



CORN SILAGE

The Minnesota Hybrid Corn Silage Evaluation Program evaluates the silage potential of corn hybrids in Minnesota. The goal of the program is to provide unbiased forage yield and quality information for educational and marketing programs.

The program is financed in part by entry fees from private seed companies that chose to enter hybrids for testing; they are listed in this publication. Results presented are from 2004 corn silage performance trials in regions of extensive corn silage use: southeastern, central and west-central Minnesota. The locations are in Minnesota's primary dairy regions.

Test Sites

Silage hybrids entered in the southeast or central region trials were tested at two sites within each region. Hybrids entered in the west-central region were tested at one site. Sites within regions were as follows:

Southeast Dairy Region:

Harmony (Fillmore County)
Potsdam (Olmsted County)

Central Dairy Region:

Paynesville (Stearns County)
Melrose (Stearns County)

West-Central Dairy Region:

Ottertail (Otter Tail County)

Test Procedure

Southeast and Central

Design: Small plots were established at Harmony, Potsdam, Paynesville and Melrose in randomized complete block designs with four replications. Hybrids were planted at 33,000 seeds per acre with 30-inch row spacing. The Southeast sites were planted May 4. Central sites were planted May 10. Plant nutrients as manure or inorganic fertilizer were applied to maximize plant yield. Cultivation and herbicides were used to control weeds.

Harvesting: Plots were harvested and whole-plant herbage sampled for yield and forage quality at each site. Harvest was targeted for when average whole-plant moisture across entries at the site averaged 65%. Harvest dates at Harmony, Potsdam, Paynesville and Melrose were September 23, September 21, September 27 and September 30, respectively.

West-Central

Design: Large plots were established April 28 near Ottertail under center-pivot irrigation in a randomized complete block design with three replications. Hybrids were planted at 34,000 seeds per acre with 30-inch row spacing. Inorganic fertilizer was applied pre-plant

and via irrigation to maximize plant yield. Cultivation and herbicides were used to control weeds.

Harvesting: Plots were harvested and whole-plant herbage sampled for yield and forage quality on October 2.

Results Provided

Tables summarize hybrid yield and forage quality results from Harmony, Potsdam, Paynesville, Melrose and Ottertail, respectively. Relative maturity (RM), moisture content, whole-plant dry matter (DM) yield and silage yield are listed, and hybrids are ranked, in descending order of milk yield per acre (Milk Yield/Acre).

Whole-plant forage quality traits listed include crude protein (CP), neutral detergent fiber (NDF), 48-hour *in vitro* digestibility (IVD), 48-hour neutral detergent fiber digestibility (NDFD) and starch concentrations. With the exception of NDFD, all forage quality traits are expressed as a percent of dry matter. NDFD is expressed as a percent of NDF.

Milk production potentials per ton (lb milk/ton forage) and per acre (lb milk/acre forage) of forage were calculated using the MILK2000 spreadsheet developed by the University of Wisconsin. MILK2000 approximates animal perfor-

Companies participating in the 2004 hybrid corn silage performance trials.

Ag Venture, P.O. Box 29, Kentland, IN 47951

Crow's Hybrid Corn Co., 612 E Dunlop St, P.O. Box 157, Kentland, IN 47951

Dairyland Seed Company, Inc., P.O. Box 958, West Bend, WI 53095

Dow AgroSciences- Mycogen Seeds, 9330 Zionsville Rd; Indianapolis, IN 46268

Dyna-Gro Seed, 7259 West 4th St, Greeley, CO 80634

Garst Seed Company, 2369 330th St, Slater, IA 50244

Golden Seed Company, Inc. - Golden Harvest, 27525 135th Ave N, Cordova, IL 61242

Hyland Seeds, 2 Hyland Dr, Box 130, Blenheim, Ontario, Canada N0P 1A0

Monsanto Seed Group, Dekalb Genetics, 3100 Sycamore Road, De Kalb, IL 60115

Mycogen Seeds, 9330 Zionsville Rd, Indianapolis, IN 46268

Pioneer Hi-Bred, International, 7000 NW 62nd Ave, Johnston, IA 50131

Producers Hybrids, P.O. Box C, Battle Creek, NE 68715

Renk Seed Company, 6800 Wilburn Rd, Sun Prairie, WI 53590

Trelay Seeds, 11623 State Road 80 North, Livingston, WI 53554

mance based on a standard cow weight and milk production level (1,350-lb. body weight and 90 lb. milk/day at 3.8% fat). Values based on field calculations for hybrid moisture and DM yield; laboratory values for CP, NDF, NDFD, starch and ash concentration; and book values for NDFCP (1.3%) and ether extract (3.2%) concentration were used for spreadsheet calculations. For MILK2000 predictions, we assumed that kernel processing occurred.

