

2019 OHIO ORGANIC CORN PERFORMANCE TEST

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The purpose of the Ohio Organic Corn Performance Test (OCPT) 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 2019, companies were permitted to enter an unlimited number of hybrids. The tests were conducted on certified organic fields in Apple Creek and Wooster (Fry and West Badger Farms) and 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 was 106 days or earlier; the relative maturity of hybrid entries in the full season trial was 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 rate was 34,000 seeds/acre with a final stand target of 30K – 31K plants/acre. Composted manure and Chilean Nitrate were applied according to recommended cultural practices for obtaining optimum grain yields. Details concerning the establishment and management of each 2019 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.

2019 GROWING CONDITIONS

The spring of 2019 was one the wettest on record and resulted in major planting delays throughout Ohio. According to the National Agricultural Statistics Service, only 33% of Ohio's corn was planted by June 2. The Organic OCPT fields were planted May 24th and 25th into fields with optimal soil moisture & temperature for uniform emergence and early growth. Frequent rain events continued into June limiting weed control opportunities. Timely rains in August and September, combined with above average temperatures, were favorable for corn development and extended the grain fill period. Diplodia ear rot was observed in a few hybrids at low levels. Stalk lodging, while present, was generally one or two nodes below the ear node and did not impact harvestability for most hybrids. The Wooster/Apple Creek areas were fortunate and missed most of the weather extremes experienced in other parts of Ohio. Excellent conditions throughout the growing season minimized stress.

RESULTS

Results of the 2019 testing program are presented in Tables 1 and 2. The seed source and table location for hybrids are shown in Table 3. The seed treatments associated with each hybrid entry (information provided by seed companies) are indicated in Table 3. 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.

Despite delayed planting dates, above normal rainfall and warmer than normal conditions during grain fill, Organic OCPT yields exceeded expectations. Averaged across hybrid entries in the early and full season tests, yields were 236 bu/A. Yields at individual test sites, averaged across hybrid entries in the early and full season tests, ranged from 232 bu/A at Apple Creek to 240 bu/A at Wooster.

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 2019 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 of this new endeavor. We are grateful for the assistance provided by Gerald Reid, Organic Farm Manager with field operations, and Ken Scaife and Mike Sword, OSU-OARDC Wooster.

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Table 1. Performance of hybrids in the Organic Early Maturity trial. (106 Day RM and Earlier) North Central / Northeast Ohio, 2019.

