Michigan Corn Production Hybrids Compared
Michigan State University Extension Service

Keith Dysinger, Susan M. Canty, James J. Kells, Crop and Soil Science, Michael Allan, David Main, Animal Science

Special Supplement
Issued 1998
22 pages

A special supplement to *Michigan Farm News*, Michigan's only statewide farm newspaper

Corn Hybrids Compared in the 1998 Season

Research conducted by Michigan State University

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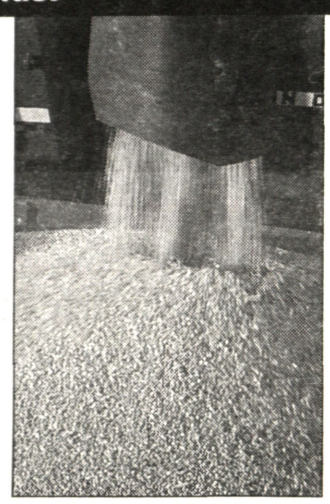

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1st	**Dave Grabemeyer**	**Dowagiac**	**3335**	**221.67**
2nd	Jerry Bement	Dowagiac	3491	217.71
A RIDGE-TILL NON-IRRIGATED				
1st	**Stephanie M. Eickholt**	**Chesaning**	**3730**	**135.46**
RIDGE-TILL IRRIGATED				
1st	**Janice A. Eickholt**	**Chesaning**	**3573**	**136.43**
IRRIGATED				
1st	**Jon & Jay Drozd**	**Allegan**	**33A14**	**252.44**
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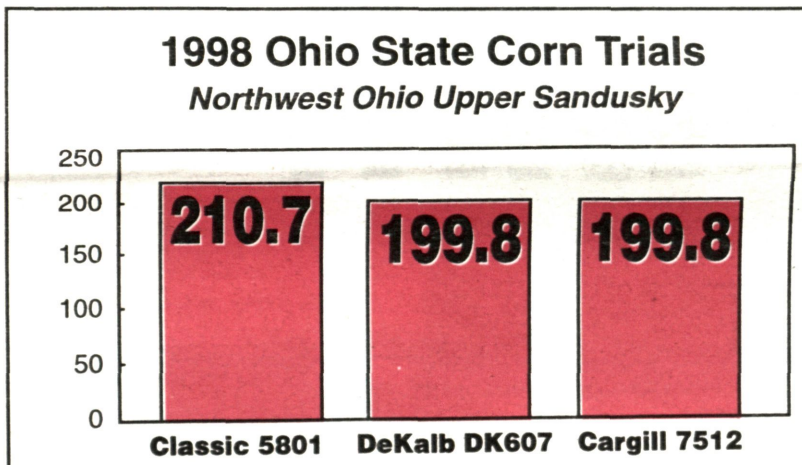

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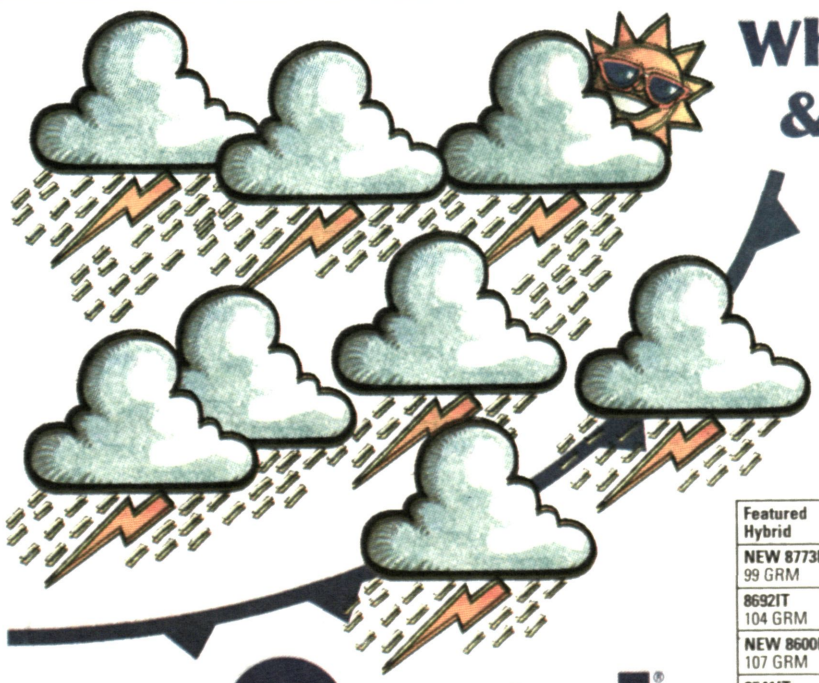

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Extension Bulletin E-431 January 1999

CORN HYBRIDS COMPARED IN THE 1998 SEASON

By:

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and

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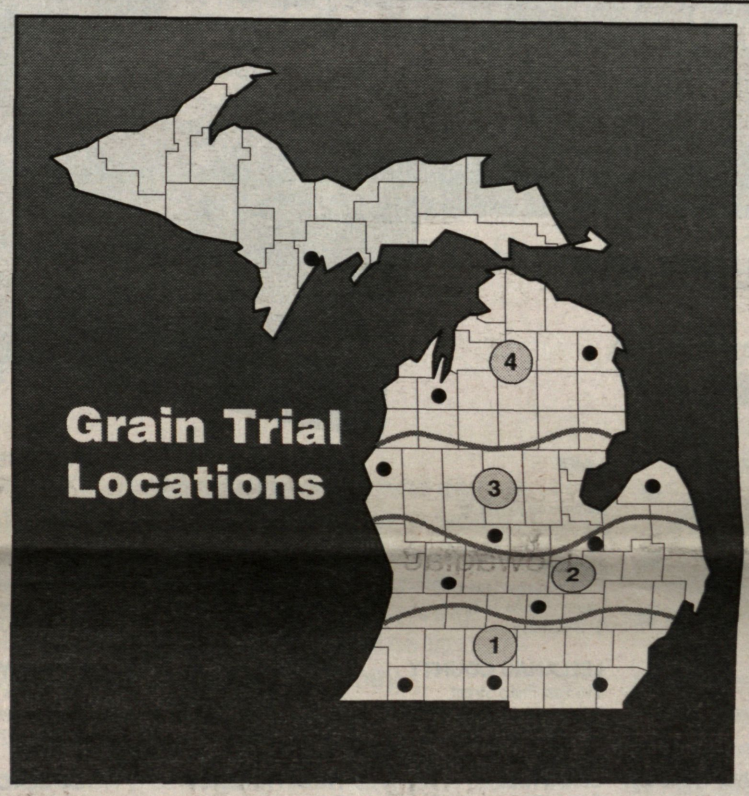
Hybrid corn trials are conducted each year by the Department of Crop and Soil Sciences in cooperation with MSU Extension, seed corn companies, and farmers.

Entries

Each year seed companies are invited to enter hybrids in the trials. A fee is charged to cover expenses.

Table 8 presents a list of all hybrids planted in the 1998 trials. At 12 grain and 7 silage locations, 303 hybrids from 37 seed companies were tested for yield as 1,376 entries. Table 4 presents 3-year data for Alpena County, 2-year data for Delta County and 1998 data for Grand Traverse County. Dry stressful conditions in Grand Traverse County resulted in data not desirable for use in multiple year and site comparisons. Company names used in association with hybrid numbers refer to the brand. The numbers are the companies' designations.



Methods

Three trial locations were planted in each of four maturity zones. These zones are based on available growing degree-day units established from long-term weather records. Hybrids entered in each zone are all tested in the three designated locations. The Delta County grain trial does not test the hybrids with maturities later than 90 day. Entries for Zones 1, 2, and 3 are divided into two maturity groups (early and late) based on maturity ratings provided by the seed companies. Zone 4 tests all hybrids in one group.

Four-row plots were used at all grain locations. The two center rows were harvested for yield. Plots were 22-feet long with a 30-inch row spacing.

Experimental design, data acquisition, analysis of variance, and data summarization were facilitated in part by ADaM, a software package developed jointly by MSU, CIMMYT (Mexico), and the Scottish Agricultural Statisitics Service. The field research layout is a four-replication, lattice design. A hybrid's performance is reported as the adjusted mean averaged together from four replicated plots.

All hybrids were grown under similar conditions at each location. They were grown in farmers' fields with equal fertilizer, population, date of planting, and other management practices. Trials in Branch, Cass, Montcalm, Mason, and Missaukee counties were irrigated. In the field, hybrids were identified only by a plot number to assure unbiased comparisons.

Stand counts were recorded in June. Plots with stand counts higher than the desired population were thinned at this time. Desired population rates are listed in Table B (grain) and Table C (silage). Lodging measurements were made at harvest, counting all plants broken below the ear. Plots were harvested mechanically for both grain and silage. Moisture content, field weight and test weight were measured by the GrainGage™, a HarvestData System™ mounted on our plot combine using the grain sample provided. *Grain yields are reported at a standard 15.5 percent moisture. Test weights are reported at harvest moisture. Automated test weight equipment loses some accuracy as harvest moistures increase. Test weight values should be used to determine relative rank and not as a precise weight.*

Grain samples were collected from four replications in Cass and Ingham counties (Zones 1 and 2) and were tested for protein, starch, and oil content. Funding was provided by the Corn Marketing Program of Michigan and the results are presented in the corresponding tables following the yield results.

Growing Conditions

All yield trials were planted between April 28 and May 18. Mild weather and dry field conditions got the planting season off to an excellent start. Three locations were planted in April with wet weather hitting the first of May. Planting resumed on May 5 at locations in northern Michigan. The planting season continued without much interruption through its conclusion with only Huron and Monroe counties delayed by wet field conditions.

Growing degree day heat units were above long-term normals throughout Michigan all season long and considerably higher than the lower-than-normal recordings of 1996 and 1997. Rainfall was below normal in most parts of Michigan and drought stress occurred across the state with low recorded yields the norm. Timely rainfall did hit some areas of the state, and combined with the higher recorded heat units, resulted in some excellent yields.

Fall harvest was excellent. Early season drydown allowed harvest to begin in late September. Exceptional weather throughout the harvest season and drier corn at harvest reduced the delays from dryer backups with wet corn and resulted in 75 percent of the crop harvested by November 1. Field losses from lodging due to poor weather conditions were virtually non-existent in 1998.

Continued on page 3

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Continued from page 1

How to Use This Bulletin

Tables have hybrids listed alphabetically. One-, two-, and three-year averages (1998, 1997, and 1996) averaged over three locations are presented for all hybrids wherever data are available. Results for individual locations in 1998 are also included in the same table. One-year single site results are less reliable than two-or three-year and multiple location averages and should be interpreted with more caution. Confidence in corn performance data increases with the number of years and locations of testing. For complete two- and three- year single site data, visit our web site at: **<www.css.msu.edu/varietytrials/>** .

The tables report the following information about the hybrids tested:

1. Average moisture content at harvest.
2. Average test weight at harvest moisture.
3. Average yield (in bushels) of shelled corn at 15.5 percent moisture.
4. Average percent of stalk lodging (plants broken below the ear at harvest).
5. Percent stand of target population.
6. Percent protein, starch, and oil content.

The results shown are the average of four replications grown in close proximity to each other. Two or more plots of the same hybrid in the same field may produce somewhat different results because of uncontrolled variability in the soil and other environmental factors. Replication and randomization of the entries are two methods used to reduce these errors. Because these methods do not eliminate all of these variables, the magnitude of difference necessary for statistical significance has been calculated for yield, moisture content, and test weight. The value calculated as the "least significant difference" or "LSD" is the amount that an individual hybrid would have to differ from another hybrid in the same test to be significantly different from that hybrid.

Hybrids which are not significantly different from the highest yielding hybrid are marked with an asterisk (*) in each table. Other agronomic information relative to each trial is given in Tables B and C. Fertilizer amounts are shown as total pounds per acre of nitrogen, P_2O_5 and K_2O applied during the season.

How to Choose a Hybrid

Adaptation

The map on page 1 shows the locations of the grain trials, and divides Michigan into four generalized maturity zones. Local variations in weather, soil type and fertility, time of planting, and other conditions all affect adaptation. Corn hybrids are often adapted to more than one zone.

In the selection of a hybrid there is no real substitute for observing individual characteristics while plants are growing. The best time to compare plants is usually in late August or early September as they approach maturity. Each year, at a limited number of locations, demonstration plantings of each hybrid are planted at the front of the test field. In 1998, four locations had demonstration plantings. A field day plot tour was scheduled and the public invited to observe the hybrids. Examining plant and ear characteristics can help in selecting hybrids suitable for your production operation. Yield results are not taken from the demonstration plot.

