# Corn Hybrids for Grain 2016

## Introduction

Corn seed manufacturers provided 48 hybrids that were part of the official variety trials on several LSU AgCenter research stations during 2015. Five variety trials were conducted at four AgCenter research stations on soils that included a Commerce silt loam and Sharkey clay at the AgCenter's Northeast Research Station.

In addition to those research station tests, the on-farm core block trials were conducted with a total of 13 hybrids spread over 15 locations throughout the corn-growing areas of Louisiana. LSU AgCenter parish extension agents coordinated those activities.

The official corn variety trials were conducted according to LSU AgCenter best management practices. The on-farm core block trials were placed with active corn producers and subjected to the standard production practices for each producer.

On-farm core block trial information is presented to provide yield results by trial, as well as some trend comparisons from compiled data. As opposed to the official variety trial research, core block trials sometimes are not replicated in the field, and rigorous statistical analyses often are not possible. Sufficient trials were conducted across a variety of locations, however, so meaningful and relevant observations can be made that will be useful to Louisiana producers as they make seed buying decisions.

The data provided in this publication should help you make more informed decisions about which varieties will work best for your production area.

## Hybrid Selection

Companies offer multiple varieties for sale to producers for good reasons. Each corn producer has somewhat different soil conditions, irrigation practices and crop rotations than their neighboring growers. Some varieties will tend to perform better than others based on soil type, planting date, weather conditions and location.

Relative maturity is determined genetically, but the maturity date of a given hybrid depends on the daily temperature mean accumulation (growing degree units) above 50 degrees Fahrenheit for corn. Below that temperature, little corn growth occurs. Louisiana producers can grow early hybrids (100-108 days), midseason hybrids (109-119 days) and full season hybrids ( more than 120 days).

Plant height, ear height and stalk strength all are factors that influence corn stands and ultimately yield. Husk coverage is important in wet harvest seasons because loosely shucked hybrids may dry quicker. But those loosely shucked ones tend not to withstand a wetter, more humid Louisiana harvest season as well as the thicker, tightly shucked ones. Grain quality can be affected as can the susceptibility to pathogens.

## Planting Rate and Depth

The optimal plant population for corn ranges from 25,000 to 30,000 live plants per acre. Assume 80 percent field emergence if planting early (plant 31,250-37,500 seeds per acre). The lower end of the recommended range should be used when lower yields are expected due to soil type, late planting date, drought-prone area or low fertility. Higher populations should be used on highly productive, deep alluvial soils or irrigated fields where moisture will not be a limiting factor.

Seed size and shape are not critical to a good stand, but be sure to use the correct plate and planter for the size purchased. Corn should be planted 2 inches deep. It is vitally important to establish seed contact with moist soil, but planting seeds greater than 2 inches deep can increase the probability of an uneven plant stand, which can affect growth and yield.

## Fertilization

Proper fertility is critical for optimizing crop yields, particularly in corn. Soil pH should be at least 5.8 for corn production. Nitrogen should be applied according to whether the field is in an alluvial plain, such as the Delta, or an upland soil – whether it is irrigated or nonirrigated (Table 1).

Apply nitrogen in a split application with 50-75 percent applied before or at planting and the balance when the corn is 3-12 inches tall. All the nitrogen can be applied preplant or at planting, but this increases the risk of fertilizer burn on seedlings and nitrogen loss from leaching or volatilization. An application of 20-50 pounds of nitrogen at tassel may be beneficial if environmental conditions resulted in leaching or volatilization of nitrogen.

Banding phosphorus will increase its efficiency when the soil pH is very acidic or alkaline or when soil test phosphorus levels are low. Soil testing is recommended to apply appropriate levels for each field, but in many soils 40- 60 pounds of $P_2O_5$ and $K_2O$ per acre will be needed. Corn uses phosphorus and potassium early in its growth cycle, so these nutrients should be applied preplant or at planting.

Soil testing also is recommended for determining sulfur and zinc needs. If sulfur is lower than 12 parts per million (Mehlich 3), apply at least 10 pounds of sulfur – in the sulfate form – per acre. If zinc is lower that 1 ppm, apply 10 pounds of zinc in a soluble form, such as zinc sulfate or zinc chelate, per acre. Among the inorganic zinc sources on the market, the most common sources are sulfates, oxides and oxysulfates. Zinc sulfate and zinc chelates essentially are 100 percent water-soluble, while zinc oxides essentially are insoluble in a single crop season, thus unavailable to the crop to be planted. Oxysulfates are a mixture of sulfates and oxides, with varying proportions of sulfates and oxides and different solubility levels (0.7 percent to 98.3 percent). The effectiveness of these can be highly variable, depending on solubility. Low solubility materials may have some value in a long-term buildup program, but when immediate results are the goal, highly soluble fertilizers are the best choices.

