

January 2017

MISSOURI CROP
PERFORMANCE

2016

sorghum



Wiebold, Mason, Knerr, Schwab, Schelp, Stanek, Grissum and Cravens

MU Variety Testing Program

COLLEGE OF AGRICULTURE, FOOD and NATURAL RESOURCES, UNIVERSITY of MISSOURI

2016 MISSOURI GRAIN SORGHUM TEST

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PREFACE

Our motto is “We test the best” and that is exactly what we do. Each year, the best seed companies and organizations select several of their best hybrids for evaluation by the MU Variety Testing Program. We use the latest scientific principles and procedures to provide farmers and others interested in corn hybrid performance with accurate and unbiased information.

We respect the seed companies and organizations that put their hybrids to the test. We are honored that they entrust us with their valuable products. It takes courage to allow their hybrids to be compared with all of the others. Not every company participates in our program for various reasons. Those companies that do participate deserve your consideration when purchasing seed for the next growing season. Please view the table at the back of our book for names and addresses of participating seed companies. Thank them for their courage and tell them you saw their hybrid in our program.

The MU Variety Testing Program has provided Missouri farmers with unbiased variety comparisons for more than 75 years, first with corn, then soybean and wheat. Current staff members have a total of over 100 years of experience with testing crop yield performance. Our plots are placed where you farm. They have the soils and weather conditions your fields have. The MU Variety Testing Program is on-farm research in the truest sense of the word. Four of our locations are on farmer fields in your communities. The other location is on an MU farm. These CAFNR owned and operated research centers sample the north, central and southeast regions of Missouri and, combined with the private farm locations, provide you with the diversity of environments you need to select the best hybrids for your farm. View the map in our procedures section to see the placement of our locations and the cooperators that are so important to the quality of our information.

Evaluating yield and making decisions based on that evaluation are difficult because yield is highly affected by environment — even the small differences that exist across a field. We use replication, plot size and plot placement to minimize the “noise.” Please read the procedures section of this book to better understand what we do and the tools we provide you to make hybrid selection decisions. Our data tables are arranged to help you quickly see how hybrids compare. We strongly suggest that you use information from more than one location. Our tables of “region means” provide you comparisons across multiple locations. Although yield is extremely important, please see our hybrid characteristics table located near the back of the book to view additional information that you might find helpful during hybrid selection.

Thank you for your interest and support. Please support the companies that participate in our program. If you have suggestions on how we can improve our program, please contact me directly (wieboldw@missouri.edu). The MU Variety Testing Program exists to serve your needs. We want to provide you with the best information possible.



William “Bill” Wiebold

PROCEDURES

Regions and locations

The MU Variety Testing Program tested grain sorghum hybrids at five locations distributed throughout the grain sorghum growing region in Missouri. The same hybrids are tested in all five locations. Locations for 2016 are as follows:

1. **Mooreville** (Livingston County),
Beetsma Farm
2. **Columbia** (Boone County),
Bradford Research Center
3. **Montrose** (Henry County),
Tom Engeman Farm
4. **Liberal** (Barton County),
Lester Dingman Farm
5. **Charleston** (Mississippi County),
Wayne Corse Farm



Entries

All seed companies were eligible to enter hybrids in the 2016 grain sorghum tests. Participation was voluntary and the MU Variety Testing Program exercised no control over which, or how many, hybrids were entered. The MU Variety Testing Program receives no Missouri tax dollars, so a fee was collected for each entry to fund the program.

Field plot design and plot management

Hybrids were randomly arranged in the field according to a randomized complete block design with three replications. At all locations, plots were four rows wide (10 feet) and 27 feet long. The center two plot rows were harvested to determine yield. All tests were planted and harvested with commercial equipment modified for small plot work. Row spacing was 30 inches and planting rate was 100,000 seeds/acre at all locations.

Fertilizer was applied at each site at the discretion of the farmer or the research station manager. Herbicides were used to control weeds, and additional hand weeding was performed as required. Management details varied among locations and are specified in individual regional crop management summaries.