How To Use Results

NDF is a negative indicator of forage intake potential; higher NDF concentration generally implies lower animal performance potential. IVD provides an estimate of forage dry matter digestibility, and NDFD estimates digestibility of the fiber fraction. Starch concentration is positively associated with digestibility because it is assumed to be 100% digestible. Relatively higher IVD, NDFD and/or starch concentrations generally imply greater animal performance potential. Milk per acre represents the combined effects of yield and quality.

Corn hybrids differed in yield, forage quality and milk production potential at all sites. Means and least significant difference (LSD) values at the 10% probability level are shown for each parameter at each site. Where the difference between two selected hybrids for a particular trait and site is greater than the LSD value, there is a 90% probability that there is a real difference between the two hybrids for that parameter (i.e. moisture, yield, quality concentration or milk production).

Relative maturity (RM), whole-plant moisture, silage yield and quality traits for corn hybrids planted at Harmony (Fillmore County) in 2004.

Brand / Hybrid	RM,		Yield, Ton/Acre ¹		Quality (Concentration) ² %					Milk Yield ³	
	Rating	Moisture, %	DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
Dekalb DKC 57-84	107	65.0	103	29.3	7.6	38	81	49	40	3,510	36,200
Pioneer 34N42	108	66.1	10.2	30.1	7.9	41	80	50	33	3,420	34,800
Dairyland Stealth 1611	108	67.8	10.0	31.1	8.2	40	80	50	35	3,430	34,400
Pioneer 33J57	114	69.6	10.4	34.0	8.0	42	79	49	31	3,290	34,100
Garst 8590IT	100	67.7	9.4	29.2	7.3	41	80	50	33	3,410	32,100
High Cycle 7698RRYGCB	107	64.4	9.5	26.6	7.8	41	79	49	35	3,350	31,700
High Cycle 7601YGCB	103	64.7	9.1	25.9	7.2	39	80	49	35	3,460	31,600
Garst 8579RR	101	67.4	9.3	28.4	7.2	43	79	51	31	3,340	30,900
Ag Venture 6501CB	103	68.1	9.7	30.3	7.8	44	77	48	30	3,180	30,800
Crows 438B	108	68.5	9.2	29.2	8.2	43	79	50	32	3,330	30,600
Golden Harvest H-8673Bt	108	65.0	9.2	26.2	8.0	42	79	49	32	3,330	30,600
Ag Venture X4413CB	105	68.0	9.4	29.7	7.3	43	78	49	31	3,270	30,600
Golden Harvest H-9006Bt	112	68.1	9.4	29.5	7.4	43	77	47	31	3,190	30,000
Producers Hybrids SS110	116	68.7	9.7	30.9	8.1	46	76	49	28	3,080	29,800
High Cycle 7748YGCB	109	70.0	9.7	32.0	7.6	45	76	47	29	3,070	29,900
Dekalb DKC 61-45	111	71.3	9.2	32.0	7.9	44	78	50	29	3,210	29,500
Dairyland Stealth 1507BT	106	66.6	8.9	26.7	7.9	42	78	49	32	3,320	29,500
Renk RK870YGCB	112	68.1	9.0	28.1	8.0	42	78	49	33	3,270	29,400
Renk RK775	104	65.5	8.8	25.6	8.2	42	79	49	33	3,300	29,100
Pioneer 35Y67	106	67.6	9.2	28.3	7.5	44	77	49	30	3,170	29,100
Renk RK789YGCB	111	66.2	9.1	27.1	7.7	43	77	48	31	3,180	29,000
Pioneer 34M93	108	67.6	9.0	27.8	8.1	46	77	51	28	3,210	29,000
Trelay 7012	105	63.3	8.3	22.8	7.5	41	79	49	34	3,310	27,600
Dekalb DKC 54-51	104	67.9	8.3	25.8	7.8	42	79	48	33	3,260	27,100
Producers Hybrids SS104RR	104	69.6	8.6	28.2	7.7	46	77	50	27	3,090	26,600
Mycogen F697	112	72.4	7.9	28.6	8.5	45	79	53	28	3,230	25,400
Mean		67.5	9.3	28.6	7.8	43	78	49	32	3,280	30,400
LSD (0.10)		2.4	1.0	2.1	0.6	3	ns	2	3	ns	4,700

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture.