Planting Rate

The number of seeds sown per acre in Michigan has increased steadily over the past several years. Increased planting rates are not a guarantee of increased yields. Check with your seed dealer for information on which hybrids perform better at the higher populations when grown on your soil type.

Maturity

Early-maturing hybrids are generally lower in moisture content than later-maturing hybrids at harvest. Differences among hybrids in rate of drydown in the field also affect moisture content at harvest but usually do not greatly disturb the relative maturity ratings as determined by moisture content.

One percent more moisture at harvest reflects a delay in maturity of about two days. Another estimate of corn maturity is when a black layer of cells forms at the base of the kernel. This black layer is an indication of the end of active growth processes. At this time, kernel moisture will be between 32 and 35 percent.

For Grain

When selecting a hybrid, yield should not be the only consideration. Identifying hybrids with lower moisture but above average yield will often have higher net returns than top yielding hybrids with higher moisture. One point higher moisture requires about two more bushels in yield to breakeven. It is often better to choose earlier hybrids (below average moisture content) than later hybrids for grain. Data in the tables show that good yields do not totally depend on later maturity. In 1998, early hybrids in Zone 1 produced about 15 bushels per acre less than the later maturing group. Moisture averaged 2.5 percent lower at harvest with 2 pounds higher test weight. The economic disadvantage for early hybrid selection with $2.00 corn was about $12.00 per acre for Zone 1. In Zone 3, where average moisture was 3.5 percent dryer and yields were only 7 bushels less for the early trial, the economic advantage was $5.00 per acre for the early season hybrids.

Advantages of early-maturing hybrids are:

- They usually mature before killing frosts.
- Adapted early hybrids can generally yield as much as late hybrids in most areas of Michigan.
- Early hybrids with lower moisture content at harvest reduce drying time and market discounts for moisture.
- Test weights are generally higher resulting in reduced market discounts.
- Mature, dry corn makes a superior feed grain when used in swine or poultry rations.
- Harvest can take place earlier in the fall when weather conditions are most favorable. Early harvest may reduce corn losses resulting from broken stalks and dropped ears.
- Fall tillage of corn stubble can be more timely with early harvest on land not subject to erosion.

Narrow Row Corn Trials in Michigan

In 1997, the Corn Marketing Board of Michigan funded a study to document the interaction of multiple row spacing and populations. Four locations were selected for trial sites in Monroe, Ingham, Saginaw, and Huron counties. In 1998, a site in Calhoun County was added to compare non-irrigated and irrigated corn in narrow rows. Data from previous years have raised some additional questions that require further investigation. In 1998, the narrow row test sites were expanded to include not only the row spacing by population trials, but also a planting date study and a study looking at Bt technology in narrow rows.

Six hybrids were selected based on their various plant type, ear type, and maturity characteristics. Of these six hybrids, the two mid-maturity hybrids were planted at all six locations. Two earlier maturity hybrids were added to the Central Zone test and two later maturity hybrids were added to the Southern Zone test. This made a total of four hybrids at each location. Plots were planted in the same manner as the previous year in 30-, 22-, and 15-inch rows with five target populations of 26-, 30-, 34-, 38-, and 42- thousand plants per acre. The Huron County location was abandoned this year due to early season drought stress resulting in poor uneven plant populations.

The planting date study was set up to investigate if a disadvantage existed for narrow rows in late season plantings. In 1997, our trials were planted late in the season and did not show a significant yield advantage for narrow rows. Numerous MSU Extension trials were conducted by local farmers to compare narrow row plantings. These trials, planted earlier in the season, did show some yield advantage with narrow rows. In the study conducted at Michigan State University, three planting dates were used: early, mid, and late season. A set of three hybrids were selected so that one hybrid out of the set would best fit the maturity for each planting date. The plots were planted with a two-week delay between planting dates on April 25, May 9, and May 23. The three hybrids were planted in 30-, 22-, and 15-inch row spacings at populations targeted for 26-, 32-, and 38-thousand plants per acre.

Corn hybrids with corn borer resistance have been gaining exposure in recent months. This has raised two key questions. First, how do Bt hybrids react to narrow rows; and second, how do narrow rows affect corn borer pressure? Locations were planted in Monroe and Calhoun counties utilizing one non-Bt hybrid that also had two versions with different Bt events. Each event was selected for the length of time the Bt was expressed and where. These plots utilized the same row spacing and populations as the planting date study. Five random corn plants from each plot were selected and hand split to evaluate corn borer damage. The number, length, and location of tunnels were recorded as well as live corn borers present in the stalks.

To date, the analysis of the 1998 data has not yet been completed. The data can be accessed through the web at **<http://www.css.msu.edu/varietytrials/>** as soon as the information becomes available.

See photos on page 11

Average of Monroe, Branch & Cass County EARLY trials
One-, two-, three-year averages — 1998, 1997, 1996

EARLY TRIAL (106 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					MONROE					BRANCH					CASS				
		%		TEST	%	%	%		TEST	%	%	%		TEST	%	%	%		TEST	%	%	%		TEST	%	%	%		TEST	%	%
BRAND	VARIETY	H2O	BU/A	WT	SL	STD	H2O	BU/A	WT	SL	STD	H2O	BU/A	WT	SL	STD	H2O	BU/A	WT	SL	STD	H2O	BU/A	WT	SL	STD	H2O	BU/A	WT	SL	STD
AGRIPRO	AP9340	20	188	57	2	99	--	--	--	--	--	--	--	--	--	--	18	194	59	1	97	22	198	56	2	100	19	171	57	3	100
AGRIPRO	AP9363	21	183	57	1	98	--	--	--	--	--	--	--	--	--	--	18	170	58	1	97	24	196	55	1	99	21	183	57	1	98
ASGROW	RX505 Bt	21	188	58	1	100	--	--	--	--	--	--	--	--	--	--	19	174	59	2	99	24	208	55	2	100	21	182	59	1	100
ASGROW	RX587	22	169	61	1	91	--	--	--	--	--	--	--	--	--	--	20	164	62	0	94	24	190	58	2	86	21	153	61	2	94
ASGROW	RX601	22	187	57	2	98	24	170	55	4	97	23	161	54	4	98	21	*202	58	1	95	24	181	55	2	100	21	178	57	2	99
BAYSIDE	Super 105	23	196	55	2	93	24	183	53	6	92	--	--	--	--	--	21	*200	56	2	85	25	199	53	3	96	22	188	55	1	97
BECK'S	5105	22	*213	55	2	96	24	195	53	9	97	23	182	53	7	94	20	*212	57	1	87	26	**230	53	3	100	21	*198	54	3	100
BECK'S	5305	23	201	56	2	99	25	192	54	9	98	25	184	53	7	98	21	197	58	2	98	25	*209	53	2	100	22	*196	57	2	100
BECK'S	5415	24	200	53	2	98	--	--	--	--	--	--	--	--	--	--	21	*205	53	3	96	28	*213	50	2	100	22	182	55	1	100
CALLAHAN	7847X	22	185	59	2	98	--	--	--	--	--	--	--	--	--	--	19	184	60	3	95	26	207	56	1	99	20	166	59	1	99
CALLAHAN	7942X	21	174	59	2	97	--	--	--	--	--	--	--	--	--	--	19	*201	60	1	94	22	169	58	3	99	21	150	57	3	97
CALLAHAN	7947X	22	*202	56	1	94	--	--	--	--	--	--	--	--	--	--	20	*202	59	1	89	26	*215	53	1	96	21	191	57	2	96
CARGILL	4111	20	188	59	2	97	--	--	--	--	--	--	--	--	--	--	18	171	60	2	92	22	204	57	1	100	20	189	59	3	100
CORN BELT	C555	22	190	56	2	97	24	176	54	7	98	--	--	--	--	--	19	189	57	2	96	25	194	54	4	100	22	186	57	1	96
CORN BELT	Exp5388	20	162	57	3	83	--	--	--	--	--	--	--	--	--	--	18	155	59	3	77	21	182	57	3	88	20	150	57	3	85
COUNTRYMARK COOP	5308	22	182	57	3	96	23	167	55	5	95	--	--	--	--	--	21	187	58	1	91	24	186	56	2	100	21	172	58	8	97
CROW'S	200	21	174	57	2	98	23	166	55	5	98	22	157	54	5	98	19	164	58	1	95	24	194	55	1	100	21	163	57	2	100
DAIRYLAND	STEALTH-1402	21	171	57	3	97	--	--	--	--	--	--	--	--	--	--	18	147	58	6	97	23	202	58	1	97	21	164	57	2	98
DAIRYLAND	STEALTH-1406	22	*214	55	2	96	25	189	53	8	94	--	--	--	--	--	19	**222	57	1	95	25	*225	53	2	97	22	*195	55	3	96
DAIRYLAND	STEALTH-1505	23	184	59	1	98	--	--	--	--	--	--	--	--	--	--	21	172	61	1	94	26	206	56	1	100	23	175	60	2	100
DEKALB	DK471	18	170	58	1	98	20	155	56	5	97	19	151	55	5	97	16	168	57	0	97	20	173	58	2	99	19	169	58	2	97
DEKALB	DK477	18	155	57	3	99	19	143	56	4	99	19	136	56	5	99	16	159	57	2	96	19	150	58	4	100	19	155	57	3	100
DEKALB	DK493 BtX	19	174	58	1	98	--	--	--	--	--	--	--	--	--	--	17	176	58	1	97	21	182	59	1	99	19	165	58	2	99
DEKALB	DK525	20	174	59	1	100	--	--	--	--	--	--	--	--	--	--	18	182	60	1	101	21	165	58	2	99	20	175	58	1	100
DEKALB	DK537	20	185	57	3	100	--	--	--	--	--	--	--	--	--	--	18	185	58	5	99	23	197	57	1	99	20	172	57	3	100
DEKALB	DK551	21	192	57	1	99	--	--	--	--	--	--	--	--	--	--	18	189	58	1	99	24	196	56	0	100	21	189	57	2	98
FONTANELLE	F4193	22	185	58	1	97	--	--	--	--	--	--	--	--	--	--	20	183	60	0	95	24	195	55	1	100	23	176	59	1	97
GARST	N5542	22	*213	57	1	99	--	--	--	--	--	--	--	--	--	--	22	*215	59	1	97	24	*228	55	1	99	21	*197	58	1	100
GARST	8640	20	*206	58	1	99	22	184	55	7	95	--	--	--	--	--	19	*208	59	0	98	21	*212	56	2	99	21	*198	57	1	100
GENESIS	1904	21	189	58	2	98	--	--	--	--	--	--	--	--	--	--	18	184	60	1	94	24	199	56	2	100	21	184	59	2	99
GOLDEN HARVEST	Ex674	21	191	59	1	97	--	--	--	--	--	--	--	--	--	--	19	191	60	1	94	24	191	56	1	100	21	191	59	1	98
GOLDEN HARVEST	Ex685	20	176	56	1	94	--	--	--	--	--	--	--	--	--	--	19	180	59	2	87	22	170	54	1	96	20	178	56	1	98
GREAT LAKES	4758	20	170	59	1	96	--	--	--	--	--	--	--	--	--	--	18	178	60	2	96	22	175	57	1	93	21	157	59	2	98
GREAT LAKES	5322	23	149	56	8	91	--	--	--	--	--	--	--	--	--	--	22	167	56	10	77	24	172	56	0	97	23	107	57	15	99
GREAT LAKES	5456	22	195	56	1	97	--	--	--	--	--	--	--	--	--	--	19	197	57	1	96	25	208	54	1	99	20	179	56	1	97
GREAT LAKES	5715	22	176	58	1	95	24	169	56	2	93	--	--	--	--	--	20	178	61	1	91	24	180	56	1	95	23	169	58	2	99
GRIES	GSF4203	22	*206	55	3	98	25	189	53	5	96	23	178	53	5	93	20	*200	56	2	95	26	*223	54	4	100	22	*196	54	3	100
GUTWEIN	2400	22	*204	55	2	99	24	193	53	5	97	23	179	53	5	94	21	*210	56	2	96	24	*209	53	2	100	22	*193	55	1	100
GUTWEIN	2424	22	180	56	1	96	24	163	54	3	95	--	--	--	--	--	20	182	57	1	89	25	192	53	0	100	22	166	57	3	100
HYTEST	BH4602	23	*205	55	2	92	--	--	--	--	--	--	--	--	--	--	21	*206	56	2	82	25	*215	53	2	98	22	*195	55	1	96
MYCOGEN	2598	21	200	56	1	99	--	--	--	--	--	--	--	--	--	--	20	*214	57	2	98	22	205	54	1	100	21	180	55	1	99
NOVARTIS	MAX 21	23	190	58	1	99	--	--	--	--	--	--	--	--	--	--	20	192	60	1	97	26	185	56	1	100	22	192	58	0	100
NOVARTIS	NX5297	23	197	58	1	99	--	--	--	--	--	--	--	--	--	--	20	196	59	1	97	26	198	56	1	100	22	*198	58	1	100
PFISTER	2015	22	197	55	4	99	--	--	--	--	--	--	--	--	--	--	19	199	57	4	98	25	*211	54	3	100	21	182	55	3	98
PFISTER	2025	22	**220	55	2	97	24	199	53	7	97	--	--	--	--	--	19	*220	57	3	96	24	*229	53	2	98	22	**211	55	1	99
PIONEER	*35N05*	22	189	59	3	99	24	183	57	4	99	--	--	--	--	--	20	196	61	2	100	23	200	57	1	98	21	171	60	6	99
PIONEER	*36H36*	21	163	59	5	99	--	--	--	--	--	--	--	--	--	--	19	173	60	10	100	23	189	57	2	100	21	128	59	4	98
PIONEER	*36K50*	22	171	62	3	99	--	--	--	--	--	--	--	--	--	--	21	193	62	0	96	23	146	61	1	100	22	172	61	7	100
RENK	RK641	22	180	56	1	100	23	172	55	4	99	22	158	54	4	99	18	171	58	1	99	25	197	54	1	100	21	172	57	1	100
RENK	RK691	20	185	57	2	98	--	--	--	--	--	--	--	--	--	--	19	175	57	1	93	22	196	56	2	100	19	184	58	3	100
RUPP	XR1682	23	187	56	0	87	--	--	--	--	--	--	--	--	--	--	21	188	58	0	83	24	199	54	1	91	22	174	56	0	86
RUPP	XR1688	23	180	59	1	96	24	170	56	3	92	23	157	56	2	94	20	186	61	1	92	26	188	56	2	100	23	167	60	1	96
RUPP	XR1698	22	201	55	2	93	25	187	53	7	92	23	174	53	6	93	21	189	57	1	81	25	*220	53	1	100	22	*195	55	4	99
SUNSTAR	4706	22	201	56	2	96	24	188	53	4	95	23	178	53	4	94	20	*200	57	2	93	25	*214	53	3	96	21	190	56	3	99
TERRA	E987	21	184	59	2	97	22	170	57	4	91	--	--	--	--	--	19	182	60	2	94	22	200	57	3	99	21	169	59	2	97
TERRA	E989	19	163	58	3	96	--	--	--	--	--	--	--	--	--	--	18	169	59	2	92	21	171	57	1	96	20	150	58	5	99
TERRA	E1008 Bt	21	181	58	1	96	--	--	--	--	--	--	--	--	--	--	18	161	60	1	91	25	207	55	0	98	21	174	58	0	98
TERRA	TR1047	23	*212	55	2	96	25	191	53	6	93	--	--	--	--	--	21	*211	57	2	87	26	*226	53	2	100	22	*200	55	3	100
TERRA	TR1058 Bt	22	191	57	1	99	--	--	--	--	--	--	--	--	--	--	19	173	59	1	98	27	208	54	0	100	21	191	57	1	100
TERRA	TR1066	22	*206	55	1	98	24	188	53	3	95	--	--	--	--	--	20	*210	56	1	95	25	*213	52	2	100	21	*195	57	1	99
TRELAY	7002	22	183	56	2	98	--	--	--	--	--	--	--	--	--	--	20	*202	58	1	95	24	189	54	0	100	21	157	57	3	100
AVERAGE		21	187	57	2	97	24	178	54	5	96	22	166	54	5	96	19	188	58	2	94	24	197	55	2	98	21	177	57	2	98
HIGHEST		24	220	62	8	100	25	199	57	9	99	25	184	56	7	99	22	222	62	10	100	28	230	61	4	100	23	211	61	15	100
LOWEST		18	149	53	0	83	19	143	53	2	91	19	136	53	2	93	16	147	53	0	77	19	146	50	0	86	19	107	54	0	85
LSD		1	18	1													1	23	1			2	21	2			1	18	1		
CV .05%		4	6	2													5	8	2			5	8	2			4	7	2		