Data recorded

Plant height was measured at maturity. Lodging was rated immediately before harvest using a scale of 1 to 5 where 1 = fewer than 20% plants lodged, 3 = all plants leaning moderately or 40% to 60% lodged, and 5 = 80% or more plants lodged. During harvest, plot grain weights were measured and an electronic moisture tester was used to determine the moisture content of the grain. Yields were corrected to a moisture content of 14% and expressed as bushels/acre.

Comparing hybrids

The performance of a hybrid cannot be measured with absolute precision. Uncontrolled variability is involved in determining each plot's yield. This variability exists in all field experiments and in farmer fields. Statistics are used to account for this variability and to help farmers select superior hybrids. The statistical tool used by the MU Variety Testing Program is called "least significant difference" (LSD). The LSD is simple to use. When two hybrids are compared and the difference between them is greater than the LSD, the entries are considered to be significantly different. Differences between two hybrids that are smaller than the LSD may have occurred by chance and are considered to be not significant. In other words, the two hybrids might have the same yield, grain moisture or other characteristics of interest. The LSD can be found at the bottom of each table.

The MU Variety Testing Program arranges hybrids within each table from highest yield to lowest yield. The "top yielding" hybrid in each test is identified by a double asterisk (**) placed next to its yield. Hybrids that did not yield significantly less than the highest yielding hybrid in the test are denoted in the tables by a single asterisk (*). Thus, by reading down the yield column, readers can readily identify the highest yielding hybrids in a test.

Hybrid performance may seem inconsistent from location to location and from year to year. These differences are caused by differences among environments for rainfall, temperatures, soil fertility, diseases, insects and many other factors. For an improved estimate of relative hybrid performance, readers should consider results from more than one environment (locations and/or years). The vast majority of hybrids are entered into our tests for only one year, so comparing hybrids across multiple locations becomes even more important. The MU Variety Testing Program facilitates hybrid comparisons across locations by publishing statewide means. The hybrid with the highest average yield and hybrids that do not differ for yield from that hybrid are designated with double (**) and single (*) asterisks.

Although yield usually receives first consideration, other agronomic characteristics may be important when selecting a grain sorghum hybrid. Maturity, resistance to insects, and diseases are among the hybrid characteristics that deserve careful consideration. We provide a table that contains several important characteristics of hybrids entered into the MU Variety Testing Program. This information was provided by seed companies. Please contact seed company representatives for the latest information. Seed entered into the MU Variety Testing Program is usually treated with one or more seed treatments. These seed treatments are identified in the table listing the hybrid characteristics.

Accessibility of data

Results of the 2016 crop performance tests are available online at varietytesting.missouri.edu. If you need help accessing the website, please call 573-882-2307.

Authors

William J. Wiebold, professor of Plant Sciences and state extension specialist;
Howard L. Mason; Delbert Knerr; David Schwab; William Schelp; Megan Stanek;
Mike Grissum and Chris Cravens.

CROP MANAGEMENT SUMMARY

Characteristics of the grain sorghum test locations

| Location | Soil type | Soil test | | | | Precipitation | | | | | |
|------------|---------------------|-----------|-----|----|-----|---------------|------|------|------|-------|--------|
| | | pH | OM | P | K | May | June | July | Aug. | Sept. | Season |
| Charleston | Dundee silt loam | 5.8 | 2.6 | 10 | 241 | 6.7 | 2.0 | 8.3 | 8.7 | 1.8 | 27.5 |
| Columbia | Mexico silt loam | 5.4 | 2.3 | 28 | 176 | 4.1 | 1.6 | 11.5 | 4.8 | 5.9 | 27.9 |
| Liberal | Yield data not used | | | | | | | | | | |
| Montrose | Barco loam | 7.1 | 3.6 | 31 | 348 | 5.1 | 2.2 | 7.1 | 4.4 | 4.0 | 22.8 |
| Mooreville | Grundy silt loam | 6.8 | 3.5 | 63 | 287 | 3.8 | 4.6 | 7.2 | 7.8 | 4.4 | 27.8 |

