For Crop Production 1999

SILAGE CORN VARIETY TRIALS

Minnesota Agricultural Experiment Station — University of Minnesota
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This document reports the results of t he Minnesota Hybrid Corn Silage Evaluation Program, conducted by the Minnesota Agricultural Experiment Station. It was prepared by Craig C. Sheaffer (612-625-7224; <sheaf@tc.umn.edu>), Dale R. Hicks (612-625-1796; <hicks004@tc.umn.edu>), Thomas R. Hoverstad (<hover003@tc.umn.edu>), Douglas R. Swanson (612-625-7729; <swans030@tc.umn.edu>), and James L. Halgerson (612-625-8189; <halge001@tc.umn.edu>), Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul, MN 55108.

The Minnesota Hybrid Corn Silage Evaluation Program was initiated to evaluate corn hybrids intended for use as silage. Unbiased forage yield and quality information provided by this program will be useful in education activities and in marketing corn hybrids grown for silage. The program is financed in part by entry fees from private seed companies that chose to enter hybrids for testing.

Testing Sites

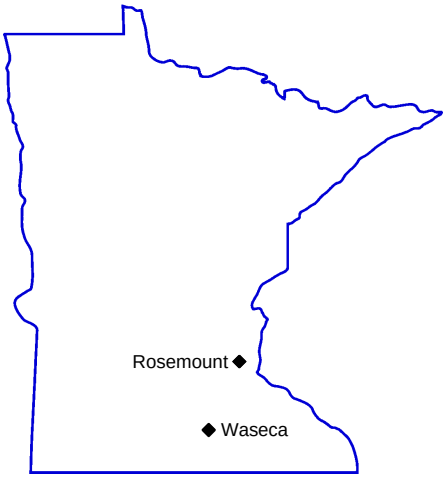
Trials were conducted at Rosemount and Waseca. Two locations and maturity are categorized: Waseca for the southern zone and Rosemount for the central zone.

Southern Zone — Waseca

- Early maturity group: hybrids rated 105-day Relative Maturity (RM) and earlier.
- Late maturity group: hybrids rated 110 & 115 RM.

Central Zone — Rosemount

- Early maturity group: hybrids rated 95 RM and earlier.
- Late maturity group: hybrids rated 100 & 105 RM.



Locations where silage corn trials were conducted for this report.

Testing Procedure

Evaluation plots for these trials were established at Waseca and Rosemount in randomized block designs with four replications. Hybrids were planted at a 32,000-seed-per-acre

seeding rate with 30-inch row spacing. Standard check hybrids were included to represent the RM groups at each location. Harvesting: Plots were harvested and herbage sampled for yield and forage quality determination for each RM group. The target maturity was whole-plant moisture content of 60 to 65 percent. Harvest at Waseca was on August 31 and at Rosemount on September 4 for both RM groups. After grain maturation, two rows adjacent to those sampled for silage were harvested for grain and yields adjusted to 15.5 percent moisture.

Using The Tables

Whole-plant dry matter yields, silage yields, moisture content, grain yields taken after physiological maturity, and crude protein (CP), acid detergent fiber (ADF), neutral detergent fiber (NDF), and in vitro digestive dry matter (IVDDM) concentrations are given for entries in each relative maturity group. Averages and least significant difference (LSD) statistical figures are given for each relative maturity group. Hybrids are ranked by average moisture content and differ in dry matter, silage and grain yields.

ADF and NDF are negative indicators of forage digestibility and intake respectively. Lower ADF and NDF numbers are related to better animal performance. IVDDM is a laboratory test to estimate digestibility in ruminant livestock. Tables 1 and 2 summarize performance results at Waseca for early and late relative maturity groups. Tables 3 and 4 summarize performance results for early and late relative maturity groups at Rosemount.

The LSD (Least Significance Difference) values associated with the data in this report's tables are measures of variability within the trials. If a yield difference between two varieties within a single column exceeds that column's LSD value, you can assume that the higher yielding variety was truly better yielding. A 5 percent level of significance is used in all these tables. This means that yield differences exceeding the stated LSD value are real 95 percent of the time.The notation "ns" indicates no significant difference.