** HIGHEST YIELDING HYBRID IN 1998

* NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Grain Quality – Percent Protein, Oil and Starch

Funding Provided by Corn Marketing Program of Michigan

EARLY TRIAL (106 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
AGRIPRO	AP9340	7.5	--	3.2	62.0
AGRIPRO	AP9363	7.4	--	3.3	62.0
ASGROW	RX505 Bt	7.6	--	3.6	61.5
ASGROW	RX587	8.3	--	3.4	61.6
ASGROW	RX601	7.5	7.1	3.6	61.3
BAYSIDE	Super 105	6.6	6.8	3.4	62.3
BECK'S	5105	6.8	7.1	3.3	62.4
BECK'S	5305	6.5	6.8	3.3	62.5
BECK'S	5415	6.5	--	3.3	62.2
CALLAHAN	7847X	7.6	--	3.5	61.8
CALLAHAN	7942X	7.7	--	3.4	61.3
CALLAHAN	7947X	8.0	--	3.6	61.2
CARGILL	4111	7.0	--	3.5	62.1
CORN BELT	C555	6.7	6.7	3.5	61.9
CORN BELT	Exp5388	6.5	--	3.5	62.4
COUNTRYMARK COOP	5308	7.2	7.5	3.5	61.9
CROW'S	200	7.1	7.8	3.1	62.5
DAIRYLAND	STEALTH-1402	7.9	--	3.2	61.6
DAIRYLAND	STEALTH-1406	6.9	6.9	3.4	62.1
DAIRYLAND	STEALTH-1505	7.6	--	3.5	61.8
DEKALB	DK471	7.1	6.9	3.5	62.0
DEKALB	DK477	7.3	7.6	3.3	62.4
DEKALB	DK493 BtX	7.0	--	3.7	62.2
DEKALB	DK525	7.2	--	3.6	62.0
DEKALB	DK537	6.9	--	3.3	62.7

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
DEKALB	DK551	7.4	--	3.5	61.7
FONTANELLE	F4193	7.0	--	3.6	62.1
GARST	N5542	6.7	--	3.6	62.1
GARST	8640	7.3	7.1	3.5	61.7
GENESIS	1904	7.4	--	3.4	62.2
GOLDEN HARVEST	Ex674	7.2	--	3.7	62.1
GOLDEN HARVEST	Ex685	8.0	--	3.2	61.4
GREAT LAKES	4758	7.2	--	3.4	62.3
GREAT LAKES	5322	7.8	--	3.2	61.4
GREAT LAKES	5456	7.1	--	3.1	62.1
GREAT LAKES	5715	7.2	7.4	3.5	62.5
GRIES	GSF4203	6.9	6.9	3.4	61.8
GUTWEIN	2400	6.6	6.3	3.3	62.1
GUTWEIN	2424	7.1	7.2	3.3	62.4
HYTEST	BH4602	6.6	--	3.4	62.4
MYCOGEN	2598	7.3	--	3.5	61.9
NOVARTIS	MAX 21	6.8	--	3.4	62.5
NOVARTIS	NX5297	6.1	--	3.4	63.2
PFISTER	2015	7.2	--	3.2	62.3
PFISTER	2025	6.7	--	3.4	62.0
PIONEER	35N05	6.5	6.6	3.6	62.6
PIONEER	36H36	8.6	--	3.1	61.1
PIONEER	36K50	7.5	--	3.6	61.8
RENK	RK641	7.6	7.2	3.3	61.7
RENK	RK691	7.3	--	3.4	61.3

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
RUPP	XR1682	7.7	--	3.3	61.2
RUPP	XR1688	7.5	7.7	3.5	62.1
RUPP	XR1698	6.9	7.2	3.4	61.9
SUNSTAR	4706	6.7	7.1	3.3	62.2
TERRA	E987	7.7	8.0	3.7	62.0
TERRA	E989	7.7	--	3.5	61.7
TERRA	E1008 Bt	8.6	--	3.4	60.4
TERRA	TR1047	6.6	6.5	3.4	62.3
TERRA	TR1058 Bt	7.1	--	3.2	62.2
TERRA	TR1066	7.4	7.2	3.0	62.1
TRELAY	7002	7.2	--	3.4	62.0
AVERAGE		7.2	7.1	3.4	62.0
HIGHEST		8.6	8.0	3.7	63.2
LOWEST		6.1	6.3	3.0	60.4
LSD		.5		.2	.8
CV .05%		4.7		4.1	.9

Table 1L

SOUTHERN MICHIGAN

ZONE 1

Average of Monroe, Branch & Cass County LATE trials
One-, two-, three-year averages — 1998, 1997, 1996

