

2022 Corn Hybrid Demonstration Program Results

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Program Objectives: The MSU Extension Corn Hybrid Demonstration Program is intended to provide growers, crop consultants and other agricultural professionals a first-hand opportunity to observe performance of elite hybrids and generate information to better assess performance and adaptability in Mississippi. This program provides a unique opportunity to observe and evaluate plant characteristics and environmental responses of our best corn hybrids in local, on-farm demonstration plots representing our production systems.

Program Methodology: Hybrids voluntarily entered in this program must be validated by producing superior grain yield in the Mississippi Corn for Grain Hybrid Trials or be a relevant market standard. Hybrids are selected annually and grouped into two distinct sets based upon performance in dryland or irrigated culture, since both these cropping systems are prevalent in Mississippi and can affect adaptability. Seed companies are granted the discretion to enter hybrids which have demonstrated superior performance in the Mississippi Corn for Grain Hybrid Trials, or a newly released hybrid that they believe is more promising or better adapted. This establishes an elite group of corn hybrids for evaluation in the program. Each standardized set of hybrids is grown at numerous field locations representing Mississippi cropping systems. Mississippi State University Extension regional agronomic crop specialists and county agricultural agents coordinate locations with growers and supervise plots. Mississippi Agricultural and Forestry Experiment Station scientists also grow trials on branch stations.

Grain Yield Data: Hybrids evaluated in this program are generally planted in “strip trials.” Yield data generated from a single location are not as reliable as when treatments are replicated numerous times. Treatment replication reduces the effect of numerous factors which can impart variability that may affect performance and confound results. Thus, average yields are calculated from data collected at multiple locations and presented in this publication to better assess yield performance related to *hybrid genetics*. Analyses of yield data were performed with SAS using GLM procedures, and means are separated at the 0.05 level. This yield data derived from numerous, diverse environments is intended to supplement data generated in university hybrid trials.

Technology Traits: All hybrid entries are glyphosate tolerant. Inclusion of other traits is optional and is primarily based on product availability and the discretion of the respective seed companies. Corn borer protection normally enhances yield at locations where corn borers are present. All seed are commercially treated with an insecticide seed treatment, which is at the discretion of each respective seed company. Seed treatments are utilized to minimize damage from insect pests during seedling establishment.



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Relative Maturity: Maturity is measured and reported as the number of days to tassel, as well as grain moisture at harvest. Grain moisture is represented for locations where grain was still actively drying at harvest.

Plant Height: Full plant height is measured after tassel emergence. Plant height is one of several factors which may affect light interception, which is key to photosynthesis and grain yield. Short plant height may limit potential light interception, particularly in wide rows. Tall plants are generally more likely to lodge and will likely have higher water demand during the growing season.

Ear Height: Ear height is measured and represented as a mean height above the soil surface. High ear placement may promote more efficient energy utilization in the plant, as leaves in the upper canopy intercept more light and produce more photosynthetic energy for the developing ear. However, high ear placement may make plants top-heavy and thus more prone to lodge when exposed to strong wind.

Root Strength: An evaluation of a hybrid's ability to resist root lodging, which occurs when the force caused by wind exceeds the root's ability to stabilize a plant and keep it erect. Thus, the entire stalk leans or completely falls to ground level, often dislodging part of the roots from the soil. This may promote a "domino effect," causing root lodging across a field. This may greatly hinder harvest efficiency, because plants lay nearly flat on the ground and are partly uprooted, making stalks very difficult to gather into a combine to harvest.

Stalk Strength: An evaluation of a hybrid's ability to resist stalk lodging, which is when the lower stalk bends, collapses or breaks above ground level. Stalk lodging often increases when plants are stressed, or harvest is delayed, which promotes stalk deterioration. Stalk lodging is usually more prevalent than root lodging, but may be less troublesome because timely harvest might help mitigate issues.

Stalk Integrity: A characterization of the plant's ability to maintain physical integrity after maturity and predict potential harvest issues. Poor stalk integrity typically appears as weak or broken stalks, particularly above the ear, and torn and tattered leaves.

Greensnap: This is a relative rating to resist stalk breakage during vegetative growth stages. Corn is most sensitive to this problem during mid to late vegetative growth stages when stalks are rapidly developing, and thus may be brittle and vulnerable to break, if exposed to high winds. The outcome normally severs the stalk below where the ear should develop. Thus, damaged plants rarely produce a viable ear.

Disease Resistance: Disease resistance represents a hybrid's ability to resist infection from a specific pathogen. Southern rust and Curvularia leaf spot were rated based upon disease presence.

