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Grain Corn Performance, 2002; Box Elder County, Utah

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Corn grain is grown on approximately 14,000 ac in Utah, with 57% of total production from Box Elder, Utah, and Millard counties. This report summarizes on-farm performance of irrigated grain corn hybrids in Box Elder County in 2002. The site was at 4290 ft elevation and had a long-term average of 3050 corn growing degree days (GDD, 50/86° F) per year. Hybrids from breeding programs and seed marketers were seeded with a farm planter on May 10 at a target rate of 31,500 seeds/ac. Furrow-irrigated plots were six rows wide at 30-in row spacing by 850 ft long in three randomized complete blocks. Nutrient and pesticide applications and previous crop are indicated in Table 1. Soil fertility levels were within recommended ranges.



Hybrids had relative maturity (RM) ratings of 96-110 days and included some with the Roundup Ready[®] trait. Plots were harvested with a combine on November 7 and weights were obtained with a grain cart with scales. Sample dry matter (DM) concentration was determined at 103° C (217° F). Test weights were determined on field-dry samples. Plot weights were expressed as bu/ac of 15.5%-moisture grain with an assumed test weight of 56 lb/bu.

Hybrids ranked in decreasing order of grain production (Table 1) may be compared in terms of the least significant difference (LSD). This is the minimum difference required between entries in a column for significance at a given level of confidence. Values of LSD are shown for 5 and 30% probabilities that observed differences among entries are merely due to chance, rather than to variety effects. For example, grain yields of the top two hybrids are different at the 5% probability level, because they vary by more than the LSD of 9 bu/ac. Yields of the second- through sixth-ranked hybrids are not different at the 5% level because they vary by less than the LSD. At 30% probability that yield variations are due to chance, smaller differences become significant. The coefficient of variation (CV) describes variability among replications of the same hybrid; values below 10% suggest good precision for detecting entry differences.

Grain yield differed by 26 bu/ac among hybrids. Differences were not strongly associated with varying population densities and RM ratings. Moisture concentration at harvest exceeded 15.5% in many cases and was

generally higher for hybrids with longer RM ratings. Excessive moisture at harvest can be avoided by selecting hybrids that perform well at shorter RM ratings and permit adequate grain filling and field drying prior to harvest.

Table 1. 2002 corn grain production at Elwood (Box Elder Co.), UT (Paul & Roger Munns).

Planted May 10, harvested Nov. 7. Elevation 4290 ft, 3050 corn GDD, Honeyville silty clay loam.
 Applications: 200 lb N, 100 lb P₂O₅, 30 lb S, and 3 lb Zn/ac; Lasso[®], Banvel[®], and 2,4-D herbicides; and Counter[®] insecticide at planting. Previous crop: corn.

Brand	Hybrid	Relative maturity	Population density	Grain moisture	Test weight field dry	Grain yield 15.5% moist.
		days	plants/ac	% fresh wt	lb/bu	bu/ac
DEKALB	DKC53-33 (RR)	103	38025	15.3	58.7	198
DEKALB	DKC46-28 (RR)	96	33688	15.0	59.0	188
Croplan Genetics	631RR	110	33843	19.8	55.7	188
Pioneer	37B35	99	33146	16.2	58.7	186
Pioneer	37D03	97	32817	16.1	57.3	185
HYTEST	HT4602	103	36321	19.2	55.3	184
DEKALB	DKC48-15	98	33379	16.2	59.7	175
DEKALB	DK477	97	37406	15.0	57.7	175
DEKALB	DKC48-83	98	34153	14.8	59.7	172
Mean		100	34814	16.4	58.0	184
Significance of F test (P)			<0.01	<0.01	<0.01	<0.01
LSD (0.05)			2301	1.0	1.2	9
LSD (0.30)			1160	0.5	0.6	5
CV (%)			3.7	3.5	1.1	2.8

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