2020 OHIO ORGANIC CORN PERFORMANCE TEST

www.oardc.ohio-state.edu/corntrials

*Southwest / West Central Region  *Northwest Region  *North Central / Northeast Region
Wood – Corn Grain and Silage  Wayne – Organic and Conventional
NEW - Sandusky - Organic

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES
2020 OHIO ORGANIC CORN PERFORMANCE TEST

Ohio State University Extension/Ohio Agricultural Research & Development Center

The purpose of the Ohio Organic Corn Performance Test (OOCPT) is to evaluate certified organic corn hybrids for grain yield and other important agronomic characteristics. Results of the test can assist farmers in selecting hybrids best suited to their farming operations and production environments. Corn hybrids differ considerably in yield potential, standability, maturity, and other agronomic characteristics that affect profitable crop production. Hybrid selection should be based on proven performance from multiple test locations and years. The presentation of data does not imply endorsement of any hybrid by The Ohio State University.

EVALUATION PROCEDURES

Seed companies marketing organic corn hybrids in Ohio are invited to enter hybrids in the test. An entry fee is charged to cover expenses. In 2020, companies were permitted to enter an unlimited number of hybrids. The tests were conducted on certified organic fields at Apple Creek (West Badger Farm) and Wooster (Fry Farm) in Wayne County and Lindsey in Sandusky County and were intensively managed for nutrients and weed control. Each hybrid entry was evaluated using four replications per site in a randomized complete block design. Hybrids were planted either in an early or full season maturity trial based on relative maturity information provided by the companies. The relative maturity of hybrid entries in the early maturity trial were 106 days or earlier; the relative maturity of hybrid entries in the full season trial were 107 days or later. Hybrids were planted with an Almaco Seed Pro 360 vacuum plot planter with SkyTrip GPS. Each plot consisted of four 30-inch rows 25 feet long with the center two rows utilized for data collection. The planting rates and target final stands are determined by known field history and yield goals. Soil amendments were applied according to recommended cultural practices for obtaining optimum grain yields. Details concerning the establishment and management of each 2020 test are listed in footnotes below the tables.

MEASUREMENTS AND RECORDS

YIELD. The center two rows of each plot were harvested with a self-propelled two-row picker sheller combine. Yields were reported as bushels of grain per acre (BU/A) at 15.5 percent moisture.

MOISTURE (Harv Mst). A grain moisture determination was made from each plot with an electrical conductance moisture meter. Grain moisture was reported as percent grain moisture.

LODGING (Stk Ldg). The number of broken stalks in each plot was determined just prior to harvest. Only those plants with a stalk broken below the ear were considered stalk lodged. Stalk lodging was reported as a percentage of final plant stand.
FINAL STAND (Final Std). Seed corn producers selected a desired planting rate for each hybrid entered. Differences between the planting rate and the final stand may be attributed to seed quality and/or environmental conditions present. Populations were reported in hundreds (100/A) per acre.

EMERGENCE (Emg). An emergence count was made on each plot after plant emergence. The emergence percentage was computed based on the number of plants and the number of seeds planted and was reported as a percentage of the seeds planted.

TEST WEIGHT (TW). Test weights were recorded in pounds per bushel on grain samples at field moisture. The results are an average of all sites in the regional tests.

LSD 0.10 - Least Significant Differences at probability level 0.10 (LSD 0.10) are reported for yield and other agronomic characteristics. Differences between hybrids are significant only if they are equal to or greater than the LSD value. If a given hybrid out yields another hybrid by as much or more than the LSD value, then we are 90% confident (i.e. the odds are 10:1) that the yield difference is real, with only a 10% probability that the difference is due to chance variation (such as soil variation, etc.). For example, if Hybrid X is 19 Bu/A higher in yield than Hybrid Y, then this difference is statistically significant if the LSD is 19 Bu/A or less. If the LSD is 20 Bu/A or greater, then we are less confident that Hybrid X is really higher yielding than Hybrid Y under conditions of the test. If ‘NS’ is indicated for a characteristic, then the differences among hybrid entries are not significant at the 10% probability level.