Crop management practices at the grain sorghum test locations

| Location | Dates | | Fertilizer | | | Tillage | Herbicides | |
|------------|---------------------|---------|------------|------|-----|---------|---|----------|
| | Planting | Harvest | N | P2O5 | K2O | | Pre | Post |
| Charleston | June 1 | Oct. 28 | 120 | 0 | 0 | Conv. | Dual II Magnum, Roundup | Callisto |
| Columbia | June 6 | Nov. 7 | 100 | 0 | 0 | Conv. | Dual II Magnum, Atrazine, Callisto, Liberty | None |
| Liberal | Yield data not used | | | | | | | |
| Montrose | June 8 | Nov. 1 | 110 | 70 | 120 | Min. | Lexar, Roundup | None |
| Mooreville | May 25 | Nov. 4 | 140 | 25 | 0 | Conv. | Lexar, Roundup | None |

Notes:

An insecticide was applied at the Liberal location for sugarcane aphid. Unfortunately, damage to some plots had already occurred. Large amount of variation for yield resulted in rejection of yield data.

2016 MISSOURI GRAIN SORGHUM TEST LOCATIONS

Charleston

| Brand-Hybrid | Yield (bu/ac) | Moisture (%) | Lodging ~ | Height (inches) |
|------------------|------------------|-----------------|--------------|--------------------|
| Alta AG3101 | 99.7** | 13.6 | 1 | 64 |
| Dyna-Gro GX16675 | 93.8* | 14.1 | 1 | 84 |
| Dekalb DKS48-07 | 93.7* | 13.7 | 1 | 54 |
| Dekalb DKS53-53 | 93.6* | 13.8 | 1 | 63 |
| Alta AG2103 | 93.5* | 14.6 | 1 | 57 |
| Alta AG1203 | 90.8* | 13.9 | 1 | 52 |
| Dekalb DKS45-23 | 89.8* | 13.6 | 1 | 58 |
| Dyna-Gro GX15484 | 88.5* | 14.1 | 1 | 64 |
| Dekalb DKS38-16 | 85.4* | 14.1 | 1 | 64 |
| Terral REV 9782 | 84.5 | 14.8 | 1 | 55 |
| Dyna-Gro GX15672 | 84.1 | 14.4 | 1 | 66 |
| Dyna-Gro 772B | 83.5 | 13.4 | 1 | 54 |
| Terral REV 9562 | 80.2 | 14.2 | 1 | 64 |
| Terral REV 9924 | 77.8 | 13.7 | 1 | 63 |
| Alta AG2105 | 75.1 | 13.7 | 1 | 50 |
| Alta AG1201 | 70.7 | 11.3 | 1 | 45 |
| Dyna-Gro M60GB31 | 65.0 | 13.7 | 1 | 60 |
| Alta AG3201 | 64.8 | 13.7 | 1 | 56 |
| Alta AG1401 | 64.8 | 12.3 | 1 | 62 |
| Mean | 83.3 | 13.8 | 1 | 60 |
| LSD (10%) | 14.7 | 1.1 | | |
| CV (%) | 8.8 | 4.2 | | |

** Highest yielding variety in test

* Yield not significantly less than the highest yielding variety in the test

~ Lodging rated on a 1 to 5 scale, where 1 = fewer than 20% plants lodged, 3 = all plants leaning moderately or 40% to 60% lodged, and 5 = 80% or more plants lodged.

Columbia

| Brand-Hybrid | Yield (bu/ac) | Moisture (%) | Lodging ~ | Height (inches) |
|------------------|------------------|-----------------|--------------|--------------------|
| Terral REV 9924 | 125.4** | 10.7 | 1 | 71 |
| Dekalb DKS38-16 | 116.6* | 12.3 | 1 | 67 |
| Dekalb DKS45-23 | 115.9* | 10.9 | 1 | 68 |
| Terral REV 9562 | 113.3* | 10.5 | 1 | 63 |
| Terral REV 9782 | 104.7* | 10.4 | 1 | 64 |
| Dekalb DKS53-53 | 103.9* | 11.2 | 1 | 64 |
| Alta AG2103 | 103.8* | 10.9 | 1 | 58 |
| Alta AG2105 | 103.1 | 10.9 | 1 | 58 |
| Dyna-Gro GX15672 | 102.6 | 10.5 | 1 | 65 |
| Dyna-Gro 772B | 98.0 | 11.2 | 1 | 58 |
| Alta AG3101 | 94.8 | 11.8 | 1 | 69 |
| Dyna-Gro GX15484 | 94.0 | 12.0 | 1 | 67 |
| Alta AG3201 | 91.3 | 11.7 | 1 | 58 |
| Alta AG1201 | 90.4 | 8.6 | 1 | 48 |
| Alta AG1203 | 90.2 | 11.2 | 1 | 54 |
| Dyna-Gro M60GB31 | 88.9 | 10.0 | 1 | 59 |
| Dekalb DKS48-07 | 80.4 | 10.9 | 1 | 55 |
| Alta AG1401 | 68.3 | 8.7 | 1 | 58 |
| Dyna-Gro GX16675 | 67.1 | 11.3 | 1 | 76 |
| Mean | 98.0 | 10.9 | 1 | 62 |
| LSD (10%) | 21.8 | 2.4 | | |
| CV (%) | 11.2 | 11.3 | | |