Seed Certification

Seed of some untested corn varieties may be eligible for certification. The use of certified seed, however, does not imply recommendation. Table 5 lists the companies that participated in the 1998 hybrid corn silage trials, as well as seed sources included in the *Minnesota Registered and Certified Seed Directory for 1999 Planting* (available without charge from the Minnesota Crop Improvement Association, 1900 Hendon Avenue, St. Paul, MN 55108; 612-625-7766 or 800-510-6242).

Acknowledgements, Permissions and Caveats

Publication project chair is Leland L. Hardman, professor, Agronomy and Plant Genetics. Web product manager for extension communications is Larry A. Etkin, senior editor.

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Table 1 — Moisture, yield and quality traits for Early relative maturity corn hybrids at Waseca.

Dry matter (DM) yield is whole-plant yield at 100% dry matter.

Silage yield is whole-plant yield at harvest moisture.

Grain harvested October 12, 1998, and adjusted to 15.5% moisture.

See “Using the Tables” text for description of concentration items.

		Yield				Concentration (%)			
Brand	Hybrid	Moisture Percent	Grain bu/a	DM ton/a	Silage ton/a	CP	ADF	NDF	IVDDM
Golden Harvest	H-2382	55.8	185	10.1	22.8	8.4	20	36	69
Dairyland	Stealth 1203	58.9	176	10.1	24.9	7.8	22	38	68
Cargill	3677 *(check)*	60.2	168	10.7	27.0	7.8	24	41	67
Dairyland	Stealth 1407	61.4	180	11.8	30.5	7.4	22	39	68
Top Farm	TFsx 2103	62.7	196	10.9	29.3	7.5	25	43	66
DeKalb	DK551	63.4	217	12.4	33.8	7.7	24	42	67
DeKalb	DK527	64.0	177	9.3	25.7	7.8	23	40	67
Terra	TR1066	64.4	203	11.5	32.2	8.1	25	44	66
Average		61.3	188	10.8	28.3	7.8	23	40	67
LSD 5%		—	19	1.3	3.2	ns	2	3	2

Table 2 — Moisture, yield and quality traits for Late relative maturity corn hybrids at Waseca.

Dry matter (DM) yield is whole-plant yield at 100% dry matter.

Silage yield is whole-plant yield at harvest moisture.

Grain harvested October 12, 1998, and adjusted to 15.5% moisture.

See "Using the Tables" text for description of concentration items.

		Yield				Concentration (%)			
Brand	Hybrid	Moisture Percent	Grain bu/a	DM ton/a	Silage ton/a	CP	ADF	NDF	IVDDM
Pioneer	35R57 *(chack)*	61.8	196	11.0	28.9	7.9	23	39	69
Top Farm	TFsx 2111	62.7	208	10.1	27.1	7.4	24	41	67
Dairyland	Stealth 1508	63.6	189	11.6	31.9	7.4	24	42	66
DeKalb	DK580	64.2	194	10.8	30.3	8.0	24	42	67
DeKalb	DK618	64.6	216	10.6	30.0	7.7	24	40	68
Wilson	1390	64.8	195	11.2	31.8	7.7	26	44	65
DeKalb	DK586	64.9	189	10.9	30.9	7.6	24	42	67
Terra	TR1106	66.6	202	11.6	34.8	7.7	25	42	67
Garst	24X	67.4	232	11.6	35.4	8.4	25	43	67
Terra	TR1136	67.6	220	11.9	36.6	7.6	26	44	67
Mallard	K-88-G	68.2	177	10.9	34.5	7.8	27	45	65
Average		65.1	202	11.1	32.0	7.8	25	42	67
LSD 5%		—	27	ns	3.4	ns	2	2	2

Table 3 — Moisture, yield and quality traits for early relative maturity corn hybrids at Rosemount.

Dry matter (DM) yield is whole-plant yield at 100% dry matter.

Silage yield is whole-plant yield at harvest moisture.

Grain harvested October 12, 1998, and adjusted to 15.5% moisture.

See "Using the Tables" text for description of concentration items.