| Brand | Hybrid | RM | Apple Creek | | | | | | Wooster | | | | | | Summary | | | | | |
|----------------------------|---------------------------------|-------|-------------|-------|------|-------------|---------------------------------|-------|---------|------|-------------|-------|-------|-------|---------|-------|------|------|------|------|
| | | | Yield | Harv. | Stk. | Final | | Yield | Harv. | Stk. | Final | | Yield | Harv. | Stk. | Final | | | | |
| | | | | Mst. | Ldg. | Std. | Emg. | | TW | Mst. | Ldg. | Std. | | Emg. | TW | Mst. | Ldg. | Std. | Emg. | TW |
| Bu/A | -----%----- | 100/A | --%-- | Lbs. | Bu/A | -----%----- | 100/A | --%-- | Lbs. | Bu/A | -----%----- | 100/A | --%-- | Lbs. | | | | | | |
| Blue River | 48G35 | 102 | 244.6 | 20.1 | 8 | 299 | 89 | 55 | 244.4 | 19.8 | 1 | 306 | 89 | 56 | 244.5 | 20.0 | 4 | 303 | 89 | 55.8 |
| Blue River | 49K70 | 103 | 225.5 | 23.5 | 1 | 310 | 91 | 55 | 224.4 | 22.4 | 0 | 325 | 94 | 56 | 224.9 | 22.9 | 1 | 318 | 93 | 55.5 |
| Blue River | 51T59 | 103 | 228.1 | 20.2 | 14 | 303 | 89 | 56 | 237.7 | 20.7 | 2 | 317 | 93 | 56 | 232.9 | 20.5 | 8 | 310 | 91 | 56.1 |
| Masters Choice | MC 5250 | 102 | 221.5 | 21.1 | 1 | 298 | 86 | 57 | 233.4 | 20.5 | 1 | 314 | 89 | 57 | 227.4 | 20.8 | 1 | 306 | 87 | 57.3 |
| Merit | O 3238 | 98 | 203.6 | 19.2 | 2 | 319 | 93 | 57 | 208.7 | 18.7 | 8 | 330 | 96 | 58 | 206.2 | 18.9 | 5 | 325 | 94 | 57.4 |
| Merit | O 5345 | 103 | 219.8 | 22.1 | 7 | 316 | 93 | 55 | 225.7 | 20.7 | 6 | 340 | 98 | 56 | 222.7 | 21.4 | 6 | 328 | 96 | 55.0 |
| Merit | O 5454 | 104 | 252.0 | 21.7 | 3 | 305 | 88 | 54 | 253.0 | 20.8 | 5 | 317 | 94 | 55 | 252.5 | 21.2 | 4 | 311 | 91 | 54.5 |
| Merit | O 6160 | 106 | 238.5 | 22.6 | 1 | 319 | 93 | 55 | 235.3 | 20.8 | 0 | 334 | 98 | 54 | 236.9 | 21.7 | 0 | 327 | 96 | 54.3 |
| Merit | O 6765 | 105 | 220.6 | 21.3 | 5 | 296 | 88 | 55 | 221.3 | 20.2 | 2 | 324 | 94 | 55 | 221.0 | 20.8 | 3 | 310 | 91 | 55.3 |
| Prairie Hybrid | PH 2741 | 102 | 231.3 | 19.9 | 3 | 312 | 91 | 55 | 254.0 | 19.5 | 4 | 318 | 93 | 55 | 242.7 | 19.7 | 4 | 315 | 92 | 55.4 |
| Prairie Hybrid | PH 3081 | 104 | 241.2 | 21.9 | 3 | 313 | 92 | 59 | 244.3 | 21.0 | 2 | 324 | 96 | 59 | 242.7 | 21.4 | 2 | 318 | 94 | 58.7 |
| Prairie Hybrid | PH 4711 | 106 | 243.9 | 21.4 | 21 | 304 | 92 | 56 | 243.9 | 20.9 | 34 | 322 | 94 | 56 | 243.9 | 21.1 | 28 | 313 | 93 | 55.9 |
| Viking | O.51-04PGS | 104 | 247.3 | 19.6 | 8 | 320 | 94 | 56 | 246.4 | 20.0 | 14 | 334 | 96 | 56 | 246.8 | 19.8 | 11 | 327 | 95 | 55.6 |
| Viking | O.55-02UP | 102 | 200.7 | 22.2 | 1 | 272 | 80 | 57 | 205.0 | 20.7 | 0 | 280 | 83 | 57 | 202.8 | 21.4 | 1 | 276 | 81 | 57.2 |
| Viking | O.98-98P | 98 | 213.0 | 18.5 | 3 | 294 | 87 | 56 | 220.7 | 18.4 | 2 | 299 | 88 | 56 | 216.9 | 18.4 | 2 | 297 | 87 | 56.4 |
| Welter Seed & Honey | WS 2482 | 104 | 250.0 | 22.4 | 5 | 286 | 86 | 54 | 235.7 | 21.1 | 1 | 289 | 84 | 55 | 242.8 | 21.7 | 3 | 287 | 85 | 54.4 |
| High | | | 252.0 | 23.5 | 21 | 320 | 94 | 59 | 254.0 | 22.4 | 34 | 340 | 98 | 59 | 252.5 | 22.9 | 28 | 328 | 96 | 58.7 |
| Average | | | 230.1 | 21.1 | 5 | 304 | 90 | 56 | 233.4 | 20.4 | 5 | 317 | 92 | 56 | 231.7 | 20.8 | 5 | 311 | 91 | 55.9 |
| Low | | | 200.7 | 18.5 | 1 | 272 | 80 | 54 | 205.0 | 18.4 | 0 | 280 | 83 | 54 | 202.8 | 18.4 | 0 | 276 | 81 | 54.3 |
| LSD .10 | | | 14.6 | 1.0 | 10 | 18 | 5 | 1 | 12.9 | 0.9 | 13 | 14 | 4 | 1 | 9.8 | 0.8 | 7 | 8 | 3 | 0.6 |
| CV | | | 5.3 | 3.9 | 150 | 5 | 5 | 1 | 4.7 | 3.6 | 214 | 4 | 4 | 1 | 2.4 | 2.2 | 75 | 2 | 2 | 0.6 |
| Soil Type | Canfield Silt Loam | | | | | | Canfield Silt Loam | | | | | | | | | | | | | |
| Soil Test (pH,P,K) M-3 ppm | 7.4, 116, 233 | | | | | | 6.9, 45, 153 | | | | | | | | | | | | | |
| Previous Crop | Barley / Double Crop Soybean | | | | | | Red Clover | | | | | | | | | | | | | |
| Planting /Harvest Dates | May 24 / Nov. 15, 2019 | | | | | | May 25 / Nov. 16, 2019 | | | | | | | | | | | | | |
| Tillage | Conventional Tillage | | | | | | Conventional Tillage | | | | | | | | | | | | | |
| Nutrients Applied (N,P,K) | 148, 227, 265 | | | | | | 129, 191, 222 | | | | | | | | | | | | | |
| Cooperator | Gerald Reid / Ken Scaife, OARDC | | | | | | Gerald Reid / Ken Scaife, OARDC | | | | | | | | | | | | | |
| County | Wayne | | | | | | Wayne | | | | | | | | | | | | | |