** Highest yielding variety in test

* Yield not significantly less than the highest yielding variety in the test

~ Lodging rated on a 1 to 5 scale, where 1 = fewer than 20% plants lodged, 3 = all plants leaning moderately or 40% to 60% lodged, and 5 = 80% or more plants lodged.

Montrose

| Brand-Hybrid | Yield (bu/ac) | Moisture (%) | Lodging ~ | Height (inches) |
|------------------|------------------|-----------------|--------------|--------------------|
| Dekalb DKS53-53 | 104.5** | 15.3 | 1 | 65 |
| Dyna-Gro 772B | 102.8* | 14.8 | 1 | 62 |
| Terral REV 9924 | 97.9* | 14.9 | 1 | 56 |
| Terral REV 9562 | 97.9* | 15.1 | 1 | 62 |
| Dyna-Gro GX15672 | 96.4* | 15.0 | 1 | 68 |
| Terral REV 9782 | 96.3* | 14.9 | 1 | 60 |
| Dyna-Gro GX15484 | 96.2* | 14.8 | 1 | 68 |
| Dekalb DKS45-23 | 95.0* | 15.1 | 1 | 59 |
| Alta AG3101 | 94.6* | 15.1 | 1 | 65 |
| Dyna-Gro M60GB31 | 94.5* | 14.8 | 1 | 60 |
| Alta AG1203 | 94.4* | 14.6 | 1 | 58 |
| Alta AG2103 | 93.0* | 14.8 | 1 | 58 |
| Alta AG2105 | 90.1* | 14.9 | 1 | 63 |
| Alta AG3201 | 88.4* | 14.5 | 1 | 60 |
| Dekalb DKS38-16 | 87.2* | 15.0 | 1 | 65 |
| Dekalb DKS48-07 | 83.1 | 15.0 | 1 | 58 |
| Alta AG1401 | 73.8 | 13.7 | 1 | 57 |
| Dyna-Gro GX16675 | 71.8 | 15.3 | 1 | 76 |
| Alta AG1201 | 57.2 | 14.6 | 1 | 50 |
| Mean | 90.3 | 14.9 | 1 | 62 |
| LSD (10%) | 18.8 | 0.7 | | |
| CV (%) | 10.5 | 2.2 | | |

** Highest yielding variety in test

* Yield not significantly less than the highest yielding variety in the test

~ Lodging rated on a 1 to 5 scale, where 1 = fewer than 20% plants lodged, 3 = all plants leaning moderately or 40% to 60% lodged, and 5 = 80% or more plants lodged.