		Yield				Concentration (%)			
Brand	Hybrid	Moisture Percent	Grain bu/a	DM ton/a	Silage ton/a	CP	ADF	NDF	IVDDM
Dairyland	Stealth 1297	62.2	198	10.3	27.3	7.7	21	35	69
DeKalb	DK440	62.8	186	11.2	30.1	7.6	22	38	67
Kruger	K9898 *(check)*	64.3	218	11.3	31.6	8.2	21	37	69
Terra	TR966	64.9	200	9.6	27.2	8.1	22	39	68
Terra	E968	66.3	201	9.7	28.9	7.9	22	37	69
Average		64.1	201	10.4	29.0	7.9	22	37	68
LSD 5%		—	ns	1.2	2.7	ns	ns	ns	ns

Table 4 — Moisture, yield and quality traits for Late relative maturity corn hybrids at Rosemount.

Dry matter (DM) yield is whole-plant yield at 100% dry matter.

Silage yield is whole-plant yield at harvest moisture.

Grain harvested October 12, 1998, and adjusted to 15.5% moisture.

See "Using the Tables" text for description of concentration items.

		Yield				Concentration (%)			
Brand	Hybrid	Moisture Percent	Grain bu/a	DM ton/a	Silage ton/a	CP	ADF	NDF	IVDDM
Golden Harvest	H-2315	60.4	189	9.6	24.1	8.7	21	37	70
Garst	8780HPH	61.3	200	10.9	28.2	7.8	22	39	71
Dairyland	Stealth 1203	61.5	213	11.7	30.3	8.3	21	38	71
Cargill	3677 *(check)*	62.1	225	10.8	28.4	8.4	22	38	71
Garst	8707	62.3	225	12.0	31.8	8.0	24	42	68
Dairyland	DST 10208	62.6	203	11.6	31.1	8.6	22	40	70
Top Farm	TF 3199	63.0	193	10.8	29.4	8.5	23	41	69
Top Farm	TFsx 2100	63.6	197	10.9	30.1	8.5	23	41	69
Dairyland	DST 10212	64.2	229	11.0	30.9	9.0	22	40	70
DeKalb	DK493BtX	64.3	234	11.2	31.4	8.3	22	39	70
Dairyland	Stealth 1500	64.4	214	11.2	31.4	8.5	22	40	69
Top Farm	TFsx 2103	65.6	222	11.1	32.2	8.3	23	41	69
Garst	8640	67.1	215	11.1	33.7	8.4	24	42	69
Average		63.2	212	11.1	30.2	8.4	22	40	70
LSD (0.05)		—	21	1.1	2.2	ns	2	3	ns

Table 5 — Companies participated in the 1998 hybrid corn silage trials, and certified seed sources.

The listing of registered / certified sources is not to be construed as an offer for sale by grower, nor is it to be considered as public advertising or as a posting of public notice in any manner. Fields of registered / certified growers have, however, been sampled, tested and inspected by the MCIA. Contact the MCIA for further information, caveats, and considerations.

Registered / certified seed (R = Registered; C = Certified)

E570 Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E580 Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E605 Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E606 Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E650A Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E660A Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E670A Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E690 Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C
E800A Hybrid	Renville	Enestvedt Bros.	Sacred Heart	320-765-2728	C

Participating Companies

Dairyland Seed Company, Inc.
PO Box 958
West Bend, WI 53095-0958

DeKalb Genetics Corporation
3100 Sycamore Road
DeKalb, IL 60115

Garst Seed Company
2369 330th Street
PO Box 500
Slater, IA 50244

J. C. Robinson Seed Company
100 J.C. Robinson Boulevard
PO Box A
Waterloo, NE 68069

Mallard Seed Company, Inc.
PO Box 637
Plainview, MN 55964

Terra International, Inc.
600 Fourth Street
PO Box 6000
Sioux City, IA 51102

Top Farm Hybrids
PO Box 850
Cokato, MN 55321

Wilson Seeds, Inc.
East Highway 44
PO Box 391
Harlan, IA 51537

Corn Planting Rate and Date

Rate is based on normal seedbeds and on normal size, good quality seed. Rate used can vary greatly depending on seed cost, desired stand, expected mortality, emerging ability, seed weight, seed germination, seedbed condition, depth of planting and planting equipment. Weight given is the most widely accepted in the U.S.

Bushel Weight (pounds)	Seeds/pound (number)	Rate/acre (pounds)	Rate (seeds)	Planting Date
56	1,400	17	24,000/acre	Late April to Early May