Table 2. Performance of hybrids in the Organic Full Season trial. (107 Day RM and Later) North Central / Northeast Ohio, 2019.

| Brand | Hybrid | RM | Apple Creek | | | | | | Wooster | | | | | | Summary | | | | | |
|----------------------------|------------|-----|---------------------------------|-------|------|-------|------|-------|---------------------------------|------|-------|------|-------|-------|---------|-------|------|------|------|------|
| | | | Yield | Harv. | Stk. | Final | | Yield | Harv. | Stk. | Final | | Yield | Harv. | Stk. | Final | | | | |
| | | | | Mst. | Ldg. | Std. | Emg. | | Lbs. | Mst. | Ldg. | Std. | | Emg. | Lbs. | Mst. | Ldg. | Std. | Emg. | Lbs. |
| American Organic | AM 2468 | 107 | 234.8 | 22.7 | 1 | 315 | 92 | 54 | 248.3 | 20.8 | 1 | 326 | 95 | 55 | 241.6 | 21.7 | 1 | 320 | 94 | 54.3 |
| American Organic | AM 2500 | 109 | 231.0 | 23.0 | 2 | 278 | 82 | 56 | 257.1 | 21.9 | 2 | 322 | 95 | 56 | 244.0 | 22.5 | 2 | 300 | 88 | 56.3 |
| American Organic | AM 2785 | 111 | 260.5 | 24.6 | 2 | 324 | 95 | 53 | 257.7 | 23.0 | 1 | 324 | 96 | 54 | 259.1 | 23.8 | 2 | 324 | 95 | 53.5 |
| Blue River | 57A30 | 107 | 230.0 | 21.9 | 1 | 313 | 92 | 54 | 240.5 | 20.7 | 1 | 318 | 94 | 55 | 235.2 | 21.3 | 1 | 315 | 93 | 54.6 |
| Blue River | 62G22 | 110 | 249.5 | 23.3 | 1 | 325 | 95 | 54 | 255.9 | 20.7 | 2 | 334 | 98 | 55 | 252.7 | 22.0 | 1 | 330 | 97 | 54.0 |
| Blue River | 66G25 | 112 | 237.4 | 24.7 | 2 | 320 | 94 | 54 | 255.3 | 23.3 | 2 | 324 | 95 | 56 | 246.4 | 24.0 | 2 | 322 | 95 | 55.1 |
| Masters Choice | MC 5790 | 107 | 236.9 | 24.1 | 0 | 303 | 89 | 54 | 240.0 | 23.6 | 1 | 313 | 92 | 54 | 238.5 | 23.8 | 1 | 308 | 91 | 54.2 |
| Masters Choice | MC 6150 | 111 | 229.4 | 26.5 | 1 | 318 | 93 | 50 | 246.2 | 24.1 | 3 | 329 | 96 | 51 | 237.8 | 25.3 | 2 | 323 | 94 | 50.8 |
| Masters Choice | MC 6580 | 115 | 228.7 | 28.6 | 4 | 305 | 89 | 51 | 235.4 | 25.9 | 7 | 317 | 93 | 51 | 232.1 | 27.3 | 6 | 311 | 91 | 50.9 |
| Merit | O 6869 | 109 | 228.7 | 21.9 | 0 | 312 | 91 | 53 | 245.7 | 21.4 | 1 | 330 | 97 | 53 | 237.2 | 21.7 | 0 | 321 | 94 | 52.9 |
| Merit | O 6969 | 107 | 228.6 | 22.0 | 3 | 285 | 83 | 54 | 237.8 | 21.8 | 6 | 318 | 94 | 55 | 233.2 | 21.9 | 4 | 301 | 88 | 54.8 |
| Prairie Hybrid | PH 5351 | 109 | 210.9 | 24.3 | 2 | 321 | 95 | 57 | 231.6 | 24.0 | 2 | 326 | 96 | 57 | 221.3 | 24.1 | 2 | 324 | 96 | 56.9 |
