supported by the Michigan Bean Commission. These results help keep Michigan as a global leader in the production of high quality dry beans that are demanded by canners and consumers. To check out more information of canning please head to Michagianbean.com and follow the research tab to article and video under: 2020 Dry Bean Canning Evaluations: Training and Results.

Please rank what areas of dry bean production and need further researcher to help increase dry bean yields on your farm?

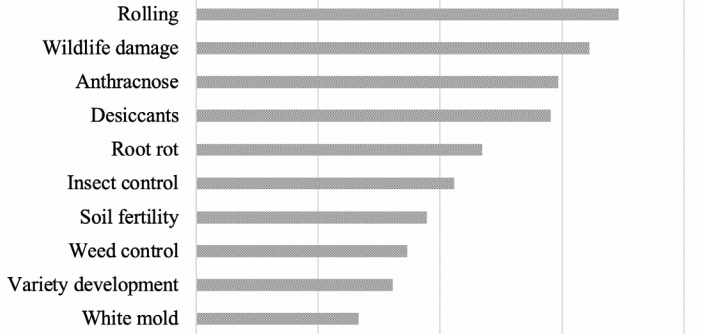


Figure 2. Dry bean research priorities as ranked by 107 Michigan farmers and crop advisors

rates) and 62% have documented increased production under the same inputs (Figure 1). These results demonstrate the industry's commitment to sustainable production as these results help both the bottom line, and the local watershed. While documenting common production practices and shifts over time is an important purpose of this survey, identifying future research objectives remains a major priority. The final question presented by the survey was, "What challenges to dry bean production needs the most research on your farm?" Eleven options were ranked from the highest priority (1) to the lowest (11) (Figure 2). Overall, this information and input from growers and industry helps MBC focus research on the challenges to production today, as well as better prepare for the challenges of the future. I would like to thank all of those who participated in this year's survey and look forward to continuing this survey in 2021. Complete survey results for all 50 questions is available on Michiganbean.com.