Mooreville

| Brand-Hybrid | Yield (bu/ac) | Moisture (%) | Lodging ~ | Height (inches) |
|------------------|------------------|-----------------|--------------|--------------------|
| Dyna-Gro GX15672 | 135.4** | 14.1 | 1 | 65 |
| Dekalb DKS53-53 | 135.2* | 12.4 | 1 | 62 |
| Terral REV 9562 | 133.6* | 13.1 | 1 | 59 |
| Dekalb DKS38-16 | 129.9* | 13.4 | 1 | 64 |
| Dekalb DKS45-23 | 126.3* | 11.8 | 1 | 61 |
| Dyna-Gro 772B | 122.0* | 12.7 | 1 | 60 |
| Alta AG1203 | 120.4* | 13.7 | 1 | 57 |
| Terral REV 9782 | 120.1* | 12.0 | 1 | 60 |
| Dyna-Gro GX15484 | 119.8* | 13.6 | 1 | 66 |
| Alta AG2105 | 117.8 | 13.6 | 1 | 64 |
| Alta AG3201 | 116.9 | 12.9 | 1 | 63 |
| Dyna-Gro M60GB31 | 116.3 | 12.8 | 1 | 55 |
| Terral REV 9924 | 114.7 | 13.3 | 1 | 55 |
| Dekalb DKS48-07 | 113.6 | 13.2 | 1 | 57 |
| Alta AG2103 | 109.5 | 13.6 | 1 | 58 |
| Alta AG1201 | 107.2 | 11.3 | 1 | 45 |
| Dyna-Gro GX16675 | 101.1 | 14.3 | 1 | 79 |
| Alta AG1401 | 91.6 | 12.9 | 1 | 50 |
| Alta AG3101 | 87.9 | 14.2 | 1 | 68 |
| Mean | 116.7 | 13.2 | 1 | 60 |
| LSD (10%) | 16.4 | 2.1 | | |
| CV (%) | 7.0 | 8.2 | | |

** Highest yielding variety in test

* Yield not significantly less than the highest yielding variety in the test

~ Lodging rated on a 1 to 5 scale, where 1 = fewer than 20% plants lodged, 3 = all plants leaning moderately or 40% to 60% lodged, and 5 = 80% or more plants lodged.

Summary

| Brand-Hybrid | Charleston (bu/ac) | Columbia (bu/ac) | Montrose (bu/ac) | Mooreville (bu/ac) | Mean (bu/ac) |
|------------------|-----------------------|---------------------|---------------------|-----------------------|-----------------|
| Dekalb DKS53-53 | 93.6* | 103.9* | 104.5** | 135.2* | 109.3** |
| Dekalb DKS45-23 | 89.8* | 115.9* | 95.0* | 126.3* | 106.7* |
| Terral REV 9562 | 80.2 | 113.3* | 97.9* | 133.6* | 106.2* |
| Dekalb DKS38-16 | 85.4* | 116.6* | 87.2* | 129.9* | 104.7* |
| Dyna-Gro GX15672 | 84.1 | 102.6 | 96.4* | 135.4** | 104.6* |
| Terral REV 9924 | 77.8 | 125.4** | 97.9* | 114.7 | 103.9* |
| Dyna-Gro 772B | 83.5 | 98.0 | 102.8* | 122.0* | 101.5* |
| Terral REV 9782 | 84.5 | 104.7* | 96.3* | 120.1* | 101.4* |
| Alta AG2103 | 93.5* | 103.8* | 93.0* | 109.5 | 99.9* |
| Dyna-Gro GX15484 | 88.5* | 94.0 | 96.2* | 119.8* | 99.6* |
| Alta AG1203 | 90.8* | 90.2 | 94.4* | 120.4* | 98.9 |
| Alta AG2105 | 75.1 | 103.1 | 90.1* | 117.8 | 96.5 |
| Alta AG3101 | 99.7** | 94.8 | 94.6* | 87.9 | 94.2 |
| Dekalb DKS48-07 | 93.7* | 80.4 | 83.1 | 113.6 | 92.7 |
| Dyna-Gro M60GB31 | 65.0 | 88.9 | 94.5* | 116.3 | 91.1 |
| Alta AG3201 | 64.8 | 91.3 | 88.4* | 116.9 | 90.3 |
| Dyna-Gro GX16675 | 93.8* | 67.1 | 71.8 | 101.1 | 83.4 |
| Alta AG1201 | 70.7 | 90.4 | 57.2 | 107.2 | 81.3 |
| Alta AG1401 | 64.8 | 68.3 | 73.8 | 91.6 | 74.6 |
| Mean | 83.3 | 98.0 | 90.3 | 116.7 | 97.1 |
| LSD (10%) | 14.7 | 21.8 | 18.8 | 16.4 | 9.7 |
| CV (%) | 8.8 | 11.2 | 10.5 | 7.0 | 9.4 |

** Highest yielding variety in test

* Yield not significantly less than the highest yielding variety in the test

CHARACTERISTICS FOR GRAIN SORGHUM HYBRIDS

All information in this table was provided by the seed companies. The MU Variety Testing Program does not guarantee accuracy. Please contact seed dealers for the latest information.