² Quality concentration description expressed as a % of DM, except NDFD which is expressed as a % of NDF. Refer to Results Provided text for additional information.

³ Milk production was estimated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to Results Provided text for additional information.

Relative maturity (RM), whole-plant moisture, silage yield and quality traits for corn hybrids planted at Potsdam (Olmsted County) in 2004.

Brand / Hybrid	RM, Rating	Moisture, %	Yield, Ton/Acre ¹		Quality (Concentration) ² %					Milk Yield ³	
			DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
Pioneer 35Y67	106	68.4	12.2	38.7	7.5	42	79	50	32	3,410	41,700
Garst 8579RR	101	67.6	11.9	36.7	7.5	40	80	51	33	3,490	41,600
Ag Venture X4413CB	105	67.1	12.8	38.7	7.6	45	77	49	27	3,240	41,400
Dekalb DKC 57-84	107	66.5	12.0	35.9	8.1	40	79	48	32	3,380	40,500
Pioneer 33J57	114	72.6	12.6	45.9	8.0	45	77	49	28	3,180	40,100
Golden Harvest H-9006Bt	112	69.9	12.1	39.9	8.0	43	77	47	33	3,190	38,400
Pioneer 34N42	108	68.2	11.3	35.5	7.9	42	79	50	33	3,360	37,900
Golden Harvest H-8673Bt	108	67.9	11.3	35.2	8.2	45	78	51	28	3,250	36,700
Crows 438B	108	69.9	11.4	37.6	8.4	45	77	49	30	3,180	36,300
Dairyland Stealth 1611	108	69.1	11.2	36.4	7.7	44	77	47	32	3,150	35,400
Mycogen F697	112	74.4	10.3	40.0	8.2	44	79	53	29	3,350	34,300
Producers Hybrids SS110	116	69.9	11.5	38.2	8.1	48	74	47	26	2,940	33,900
Renk RK870YGCB	112	69.6	11.3	37.0	7.6	47	75	47	28	3,000	33,800
High Cycle 7698RRYGCB	107	69.9	11.2	37.1	8.0	47	76	49	27	3,030	33,900
Pioneer 34M93	108	69.5	11.0	36.0	8.1	48	76	49	26	3,030	33,300
Producers Hybrids SS104RR	104	70.5	10.8	36.4	7.8	46	76	48	28	3,080	33,200
Dekalb DKC 61-45	111	72.1	10.9	39.1	8.1	47	76	48	28	3,030	33,100
Trelay 7012	105	67.5	10.4	31.9	7.5	44	77	48	32	3,190	33,100
Garst 8590IT	100	70.5	10.5	35.5	7.3	46	76	47	30	3,120	32,600
Renk RK775	104	67.5	10.6	32.5	7.8	47	75	47	30	3,010	32,000
Dairyland Stealth 1507BT	106	70.5	10.7	36.2	8.1	48	75	47	28	2,970	31,800
High Cycle 7601YGCB	103	70.2	9.7	32.4	7.9	43	78	50	31	3,250	31,400
Renk RK789YGCB	111	69.3	10.2	33.2	7.4	46	75	45	29	3,040	31,000
High Cycle 7748YGCB	109	72.5	10.8	39.3	7.6	49	74	46	26	2,860	30,900
Dekalb DKC 54-51	104	69.5	9.8	32.2	7.5	44	77	46	31	3,140	30,900
Ag Venture 6501CB	103	70.3	9.9	33.6	7.8	46	76	48	29	3,050	30,300
Mean		69.7	11.1	36.6	7.8	45	77	48	29	3,150	35,000
LSD (0.10)		2.0	1.2	2.6	0.5	3	2	1	3	200	5,300

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture.

² Quality concentration description expressed as a % of DM, except NDFD which is expressed as a % of NDF. Refer to Results Provided text for additional information.

³ Milk production was estimated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to Results Provided text for additional information.

Relative maturity (RM), whole-plant moisture, silage yield and quality traits for corn hybrids planted at Paynesville (Stearns County) in 2004.

