2017 Corn Hybrid Demonstration Program Results

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Program Summary: The Corn Hybrid Demonstration Program is intended to provide corn growers, crop consultants, and other agricultural professionals a firsthand opportunity to observe performance of elite hybrids and generate information to better assess hybrid 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 Mississippi's production systems.

Hybrids selected for this program must be validated by producing superior grain yield in the Mississippi Corn for Grain Hybrid Trials or be relevant market standards. 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 significantly affect hybrid adaptability. Seed companies are granted the discretion to enter the hybrid that has demonstrated superior performance in the Mississippi Corn for Grain Hybrid Trials, or a newly released hybrid that they feel 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 Service regional agronomic crop specialists and county agricultural agents coordinate locations with grower cooperators and supervise plots during the season.

Hybrid characteristics are rated relative to other entries within the respective set of hybrids (irrigated or dryland) grown at various locations. Thus, these relative rankings are not intended to compare to other commercial hybrids available in the market.

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 that 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 seeds are commercially treated with an insecticide seed treatment, which is at the discretion of each respective seed company. Seed treatments are used to minimize damage from insect pests during seedling establishment.

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 actively drying at harvest—in other words, those plots harvested within 30 days of attaining physiological maturity.

Plant Height: Full plant height is measured after tassel emergence. Plant height is one of several factors that may affect light interception, which is critical to photosynthesis and grain yield. Short plant height may reduce 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 use 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 more top-heavy and more prone to lodge when exposed to strong wind.

Root Strength: An evaluation of a hybrid's ability to resist root lodging. Root lodging occurs when the force caused by wind exceeds the roots' ability to stabilize plants and keep them erect, particularly if the soil is moist and soft. Thus, the entire stalk leans or completely falls from ground level, often dislodging part of the root system from the soil. This may promote a "domino effect," causing lodging in sizable portions of a field. Root lodging normally occurs as plants approach physiological maturity, since the mass of the plant is greatest at this time. Root lodging may also occur when a location sustains substantial rain and high wind. Root lodging may considerably hinder harvest efficiency because plants lay nearly flat on the ground and are often partially uprooted from the soil, making stalks difficult to gather and flow into a combine.

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 harvest is delayed by rainy weather, which promotes stalk deterioration. Stalk lodging is often more prevalent than root lodging but is generally less troublesome because timely harvest can mediate issues and combines can still gather stalks.

Stalk Integrity: A characterization of the plant's ability to maintain physical integrity after physiological maturity. Poor stalk integrity may appear as shriveled, shredded, or dislodged leaves and brittle or broken stalks, particularly above the ear. Late-season stress and adverse weather often promote plant deterioration during the time between physiological maturity and harvest.

Disease Resistance: Disease resistance refers to a hybrid's ability to resist infection from a specific pathogen. Southern rust was present during the 2017 season at levels substantial enough to evaluate hybrid differences. Ratings are represented on a scale from resistant to very susceptible based on increasing degree of disease infection.

Yield Components: Corn grain yield is determined by the total number of kernels produced and kernel weight. Kernel number is the number of kernel rows an ear produces and the number of kernels per row. Each of these traits is determined during different growing stages. Kernel row number is determined during late vegetative stages and is the first yield component determined by the plant. Kernel number is primarily determined during the first few weeks after pollination as young kernels develop until the milk stage. Kernel weight depends largely on favorable conditions from dough 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.