| Prairie Hybrid | PH 7781 | 112 | 241.7 | 25.2 | 4 | 321 | 94 | 54 | 245.2 | 24.2 | 8 | 318 | 93 | 55 | 243.4 | 24.7 | 6 | 320 | 93 | 54.4 |
| Prairie Hybrid | PH 7861 | 112 | 218.0 | 23.3 | 2 | 314 | 91 | 57 | 222.7 | 22.4 | 1 | 326 | 94 | 58 | 220.3 | 22.9 | 1 | 320 | 93 | 57.4 |
| Prairie Hybrid | PH 8751 | 114 | 256.8 | 24.3 | 10 | 312 | 91 | 53 | 250.1 | 24.7 | 6 | 327 | 96 | 52 | 253.5 | 24.5 | 8 | 319 | 94 | 52.7 |
| Viking | O.48-08PGS | 108 | 233.1 | 24.4 | 3 | 308 | 90 | 52 | 252.1 | 21.9 | 1 | 318 | 94 | 52 | 242.6 | 23.1 | 2 | 313 | 92 | 52.1 |
| Viking | O.74-10PGS | 110 | 241.7 | 22.9 | 1 | 314 | 93 | 55 | 242.8 | 22.4 | 1 | 318 | 93 | 55 | 242.2 | 22.6 | 1 | 316 | 93 | 54.5 |
| Viking | O.82-14PGS | 114 | 220.4 | 24.2 | 25 | 299 | 88 | 53 | 257.6 | 23.1 | 4 | 318 | 93 | 54 | 239.0 | 23.6 | 14 | 309 | 91 | 53.4 |
| Welter Seed & Honey | WS 4816 | 108 | 239.2 | 22.1 | 4 | 305 | 90 | 54 | 244.7 | 21.1 | 3 | 311 | 92 | 56 | 242.0 | 21.6 | 4 | 308 | 91 | 55.0 |
| High | | | 260.5 | 28.6 | 25 | 325 | 95 | 57 | 257.7 | 25.9 | 8 | 334 | 98 | 58 | 259.1 | 27.3 | 14 | 330 | 97 | 57.4 |
| Average | | | 234.6 | 23.9 | 4 | 310 | 91 | 54 | 245.6 | 22.7 | 3 | 322 | 95 | 54 | 240.1 | 23.3 | 3 | 316 | 93 | 54.1 |
| Low | | | 210.9 | 21.9 | 0 | 278 | 82 | 50 | 222.7 | 20.7 | 1 | 311 | 92 | 51 | 220.3 | 21.3 | 0 | 300 | 88 | 50.8 |
| LSD .10 | | | 15.5 | 1.4 | 8 | 17 | 5 | 1 | 16.8 | 1.2 | 4 | NS | NS | 1 | 13.0 | 1.1 | NS | 14 | NS | 0.8 |
| CV | | | 5.6 | 4.8 | 175 | 5 | 5 | 1 | 5.8 | 4.4 | 117 | 3 | 3 | 2 | 3.1 | 2.7 | 116 | 3 | 3 | 0.9 |
| Soil Type | | | Canfield Silt Loam | | | | | | Canfield Silt Loam | | | | | | | | | | | |
| Soil Test (pH,P,K) M-3 ppm | | | 7.4, 116, 233 | | | | | | 6.9, 45, 153 | | | | | | | | | | | |
| Previous Crop | | | Barley / Double Crop Soybean | | | | | | Red Clover | | | | | | | | | | | |
| Planting /Harvest Dates | | | May 24 / Nov. 15, 2019 | | | | | | May 25 / Nov. 16, 2019 | | | | | | | | | | | |
| Tillage | | | Conventional Tillage | | | | | | Conventional Tillage | | | | | | | | | | | |
| Nutrients Applied (N,P,K) | | | 148, 227, 265 | | | | | | 129, 191, 222 | | | | | | | | | | | |
| Cooperator | | | Gerald Reid / Ken Scaife, OARDC | | | | | | Gerald Reid / Ken Scaife, OARDC | | | | | | | | | | | |
| County | | | Wayne | | | | | | Wayne | | | | | | | | | | | |