| Company name | Hybrid name | Entry | Maturity | Grain color | Sp traits | Greenbug type | Fungicide | Insecticide |
|---------------|-------------|------------------|----------|-------------|--------------------------|---------------|-----------------------------|-------------|
| Terral | REV 9924 | Terral REV 9924 | 63 | Red | | | | Cruiser |
| Terral | REV 9782 | Terral REV 9782 | 59 | Red | | | | Cruiser |
| Terral | REV 9562 | Terral REV 9562 | 55 | Red | | | | Cruiser |
| Alta | AG1201 | Alta AG1201 | 60 | Bronze | Sugarcane aphid tolerant | | Maxim4FS, Aproon, Storicide | Nipsit |
| Alta | AG1203 | Alta AG1203 | 63 | Bronze | Sugarcane aphid tolerant | | Maxim4FS, Aproon, Storicide | Nipsit |
| Alta | AG2103 | Alta AG2103 | 66 | Red | | | Maxim4FS, Aproon, Storicide | Nipsit |
| Alta | AG2105 | Alta AG2105 | 65 | Red | Stalk rot | | Maxim4FS, Aproon, Storicide | Nipsit |
| Alta | AG3101 | Alta AG3101 | 68 | Red | | | Maxim4FS, Aproon, Storicide | Nipsit |
| Alta | AG3201 | Alta AG3201 | 68 | Bronze | Downy mildew P3 and P6 | | Maxim4FS, Aproon, Storicide | Nipsit |
| Alta | AG1401 | Alta AG1401 | 63 | White | Food grade | | Maxim4FS, Aproon, Storicide | Nipsit |
| Dyna-Gro Seed | M60GB31 | Dyna-Gro M60GB31 | 60 | Bronze | Sugarcane aphid tolerant | C, D, E | Imidacloprid | ApronMax |
| Dyna-Gro Seed | GX16675 | Dyna-Gro GX16675 | 70 | Red | Sugarcane aphid tolerant | C, E | Imidacloprid | ApronMax |
| Dyna-Gro Seed | GX15484 | Dyna-Gro GX15484 | 75 | Bronze | Sugarcane aphid tolerant | C, E | Imidacloprid | ApronMax |
| Dyna-Gro Seed | GX15672 | Dyna-Gro GX15672 | 75 | Red | Sugarcane aphid tolerant | C, E | Imidacloprid | ApronMax |
| Dyna-Gro Seed | 772B | Dyna-Gro 772B | 70 | Bronze | | C, E | Imidacloprid | ApronMax |

Characteristics for grain sorghum hybrids (continued)

| Company name | Hybrid name | Entry | Maturity | Grain color | Sp traits | Greenbug type | Fungicide | Insecticide |
|--------------|-------------|--------------------|----------|-------------|-----------|---------------|-----------------|-------------|
| Dekalb | DKS38-16 | Dekalb DKS38-16 | 63 | Bronze | | | Maxim/ Apron | Poncho |
| Dekalb | DKS45-23 | Dekalb DKS45-23 | 68 | Bronze | | | Maxim/ Apron | Poncho |
| Dekalb | DKS48-07 | Dekalb DKS48-07 | 68 | Bronze | | | Maxim/ Apron | Poncho |
| Dekalb | DKS53-53 | Dekalb DKS53-53 | 71 | Bronze | | E, I | Maxim/ Apron | Poncho |

SOURCES FOR HYBRIDS

ENTERED IN THE 2016 MISSOURI GRAIN SORGHUM TEST

| Brand | Company and address | Phone | URL |
|----------|---|--------------|------------------------|
| Alta | Alta Seeds Amarillo, TX 79101 | 806-340-2031 | <i>altaseeds.com</i> |
| Dekalb | Monsanto Company Mt. Hope, KS 67108 | 316-445-2290 | <i>dekalb.com</i> |
| Dyna-Gro | Dyna-Gro Seed Geneseo, IL 61254 | 309-944-4791 | <i>dynagroseed.com</i> |
| Terral | Terral Seed, Inc. Rayville, LA 71269 | 318-341-8814 | <i>terralseed.com</i> |

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