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Silage Corn Performance, 2001; Cache, Davis, and Millard Counties, Utah

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This report summarizes performance of irrigated silage corn hybrids on farms in Cache, Davis, and Millard counties in 2001. Sites were at 4236-4600 ft elevation and had long-term averages of 2696-3423 corn growing degree days (GDD, 50/86° F) per year (Tables 1-3). Hybrids from breeding programs and seed marketers were seeded with farm planters on May 4-14 at target rates of 32,000-34,000 seeds/ac. Furrow-irrigated plots were three-to-six rows wide at 30-in row spacing by 1200 ft long in three randomized complete blocks. Nutrient and pesticide applications and previous crops are indicated in Tables 1-3. Soil fertility levels were within recommended ranges except for marginally low P (12 ppm) at Delta. Plots at Delta were injured and regrew from high winds and frosts of 27-28° F during two nights in mid-June.



Hybrids had relative maturity (RM) ratings of 103-124 days and included some with Roundup Ready[®] and leafy (N48-V8) traits. Plots were harvested with silage choppers on September 13-October 5 to target whole-plant moisture concentrations of 65-70%. Weights were obtained with trucks and commercial scales. Sample dry matter (DM) concentration was determined at 105° C (221° F). Plot weights were expressed as tons/ac of oven-dry and 70%-moisture silage.

Hybrids ranked in decreasing order of forage production (Tables 1-3) 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, in Table 2, DM yields of the top two hybrids are not different at the 5% probability level, because they vary by less than the LSD of 0.29 ton/ac. Yields of the remaining hybrids are different from the first hybrid at the 5% level because they vary by at least 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.

Forage production at 70% moisture differed by 3.3-5.9 tons/ac among hybrids, depending on location. Yields at Delta reflected frost injury and leaf loss in June. Differences were not strongly associated with varying population densities and RM ratings. Hybrids with longer RM ratings tended to be wettest at harvest. In a few cases, harvest moisture concentrations exceeded 70%, which can lead to energy loss via seepage of soluble dry matter and impaired silage fermentation. Moisture concentrations were drier than 60-65% in a few cases, which

can also impair silage fermentation. 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. 2001 silage corn performance at Wellsville (Cache Co.), UT (USU Caine Dairy).

Planted May 14, harvested Oct. 5. Elevation 4490 ft, 2696 corn GDD, Greenson loam. Applications: 100 lb N/ac; Dual Magnum[®] herbicide; and Lorsban[™] granular insecticide at planting. Previous crop: corn.

Brand	Hybrid	Relative maturity	Population density	Silage moisture	Silage yield	
		days	plants/ac	% fresh wt.	DM (105 C)	70% moist.
				ton/ac		
HYTEST	HT7815	117	33522	71.8	7.35	24.49
Asgrow	RX634	107	32858	65.8	6.76	22.53
HYTEST	HT7747RR	113	28543	66.7	6.60	22.01
DEKALB	DKC61-25	111	32692	68.6	6.53	21.77
DEKALB	DKC63-03	113	35347	65.1	6.33	21.11
Asgrow	RX508	103	34683	64.1	5.91	19.69
NK	N48-V8	107	32692	69.6	5.79	19.31
DEKALB	DK626	112	28045	67.2	5.59	18.62
Mean		110	32298	67.4	6.36	21.19
Significance of F test (P)			<0.01	<0.01	0.08	0.08
LSD (0.05)			2918	2.0	1.14	3.78
LSD (0.30)			1464	1.0	0.57	1.90
CV (%)			5.2	1.7	10.2	10.2

Table 2. 2001 silage corn performance south of Hooper (Davis Co.), UT (Kurt Fowers).

Planted May 4, harvested Sept. 13. Elevation 4236 ft, 3300 corn GDD, Warm Springs fine sandy loam. Applications: 177 lb N/ac; Frontier[®] herbicide; and Isotox[®] Seed Treater F. Previous crop: corn.

Brand	Hybrid	Relative maturity	Population density	Silage moisture	Silage yield	
		days	plants/ac	% fresh wt.	DM (105 C)	70% moist.
				ton/ac		
DEKALB	DK679	117	26950	74.0	8.70	29.00
Asgrow	RX897	118	30767	75.1	8.59	28.62
Croplan Genetics	TR1167	116	26851	73.7	8.38	27.93
DEKALB	DK743	124	29772	75.6	8.20	27.32
DEKALB	DK697	119	31332	71.3	8.18	27.24
Asgrow	RX740RR	111	31763	73.7	7.87	26.22
NK	N48-V8	107	31265	67.6	7.72	25.71
Mean		116	29814	73.0	8.23	27.44
Significance of F test (P)			0.01	<0.01	<0.01	<0.01
LSD (0.05)			3001	2.0	0.29	0.97
LSD (0.30)			1491	1.0	0.14	0.48
CV (%)			5.7	1.5	2.0	2.0

Table 3. 2001 silage corn performance at Delta (Millard Co.), UT (Rick Smith).

Planted May 8, harvested Sept. 25. Elevation 4600 ft, 3423 corn GDD, Abbott silty clay, and Anco and Poganeab silty clay loams. Applications: 150 lb N and 50 lb P₂O₅/ac; and Banvel[®] and 2,4-D herbicides. Previous crop: alfalfa.

Brand	Hybrid	Relative maturity days	Population density plants/ac	Silage moisture % fresh wt.	Silage yield	
					DM (105 C)	70% moist. ton/ac
Pioneer	32P75	116	32128	59.3	6.80	22.65
NK	N48-V8	107	31165	52.3	6.76	22.54
HYTEST	HT7815	117	29571	67.4	6.59	21.97
Croplan Genetics	TR1167	116	26652	65.3	6.57	21.91
Monsanto	TXP165A-D (RR) ^a	116	27382	57.5	6.18	20.59
Grand Valley	SX2298RR	113	25258	58.6	6.06	20.21
Asgrow	RX738RR	111	31099	56.9	6.01	20.04
Asgrow	RX740RR	111	31962	60.6	5.84	19.48
HYTEST	HT7747RR	113	26552	61.3	5.77	19.25
Monsanto	TXP164A-D (RR) ^b	115	28211	63.3	5.57	18.56
Mean		114	28961	60.0	6.23	20.75
Significance of F test (P)			0.02	<0.01	0.41 ^c	0.42
LSD (0.05)			4202	4.4	NS ^c	NS
LSD (0.30)			2129	2.2	NS	NS
CV (%)			8.3	4.2	11.4	11.5

^aTXP165A-D (RR) was commercialized to DKC66-00(RR).

^bTXP164A-D (RR) was commercialized to DKC65-00(RR).

^cNo significant differences among hybrids.

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