MSU Corn Hybrid Demonstration Program

2017 Grain Yield Summary (bu/a)

Irrigated Locations

Brand	Hybrid	Shaw	Rising Sun	Rolling Fork	Fairview	Schlater	Pontotoc	Belzoni	Inverness	MSU	Sledge	Webb	Average Yield*
AgriGold	A6659	251	234	244	271	240	195	190	233	232	245	220	**232 C**
AgriGold	A6711	247	261	238	250	235	211	208	226	233	234	194	**231 CD**
Armor	1717PRO	242	248	243	261	212	209	205	218	230	240	199	**228 CDE**
Augusta	7768	235	249	225	252	234	204	158	208	232	216	203	**220 E**
Augusta	6664	228	245	212	250	208	193	202	225	236	232	215	**222 DE**
Croplan	5678	245	258	225	266	238	199	204	228	233	245	222	**233 C**
DEKALB	DKC67-44	259	265	244	279	252	221	210	228	253	249	206	**243 AB**
DEKALB	DKC68-26	247	258	233	265	231	227	209	217	217	249	221	**234 C**
DEKALB	DKC70-27	256	266t	249	288	241	221	210	242	234	248	231	**244 A**
Dyna-Gro	D57VP51	247	263	246	272	229	207	186	233	239	251	211	**235 BC**
Dyna-Gro	D58VC65	253	237	238	269	235	223	207	230	218	254	230	**236 ABC**
Pioneer	2089YHR	231	269	251	267	236	216	178	232	223	201	212	**229 CD**
Progeny	PGY 5115	239	267	249	255	208	206	195	225	229	235	221	**230 CD**
	Location Average	**245**	**255**	**238**	**265**	**231**	**210**	**197**	**227**	**231**	**238**	**214**	**232**

Soil Type	Forestdale silt loam	Dubbs loam	Commerce silty clay loam	Sharkey clay	Dubbs loam	Atwood silt loam	Forestdale silty clay loam	Forestdale silt loam	Marietta fine sandy loam	Falaya silt loam	Dubbs very fine sandy loam
Planting Date	21-Mar	24-Mar	24-Mar	29-Mar	29-Mar	7-Apr	10-Apr	11-Apr	12-Apr	12-Apr	10-May

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

MSU Corn Hybrid Demonstration Program

Irrigated Entries

Plant Characteristic Ratings

											Yield Components		
Brand	**Hybrid**	**Days to Tassel**	**% Grain Moisture**	**Plant Ht (ft)**	**Ear Ht (ft)**	**Root Strength**	**Stalk Strength**	**Stalk Integrity**	**Southern Rust Resistance**	**Test Wt (lb/bu)**	**Kernel Rows**	**Kernels per Row**	**Seed Wt (g/250)**
AgriGold	A6659	68	18.1	8.9	3.9	High	Med-High	High	Mod-Resistant	58.7	14.9	31.5	90.3
AgriGold	A6711	65	16.7	9.1	4.2	Medium	Med-Low	Low	Moderate	59.0	16.6	31.2	86.3
Armor	1717PRO	66	17.2	9.7	4.4	Medium	Med-Low	Low	Susceptible	59.3	16.6	32.0	88.1
Augusta	7768	67	18.6	10.0	4.3	Very Low	Low	Med-Low	Moderate	57.7	16.3	34.0	87.6
Augusta	6664	65	16.8	8.8	3.7	High	High	Med-Low	Susceptible	58.0	15.4	32.0	85.2
Croplan	5678	67	17.0	8.8	3.7	Med-High	High	Med-High	Very Susceptible	59.8	16.0	30.5	91.1
DEKALB	DKC67-44	67	16.9	9.3	4.1	Low	Med-Low	Med-High	Mod-Resistant	59.6	16.0	32.6	87.6
DEKALB	DKC68-26	66	16.9	9.2	4.1	Med-High	Med-High	High	Susceptible	58.5	16.0	32.0	90.3
DEKALB	DKC70-27	70	18.1	9.1	4.2	Med-High	Med-High	Med-High	Mod-Resistant	59.3	17.0	28.6	91.3
Dyna-Gro	D57VP51	70	17.6	8.7	4.0	Med-High	Medium	High	Moderate	59.0	15.2	33.7	92.8
Dyna-Gro	D58VC65	67	16.8	8.9	3.9	High	Med-High	High	Susceptible	59.1	15.4	32.0	90.0
Pioneer	2089YHR	66	17.3	10.3	4.3	Low	Med-Low	Med-Low	Mod-Resistant	56.6	15.2	35.1	86.2
Progeny	PGY 5115	65	16.9	8.8	3.8	High	High	Medium	Susceptible	58.1	15.6	32.0	85.2
	Average	**67**	**17.3**	**9.2**	**4.1**					**58.7**	**15.9**	**32.1**	**88.6**