LATE TRIAL (107 DAY RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					MONROE					BRANCH					CASS				
BRAND	VARIETY	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD
AGRIPRO	AP9468	23	*202	56	0	94	--	--	--	--	--	--	--	--	--	--	20	188	57	1	88	27	*220	53	0	100	22	198	58	0	95
ANDERSONS	NC5801	24	*211	55	2	98	26	195	53	4	98	25	182	52	4	98	22	201	57	3	97	26	*223	52	1	100	23	*210	56	2	99
BECK'S	5360	25	198	56	2	98	--	--	--	--	--	--	--	--	--	--	22	*206	59	2	99	28	200	53	1	96	24	189	57	2	98
BECK'S	5405	25	*206	54	1	98	27	193	52	4	98	25	183	52	5	98	22	*211	55	2	93	30	207	52	1	100	23	*201	56	0	100
BECK'S	X5505 Bt	25	197	54	1	96	27	188	53	3	97	--	--	--	--	--	22	175	55	1	92	29	203	52	1	97	25	*213	55	2	98
BIO GENE	BG307	24	**216	55	1	92	--	--	--	--	--	--	--	--	--	--	22	*215	56	2	91	27	*222	53	0	93	24	*210	56	1	92
BIO GENE	BG309	24	*209	55	1	98	--	--	--	--	--	--	--	--	--	--	21	197	56	2	94	27	**233	53	1	100	23	198	56	1	99
BROWN	BR7050	24	**216	55	2	100	--	--	--	--	--	--	--	--	--	--	22	*215	57	2	100	27	*228	52	1	100	23	*205	56	1	100
CALLAHAN	7658	24	*207	55	3	95	26	193	53	6	94	25	184	53	5	96	22	199	56	6	93	26	*217	52	1	95	23	*203	56	2	97
CARGILL	6888	24	*209	54	1	96	--	--	--	--	--	--	--	--	--	--	21	*219	56	2	95	27	211	52	1	95	25	196	55	1	99
CORN BELT	C588	24	*207	55	2	98	26	195	53	7	98	25	186	53	5	98	22	*212	57	3	96	26	209	52	2	98	23	*200	56	1	100
CORN BELT	Exp5998	25	*204	55	1	99	--	--	--	--	--	--	--	--	--	--	22	*209	56	1	98	28	*221	52	1	100	24	181	57	1	100
COUNTRYMARK COOP	627	24	*211	55	1	99	--	--	--	--	--	--	--	--	--	--	21	*203	56	2	98	28	*226	53	1	100	22	*203	55	1	99
CROW'S	365	23	194	55	1	97	25	180	53	4	97	23	167	53	5	98	20	175	56	1	95	27	201	52	1	98	23	*207	56	2	98
CROW'S	366	23	195	57	1	99	24	179	55	4	97	--	--	--	--	--	20	183	58	2	97	26	*214	55	1	100	22	187	57	1	100
CROW'S	492	24	*203	53	1	97	--	--	--	--	--	--	--	--	--	--	21	201	54	2	91	29	*215	50	0	100	23	192	54	2	100
CROW'S	496	25	193	54	3	100	26	187	52	6	98	25	176	52	5	99	22	190	54	6	99	30	206	51	2	100	22	183	56	1	100
DAIRYLAND	STEALTH-1412	24	*213	55	1	99	26	198	53	3	97	25	193	53	3	98	22	*213	56	1	98	27	*225	52	1	99	24	*202	56	1	100
DEKALB	DK585	22	*206	56	2	99	--	--	--	--	--	--	--	--	--	--	20	202	57	1	97	26	*217	53	3	98	21	*199	57	2	100
DEKALB	DK595 BtX	23	198	56	2	98	--	--	--	--	--	--	--	--	--	--	21	*205	58	3	92	25	206	53	0	100	22	183	57	2	100
DEKALB	DK618 BtX	25	*200	55	1	93	--	--	--	--	--	--	--	--	--	--	23	184	56	1	88	28	213	52	0	96	24	*204	56	1	94
FONTANELLE	F4997	24	177	59	1	95	--	--	--	--	--	--	--	--	--	--	22	177	62	1	93	26	181	56	1	97	24	174	58	0	95
FONTANELLE	F5306	24	*215	55	1	98	--	--	--	--	--	--	--	--	--	--	22	**222	57	1	94	26	212	53	2	100	24	*211	56	1	100
GEERTSON	GS1117	24	*209	55	1	95	--	--	--	--	--	--	--	--	--	--	22	*208	56	2	90	26	*224	53	1	98	24	196	56	1	97
GENESIS	1909	22	197	56	1	94	--	--	--	--	--	--	--	--	--	--	20	197	57	2	95	25	206	53	1	95	22	189	57	1	92
GOLDEN HARVEST	H2495	24	186	55	1	93	25	178	53	1	94	24	172	53	2	96	22	196	57	0	83	26	197	52	0	100	24	166	55	2	95
GREAT LAKES	5816	24	199	55	1	91	--	--	--	--	--	--	--	--	--	--	22	177	56	3	78	26	211	52	1	96	22	*207	56	0	99
GREAT LAKES	5849	24	190	56	2	97	25	183	54	3	96	24	176	53	4	96	21	182	57	2	91	27	205	53	2	100	23	183	57	0	99
GUTWEIN	2520	23	*208	55	2	96	26	193	53	6	97	25	186	53	5	97	21	199	56	3	92	26	*225	52	1	99	23	*201	56	1	96
GUTWEIN	Ex799	23	197	54	1	96	--	--	--	--	--	--	--	--	--	--	22	175	55	2	92	26	207	52	1	97	23	*208	56	1	98
HYTEST	HT4680	23	*204	55	2	92	--	--	--	--	--	--	--	--	--	--	22	201	57	6	86	25	212	53	1	95	23	*200	56	1	94
HYTEST	HTX7512	23	198	56	1	97	--	--	--	--	--	--	--	--	--	--	21	197	57	1	96	25	200	53	1	98	22	196	57	2	98
LG SEEDS	LG2583	24	*214	55	2	96	26	200	53	5	97	25	189	52	4	98	21	195	57	2	91	28	**233	52	2	98	23	*215	56	1	98
LG SEEDS	LG2587	25	194	57	0	95	--	--	--	--	--	--	--	--	--	--	23	194	58	1	93	28	209	54	0	95	23	179	58	0	96
MIDWEST GENETIC	G7610	24	192	55	1	99	--	--	--	--	--	--	--	--	--	--	21	194	58	0	99	27	205	52	1	100	24	178	55	2	98
MIDWEST GENETIC	G7636	24	189	55	2	95	26	185	53	5	96	--	--	--	--	--	21	184	57	3	89	27	196	52	2	99	24	188	56	1	99
MYCOGEN	2722	23	*203	55	1	94	--	--	--	--	--	--	--	--	--	--	21	190	57	0	86	25	*218	52	1	96	23	*200	56	1	98
MYCOGEN	2725	24	*213	54	1	99	26	200	53	4	97	25	187	53	4	95	21	*218	56	0	98	27	*219	52	1	99	24	*201	55	1	100
NOVARTIS	MAX 454	24	184	56	1	99	--	--	--	--	--	--	--	--	--	--	20	170	58	2	98	28	181	53	0	100	23	*200	57	1	100
NOVARTIS	N6800 Bt	24	183	57	1	98	--	--	--	--	--	--	--	--	--	--	23	180	59	2	95	28	188	53	0	100	23	182	59	0	100
PAYCO	834	24	*209	55	1	96	26	193	53	6	97	25	185	53	5	95	22	188	57	2	90	26	*223	53	1	98	23	**216	56	1	99
PFISTER	2650	24	*209	55	1	100	26	197	53	6	98	25	188	54	5	96	22	*209	57	1	99	28	*226	54	2	100	24	190	55	0	100
PIONEER	33V08	24	*211	56	0	99	26	199	55	2	99	--	--	--	--	--	22	*204	58	1	96	26	*230	55	0	100	24	198	56	0	100
PIONEER	33Y18	25	*211	59	1	97	--	--	--	--	--	--	--	--	--	--	23	*219	61	3	95	28	*230	57	0	97	25	184	58	1	100
PIONEER	34E79	24	*202	56	2	98	--	--	--	--	--	--	--	--	--	--	23	189	57	6	95	24	*218	54	0	100	24	*200	56	0	98
PIONEER	34G81	23	*200	56	1	99	24	192	54	4	98	--	--	--	--	--	21	198	59	1	98	24	204	55	1	100	23	196	55	0	99
RENK	RK778	22	198	56	1	97	--	--	--	--	--	--	--	--	--	--	21	198	58	2	95	24	197	53	0	97	22	198	57	1	100
RENK	RK818	23	196	57	2	94	--	--	--	--	--	--	--	--	--	--	21	186	59	3	85	25	207	55	1	98	23	193	58	1	100
RENK	RK835	24	196	55	2	97	25	192	53	6	98	25	180	53	5	98	21	182	57	4	92	26	*216	52	0	100	23	190	56	2	98
RENK	RK864	24	*213	55	1	95	26	201	53	3	95	25	190	53	3	95	22	*205	56	1	91	26	*220	53	1	97	25	*214	56	0	96
RUPP	XR1733	24	*203	55	2	93	26	194	54	6	95	25	184	53	5	96	22	202	57	2	92	27	209	53	1	93	23	*199	57	2	95
SUNSTAR	4408	23	*207	55	1	98	26	191	53	2	92	25	180	53	2	94	20	187	56	1	97	25	*222	54	1	100	24	*212	56	2	98
SUNSTAR	4409	23	*208	55	1	99	26	195	53	6	95	25	183	52	5	97	21	*206	57	2	96	26	*219	52	0	100	23	198	56	1	100
TERRA	TR1087	24	*209	55	2	97	26	196	53	4	94	25	183	53	4	95	22	199	56	4	91	26	*224	52	0	100	23	*203	56	2	99
TERRA	TR1097	24	199	54	1	94	26	197	53	3	96	--	--	--	--	--	21	190	55	1	91	26	*223	53	1	97	25	185	55	0	93
TERRA	TR1106	26	*207	52	2	98	28	197	51	6	97	26	187	50	5	96	22	*211	52	3	95	33	206	50	2	100	24	*204	54	2	99
TRELAY	8002	23	188	56	1	98	--	--	--	--	--	--	--	--	--	--	21	192	58	0	95	25	188	53	0	99	23	183	56	1	100
TRELAY	9095	25	*208	55	2	98	26	200	53	4	98	25	190	53	4	98	22	*210	56	5	100	27	*214	52	1	100	24	*201	56	0	95
TRELAY	9700	28	191	55	2	100	--	--	--	--	--	--	--	--	--	--	24	*204	58	1	100	34	192	53	4	100	26	178	55	1	98
AVERAGE		24	202	55	1	97	26	193	53	4	96	25	183	52	4	97	22	197	57	2	94	27	212	53	1	98	23	196	56	1	98
HIGHEST		28	216	59	3	100	28	201	55	7	99	26	193	53	7	99	24	222	62	6	100	34	233	57	4	100	26	216	59	2	100
LOWEST		22	177	52	0	91	24	178	51	1	92	23	167	50	2	94	20	170	52	0	78	24	181	50	0	93	21	166	54	0	92
LSD		2	16	1													1	19	2			3	19	1			1	17	2		
CV .05%		4	5	1													4	7	2			6	6	2			3	6	2		

** HIGHEST YIELDING HYBRID IN 1998

* NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Grain Quality – Percent Protein, Oil and Starch

Funding Provided by Corn Marketing Program of Michigan

LATE TRIAL (107 DAY RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
AGRIPRO	AP9468	7.5	--	3.3	62.0
ANDERSONS	NC5801	7.0	6.8	3.5	61.8
BECK'S	5360	7.8	--	3.7	61.2
BECK'S	5405	7.3	7.4	3.4	61.9
BECK'S	X5505 Bt	6.8	6.7	3.5	61.9
BIO GENE	BG307	7.3	--	3.5	62.5
BIO GENE	BG309	6.8	--	3.5	62.1
BROWN	BR7050	7.0	--	3.3	62.4
CALLAHAN	7658	6.8	6.7	3.4	62.2
CARGILL	6888	6.3	--	3.6	62.4
CORN BELT	C588	6.7	7.0	3.5	61.9
CORN BELT	Exp5998	7.7	--	3.4	61.5
COUNTRYMARK COO	627	6.7	--	3.5	62.2
CROW'S	365	7.9	--	3.5	61.2
CROW'S	366	7.6	--	3.3	61.8
CROW'S	492	6.9	--	3.4	61.6
CROW'S	496	7.4	7.2	3.5	61.6
DAIRYLAND	STEALTH-1412	6.5	6.5	3.5	62.4
DEKALB	DK585	7.3	--	3.7	61.9
DEKALB	DK595 BtX	6.9	--	3.1	62.9
DEKALB	DK618 BtX	7.7	--	3.2	62.1
FONTANELLE	F4997	6.5	--	3.7	62.8
FONTANELLE	F5306	6.3	--	3.5	62.5
GEERTSON	GS1117	6.7	--	3.5	62.4
GENESIS	1909	8.4	--	3.8	60.7

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
GOLDEN HARVEST	H2495	7.2	7.2	3.5	61.7
GREAT LAKES	5816	7.0	--	3.4	62.1
GREAT LAKES	5849	7.6	7.4	3.3	61.9
GUTWEIN	2520	6.7	6.5	3.4	62.2
GUTWEIN	Ex799	6.5	--	3.4	62.5
HYTEST	HT4680	7.0	--	3.4	61.7
HYTEST	HTX7512	7.1	--	3.4	61.7
LG SEEDS	LG2583	6.9	6.8	3.4	62.0
LG SEEDS	LG2587	7.8	--	3.7	61.3
MIDWEST GENETIC	G7610	6.7	--	3.3	62.8
MIDWEST GENETIC	G7636	6.9	6.8	3.5	61.9
MYCOGEN	2722	7.3	--	3.6	61.5
MYCOGEN	2725	6.5	6.5	3.5	62.5
NOVARTIS	MAX 454	7.4	--	3.3	62.1
NOVARTIS	N6800 Bt	7.1	--	3.6	62.5
PAYCO	834	7.0	7.2	3.5	61.9
PFISTER	2650	6.7	--	3.3	62.2
PIONEER	33V08	6.9	7.1	3.1	62.7
PIONEER	33Y18	6.6	--	3.2	63.6
PIONEER	34E79	7.8	--	3.8	61.4
PIONEER	34G81	7.8	7.8	3.3	61.7
RENK	RK778	7.2	--	3.5	61.6
RENK	RK818	7.2	--	3.3	62.1
RENK	RK835	6.5	6.9	3.5	62.0
RENK	RK864	6.8	6.9	3.5	62.2

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
RUPP	XR1733	6.8	6.9	3.5	62.0
SUNSTAR	4408	6.7	6.6	3.5	62.5
SUNSTAR	4409	6.7	6.8	3.5	61.7
TERRA	TR1087	6.8	6.7	3.4	62.1
TERRA	TR1097	6.8	6.4	3.4	62.6
TERRA	TR1106	6.9	6.8	3.5	61.9
TRELAY	8002	6.9	--	3.4	62.2
TRELAY	9095	6.5	6.7	3.5	62.6
TRELAY	9700	7.6	--	3.5	61.9
AVERAGE		7.0	6.9	3.4	62.0
HIGHEST		8.4	7.8	3.8	63.6
LOWEST		6.3	6.4	3.1	60.7
LSD		.6		.2	.8
CV .05%		5.9		4.2	.8

Average of Kent, Ingham & Saginaw County EARLY trials
One-, two-, three-year averages — 1998, 1997, 1996