For acceptable in-season efficacy, a zinc fertilizer source should be at least 50 percent water-soluble. If a soil test shows zinc is between 1 and 2.25 ppm, apply 5 pounds of zinc per acre when broadcasting. Less is needed if using a banded application.

**Table 1. Nitrogen rates for corn in Louisiana based on field conditions.**

| Soil | Irrigation | Nitrogen Rate (lbs./acre) |
|---|---|---|
| Alluvial | Yes | 180-270 |
| Alluvial | No | 140-210 |
| Upland | Yes | 160-230 |
| Upland | No | 120-190 |

## Planting Date

Corn should be planted as close as possible to the date of the average last spring freeze. The optimal planting window for south Louisiana is Feb. 25-March 20, and for north Louisiana the optimal planting window generally is March 10-April 1. In most years, April 15 is the last date for maximum yield potential. Extending planting to May 1 can result in a yield reduction of 30 percent or more.

Corn younger than V6 (six-leaf stage) usually can withstand a light frost if the temperature does not drop below 30 degrees Fahrenheit. A moderate freeze will burn any existing leaves and cause them to drop, but new leaves can emerge in four to five days with higher temperatures. As the growing point moves upward near the soil surface, however, the possibility of injury increases.

## Evaluating the Data

This report begins with yield data from the official variety trials conducted by LSU AgCenter scientists in replicated formats that allowed for statistical comparisons. Detailed measurements were made, but this report only displays yield data. For a completer review of the official variety trial data, visit the corn section of the LSU AgCenter's website at www.lsuagcenter.com/corn.

For a better understanding of how corn varieties performed in Louisiana, refer to the official variety trial data first. Choose the varieties that performed well overall and those that performed well in the region most representative of your growing area. Finally, check the on-farm core block data to see if it is consistent with the official variety trial data for your chosen varieties. By making thorough comparisons across the full range of information available, you can improve your chances of choosing varieties that will perform well on your farm.

## LSU AgCenter Official Variety Trail Data

**Table 2. Planting dates and irrigation schedule for OVT trials.**

| Location | Planting Date | Irrigation | Seeding rate (seeds/acre) |
|---|---|---|---|
| St. Joseph-Commerce silt loam | March 26 | furrow | 34,000 |
| St. Joseph-Sharkey clay | March 27 | furrow | 34,000 |
| Winnsboro | March 25 | furrow | 34,000 |
| Alexandria | March 20 | none | 34,000 |
| Bossier City | March 20 | furrow | 34,000 |

**Table 3. Yield performance of hybrids entered in the LSU AgCenter's corn hybrid performance trials, 2015.**

| Hybrid | Alexandria | Bossier City | St. Joseph Commerce Silt Loam | St. Joseph Sharkey Clay | Winnsboro | Average |
|---|---|---|---|---|---|---|
| | bu/a | | | | | |
| Golden Acres 26V21 | 163.0 | 188.7 | 213.5 | 179.7 | 205.2 | **190.0** |
| Golden Acres G6611 | 178.6 | 167.3 | 212.0 | 198.1 | 199.0 | **191.0** |
| Mycogen 2C797 | 184.5 | 170.7 | 203.3 | 195.6 | 195.3 | **189.9** |
| Mycogen 2Y744 | 177.6 | 137.0 | 213.7 | 182.0 | 195.3 | **181.1** |
| Mycogen 2C786 | 170.9 | 129.3 | 188.3 | 183.9 | 178.1 | **170.1** |
| Mycogen 2D848 | 159.0 | 160.0 | 216.0 | 190.2 | 198.6 | **184.8** |
| Mycogen X13813VH | 180.3 | 174.7 | 203.7 | 189.8 | 208.8 | **191.5** |
| Mycogen X13726VH | 171.2 | 187.7 | 218.8 | 197.3 | 208.7 | **196.7** |
| Delta Grow DG 3660 GTCBLLBL | 156.5 | 163.7 | 191.9 | 162.0 | 190.5 | **172.9** |
| Delta Grow DG 2888 GTCBLLBL | 155.7 | 151.3 | 178.7 | 172.8 | 191.2 | **169.9** |
| DKC62-08 GENSS | 168.0 | 146.7 | . | 179.8 | 201.4 | **174.0** |
| DKC64-69 | 181.4 | 178.7 | 209.6 | 183.2 | 204.2 | **191.4** |
| DKC66-87 | 164.7 | 169.3 | 219.2 | 179.5 | 211.0 | **188.7** |