Yield Components: Corn grain yield is determined by the total number of kernels produced and kernel weight. Kernel number is comprised by the number of kernel rows an ear produces and the number of kernels per row. Each of these traits are determined during different growth stages. Kernel row number is determined during late vegetative stages and is the first yield component determined. Kernel number is primarily determined during the first few weeks after pollination as young kernels develop until the milk stage. Kernel weight is the final yield component settled and is dependent upon favorable conditions from milk stage until physiological maturity.

Test Weight: Test weight is a measurement of grain bulk density and an indicator of general grain quality. It is a standard component used to assess official grain grade for commercial trade.

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2022 Grain Yield Summary (bu/a)

Irrigated Locations

Brand	Hybrid	Greenwood	Itta Bena	Fairview	Friars Point	Inverness	Schlater	MSU Starkville	Average Yield*
AgriGold	A6544	195	236	227	217	244	214	249	226 AB
AgriGold	A6659	191	235	245	198	218	222	253	223 AB
BECK'S	6803	183	237	225	195	234	214	243	219 B
CROPLAN	5497	194	226	242	206	227	218	241	222 AB
DEKALB	DKC62-70	190	248	246	215	229	226	259	230 A
DEKALB	DKC65-99	211	238	238	221	239	215	244	230 A
DEKALB	DKC66-18	202	239	240	215	236	217	240	227 AB
Dyna-Gro	54VC14	201	244	239	188	234	214	248	224 AB
Dyna-Gro	D57VC53	204	242	223	211	247	214	241	226 AB
Great Heart	HT-7499	207	241	236	213	233	217	239	227 AB
Innictis	A1689	183	232	233	193	230	216	248	219 B
REVERE	1307	179	229	247	208	234	225	252	225 AB
REVERE	1898	204	240	250	197	236	213	237	225 AB
Pioneer	P1289	190	226	224	214	235	211	254	222 AB
Pioneer	P1718	154	233	241	216	231	235	263	225 AB
Progeny	PGY 2118	186	236	237	202	231	219	246	222 AB
Location Average		192	236	237	207	234	218	247	225
Soil Type		Adler silt loam	Dundee loam	Forestdale silt loam	Dundee silty clay loam	Dundee silt loam	Askew silt loam	Marietta fine sandy loam	
Planting Date		28-Mar	8-Apr	29-Mar	11-Apr	10-Apr	27-Apr	23-Apr	

* Grain yields were analyzed and average yield values represented with any combination of the same letter are not significantly different ($P < 0.05$).



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Irrigated Entries

2022 Plant Characteristic Ratings

Brand	Hybrid	Days to Tassel	% Grain Moisture	Plant Ht (feet, 10ths)	Ear Ht (feet, 10ths)	Root Strength	Stalk Strength	Stalk Integrity	Southern Rust Resistance	Curvularia Leaf Spot Resistance	Test Wt (lbs/bu)	Yield Components		
												Kernel Rows	Kernels per row	Seed Wt (g/250)
AgriGold	A6544	57	16.6	9.1	4.0	Med-High	Medium	Low	Medium	High	58.5	16.0	26.8	83.6
AgriGold	A6659	59	17.2	8.9	4.0	High	High	High	High	Medium	59.3	15.6	32.3	91.0
BECK'S	6803	59	17.6	9.0	4.0	Med-High	Medium	High	Medium	Medium	60.8	16.5	28.7	86.5
CROPLAN	5497	57	16.6	9.3	4.0	Medium	Medium	Medium	Low	Medium	58.9	15.6	35.1	94.7
DEKALB	DKC62-70	58	16.4	9.1	4.0	High	High	Med-Low	High	Medium	59.7	15.1	32.9	85.2
DEKALB	DKC65-99	58	17.0	8.5	3.9	High	High	High	High	Med-Low	59.4	16.7	32.6	88.5
DEKALB	DKC66-18	59	16.2	8.7	3.8	High	High	Med-High	Medium	Med-High	59.2	16.3	29.4	85.2
Dyna-Gro	54VC14	57	15.9	8.6	3.8	Med-High	Med-Low	Low	Med-High	Low	60.2	15.4	28.2	85.9
Dyna-Gro	D57VC53	59	17.6	8.8	4.0	Medium	Medium	Med-High	Medium	Medium	60.3	16.6	30.7	87.0
Great Heart	HT-7499	59	17.2	9.2	4.2	Med-High	High	Medium	Med-High	High	58.6	15.8	28.5	87.8
Innvictis	A1689	58	16.4	8.9	4.1	Med-High	Medium	High	Medium	Medium	60.3	16.3	30.6	93.0
REVERE	1307	56	16.5	8.7	4.0	Medium	Medium	Medium	Med-Low	Low	58.6	16.2	32.4	86.2
REVERE	1898	58	16.0	9.0	4.1	High	High	High	Medium	Medium	60.6	15.8	30.9	92.8
Pioneer	P1289	58	16.3	9.8	4.2	Med-Low	Medium	Med-Low	Med-High	High	59.5	16.1	29.5	79.7
Pioneer	P1718	59	18.0	10.1	4.4	Low	Low	Med-Low	Low	Medium	58.7	15.9	34.4	80.5
Progeny	PGY 2118	59	17.5	9.0	4.1	High	Medium	High	Med-High	Med-High	60.8	16.8	28.8	85.8
		58	16.8	9.0	4.0						59.6	16.0	30.7	87.1