EARLY TRIAL (101 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					KENT					INGHAM					SAGINAW				
BRAND	VARIETY	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD
AGRIPRO	AP9195	18	125	57	1	99	--	--	--	--	--	--	--	--	--	--	19	111	56	1	98	18	155	58	1	98	16	110	58	0	100
AGRIPRO	AP9300	20	*144	57	1	97	23	156	55	1	93	22	153	54	4	95	21	*134	57	1	95	21	160	58	1	100	18	*136	58	2	97
AGRIPRO	AP9313	20	*136	56	1	88	--	--	--	--	--	--	--	--	--	--	22	*131	54	1	89	20	154	57	1	82	17	121	58	1	92
ASGROW	RX456	18	128	59	1	96	--	--	--	--	--	--	--	--	--	--	20	*133	59	0	97	19	144	60	1	94	16	107	60	1	98
ASGROW	RX492	20	122	62	1	99	--	--	--	--	--	--	--	--	--	--	21	116	61	1	99	20	147	63	1	99	18	102	61	2	100
BAYSIDE	Super 88	17	113	58	2	98	20	136	55	3	94	--	--	--	--	--	18	99	56	2	99	17	143	59	3	94	16	98	57	2	100
BAYSIDE	Super 93	19	129	57	1	96	--	--	--	--	--	--	--	--	--	--	20	122	56	1	98	20	150	57	2	93	16	116	57	1	98
BAYSIDE	Super 99	21	126	57	2	92	24	151	55	2	87	--	--	--	--	--	22	117	58	1	97	22	141	57	1	80	19	119	59	3	99
BAYSIDE	Super 100	20	*145	57	1	100	--	--	--	--	--	--	--	--	--	--	23	*141	55	1	100	21	*171	57	0	100	17	*124	58	1	100
BAYSIDE	Super 101	21	*135	57	1	100	--	--	--	--	--	--	--	--	--	--	23	120	56	3	100	21	*165	58	0	100	20	120	57	1	100
BAYSIDE	1792	18	*140	57	1	97	21	156	55	2	95	20	152	54	3	96	19	*132	57	1	100	19	*167	58	0	99	17	122	57	2	93
BIO GENE	BG095	20	*132	59	2	96	--	--	--	--	--	--	--	--	--	--	21	*133	58	1	97	21	145	59	1	95	18	116	59	3	98
CALLAHAN	7737	18	*131	57	1	99	22	151	55	2	94	--	--	--	--	--	22	*137	55	1	100	19	149	58	1	99	15	106	56	1	100
CALLAHAN	7741	23	*133	55	2	99	25	156	53	2	92	25	153	52	5	93	25	126	53	3	97	23	147	55	1	100	22	125	55	3	100
CALLAHAN	7938X	20	*137	56	2	97	--	--	--	--	--	--	--	--	--	--	22	*130	54	1	98	20	155	57	1	95	17	126	57	4	98
CALLAHAN	7939X	21	*130	59	2	100	--	--	--	--	--	--	--	--	--	--	23	118	59	2	100	22	156	59	2	99	19	115	60	2	100
CARGILL	3677	19	127	59	2	97	22	151	56	2	94	--	--	--	--	--	21	116	58	3	100	20	157	59	2	92	17	108	59	1	100
CORN BELT	Exp5258	21	*132	57	2	100	--	--	--	--	--	--	--	--	--	--	23	122	56	3	101	21	151	60	3	99	20	*125	56	0	100
CROW'S	200	22	*140	55	3	99	24	160	53	3	94	24	156	53	5	96	24	*128	54	4	99	22	*164	56	3	98	19	*127	56	2	100
DAIRYLAND	STEALTH-1297	19	127	58	2	96	--	--	--	--	--	--	--	--	--	--	20	114	56	5	92	20	150	59	2	96	16	117	58	1	100
DAIRYLAND	STEALTH-1401	21	*135	57	1	83	23	151	54	1	84	22	151	54	2	86	23	*127	55	0	85	21	146	57	1	80	19	*131	58	1	85
DAIRYLAND	STEALTH-1496	18	*141	57	1	94	21	156	55	2	88	--	--	--	--	--	20	*132	56	1	96	19	*166	58	1	88	16	*127	58	1	98
DEKALB	DK355	16	113	58	5	100	--	--	--	--	--	--	--	--	--	--	18	108	57	8	99	15	132	59	2	101	15	98	59	6	100
DEKALB	DK365	16	89	57	3	95	--	--	--	--	--	--	--	--	--	--	18	116	56	3	100	16	102	57	2	90	14	50	57	3	95
DEKALB	DK385B	16	92	58	3	100	20	123	57	3	95	--	--	--	--	--	19	104	58	1	100	16	118	60	2	100	14	55	58	5	100
DEKALB	DK405	15	120	56	2	97	--	--	--	--	--	--	--	--	--	--	18	*132	56	2	94	15	129	57	2	98	13	98	55	3	99
DEKALB	DK417	17	117	58	4	98	--	--	--	--	--	--	--	--	--	--	19	117	56	7	96	17	134	59	3	99	15	101	57	3	100
DEKALB	DK440	16	*137	56	2	98	--	--	--	--	--	--	--	--	--	--	19	*141	55	1	100	17	157	58	3	95	14	113	56	1	99
DEKALB	DK471	17	127	56	3	96	21	142	54	3	90	20	142	54	7	93	20	125	55	2	97	17	136	58	4	91	15	121	56	2	99
DEKALB	DK477	17	*135	58	2	99	21	152	55	1	93	20	153	54	4	94	19	*132	57	1	100	18	157	58	1	98	16	117	58	3	100
DEKALB	DK493 BtX	18	*141	57	1	97	--	--	--	--	--	--	--	--	--	--	20	*134	56	1	96	18	*164	58	1	94	15	*126	56	2	100
GARST	8766	19	*132	58	1	97	--	--	--	--	--	--	--	--	--	--	20	126	57	2	96	20	144	58	1	96	17	*127	58	0	100
GARST	8780 Hph	20	*142	57	1	99	23	157	54	1	95	--	--	--	--	--	22	*132	55	1	97	21	**180	57	1	98	17	114	58	1	100
GARST	8830	18	*134	57	1	96	21	150	54	2	94	--	--	--	--	--	20	123	56	1	96	19	159	58	1	99	16	121	57	1	92
GENESIS	1996	18	*145	57	3	94	--	--	--	--	--	--	--	--	--	--	20	**146	56	3	95	19	*167	58	1	87	16	122	58	4	100
GENESIS	2900	21	*132	58	1	90	--	--	--	--	--	--	--	--	--	--	23	*137	56	2	91	21	146	58	1	82	19	115	59	1	97
GENESIS	2995	19	*140	57	1	88	--	--	--	--	--	--	--	--	--	--	20	*137	55	1	94	20	152	57	2	78	16	*131	58	0	92
GENESIS	2999	20	*143	57	1	97	--	--	--	--	--	--	--	--	--	--	22	*134	56	1	97	21	160	57	2	94	19	**137	58	0	100
GOLDEN HARVEST	H2309	18	126	57	1	91	--	--	--	--	--	--	--	--	--	--	20	*131	56	1	92	18	141	58	0	84	16	104	57	3	98
GOLDEN HARVEST	H2382	20	115	58	3	97	23	144	56	3	97	23	143	55	5	98	22	119	56	1	92	20	135	59	4	100	19	92	58	3	100
GOLDEN HARVEST	Ex816	16	118	55	2	90	--	--	--	--	--	--	--	--	--	--	18	112	55	1	85	16	143	57	1	88	14	98	54	3	98
GREAT LAKES	4758	19	*137	58	1	92	--	--	--	--	--	--	--	--	--	--	20	*129	57	1	88	21	160	58	0	94	18	120	59	2	95
GREAT LAKES	4848	20	*138	57	1	95	23	155	55	1	93	22	154	54	3	93	21	*140	56	1	100	22	148	57	2	87	18	*127	58	1	99
GRIES	GSF2285	17	122	59	1	96	--	--	--	--	--	--	--	--	--	--	19	111	58	0	90	17	149	60	0	97	15	106	58	1	100
GUTWEIN	2066	18	127	57	1	87	--	--	--	--	--	--	--	--	--	--	19	119	56	1	83	18	136	58	2	84	16	*124	58	1	93
GUTWEIN	2087	19	*139	58	1	98	23	145	55	3	88	--	--	--	--	--	21	*131	57	1	93	20	158	59	0	99	17	*128	59	2	100
GUTWEIN	2110	22	*132	56	1	89	24	143	54	1	86	23	145	54	2	86	23	119	55	0	93	22	150	57	0	84	21	*126	57	2	91
HYTEST	HT4404	17	119	56	4	89	--	--	--	--	--	--	--	--	--	--	18	116	55	4	85	18	149	57	1	89	15	90	55	7	95
LG SEEDS	LG2473	19	129	56	1	97	--	--	--	--	--	--	--	--	--	--	22	*130	54	1	96	19	150	58	1	95	15	106	56	1	100
LG SEEDS	LG2483	20	124	56	1	91	23	152	53	2	90	--	--	--	--	--	22	123	54	0	93	20	142	57	1	85	18	107	56	2	95
LG SEEDS	LG2499	23	*143	55	1	99	26	160	52	2	94	25	160	52	4	96	24	*140	53	1	100	24	*166	55	1	99	22	123	56	0	99
MIDWEST GENETIC	G6980	17	118	56	3	97	--	--	--	--	--	--	--	--	--	--	18	121	55	1	97	19	154	56	2	94	15	81	55	6	99
MIDWEST GENETIC	G7010	18	*131	57	1	84	21	153	55	2	89	--	--	--	--	--	20	119	56	2	80	18	155	58	1	85	16	120	58	1	88
MYCOGEN	2545	20	*143	58	1	98	--	--	--	--	--	--	--	--	--	--	21	*135	56	1	97	21	*162	57	2	97	18	*132	59	1	99
NOVARTIS	NX4446	18	*140	58	1	97	--	--	--	--	--	--	--	--	--	--	19	*141	57	0	99	18	144	59	2	92	16	*135	59	1	100
PAYCO	607	18	*144	57	1	100	21	155	54	2	97	--	--	--	--	--	20	*130	56	0	100	18	*173	57	1	100	16	*128	57	1	100
PIONEER	36G32	21	*130	59	3	99	--	--	--	--	--	--	--	--	--	--	22	*142	58	0	100	22	*161	59	0	97	19	87	59	8	100
PIONEER	36H36	21	*143	58	2	94	--	--	--	--	--	--	--	--	--	--	23	*139	57	2	88	21	*168	59	1	94	18	122	58	2	100
PIONEER	3730	19	**146	57	0	100	22	159	55	2	96	22	162	55	4	96	21	*137	56	0	99	20	*173	57	0	100	16	*127	58	0	100
PIONEER	37R71	18	*145	57	2	96	--	--	--	--	--	--	--	--	--	--	20	*135	56	2	94	17	*176	57	1	95	16	*125	57	2	100
PIONEER	37M81	18	*141	57	2	99	21	161	54	4	96	--	--	--	--	--	20	*143	55	3	99	17	*166	58	1	98	16	114	57	2	100
RENK	RK543	21	*137	59	1	97	--	--	--	--	--	--	--	--	--	--	23	*134	58	2	95	21	152	60	0	97	18	*126	60	0	100
RENK	RK552	18	*142	57	1	97	21	157	55	2	95	--	--	--	--	--	19	123	56	2	94	18	*172	58	2	96	16	*129	58	0	100
RENK	RK611	20	*136	58	1	100	--	--	--	--	--	--	--	--	--	--	21	*131	58	0	100	20	148	59	0	99	19	*128	59	1	100
RUPP	XR1522	19	*134	58	1	92	--	--	--	--	--	--	--	--	--	--	20	117	57	2	93	19	*161	59	1	90	16	*124	58	2	93
RUPP	XR1599	20	*140	57	1	80	23	146	54	1	80	--	--	--	--	--	22	*138	55	0	85	21	153	57	0	74	19	*130	58	2	81
TERRA	E987	20	*135	58	2	96	24	153	55	2	92	--	--	--	--	--	22	126	57	2	98	20	160	58	1	95	19	117	60	2	94
TERRA	E989	19	*133	57	1	95	--	--	--	--	--	--	--	--	--	--	20	119	56	1	95	20	153	57	2	90	16	*126	58	1	100
TERRA	E1008 Bt	25	*144	56	3	98	--	--	--	--	--	--	--	--	--	--	27	123	54	5	99	24	*179	57	1	94	23	*131	57	2	100
TRELAY	4002	18	*142	57	1	96	--	--	--	--	--	--	--	--	--	--	20	*130	56	0	99	19	*176	57	0	91	16	121	58	1	99
TRELAY	4600	17	117	55	3	96	--	--	--	--	--	--	--	--	--	--	19	120	54	3	88	17	143	56	1	100	15	88	55	5	100
TRELAY	5004	21	123	57	1	95	--	--	--	--	--	--	--	--	--	--	22	116	56	2	100	22	133	57	1	87	20	120	58	1	97
AVERAGE		19	132	57	2	96	22	151	53	2	92	22	152	54	4	94	21	127	56	2	95	19	153	58	1	94	20	115	58	2	98
HIGHEST		25	146	62	4	100	26	161	57	4	97	25	160	55	7	98	27	146	61	5	100	24	180	63	4	100	23	137	61	8	100
LOWEST		15	89	55	0	80	20	123	52	1	80	20	142	52	2	86	18	99	53	0	85	15	102	55	0	80	13	55	54	0	85
LSD		1	16	1													2	19	2			2	19	1			1	13	1		
CV .05%		4	7	1													5	10	2			5	8	2			4	8	1		

** HIGHEST YIELDING HYBRID IN 1998

* NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Grain Quality – Percent Protein, Oil and Starch