Brand / Hybrid	RM, Rating	Moisture, %	Yield, Ton/Acre ¹		Quality (Concentration) Percent ²					Milk Yield ³	
			DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
Pioneer 37F16	98	64.9	8.7	24.8	7.1	41	80	50	24	3,570	31,100
DeKalb DKC 54-51	104	71.5	8.7	30.4	7.4	45	79	52	27	3,410	29,500
Pioneer 34N44	108	64.3	8.9	25.2	6.8	45	77	50	26	3,290	29,100
Dairyland Stealth 1602	98	70.6	7.8	26.6	9.2	42	81	54	30	3,630	28,300
Pioneer 37A91	97	65.1	7.6	21.8	6.8	40	81	51	33	3,660	27,800
Pioneer 35Y67	106	71.3	8.0	27.8	6.4	45	78	52	25	3,360	26,900
Renk RK556	97	68.7	7.7	24.4	8.1	44	78	51	31	3,450	26,400
High Cycle 7560YGCB	100	69.3	7.7	25.1	7.6	43	78	48	21	3,360	25,900
Renk RK488YGCB	96	70.7	7.7	26.0	7.6	44	78	50	27	3,380	25,900
Producers Hybrids 5152RR	91	67.5	7.4	22.6	7.5	40	80	49	32	3,440	25,300
Producers Hybrids 577	100	69.0	7.8	25.1	7.5	47	77	50	25	3,210	24,900
DeKalb DKC 48-52	98	68.2	7.4	23.0	7.0	43	77	47	30	3,370	24,800
Pioneer 36K67	102	71.0	6.8	23.5	7.3	45	78	51	29	3,420	23,300
Dairyland Stealth 1606	104	70.8	7.0	23.8	7.4	46	76	48	26	3,290	23,000
Dyna-Gro 5227RR	100	73.0	7.2	26.6	7.2	49	76	50	21	2,970	21,400
Dairyland HIDF 4200	101	73.7	6.6	25.2	7.7	47	76	50	25	3,200	21,100
Garst 8787YG1	96	71.0	6.2	21.2	7.5	45	78	52	26	3,420	21,000
High Cycle 7698RRYGCB	107	73.5	6.9	26.0	7.6	50	75	50	20	3,010	20,800
Dairyland Stealth 1503	100	72.2	6.8	24.4	7.3	48	75	48	25	3,050	20,700
Hyland Seeds HL S041	95	71.4	6.3	21.9	7.4	46	77	54	27	3,310	20,700
DeKalb DKC 47-10	97	69.9	5.8	19.2	7.8	42	80	52	30	3,510	20,400
Garst 8865	90	71.0	6.1	20.8	7.6	45	77	50	29	3,310	20,200
Hyland Seeds HL S058	102	73.7	5.9	22.5	7.3	46	79	54	21	3,260	19,200
Hyland Seeds HL S067	104	73.7	6.3	23.7	6.6	51	73	48	17	2,880	18,000
Mean		70.4	7.1	24.1	7.4	45	78	51	26	3,320	23,800
LSD (0.10)		3.8	1.5	4.6	ns	3	2	2	5	260	5,700

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture.

² Quality concentration description expressed as a % of DM, except NDFD which is expressed as a % of NDF. Refer to Results Provided text for additional information.

³ Milk production was estimated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to Results Provided text for additional information.

Relative maturity (RM), whole-plant moisture, silage yield and quality traits for corn hybrids planted at Melrose (Stearns County) in 2004.