*Continued*

**Table 3. Yield performance of hybrids entered in the LSU AgCenter's corn hybrid performance trials, 2015.**

| Hybrid | Alexandria | Bossier City | St. Joseph Commerce Silt Loam | St. Joseph Sharkey Clay | Winnsboro | Average |
|---|---|---|---|---|---|---|
| | bu/a | | | | | |
| DKC66-59 | 159.1 | 148.7 | 206.1 | 180.1 | 212.0 | **181.2** |
| DKC67-14 | 169.9 | 187.3 | 212.7 | 192.0 | 198.0 | **192.0** |
| DKC67-72 | 159.9 | 177.3 | 210.7 | 177.7 | 199.1 | **184.9** |
| DKC 68-26 | 180.8 | 148.3 | 220.8 | 181.8 | 201.5 | **186.6** |
| DKC 62-77 | 134.4 | 150.0 | 196.5 | 167.1 | 177.3 | **165.1** |
| ARMOR 1414 | 164.7 | 188.7 | 210.4 | 170.1 | 198.5 | **186.5** |
| ARMOR 1555 | 164.6 | 152.3 | 204.5 | 171.9 | 182.3 | **175.1** |
| ARMOR 1616 | 169.7 | 154.0 | 198.5 | 180.0 | 187.2 | **177.9** |
| ARMOR 1621 | 167.2 | 129.7 | 190.7 | 171.4 | 196.5 | **171.1** |
| ARMOR AXC5117 | 172.4 | 172.0 | 209.5 | 193.2 | 201.5 | **189.7** |
| ARMOR AXC4119 | 162.9 | 164.3 | 210.1 | 192.7 | 204.0 | **186.8** |
| Dyna-Gro D52VC91 | 163.4 | 185.3 | 190.7 | 176.4 | 195.8 | **182.3** |
| Dyna-Gro D54DC94 | 181.8 | 151.0 | 216.8 | 188.9 | 203.7 | **188.4** |
| Dyna-Gro D55VP77 | 158.6 | 148.7 | 202.8 | 174.8 | 187.5 | **174.5** |
| Dyna-Gro D56VC46 | 171.8 | 189.7 | 217.2 | 183.5 | 208.3 | **194.1** |
| Dyna-Gro D57DC58 | 146.7 | 161.0 | 195.9 | 188.2 | 184.4 | **175.2** |
| Dyna-Gro D57VP51 | 178.7 | 183.3 | 217.1 | 198.2 | 204.7 | **196.4** |
| Dyna-Gro D58QC72 | 185.8 | 165.0 | 214.3 | 175.0 | 199.2 | **187.9** |
| Dyna-Gro CX15118 | 170.5 | 172.7 | 204.4 | 174.1 | 209.2 | **186.2** |
| NK N76A | 156.2 | 169.7 | 199.9 | 180.0 | 197.7 | **180.7** |
| NK N79M | 170.0 | 146.0 | 200.8 | 181.1 | 197.4 | **179.1** |
| NK N83D | 174.0 | 178.0 | 211.6 | 187.5 | 201.4 | **190.5** |
| NK 785 | 161.2 | 185.7 | 204.9 | 180.9 | 188.3 | **184.2** |
| REV 22BHR43 | 162.5 | 139.3 | 189.4 | 185.6 | 183.0 | **172.0** |
| REV 23BHR55 | 180.9 | 187.7 | 216.6 | 182.2 | 200.0 | **193.5** |
| REV 24BHR93 | 178.4 | 165.3 | 208.2 | 181.7 | 183.3 | **183.4** |
| REV 25BHR26 | 173.5 | 174.3 | 225.9 | 193.1 | 203.0 | **194.0** |
| REV 26BHR50 | 175.8 | 143.0 | 226.4 | 195.5 | 220.7 | **192.3** |
| REV 28HR20 | 176.2 | 178.0 | 235.1 | 195.2 | 218.1 | **200.5** |
| REV 28R10 | 174.1 | 154.0 | 223.1 | 200.5 | 213.4 | **193.0** |
| BH 8660VTTP | 189.0 | 160.0 | 210.9 | 187.2 | 187.4 | **186.9** |
| BH 8688DG2P | 159.2 | 182.0 | 215.1 | 184.6 | 204.6 | **189.1** |