TABLE 3. Seed source, table location and seed treatments for hybrids tested in 2019.

| Brand | Seed Source | Hybrid No. | Relative Maturity | Table No. | Seed Treatment |
|-------------------------|--|------------|-------------------|-----------|--------------------------|
| AMERICAN ORGANIC | CHAMPAIGN COUNTY SEED CO. 1676 CR 2200 EAST ST. JOSEPH, IL 61873 217-469-2351 american-organic.com | AM 2468 | 107 | 2 | None |
| | | AM 2500 | 109 | 2 | None |
| | | AM 2785 | 111 | 2 | None |
| BLUE RIVER ORGANIC SEED | BLUE RIVER ORGANIC SEED 2326 230th ST. AMES, IA 50014 800-370-7979 blueriverorganicseed.com | 48G35 | 102 | 1 | 1R |
| | | 49K70 | 103 | 1 | 1R |
| | | 51T59 | 103 | 1 | 1R |
| | | 57A30 | 107 | 2 | 1R |
| | | 62G22 | 110 | 2 | 1R |
| | | 66G25 | 112 | 2 | 1R |
| MASTERS CHOICE | MASTERS CHOICE, INC. 305 W. VIENNA ST. ANNA, IL 62906 618-697-7031 seedcorn.com | MC 5250 | 102 | 1 | MicroMaster |
| | | MC 5790 | 107 | 2 | MicroMaster |
| | | MC 6150 | 111 | 2 | MicroMaster |
| | | MC 6580 | 115 | 2 | MicroMaster |
| MERIT | MERIT SEED P.O. BOX 205 BERLIN, OH 44610 330-893-3196 meritseed.com | O 3238 | 98 | 1 | Gen II PB |
| | | O 5345 | 103 | 1 | Gen II PB |
| | | O 5454 | 104 | 1 | Gen II PB |
| | | O 6765 | 105 | 1 | Gen II PB |
| | | O 6160 | 106 | 1 | Gen II PB |
| | | O 6969 | 107 | 2 | Gen II PB |
| | | O 6869 | 109 | 2 | Gen II PB |
| PRAIRIE HYBRID SEEDS | PRAIRIE HYBRID SEEDS 27445 HURD RD. DEER GROVE, IL 61243 815-438-7815 prairiehybrids.com | PH 2741 | 102 | 1 | 1R |
| | | PH 3081 | 104 | 1 | 1R |
| | | PH 4711 | 106 | 1 | 1R |
| | | PH 5351 | 109 | 2 | 1R |
| | | PH 7781 | 112 | 2 | 1R |
| | | PH 7861 | 112 | 2 | 1R |
| | | PH 8751 | 114 | 2 | 1R |
| VIKING | ALBERT LEA SEED 1414 W. MAIN ST. ALBERT LEA, MN 56007 800-352-5247 alseed.com | O.98-98P | 98 | 1 | Soil Biotics 1r + SabrEx |
| | | O.55-02UP | 102 | 1 | Soil Biotics 1r + SabrEx |
| | | O.51-04PGS | 104 | 1 | Soil Biotics 1r + SabrEx |
| | | O.48-08PGS | 108 | 2 | Soil Biotics 1r + SabrEx |
| | | O.74-10PGS | 110 | 2 | Soil Biotics 1r + SabrEx |
| | | O.82-14PGS | 114 | 2 | Soil Biotics 1r + SabrEx |
| WELTER SEED & HONEY | WELTER SEED & HONEY 17724 HWY. 136 ONSLow, IA 52321 800-852-3325 welterseed.com | WS 2482 | 104 | 1 | None |
| | | WS 4816 | 108 | 2 | None |