Funding Provided by Corn Marketing Program of Michigan

EARLY TRIAL (101 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
AGRIPRO	AP9195	8.7	--	3.3	60.8
AGRIPRO	AP9300	9.0	8.8	3.6	60.0
AGRIPRO	AP9313	9.4	--	3.5	60.6
ASGROW	RX456	9.5	--	3.2	60.6
ASGROW	RX492	9.0	--	3.3	61.2
BAYSIDE	Super 88	9.9	10.3	4.0	58.8
BAYSIDE	Super 93	8.7	--	3.6	60.6
BAYSIDE	Super 99	10.3	9.9	3.9	59.2
BAYSIDE	Super 100	9.2	--	3.5	60.2
BAYSIDE	Super 101	8.5	--	3.6	60.8
BAYSIDE	1792	8.1	8.2	3.8	60.9
BIO GENE	BG095	8.3	--	3.5	61.3
CALLAHAN	7737	8.6	9.0	3.6	61.3
CALLAHAN	7741	10.2	10.1	3.6	59.1
CALLAHAN	7938X	8.7	--	3.4	60.6
CALLAHAN	7939X	9.8	--	3.3	60.4
CARGILL	3677	8.4	8.7	3.7	61.0
CORN BELT	Exp5258	8.7	--	3.7	60.4
CROW'S	200	9.4	9.3	3.4	60.1
DAIRYLAND	STEALTH-1297	8.8	--	3.2	61.1
DAIRYLAND	STEALTH-1401	9.3	9.4	3.6	60.2
DAIRYLAND	STEALTH-1496	8.7	8.7	3.7	60.4
DEKALB	DK355	8.7	--	3.9	60.3
DEKALB	DK365	9.0	--	3.8	59.8
DEKALB	DK385B	8.6	8.7	3.8	60.8
DEKALB	DK405	8.4	--	3.2	61.4
DEKALB	DK417	8.5	--	3.6	60.8
DEKALB	DK440	7.3	--	3.3	62.1
DEKALB	DK471	8.1	9.0	3.5	61.4
DEKALB	DK477	8.2	9.0	3.5	61.4
DEKALB	DK493 BtX	7.6	--	3.7	61.3
GARST	8766	9.3	--	3.2	60.4
GARST	8780 Hph	9.0	9.4	3.6	59.9
GARST	8830	8.2	8.0	3.7	61.1
GENESIS	1996	8.7	--	3.6	60.5
GENESIS	2900	9.9	--	3.9	59.6
GENESIS	2995	9.0	--	3.8	60.3
GENESIS	2999	9.4	--	3.6	60.1
GOLDEN HARVEST	H2309	9.8	--	3.7	59.3
GOLDEN HARVEST	H2382	9.0	9.0	2.8	60.6
GOLDEN HARVEST	Ex816	9.2	--	3.6	60.0
GREAT LAKES	4758	8.9	--	3.4	60.2
GREAT LAKES	4848	9.2	8.7	3.6	60.3
GRIES	GSF2285	9.3	--	3.4	60.2
GUTWEIN	2066	9.1	--	3.8	59.8
GUTWEIN	2087	8.8	8.9	3.2	61.1
GUTWEIN	2110	9.6	9.1	3.5	60.0
HYTEST	HT4404	8.8	--	3.7	60.1
LG SEEDS	LG2473	8.8	--	3.7	60.8
LG SEEDS	LG2483	8.9	8.5	3.3	60.5
LG SEEDS	LG2499	10.3	10.2	3.5	59.2
MIDWEST GENETIC	G6980	8.4	--	3.7	60.5
MIDWEST GENETIC	G7010	8.7	8.6	3.6	60.7
MYCOGEN	2545	9.2	--	3.6	60.2
NOVARTIS	NX4446	9.1	--	3.4	60.8
PAYCO	607	8.3	8.5	3.7	60.9
PIONEER	36G32	8.9	--	3.4	60.8
PIONEER	36H36	10.2	--	3.1	59.6
PIONEER	3730	8.6	9.1	3.4	61.3
PIONEER	37R71	8.3	--	3.6	61.2
PIONEER	37M81	8.6	8.8	3.7	60.6
RENK	RK543	8.3	--	3.7	61.0
RENK	RK552	8.8	9.1	3.8	60.3
RENK	RK611	8.6	--	3.4	60.6
RUPP	XR1522	8.7	--	3.6	60.6
RUPP	XR1599	9.7	9.4	3.6	59.8
TERRA	E987	9.0	9.0	3.7	60.6
TERRA	E989	8.7	--	3.6	60.6
TERRA	E1008 Bt	9.6	--	3.6	59.9
TRELAY	4002	8.5	--	3.7	60.7
TRELAY	4600	8.8	--	3.6	60.2
TRELAY	5004	9.7	--	3.9	59.6
AVERAGE		8.9	9.1	3.6	60.5
HIGHEST		10.3	10.3	4.0	62.1
LOWEST		7.3	8.0	2.8	58.8
LSD		.6		.2	.7
CV .05%		4.4		3.4	.8

Average of Kent, Ingham & Saginaw County LATE trials
One-, two-, three-year averages — 1998, 1997, 1996

LATE TRIAL (102 DAY RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					KENT					INGHAM					SAGINAW				
BRAND	VARIETY	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD
ANDERSONS	NC5401	24	147	54	1	90	--	--	--	--	--	--	--	--	--	--	25	138	53	1	92	25	172	54	1	81	22	130	55	1	96
ASGROW	RX490	21	144	58	1	99	--	--	--	--	--	--	--	--	--	--	23	*145	57	1	97	21	166	58	2	100	19	120	60	2	100
ASGROW	RX530	22	151	55	1	100	--	--	--	--	--	--	--	--	--	--	23	142	54	0	100	23	178	55	1	99	19	135	56	2	99
BIO GENE	BG105	24	*156	53	1	96	--	--	--	--	--	--	--	--	--	--	25	139	52	2	94	25	*193	52	0	94	23	*137	55	2	100
BROWN	BR6850	24	*156	53	1	98	27	169	52	2	92	--	--	--	--	--	25	135	53	2	99	26	*199	53	1	98	22	133	55	1	97
CALLAHAN	7942X	20	141	57	1	97	--	--	--	--	--	--	--	--	--	--	22	132	57	0	97	22	168	57	0	93	17	122	58	1	100
CARGILL	6303	26	*157	53	1	100	28	170	52	1	96	27	166	52	3	97	30	*165	51	1	100	25	184	53	1	99	23	121	55	1	100
CORN BELT	C567	24	*157	53	2	96	27	171	52	3	91	26	167	51	3	91	26	139	52	1	99	26	*196	53	2	90	22	*137	55	3	98
COUNTRYMARK COOP	447	23	144	54	3	97	25	157	53	3	94	24	156	52	5	96	25	135	52	6	95	24	174	55	2	97	18	122	56	0	100
COUNTRYMARK COOP	4949	22	151	54	1	98	--	--	--	--	--	--	--	--	--	--	24	*152	53	0	99	23	173	55	0	97	20	130	56	1	99
COUNTRYMARK COOP	5308	24	*161	54	1	95	27	164	52	2	87	--	--	--	--	--	27	*155	53	1	98	24	186	54	0	91	22	*141	55	2	97
CROW'S	366	26	134	54	2	98	29	155	52	3	95	--	--	--	--	--	27	129	53	2	100	26	165	56	1	100	26	107	54	1	95
DAIRYLAND	STEALTH-1406	24	*162	54	2	92	27	176	52	3	90	--	--	--	--	--	26	*146	53	2	93	25	*195	54	1	89	21	*143	54	2	96
DAIRYLAND	STEALTH-1410	27	*161	53	1	97	30	174	52	2	90	29	171	51	5	93	27	*150	53	0	95	27	*201	53	1	97	25	132	53	2	100
DAIRYLAND	STEALTH-1509	26	*153	54	2	100	--	--	--	--	--	--	--	--	--	--	27	139	53	4	101	26	186	54	1	98	23	134	55	1	100
DAIRYLAND	DST10208	21	145	57	1	95	--	--	--	--	--	--	--	--	--	--	22	142	57	0	95	22	169	57	0	90	19	123	58	2	100
DEKALB	DK525	19	136	59	1	98	--	--	--	--	--	--	--	--	--	--	22	130	58	1	99	20	168	61	2	96	16	110	59	1	100
DEKALB	DK537	20	146	56	2	98	--	--	--	--	--	--	--	--	--	--	23	*148	55	1	99	21	172	57	3	97	16	118	57	2	99
DEKALB	DK551	22	144	56	3	99	--	--	--	--	--	--	--	--	--	--	23	137	55	5	99	23	175	57	2	98	19	119	55	2	100
DEKALB	DK585	23	*152	54	2	98	--	--	--	--	--	--	--	--	--	--	25	143	53	3	99	25	182	54	1	94	19	131	56	2	100
DEKALB	DK595 BtX	25	148	54	1	98	--	--	--	--	--	--	--	--	--	--	26	119	54	0	99	26	186	54	1	95	24	*140	54	1	100
GARST	8640	22	*161	56	2	99	25	170	54	3	90	24	162	53	5	88	24	*161	55	1	99	22	*194	56	1	98	21	129	57	4	100
GEERTSON	GS1067	24	*163	54	3	99	--	--	--	--	--	--	--	--	--	--	26	*154	53	2	100	25	*192	54	4	99	22	*144	55	2	98
GENESIS	2903	23	144	55	1	100	--	--	--	--	--	--	--	--	--	--	24	140	55	1	100	24	161	54	1	99	21	132	55	0	100
GREAT LAKES	5322	23	142	57	1	98	--	--	--	--	--	--	--	--	--	--	24	141	55	1	98	24	157	56	2	96	20	127	58	1	100
GREAT LAKES	5715	26	145	55	1	93	28	159	53	2	89	27	157	53	4	92	26	*149	54	0	92	26	154	54	2	91	25	132	56	1	97
GREAT LAKES	5816	26	*161	53	4	97	--	--	--	--	--	--	--	--	--	--	28	*157	53	1	98	26	182	54	3	93	25	*143	53	7	100
GRIES	GSF4203	23	*155	54	1	99	27	171	52	2	92	25	165	52	3	89	26	138	52	1	100	23	*198	54	1	96	21	128	55	2	100
GUTWEIN	2424	24	*152	54	1	98	--	--	--	--	--	--	--	--	--	--	26	*151	53	0	100	25	184	54	1	98	22	120	56	2	97
HYTEST	BH4531	22	141	54	1	98	--	--	--	--	--	--	--	--	--	--	22	137	55	0	97	23	165	53	1	100	20	120	56	0	98
HYTEST	BH4602	24	*159	54	2	99	--	--	--	--	--	--	--	--	--	--	25	143	52	1	100	25	*202	54	1	97	22	132	54	4	100
LG SEEDS	LG2512	23	140	56	1	96	--	--	--	--	--	--	--	--	--	--	26	133	54	0	97	25	164	55	1	95	19	123	59	1	98
LG SEEDS	LG2530	24	*153	54	0	98	--	--	--	--	--	--	--	--	--	--	25	*148	52	0	98	25	*189	54	0	99	22	121	56	1	98
LG SEEDS	LG2539	23	*167	54	1	98	27	176	52	2	93	25	167	52	3	92	24	*155	53	1	100	24	**207	54	1	95	21	*137	55	2	100
MYCOGEN	2620	23	*153	57	2	99	--	--	--	--	--	--	--	--	--	--	25	*146	56	4	99	24	183	57	0	100	21	130	58	1	98
MYCOGEN	2598	22	*152	53	1	97	--	--	--	--	--	--	--	--	--	--	22	*147	53	2	96	23	185	53	1	97	21	124	53	1	97
NOVARTIS	MAX 21	25	149	56	1	99	--	--	--	--	--	--	--	--	--	--	27	*147	55	1	99	26	174	55	0	97	23	127	57	1	100
NOVARTIS	N4640 Bt	19	147	58	1	100	--	--	--	--	--	--	--	--	--	--	21	*145	58	0	101	19	164	59	1	99	17	133	59	1	100
NOVARTIS	NX5297	24	*157	56	0	98	--	--	--	--	--	--	--	--	--	--	25	141	55	0	99	25	*194	55	0	96	22	135	57	1	98
PIONEER	34G81	25	*167	55	1	98	27	179	53	1	94	--	--	--	--	--	26	*160	54	1	97	26	*197	54	0	97	23	*145	56	1	100
PIONEER	35N05	24	148	57	1	100	26	162	54	1	95	--	--	--	--	--	25	137	55	1	100	25	179	57	1	99	22	129	58	1	100
PIONEER	33V08	28	*159	54	1	99	--	--	--	--	--	--	--	--	--	--	29	*157	54	1	98	31	*187	53	0	98	25	132	55	2	100
RENK	RK681	22	147	55	2	97	--	--	--	--	--	--	--	--	--	--	24	*150	54	1	99	23	171	54	1	92	18	119	56	3	98
RENK	RK691	20	138	55	1	97	--	--	--	--	--	--	--	--	--	--	20	133	54	2	98	22	167	54	1	99	18	115	55	1	95
RENK	RK775	24	*158	54	1	97	26	171	52	3	92	--	--	--	--	--	24	143	53	2	96	25	*194	53	1	99	22	*137	55	1	98
RENK	RK778	25	**168	53	2	97	--	--	--	--	--	--	--	--	--	--	26	*163	53	1	97	27	*195	53	0	99	24	*145	54	5	96
RENK	RK818	27	149	54	1	97	29	163	53	1	90	--	--	--	--	--	28	143	54	1	96	27	166	55	2	96	25	*137	55	1	100
RENK	RK864	27	*164	53	1	97	29	179	52	2	89	29	176	51	3	92	29	**167	53	1	100	27	*190	53	0	93	25	*136	54	1	99
RUPP	XR1682	25	*154	53	2	95	--	--	--	--	--	--	--	--	--	--	26	142	53	1	94	25	176	53	0	94	24	*143	53	5	96
RUPP	XR1688	26	146	55	1	98	28	155	53	2	86	27	148	53	5	90	27	143	53	0	96	25	167	55	1	97	24	126	56	2	100
RUPP	XR1698	24	*160	54	1	93	27	167	52	2	87	26	163	52	4	88	25	139	53	2	91	24	*204	53	1	93	22	*137	56	2	96
TERRA	TR1047	23	151	54	1	99	26	169	52	3	92	--	--	--	--	--	24	132	53	1	98	24	*198	54	1	100	22	124	54	1	100
TERRA	TR1058 Bt	24	148	54	3	98	--	--	--	--	--	--	--	--	--	--	29	123	52	2	100	26	*189	54	4	93	19	131	56	2	100
TERRA	TR1066	26	147	52	1	99	29	166	51	1	92	--	--	--	--	--	26	124	51	1	100	28	*190	52	0	99	26	127	53	1	99
TERRA	TR1087	27	*164	53	1	98	30	171	51	2	92	29	168	51	3	94	27	143	54	1	96	27	*198	52	0	99	26	**150	53	2	100
TERRA	TR1097	28	*156	52	1	95	30	176	52	1	92	--	--	--	--	--	29	*154	52	0	97	29	173	52	0	92	25	*141	53	2	95
TERRA	TR1106	32	147	50	3	98	34	158	49	3	90	33	153	49	6	91	33	*150	50	0	99	34	176	50	0	95	30	117	50	8	100
TRELAY	7002	23	150	55	1	98	--	--	--	--	--	--	--	--	--	--	25	*156	53	1	100	24	169	55	2	96	20	127	56	2	100
AVERAGE		24	152	54	1	98	28	168	52	2	91	27	163	52	4	93	25	144	54	1	98	25	181	54	1	96	22	130	55	2	99
HIGHEST		28	168	59	4	100	34	179	54	3	96	33	176	53	6	97	33	167	58	5	100	34	207	61	4	100	30	150	60	8	100
LOWEST		19	134	50	0	90	25	155	49	1	86	24	153	49	3	88	20	123	50	0	92	19	154	50	0	81	16	107	50	0	95
LSD		2	15	1													2	23	1			2	20	2			1	14	1		
CV .05%		4	6	1													5	10	2			6	8	2			4	7	1		