2020 GROWING CONDITIONS

The Organic OCPT fields were planted in late May/early June into fields with good soil moisture. Rainfall was extremely variable from mid-June through mid-August. Adequate rainfall the end of August & early September combined with above average temperatures later in the season were favorable for corn development and extended the grain fill period well into October. Above average temperatures in November promoted the drying process and grain moistures dropped to a manageable level. Foliar diseases (Northern Corn Leaf Blight and Gray Leaf Spot) and ear rots (Diplodia) were observed but were generally present at low levels.

RESULTS

In 2020, Organic OCPT yields exceeded expectations. Averaged across hybrid entries in the early and full season tests, yields were 206 bu/A. Yields at individual test sites, averaged across hybrid entries in the early and full season tests, ranged from 191 bu/A at Lindsey to 222 bu/A at Apple Creek. Results for the Wooster site are not presented due to heavy rains immediately after planting reducing stands and limiting early weed control which created variability within the test plot field.

Results of the 2020 testing program are presented in Tables 1 and 2. Two-year averages for the Apple Creek location are presented in table 3. The seed source and table location for hybrids are shown in Table 4. The seed treatments associated with each hybrid entry (information provided by seed companies) are indicated in Table 4. Yields and other agronomic performance
characteristics have been averaged across the individual test sites and shown under the SUMMARY heading for each maturity group. Hybrids are listed in alphabetical order by brand.

Confidence in test results increases with the number of years and the number of locations in which the hybrid was tested. Look for consistency in a hybrid's performance across a range of environmental conditions. Yield, standability, grain moisture, and other comparisons should be made between hybrids of similar maturity to determine those best adapted to your farm. Results of the crop performance trials for 2020 are available online at: http://www.oardc.ohio-state.edu/organiccorntrials. Hybrids can be sorted by yield, brand, and other variables online.

Acknowledgments: We thank Kevin and Sue Hennis for proposing the Organic Corn Performance Test and for working with their industry contacts to promote hybrid submission. Thank you to the organic seed industry for their contributions and support. We thank our on-farm cooperator, Steve Turnow, for his contributions to the 2020 corn hybrid testing program. We are grateful for the assistance provided by Matt Lowe, Ohio State Farm Operations at Wooster; Gerald Reid, Organic Farm Manager with field operations; and Ken Scaife and Mike Sword, OSU-OARDC Wooster.

All educational programs conducted by Ohio State University Extension are available to clientele on a nondiscriminatory basis without regard to race, color, creed, religion, sexual orientation, national origin, gender, age, disability or Vietnam-era veteran status.
Dr. Jacqueline Wilkins, director, OSU Extension.
TDD No. 800-589-8292 (Ohio only) or 614-292-1868
### Table 1. Performance of hybrids in the Organic Early Maturity trial. (106 Day RM and Earlier) North Central / Northeast Ohio, 2020.

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**Summary**

- **High**: 208.6, 20.3, 43, 316, 97, 58.4
- **Average**: 181.8, 19.1, 14, 292, 89, 56.0
- **Low**: 152.4, 17.8, 3, 262, 80, 53.9
- **LSD .10**: 15.1, 0.4, 22, 17, 5, 0.9
- **CV**: 7.0, 1.25, 5, 5, 1.3

**Soil Type**
- Lenawee Silt Loam
- Canfield Silt Loam

**Soil Test (pH,P,K) M-3 ppm**
- 6.1, 82, 127
- 6.8, 43, 183

**Previous Crop**
- Soybeans
- Alfalfa

**Planting / Harvest Dates**
- June 3 / Nov. 28, 2020
- May 26 / Nov. 29, 2020

**Tillage**
- Conventional Tillage
- Conventional Tillage

**Nutrients Applied (N,P,K)**
- NA
- 78, 69, 218

**Cooperator**
- Steve Turnow
- Gerald Reid / Ken Scaife, OARDC

**County**
- Sandusky
- Wayne

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**Soil Type** Lenawee Silt Loam
**Soil Test (pH,P,K) M-3 ppm** 6.1, 82, 127
**Previous Crop** Soybeans
**Planting /Harvest Dates** June 3 / Nov. 28, 2020
**Tillage** Conventional Tillage
**Nutrients Applied (N,P,K)** NA
**Cooperator** Steve Turnow
**County** Sandusky

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**Summary**

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