MSU Corn Hybrid Demonstration Program

2017 Grain Yield Summary (bu/a)

Dryland Locations

Brand	Hybrid	Natchez	Vardaman	Mayersville	Bolton	Pontotoc	Artesia	Ashland	Okolona	MSU	Sledge	Hernando	Shellmound	Average Yield*
AgriGold	A6499	222	281	217	184	204	175	216	219	233	231	190	164	**211 BC**
AgriGold	A6572	232	281	214	166	194	165	209	222	231	200	192	159	**205 CD**
Armor	1717PRO	234	274	234	184	208	182	204	220	234	187	198	150	**209 BC**
Croplan	5290DG	218	274	221	162	174	176	193	221	230	188	188	126	**198 DE**
Croplan	6640	233	288	230	168	181	184	189	221	234	205	201	153	**207 BC**
Dekalb	DKC67-44	244	322	244	188	214	193	222	230	240	205	224	121	**221 A**
Dekalb	DKC68-26	234	288	235	186	202	190	212	223	235	239	171	171	**216 AB**
Dekalb	DKC70-27	254	304	228	201	203	181	217	235	252	219	216	162	**223 A**
Dyna-Gro	D57VP75	226	283	225	156	178	161	188	215	213	201	151	156	**196 E**
Pioneer	1316YHR	230	285	226	174	204	181	207	225	223	190	178	133	**205 CDE**
Progeny	PGY 5115	229	286	217	177	195	189	211	220	228	231	179	158	**210 BC**
Progeny	PGY 6116	225	286	223	131	208	174	212	220	225	222	197	166	**207 BC**
	Location Average	**232**	**288**	**226**	**173**	**197**	**179**	**207**	**223**	**232**	**210**	**190**	**152**	**209**

Soil Type	Convent silt loam	Ora loam	Tunica clay	Riedtown silt loam	Atwood silt loam	Okolona silty clay	Lexington silt loam	Brooksville silty clay	Leeper silty clay loam	Collins silt loam	Collins silt loam	Dubbs loam
Planting Date	16-Mar	23-Mar	24-Mar	7-Apr	7-Apr	10-Apr	10-Apr	10-Apr	12-Apr	12-Apr	14-Apr	19-Apr

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Dryland Entries

Plant Characteristic Ratings

											Yield Components		
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AgriGold	A6572	67	16.5	10.0	4.8	Medium	High	Med-Low	Mod-Resistant	60.4	16.9	28.8	87.7
Armor	1717PRO	66	17.3	10.1	4.4	Med-Low	Low	Low	Susceptible	59.3	16.8	35.2	85.8
Croplan	5290DG	64	16.4	9.9	4.6	Low	Low	Med-Low	Moderate	59.0	16.0	31.8	83.9
Croplan	6640	64	16.8	9.2	4.0	Medium	Medium	Low	Very Susceptible	58.1	17.6	31.7	81.6
Dekalb	DKC67-44	66	17.2	10.1	4.5	Low	Medium	Med-High	Mod-Resistant	59.3	17.3	31.1	88.3
Dekalb	DKC68-26	63	17.5	10.0	4.2	Med-High	Med-High	Med-High	Susceptible	58.6	17.3	35.3	86.6
Dekalb	DKC70-27	69	18.1	9.9	4.6	High	High	Med-High	Mod-Resistant	58.9	16.7	31.4	86.8
Dyna-Gro	D57VP75	65	17.6	10.8	4.9	High	Med-Low	Medium	Susceptible	57.1	17.0	32.0	86.2
Pioneer	1316YHR	65	16.9	10.5	4.4	Med-High	Med-Low	Medium	Susceptible	57.4	16.3	35.2	80.1
Progeny	PGY 5115	64	16.7	9.8	4.3	High	High	Low	Susceptible	57.9	16.3	33.1	84.2
Progeny	PGY 6116	65	18.1	10.0	4.5	High	High	High	Mod-Resistant	58.1	16.1	33.0	89.2
	Average	**65**	**17.2**	**9.9**	**4.4**					**58.6**	**16.7**	**32.5**	**85.9**

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