Brand	Hybrid	RM		Yield, Ton/Acre ¹		Quality (Concentration) ²					Milk Yield ³	
		Rating	Moisture, %	DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
High Cycle	7560YGCB	100	71.0	9.9	34.6	8.6	42	80	53	31	3,380	33,400
DeKalb	DKC 48-52	98	68.9	9.2	29.9	8.4	38	83	54	34	3,630	33,300
Garst	8865	90	70.7	9.8	33.7	8.9	43	80	54	29	3,360	32,800
DeKalb	DKC 47-10	97	70.9	8.8	30.3	8.7	42	81	54	31	3,390	29,800
Dairyland Stealth	1602	98	72.4	8.8	32.1	9.5	46	79	55	25	3,290	29,000
Pioneer	37A91	97	72.2	8.8	32.0	9.2	43	79	52	29	3,260	28,600
Pioneer	34N44	108	72.1	9.0	32.6	8.8	44	80	54	26	3,160	28,400
Dairyland Stealth	1503	100	71.9	9.0	32.2	8.6	46	78	52	25	3,130	28,200
High Cycle	7698RRYGCB	107	69.9	8.9	29.6	9.6	46	80	55	23	3,150	28,000
DeKalb	DKC 54-51	104	69.2	8.8	28.4	8.5	44	80	54	26	3,190	27,900
Producers Hybrids	5152RR	91	72.4	8.1	29.6	8.4	41	81	53	32	3,420	27,800
Dairyland Stealth	1606	104	72.0	8.5	30.2	9.2	44	81	56	25	3,250	27,500
Pioneer	35Y67	106	69.6	8.6	28.3	8.3	45	81	57	25	3,180	27,300
Renk	RK488YGCB	96	69.7	8.4	27.8	8.7	42	80	52	29	3,260	27,200
Pioneer	36K67	102	70.8	8.4	28.5	9.0	42	80	52	28	3,240	27,100
Hyland Seeds	HL S058	102	72.4	8.8	32.0	8.8	46	79	55	23	3,060	26,900
Garst	8787YG1	96	72.4	8.4	30.7	8.8	44	79	52	26	3,190	26,800
Hyland Seeds	HL S067	104	72.4	8.9	32.3	9.2	49	77	53	20	2,980	26,400
Producers Hybrids	577	100	70.7	8.1	27.9	9.0	43	81	55	27	3,230	26,000
Dyna-Gro	5227RR	100	72.0	8.1	29.0	9.0	45	79	54	26	3,180	25,700
Renk	RK556	97	70.7	8.3	28.8	9.3	45	78	51	27	3,070	25,600
Pioneer	37F16	98	72.2	7.7	27.9	8.5	42	79	51	29	3,230	25,000
Dairyland	HIDF 4200	101	68.0	7.7	24.3	9.1	46	78	52	25	3,100	23,900
Hyland Seeds	HL S041	95	71.2	7.3	25.4	8.6	46	77	51	27	3,120	22,800
Means			71.0	8.5	29.7	8.9	44	80	54	27	3,230	27,500
LSD (0.10)			ns	1.1	5.1	0.5	3	2	2	4	230	4,300

Relative maturity (RM), whole-plant moisture, silage yield and quality traits for irrigated corn hybrids planted at Ottertail (Otter Tail County) in 2004.

Brand	Hybrid	RM		Yield, Ton/Acre ¹		Quality (Concentration) ²					Milk Yield ³	
		Rating	Moisture, %	DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
Pioneer	38W21	91	58.0	6.8	16.2	7.3	48	75	48	26	2,900	19,800
Monsanto	DKC 42-95	92	67.7	6.2	19.1	8.1	46	78	52	27	3,180	19,600
Mycogen	2M405	97	71.1	6.8	23.6	8.3	52	75	51	18	2,830	19,200
Pioneer	37R71	97	68.1	6.7	20.9	7.9	49	76	51	21	2,880	19,200
Garst	8865	90	64.6	6.2	17.5	7.6	48	76	50	25	3,060	19,000
Pioneer	37D02	97	68.1	6.8	21.2	7.8	52	74	50	20	2,760	18,700
Monsanto	DKC 37-14	87	62.7	6.0	16.1	8.1	46	77	50	27	3,090	18,500
Dyna Gro	5227	100	69.9	6.8	22.6	7.7	52	73	49	19	2,690	18,300
Hyland Seeds	HL S067	102	74.0	7.1	27.4	8.8	57	73	52	14	2,550	18,200
Monsanto	DKC 40-05	90	62.8	6.2	16.7	7.7	50	74	49	22	2,850	17,800
Hyland	HL S058	99	74.4	6.4	25.0	7.8	54	73	50	15	2,550	16,300
Pioneer	37A91	97	64.5	5.7	16.1	7.7	51	74	49	21	2,760	15,800
Mycogen	2D421	95	68.6	6.2	19.6	7.2	57	72	51	15	2,550	15,700
Hyland Seeds	HL SR59	99	75.1	6.2	24.9	7.4	54	74	52	13	2,360	14,600
Mean			67.8	6.4	20.5	7.8	51	75	50	20	2,790	17,900
LSD (0.10)			1.7	ns	2.6	0.6	3	2	2	3	230	3,100

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture.

² Quality concentration description expressed as a % of DM, except NDFD which is expressed as a % of NDF.

Refer to Results Provided text for additional information.

³ Milk production was estimated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to Results Provided text for additional information.