2024 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 grower cooperators and supervise plots. Mississippi Agricultural and Forestry Experiment Station scientists also grow some 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 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 critical 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: This is 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 plants and keep them erect. Thus, the entire stalk leans or completely falls to the ground, 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 of resistance to 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, so 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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2024 Grain Yield Summary (bu/a)

Irrigated Locations

Brand	Hybrid	Schlater	Dockery West	Dockery East	Macon	Inverness	Itta Bena	MSU** Starkville	**Average Yield***
AgriGold	A647-79	209	252	251	219	232	249	229	**233** EF
DEKALB	DKC65-99	213	264	253	220	234	242	227	**234** EF
DEKALB	DKC66-06	226	256	251	234	235	242	241	**241** CD
DEKALB	DKC68-35	224	280	268	242	251	254	250	**252** A
DEKALB	DKC70-45	232	261	267	238	246	238	242	**245** BC
Dyna-Gro	D58VC74	219	270	256	231	250	253	242	**245** BC
Dyna-Gro	D58TC94	225	273	262	220	226	235	233	**238** DE
Great Heart	HT-7360	219	252	255	224	238	226	233	**235** EF
Great Heart	HT-7500	204	257	245	232	242	233	227	**233** EF
Innvictis	A1792	214	265	256	223	254	243	236	**240** CD
Innvictis	A1993	232	265	265	235	255	251	248	**250** AB
Pioneer	P1511	210	249	238	214	231	246	231	**231** F
Pioneer	P17677	218	242	248	227	234	242	238	**236** DEF
Progeny	PGY 2314	223	253	255	234	238	247	227	**236** DEF
REVERE	1627	214	265	253	232	247	250	227	**238** DE
REVERE	1839	230	282	271	233	254	257	241	**250** AB
Location Average		**220**	**262**	**256**	**229**	**242**	**244**	**236**	**240**
	Soil Type	Beulah fine sandy loam	Forestdale silt loam	Sharkey clay	Brooksville silty clay	Dundee silt loam	Dundee loam	Marietta fine sandy loam	
	Planting Date	21-Mar	5-Apr	5-Apr	25-Apr	4-Apr	16-Apr	4-Apr	

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

***Trials at MSU were grown with three replications of hybrid treatments.*

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Irrigated Entries

2024 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	A647-79	66	14.8	9.2	3.9	High	Med-High	Med-High	Med-High	Medium	61.0	16.8	33.9	84.6
DEKALB	DKC65-99	66	14.5	8.4	3.6	High	Med-Low	Low	High	Med-Low	60.4	16.9	32.4	81.8
DEKALB	DKC66-06	66	15.3	9.7	3.9	Med-High	Med-Low	Medium	Med-Low	Med-High	59.9	16.4	35.5	85.7
DEKALB	DKC68-35	67	15.1	9.1	3.9	Medium	Med-High	High	Med-Low	Medium	61.0	15.9	36.1	88.9
DEKALB	DKC70-45	67	16.2	9.4	4.0	Med-High	Med-Low	Medium	Med-High	High	60.7	17.0	33.1	88.6
Dyna-Gro	D58VC74	66	16.4	9.1	3.8	Med-High	High	Med-High	Med-Low	Med-High	60.9	15.6	34.9	90.4
Dyna-Gro	D58TC94	67	16.4	9.3	4.0	High	Med-High	Medium	Low	Medium	61.6	15.9	35.6	85.7
Great Heart	HT-7360	65	15.8	9.5	3.7	Medium	Medium	Low	Low	Medium	58.9	16.3	33.4	89.7
Great Heart	HT-7500	66	16.2	10.0	4.2	Med-Low	Medium	Med-High	Medium	Medium	59.5	15.8	34.4	89.0
Innvictis	A1792	66	15.4	9.5	4.2	Medium	High	Medium	Medium	Med-High	61.5	16.2	36.0	84.5
Innvictis	A1993	66	17.1	9.6	4.3	Med-High	Med-High	High	Med-High	Med-Low	58.7	16.9	36.3	81.9
Pioneer	P1511	67	16.1	9.4	4.1	Medium	High	Med-Low	Med-Low	Med-Low	60.1	15.4	40.1	79.1
Pioneer	P17677	68	15.0	9.9	4.2	Med-Low	Med-Low	Low	Med-Low	Med-Low	60.6	16.3	36.8	79.7
Progeny	PGY 2314	66	15.2	9.4	4.0	Med-Low	Med-Low	Medium	Medium	Med-High	59.6	16.3	32.7	87.0
REVERE	1627	66	15.4	9.4	3.9	Med-Low	Med-Low	Med-Low	Med-Low	Med-High	59.8	16.1	33.7	86.6
REVERE	1839	66	17.2	9.6	4.2	Med-High	High	High	Med-High	Med-Low	58.8	16.9	36.4	82.2
		66	**15.7**	**9.4**	**4.0**						**60.2**	**16.3**	**35.1**	**85.3**

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2024 Grain Yield Summary (bu/a)