*Continued*

**Table 3. Yield performance of hybrids entered in the LSU AgCenter's corn hybrid performance trials, 2015.**

| Hybrid | Alexandria | Bossier City | St. Joseph Commerce Silt Loam | St. Joseph Sharkey Clay | Winnsboro | Average |
|---|---|---|---|---|---|---|
| | bu/a | | | | | |
| Croplan 8512DGVT2P | 166.5 | 170.7 | 206.5 | 193.1 | 192.1 | **185.8** |
| Croplan 7927VT3/P | 161.2 | 142.3 | 201.0 | 179.1 | 189.9 | **174.7** |
| Croplan 6640VT3/P | 179.4 | 155.3 | 198.6 | 192.4 | 205.7 | **186.3** |
| **Average** | **168.8** | **164.2** | **207.7** | **184.2** | **198.4** | |
| **CV, %** | **9.9** | **11.1** | **5.8** | **5.8** | **5.5** | |
| **LSD (0.10)** | **19.6** | **24.7** | **16.3** | **11.0** | **12.7** | |

**Note: missing data on Commerce silt loam at St. Joseph was due to severe racoon damage.**

**Table 4. Summary of corn hybrid demonstrations at fifteen locations identified by parish. Yield expressed in bushels per acre (15.5% moisture)**

| | Avoyelles-1 | Avoyelles-2 | Beauregard | Caldwell | Concordia | Franklin | Madison | Morehouse | Ouachita | Pointe Coupee | Rapides-1 | Rapides-2 | St. Landry | W. Baton Rouge | West Carroll |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Stacked Hybrids** | | | | | | | | | | | | | | | |
| Armor 1555 | 231.7 | 203.7 | 163.4 | 155.5 | 134.2 | 207.1 | | 219 | 219.7 | 164.1 | 235.7 | 160.8 | 173.7 | 178.9 | 226.9 |
| Armor 1616 | 221.9 | 206 | 192.4 | 157.3 | 137.4 | 208.3 | | 219.5 | 203.5 | 170.0 | 230.3 | 155.1 | 163.8 | 170.2 | 227.5 |
| DeKalb DKC62-08 | 207.9 | 190 | 186.4 | | 170.3 | 228.8 | 214.5 | 214 | 219.2 | 173.9 | 245.2 | 148.3 | 175.9 | 163.8 | 240.4 |
| DeKalb DKC67-72 | 223.4 | 211 | 210.2 | 160.3 | 168.0 | 226.4 | 201.0 | 220 | 225.2 | 159.8 | 250.4 | 161.5 | 186.7 | 191.2 | 237.8 |
| Dyna-Gro D56VC46 | 231.2 | 206 | 193.9 | 136.2 | 146.0 | 218.2 | 220.1 | 215 | 219.7 | 186.5 | 228.0 | 175.7 | 191.4 | 176.9 | 247.3 |
| Dyna-Gro D57VP51 | 220.7 | 214 | 200.0 | 160.3 | 171.4 | 221.7 | 214.8 | 213 | 232.6 | 183.2 | 249.3 | 166.6 | 190.2 | 190.3 | 239.3 |
| Mycogen 2C797 | 203.7 | 208 | 195.9 | 149.8 | 165.0 | 215.8 | 194.0 | 219 | 198.3 | 184.0 | 216.0 | 153.5 | 184.3 | 182.8 | 223.0 |
| Mycogen 2D848 | 212.9 | 219 | | 144.5 | 152.6 | 197.2 | 211.5 | 216 | 202.1 | 196.3 | 203.4 | 159.8 | 182.3 | 197.8 | 233.6 |
| Syngenta N83-D | 210.5 | 212 | 175.9 | 155.7 | 153.0 | 209.7 | 212.2 | 214 | 220.7 | 180.6 | 232.4 | 161.5 | 177.3 | 185.9 | 238.9 |
| Terral 23BHR55 | 223.6 | 222 | 210.0 | 151.0 | 147.3 | 215.8 | 225.6 | | 219.4 | 179.0 | 243.9 | 172.0 | 196.3 | 182.5 | 247.0 |
| Terral 26BHR50 | 236.8 | 222 | 205.4 | 125.1 | 141.5 | 219.7 | 235.3 | 222 | 216.3 | 181.1 | 234.7 | 165.2 | 195.7 | 206.9 | 252.8 |
| **Non-Stacked Hybrids** | | | | | | | | | | | | | | | |
| Mycogen 2Y744 | 215.9 | 198 | 188.0 | 143.2 | 159.3 | 220.2 | 206.3 | 217 | 218.1 | 160.1 | 224.9 | 156.4 | 183.3 | 180.7 | 229.2 |
| Terral 28R10 | 220.0 | 233 | 197.6 | 137.6 | 142.2 | 203.5 | 229.5 | 220 | 208.2 | 147.9 | 221.6 | 170.2 | 184.4 | 188.1 | 236.7 |

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