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2022 Grain Yield Summary (bu/a)

Dryland Locations

Brand	Hybrid	Natchez	West Point	NMREC Verona	Artesia 30K Pop	Artesia 36K Pop	MSU Starkville	Average Yield*
AgriGold	A6544	210	149	146	157	154	208	171 DE
AgriGold	A6659	217	149	135	145	148	215	168 E
CROPLAN	5678	220	148	160	156	152	215	175 BCDE
DEKALB	DKC62-70	216	160	141	157	162	226	177 BCD
DEKALB	DKC65-99	225	176	150	164	156	214	181 AB
DEKALB	DKC66-18	217	158	154	152	150	222	175 BCDE
Dyna-Gro	D54VC14	211	140	162	163	164	222	177 BCD
Dyna-Gro	58VC65	213	155	152	151	146	217	172 CDE
Great Heart	HT-7393	223	168	142	154	147	222	176 BCDE
Innictis	A1548	209	162	135	149	153	214	170 DE
REVERE	1307	232	161	152	163	156	224	181 AB
REVERE	1898	226	168	166	165	168	219	185 A
Pioneer	P1289	214	145	149	153	143	225	172 DE
Pioneer	P1464	225	158	138	154	150	211	172 CDE
Progeny	PGY 9114	216	151	172	159	161	221	180 ABC
Location Average		218	157	150	156	154	218	176
Soil Type		Convent silt loam	Griffith silty clay	Leeper silty clay loam	Brooksville silty clay	Brooksville silty clay	Leeper silty clay loam	
Planting Date		27-Mar	25-Apr	8-Apr	26-Apr	26-Apr	23-Apr	

* Grain yields were analyzed and average yield values represented with any combination of the same letter are not significantly different ($P < 0.05$).



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Dryland Entries

2022 Plant Characteristic Ratings

Brand	Hybrid	Days to Tassel	% Grain Moisture	Plant Ht (feet, 10ths)	Ear Ht (feet, 10ths)	Stalk Strength	Stalk Integrity	Southern Rust Resistance	Curvularia Leaf Spot Resistance	Test Wt (lbs/bu)	Yield Components		
											Kernel Rows	Kernels per row	Seed Wt (g/250)
AgriGold	A6544	56	16.2	9.1	4.1	Medium	Med-Low	Medium	High	59.1	15.8	30.4	76.7
AgriGold	A6659	59	16.8	8.7	4.1	High	High	Med-High	Medium	59.5	14.2	33.1	82.1
CROPLAN	5678	56	16.6	8.5	3.9	High	High	Med-Low	Medium	60.1	15.1	30.7	84.9
DEKALB	DKC62-70	57	16.3	8.8	4.2	High	Medium	High	Medium	59.9	15.0	33.9	80.0
DEKALB	DKC65-99	57	16.8	8.4	3.8	High	Med-High	High	Medium	59.5	15.9	29.9	82.1
DEKALB	DKC66-18	59	16.5	8.2	3.8	High	Med-High	Medium	High	59.0	16.1	30.9	77.2
Dyna-Gro	D54VC14	56	16.7	8.4	3.9	Medium	Med-Low	Med-High	Low	59.6	14.9	34.6	82.4
Dyna-Gro	58VC65	57	16.5	8.4	3.9	High	High	Med-Low	Medium	59.9	14.9	30.9	81.9
Great Heart	HT-7393	56	17.5	8.5	3.8	Medium	High	Low	Medium	58.3	15.2	30.5	83.4
Innvictis	A1548	56	16.6	9.0	4.2	High	Med-High	Med-High	High	58.4	15.2	33.3	78.7
REVERE	1307	55	16.3	8.4	4.1	High	Medium	Med-High	Low	58.1	15.8	32.2	78.5
REVERE	1898	57	16.2	8.8	4.3	High	High	Med-High	Medium	60.6	15.2	29.5	86.0
Pioneer	P1289	58	16.3	9.5	4.3	Med-Low	Low	Med-High	High	59.8	15.8	32.9	71.5
Pioneer	P1464	56	16.6	9.4	4.6	Medium	Low	Low	High	59.5	15.1	35.0	74.2
Progeny	PGY 9114	56	16.4	8.4	3.9	Medium	Med-Low	Med-High	Low	59.6	15.0	34.5	82.7
		57	16.6	8.7	4.1					59.4	15.3	32.1	80.2