** HIGHEST YIELDING HYBRID IN 1998

* NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Grain Quality - Percent Protein, Oil and Starch

Funding Provided by Corn Marketing Program of Michigan

LATE TRIAL (102 RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
ANDERSONS	NC5401	8.7	--	3.4	60.5
ASGROW	RX490	10.0	--	3.4	60.0
ASGROW	RX530	9.0	--	3.9	59.9
BIO GENE	BG105	8.5	--	3.3	61.0
BROWN	BR6850	8.2	--	3.3	61.3
CALLAHAN	7942X	8.5	--	3.5	60.9
CARGILL	6303	8.8	8.8	3.6	60.8
CORN BELT	C567	7.9	8.0	3.3	61.2
COUNTRYMARK COOP	447	9.4	--	3.5	59.9
COUNTRYMARK COOP	4949	9.3	--	3.9	59.8
COUNTRYMARK COOP	5308	8.8	9.0	3.8	60.1
CROW'S	366	9.4	9.4	3.5	60.2
DAIRYLAND	STEALTH-1406	8.4	8.4	3.3	60.9
DAIRYLAND	STEALTH-1410	8.8	8.7	3.6	60.1
DAIRYLAND	STEALTH-1509	9.3	--	3.5	60.1
DAIRYLAND	DST10208	9.8	--	4.1	59.5
DEKALB	DK525	8.1	--	3.8	61.2
DEKALB	DK537	8.1	--	3.4	61.8
DEKALB	DK551	8.4	--	3.8	60.6
DEKALB	DK585	7.8	--	3.6	61.3
DEKALB	DK595 BtX	8.8	--	3.4	60.7
GARST	8640	8.7	8.9	3.4	60.9
GEERTSON	GS1067	8.2	--	3.6	60.8
GENESIS	2903	8.4	--	3.4	60.9
GREAT LAKES	5322	8.2	--	3.3	61.1

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
GREAT LAKES	5715	9.8	9.7	3.8	59.7
GREAT LAKES	5816	9.2	--	3.5	59.9
GRIES	GSF4203	8.0	8.5	3.3	61.3
GUTWEIN	2424	8.5	--	3.6	60.7
HYTEST	BH4531	8.0	--	3.6	61.2
HYTEST	BH4602	8.3	--	3.4	60.8
LG SEEDS	LG2512	9.0	--	3.8	60.3
LG SEEDS	LG2530	9.1	--	3.8	60.0
LG SEEDS	LG2539	7.9	8.0	3.3	61.6
MYCOGEN	2598	8.6	--	3.4	60.8
MYCOGEN	2620	9.3	--	3.7	60.4
NOVARTIS	MAX 21	8.9	--	3.6	60.7
NOVARTIS	N4640 Bt	8.6	--	3.4	61.3
NOVARTIS	NX5297	8.2	--	3.6	61.0
PIONEER	34G81	8.9	8.3	3.3	60.6
PIONEER	35N05	7.9	7.9	3.6	61.5
PIONEER	33V08	8.4	--	3.2	61.5
RENK	RK681	9.2	--	3.3	60.5
RENK	RK691	9.2	--	3.5	59.8
RENK	RK775	8.4	8.4	3.4	60.8
RENK	RK778	9.0	--	3.5	60.2
RENK	RK818	9.5	9.1	3.5	60.0
RENK	RK864	8.1	7.9	3.7	60.8
RUPP	XR1682	9.1	--	3.5	60.0
RUPP	XR1688	9.6	9.2	3.9	59.8

HYBRID		%	97/98	%	%
BRAND	VARIETY	Protein	%Prot	Oil	Starch
RUPP	XR1698	8.3	8.2	3.4	60.8
TERRA	TR1047	8.0	8.0	3.3	61.2
TERRA	TR1058 Bt	8.6	--	3.4	60.5
TERRA	TR1066	9.1	9.5	3.2	60.5
TERRA	TR1087	8.5	8.4	3.5	60.4
TERRA	TR1097	8.4	8.2	3.7	60.3
TERRA	TR1106	8.4	8.4	3.6	60.2
TRELAY	7002	8.5	--	3.4	61.1
AVERAGE		8.7	8.6	3.5	60.6
HIGHEST		10.0	9.7	4.1	61.8
LOWEST		7.8	7.9	3.2	59.5
LSD		.5		.2	.6
CV .05%		3.6		3.4	.7

Average of Huron, Montcalm & Mason County EARLY trials
One-, two-, three-year averages — 1998, 1997, 1996