Dryland Locations

Brand	Hybrid	Natchez	Varda-man	Artesia 30K	Artesia 36K	Bolton	Brown Loam	Aber-deen	West Point	Ponto-toc Sta	Ponto-toc	NMREC Verona	MSU** Starkville	**Average Yield***
AgriGold	A647-79	222	124	124	122	176	203	124	147	128	207	124	234	**171** BCDE
DEKALB	DKC65-99	217	116	134	139	198	196	119	149	131	210	127	235	**174** ABCD
DEKALB	DKC66-06	237	118	106	87	181	210	131	135	146	188	115	241	**170** BCDEF
DEKALB	DKC68-35	243	132	134	115	214	197	140	144	149	193	127	240	**179** AB
DEKALB	DKC70-45	227	127	120	94	190	206	135	156	124	198	121	236	**172** BCDE
Dyna-Gro	D54VC14	208	120	121	120	199	198	142	118	133	203	115	212	**165** CDEF
Dyna-Gro	D56TC44	198	142	129	117	202	202	128	150	142	213	117	235	**175** ABC
Great Heart	HT-7393	228	116	119	88	192	196	129	139	99	179	106	219	**161** F
Innvictis	A1551	223	116	121	112	194	196	115	124	123	208	111	223	**165** DEF
Pioneer	P14830	202	106	103	65	145	186	111	138	104	206	85	216	**150** G
Pioneer	P17677	230	115	43	41	184	192	129	135	149	186	129	238	**161** F
Progeny	PGY 9114	218	127	129	106	172	187	132	121	142	202	102	229	**166** CDEF
Progeny	PGY 2118	207	113	112	108	172	198	115	142	153	184	136	222	**165** EF
REVERE	1627	229	141	151	142	201	200	141	158	163	211	131	232	**183** A
REVERE	1839	230	116	135	97	212	204	132	160	140	243	126	237	**179** AB
Location Average		**221**	**122**	**119**	**104**	**189**	**198**	**128**	**141**	**135**	**202**	**118**	**230**	**169**
	Soil Type	Adler silt loam	Almo silt loam	Vaiden silty clay	Vaiden silty clay	Riedtown silt loam	Loring silt loam	Prentiss fine sandy loam	Griffith silty clay	Providence silt loam	Iuka loam	Marietta loam	Leeper silty clay loam	
	Planting Date	29-Mar	5-Apr	26-Apr	26-Apr	4-Apr	2-Apr	24-Apr	26-Apr	17-Apr	19-Apr	23-Apr	3-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

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												Kernel Rows	Kernels per row	Seed Wt (g/250)
AgriGold	A647-79	66	13.3	8.2	3.6	Med-High	Medium	Medium	Med-High	Medium	60.5	16.6	30.4	80.9
DEKALB	DKC65-99	67	13.4	7.8	3.5	High	Med-Low	Medium	High	Med-Low	59.7	16.6	28.9	80.2
DEKALB	DKC66-06	67	13.8	8.8	3.8	Medium	Med-Low	Medium	Med-Low	Med-High	59.2	16.3	29.9	80.0
DEKALB	DKC68-35	69	13.7	8.7	3.7	Medium	High	High	Med-Low	Medium	60.2	15.6	29.5	85.3
DEKALB	DKC70-45	67	14.8	8.5	3.8	High	High	Med-High	Med-High	High	60.4	16.6	28.3	83.6
Dyna-Gro	D54VC14	63	13.2	7.9	3.5	Med-High	Low	Medium	Medium	Low	59.6	15.5	30.7	80.4
Dyna-Gro	D56TC44	67	13.4	8.5	3.7	Low	Medium	Low	Medium	Very Low	59.6	15.3	30.1	79.9
Great Heart	HT-7393	64	13.8	8.4	3.6	Med-High	Med-High	Med-High	Medium	Medium	58.4	15.6	30.3	82.6
Innvictis	A1551	65	13.7	8.5	3.9	Medium	Med-Low	Med-High	Low	Medium	58.5	15.5	28.8	82.4
Pioneer	P14830	68	13.6	8.5	3.6	Medium	Low	Med-Low	Low	Med-High	59.3	15.4	33.0	72.4
Pioneer	P17677	69	12.9	9.2	4.0	Medium	Med-High	Med-Low	Med-Low	Medium	59.9	16.1	30.2	74.6
Progeny	PGY 9114	63	13.0	8.1	3.5	Med-High	Low	Medium	Medium	Low	59.5	15.6	30.8	81.1
Progeny	PGY 2118	67	14.3	8.4	3.8	Med-Low	Med-High	Med-High	Medium	Medium	61.4	17.1	28.5	79.2
REVERE	1627	67	13.9	8.6	3.8	Low	Medium	Medium	Med-High	Med-High	59.8	15.9	30.3	84.4
REVERE	1839	67	15.3	8.9	4.2	High	High	High	Medium	Medium	58.9	16.4	28.3	80.0
		67	**13.7**	**8.5**	**3.7**						**59.7**	**16.0**	**29.8**	**80.5**

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