EARLY TRIAL (97 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					HURON					MONTCALM					MASON				
BRAND	VARIETY	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD
ASGROW	RX352	21	148	56	1	93	--	--	--	--	--	--	--	--	--	--	22	129	57	1	83	20	134	58	0	100	22	180	53	1	96
ASGROW	RX355	21	163	57	1	99	--	--	--	--	--	--	--	--	--	--	21	145	58	1	97	20	147	60	1	100	22	197	53	0	99
BAYSIDE	Super 88	22	161	55	2	92	23	157	53	3	96	--	--	--	--	--	23	145	55	3	78	20	143	56	1	100	22	194	53	1	99
BAYSIDE	Super 91	22	165	55	1	93	--	--	--	--	--	--	--	--	--	--	23	*151	55	1	85	21	143	56	0	100	23	201	52	1	94
BAYSIDE	Super 93	24	167	53	1	91	--	--	--	--	--	--	--	--	--	--	26	142	53	1	78	22	147	55	1	100	24	*213	51	1	95
BAYSIDE	Super 95	25	*175	51	2	94	26	171	50	4	96	--	--	--	--	--	28	*157	51	3	88	21	*159	53	2	100	25	208	50	0	93
BAYSIDE	Super 97	25	166	55	2	84	--	--	--	--	--	--	--	--	--	--	26	142	56	3	76	22	151	57	3	93	26	205	53	1	82
BAYSIDE	1792	24	*177	53	1	96	25	176	52	2	98	25	165	50	3	99	25	*161	53	2	89	23	*165	55	2	100	24	206	52	0	98
BIO GENE	BG090	23	158	54	2	83	--	--	--	--	--	--	--	--	--	--	21	125	55	2	67	21	153	55	2	94	26	198	51	1	89
CALLAHAN	7737	24	*172	53	1	94	27	176	52	2	97	--	--	--	--	--	24	140	53	4	87	21	*163	56	1	100	27	*212	51	0	97
CALLAHAN	7938X	25	*176	52	1	94	--	--	--	--	--	--	--	--	--	--	27	*162	52	2	88	24	*160	52	0	97	26	207	51	0	97
CARGILL	2827	22	154	58	1	87	--	--	--	--	--	--	--	--	--	--	23	122	58	1	71	22	147	60	1	96	23	193	56	0	94
CORN BELT	C467	22	156	55	0	90	--	--	--	--	--	--	--	--	--	--	24	140	54	0	75	20	144	58	0	98	23	183	53	1	97
COUNTRYMARK COOP	3858	23	*175	53	2	90	24	169	52	3	86	--	--	--	--	--	24	*149	53	3	75	22	154	55	2	100	23	*222	51	0	94
DAIRYLAND	STEALTH-1496	24	*176	54	1	92	25	175	52	2	91	--	--	--	--	--	26	148	53	0	78	22	*157	56	3	99	25	*224	52	1	98
DAIRYLAND	STEALTH-1595	23	158	54	0	97	24	157	52	1	97	--	--	--	--	--	25	137	53	0	93	21	136	56	1	99	22	201	53	0	98
DEKALB	DK355	20	153	56	2	90	--	--	--	--	--	--	--	--	--	--	21	137	56	1	77	19	137	58	3	97	21	186	53	1	94
DEKALB	DK365	21	151	56	1	90	22	152	55	4	94	--	--	--	--	--	20	118	57	2	74	20	139	57	1	99	23	195	53	1	99
DEKALB	DK385B	21	148	58	1	98	23	157	56	2	97	--	--	--	--	--	20	127	60	2	96	19	134	60	0	100	23	184	55	1	99
DEKALB	DK405	20	160	55	1	87	--	--	--	--	--	--	--	--	--	--	19	112	56	1	74	20	*159	58	1	94	22	*210	52	0	93
DEKALB	DK417	21	169	57	1	94	--	--	--	--	--	--	--	--	--	--	21	*150	58	0	87	20	143	59	2	100	22	*213	54	1	95
DEKALB	DK440	21	*178	54	1	91	--	--	--	--	--	--	--	--	--	--	20	145	55	3	76	21	*159	55	1	100	23	**230	52	0	97
DEKALB	DK471	23	*173	54	1	90	26	173	52	3	94	25	166	50	3	96	23	*156	55	0	80	22	*159	56	1	98	26	205	51	1	91
DEKALB	DK477	23	*177	53	2	96	25	171	52	3	97	25	167	51	2	97	25	*145	53	4	88	21	*165	56	2	100	24	*220	51	0	99
GARST	8830	23	*179	52	2	97	25	177	51	3	98	--	--	--	--	--	23	*164	53	3	93	23	*165	54	1	100	24	207	49	2	97
GENESIS	2990	23	153	55	2	94	--	--	--	--	--	--	--	--	--	--	24	139	55	3	84	21	148	57	2	99	23	171	53	0	98
GOLDEN HARVEST	H2309	23	161	54	1	88	--	--	--	--	--	--	--	--	--	--	23	130	54	2	77	22	151	55	1	97	23	201	51	0	89
GOLDEN HARVEST	Ex816	22	*170	53	1	96	--	--	--	--	--	--	--	--	--	--	22	*149	53	2	94	20	*161	55	1	100	23	200	52	0	96
GREAT LAKES	3807	22	129	57	1	93	--	--	--	--	--	--	--	--	--	--	22	104	57	0	80	20	135	59	2	99	22	147	54	2	100
GREAT LAKES	4526	23	*177	54	2	97	--	--	--	--	--	--	--	--	--	--	23	*163	54	3	93	22	152	56	1	100	24	*215	51	0	97
GREAT LAKES	4758	25	*172	54	1	92	--	--	--	--	--	--	--	--	--	--	28	144	53	1	82	22	*167	56	2	97	26	206	52	0	98
GRIES	GSF2285	23	167	55	1	93	--	--	--	--	--	--	--	--	--	--	24	*155	55	2	85	22	152	58	1	99	22	192	53	0	94
HYTEST	HT4310	24	*171	54	2	91	--	--	--	--	--	--	--	--	--	--	25	*167	54	4	83	22	141	56	2	95	25	206	52	1	95
HYTEST	HT4395	21	160	55	1	94	--	--	--	--	--	--	--	--	--	--	21	*156	56	2	83	21	140	56	1	100	22	183	52	2	99
JUNG	2488	24	*173	52	1	92	25	173	51	4	96	--	--	--	--	--	24	*151	52	3	85	22	151	54	1	98	25	*217	50	0	94
LG SEEDS	LG2421	24	*177	56	2	98	--	--	--	--	--	--	--	--	--	--	24	*150	55	3	94	22	*160	58	1	100	25	*220	53	1	100
LG SEEDS	LG2442	23	*177	54	2	95	25	174	52	3	97	--	--	--	--	--	23	**170	55	2	89	22	139	55	2	100	23	*223	51	1	97
LG SEEDS	LG2473	24	*172	54	1	92	27	178	52	2	96	--	--	--	--	--	23	139	54	2	82	22	*159	56	1	100	26	*220	52	0	94
MIDWEST GENETIC	G6970	22	*170	53	1	89	25	168	52	3	93	--	--	--	--	--	23	136	53	1	76	20	155	55	2	96	25	*221	51	1	94
MIDWEST GENETIC	G7010	24	158	53	2	81	--	--	--	--	--	--	--	--	--	--	25	123	52	3	66	22	150	56	2	94	24	202	51	1	83
MYCOGEN	2395	24	166	56	2	93	--	--	--	--	--	--	--	--	--	--	26	139	56	3	86	22	*160	59	2	100	23	198	55	0	92
MYCOGEN	2420	22	168	55	2	94	--	--	--	--	--	--	--	--	--	--	23	*153	55	2	96	21	*159	57	3	100	24	193	53	1	87
NOVARTIS	MAX 86	23	*174	58	1	88	--	--	--	--	--	--	--	--	--	--	24	*165	59	1	76	20	144	60	2	94	24	*212	56	0	93
NOVARTIS	N3030 Bt	24	*184	54	2	91	--	--	--	--	--	--	--	--	--	--	25	*164	54	5	85	22	**170	57	2	100	25	*216	52	0	89
PIONEER	37M81	23	**187	53	3	98	25	182	51	5	99	--	--	--	--	--	23	*169	53	5	95	21	*166	56	3	100	25	*225	50	1	99
PIONEER	38P05	23	*178	56	0	92	--	--	--	--	--	--	--	--	--	--	23	*159	58	1	87	21	*166	59	0	99	24	207	53	1	91
PIONEER	38W36	23	169	55	3	97	--	--	--	--	--	--	--	--	--	--	27	**170	52	4	94	22	151	57	2	100	21	187	54	2	97
RENK	RK450	22	159	54	2	88	--	--	--	--	--	--	--	--	--	--	23	136	54	3	72	20	146	56	1	97	22	197	53	1	95
RENK	RK546	23	161	53	1	86	25	165	52	3	91	24	160	50	3	94	22	129	52	1	81	20	*159	55	1	100	26	195	51	1	78
RENK	RK552	24	*173	53	1	92	25	172	52	3	94	--	--	--	--	--	26	*155	53	1	89	22	148	56	1	99	24	*216	51	1	88
RUPP	XR1357	22	162	55	1	91	24	155	53	2	94	--	--	--	--	--	24	148	53	2	79	21	145	58	2	99	23	193	53	1	96
RUPP	XR1522	24	*172	54	2	87	--	--	--	--	--	--	--	--	--	--	26	*154	54	2	78	22	144	56	3	97	24	*219	53	1	86
TERRA	E958	25	161	54	1	88	--	--	--	--	--	--	--	--	--	--	28	138	53	1	75	21	153	57	2	100	26	191	51	1	90
TERRA	E968	24	*178	54	2	94	--	--	--	--	--	--	--	--	--	--	23	142	54	4	84	22	*166	55	2	100	26	*226	52	1	99
TRELAY	3700	23	163	54	2	90	--	--	--	--	--	--	--	--	--	--	22	139	54	2	77	21	149	56	2	100	24	200	51	1	94
TRELAY	4002	23	*181	53	1	95	24	176	52	3	95	--	--	--	--	--	23	*167	53	2	91	22	*157	55	2	99	24	*217	51	0	94
TRELAY	4600	24	165	52	2	90	25	166	50	4	93	--	--	--	--	--	25	*155	51	1	82	20	147	54	3	95	27	192	49	0	94
AVERAGE		23	167	54	1	92	25	169	52	3	95	25	165	50	3	97	24	146	54	2	83	21	152	56	1	99	24	204	52	1	94
HIGHEST		25	187	58	3	99	27	182	56	5	99	25	167	51	3	99	28	170	60	5	97	24	170	60	3	100	27	230	56	2	100
LOWEST		20	148	51	0	83	22	152	50	1	86	24	160	50	2	94	19	104	51	0	66	19	134	52	0	93	21	147	49	0	78
LSD		2	17	1													2	21	2			1	14	1			2	21	1		
CV .05%		5	6	2													7	10	2			3	6	2			5	7	2		

** HIGHEST YIELDING HYBRID IN 1998

* NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

1998 GROWING SEASON
WEATHER SUMMARY

Jeff Andresen, agricultural meteorologist/Extension specialist, MSU Dept. of Geography

The beginning of the 1998 growing season coincided with the final stages of the strongest El Nino event of the century. The El Nino conditions were at least partially responsible for abnormally mild temperatures across much of the Great Lakes region for much of the winter and spring of 1998. Mean temperatures from January through May ranged from 5 to as much as 8°F above normal (setting new records for mild temperatures and lack of snowfall in many sections of the state). The abnormally mild weather resulted from a persistent split flow configuration of the jet stream across North America, with cold, arctic-origin air masses remaining well to the north of the lower 48 states. The southern or subtropical branch of the jet stream, much stronger and more active than normal due to the addition of energy from the El Nino/warm water conditions of the eastern Pacific Ocean, generally remained along the southern border states of the U.S. and was responsible for a variety of severe weather, including high winds and flooding in California and violent tornadoes in Florida. For Michigan, the subtropical jet stream provided occasional incursions of moisture from the Gulf of Mexico which resulted in monthly precipitation totals ranging from much above normal in the southern sections to below normal in the north. Spring fieldwork, planting progress, and early crop vegetative development rates were consistently well ahead of normals for the date, due mainly to drier than normal conditions and to abnormally warm soil temperatures. In most years, soils in Michigan contain frozen layers left from the preceding cold months. The seasonal melting of these frozen soil layers and leftover snow cover takes large amounts of heat energy, resulting in a moderation of temperatures and a delay of warm (e.g., 60°F or above) temperatures relative to areas to our south or west. This year, with record-breaking mild temperatures during much of the winter and early spring, there was little in the way of frozen soils or snow cover, allowing soil temperatures to increase much more quickly than normal (e.g., at East Lansing, average 2-inch soil temperatures reached 50°F during the last week in March).

While the early start to the growing season benefitted many, the major weather story of the 1998 growing season was undoubtedly the drought conditions which developed during the early summer and resulted in reduced crop yields. Dryness was most pronounced in central and northern areas of the state, where seasonal (May-September) rainfall totals generally ranged from 50-80% of normal values and soil moisture

Continued on page 10

Average of Huron, Montcalm & Mason County LATE trials
One-, two-, three-year averages — 1998, 1997, 1996

LATE TRIAL (98 DAY RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					HURON					MONTCALM					MASON				
BRAND	VARIETY	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD
BAYSIDE	Super 100	26	162	52	3	92	--	--	--	--	--	--	--	--	--	--	28	134	52	5	80	24	150	53	2	100	28	202	50	2	96
BROWN	BR5140	26	175	53	2	91	27	169	52	2	91	--	--	--	--	--	28	*168	53	3	82	23	142	55	3	98	27	215	52	1	94
CALLAHAN	7741	30	168	51	1	92	31	170	50	2	95	30	165	49	2	96	32	156	51	3	83	24	147	52	1	100	33	201	49	0	94
CALLAHAN	7939X	28	176	54	1	96	--	--	--	--	--	--	--	--	--	--	29	*159	55	3	95	24	155	57	0	100	30	212	52	0	95
CARGILL	3677	24	167	55	3	95	25	169	53	3	95	25	164	52	3	97	23	153	55	0	90	23	146	58	5	100	25	201	53	2	96
CARGILL	4127	26	174	53	1	96	28	168	52	3	98	27	160	51	2	99	25	*164	54	1	88	23	146	55	3	100	30	211	52	0	100
CORN BELT	C498	26	161	52	2	92	28	165	51	2	95	--	--	--	--	--	26	143	52	5	83	24	147	54	1	99	27	193	50	1	95
COUNTRYMARK COOP	3969	25	170	55	3	94	--	--	--	--	--	--	--	--	--	--	25	150	54	3	87	21	135	57	5	100	28	*224	52	1	95
COUNTRYMARK COOP	4949	27	*181	52	1	94	--	--	--	--	--	--	--	--	--	--	28	*162	52	2	90	24	*162	53	1	100	29	217	50	0	92
DAIRYLAND	STEALTH-1203	27	164	50	2	93	28	161	49	4	95	28	159	48	5	96	29	132	49	4	82	23	143	52	2	100	28	217	49	1	96
DAIRYLAND	STEALTH-1297	25	175	54	1	94	29	173	52	3	96	26	164	51	3	97	26	*166	54	2	92	23	160	55	1	98	25	200	53	1	92
DAIRYLAND	STEALTH-1401	26	165	53	1	87	28	164	51	1	92	27	160	50	2	92	26	141	53	1	80	24	158	54	1	92	28	196	52	1	89
DAIRYLAND	STEALTH-1500	26	171	53	3	96	28	163	52	3	97	--	--	--	--	--	26	*164	53	2	89	23	144	55	6	97	28	206	52	1	100
DEKALB	DK493 BtX	24	168	53	1	92	--	--	--	--	--	--	--	--	--	--	24	137	53	1	79	22	161	56	1	100	27	205	51	0	97
DEKALB	DK525	25	*181	54	1	92	--	--	--	--	--	--	--	--	--	--	27	*176	54	1	82	21	143	57	3	99	26	*223	51	0	96
DEKALB	DK537	26	**194	53	2	97	--	--	--	--	--	--	--	--	--	--	27	*173	52	3	91	23	*170	55	2	100	28	**240	51	1	100
DEKALB	DK551	29	*188	52	1	94	--	--	--	--	--	--	--	--	--	--	30	*175	51	1	95	25	*167	53	3	100	33	*222	52	0	88
GARST	8780 Hph	27	*181	53	1	96	28	173	51	2	97	--	--	--	--	--	26	*169	53	2	91	24	*163	55	2	99	31	211	50	0	97
GEERTSON	GS998	25	171	51	2	92	--	--	--	--	--	--	--	--	--	--	27	146	50	2	81	21	158	53	3	99	26	210	51	0	96
GOLDEN HARVEST	H2382	26	161	54	1	94	28	161	52	3	96	27	155	51	4	97	27	134	53	2	81	24	145	55	1	101	26	203	53	1	100
GREAT LAKES	4848	24	165	53	1	87	27	167	51	2	93	27	154	50	2	94	24	137	54	2	70	23	*163	54	2	99	26	196	51	0	90
GREAT LAKES	5322	29	171	52	3	92	--	--	--	--	--	--	--	--	--	--	29	154	52	5	84	26	157	53	2	100	30	201	51	1	92
JUNG	2577	28	170	53	3	97	30	164	51	4	98	--	--	--	--	--	30	156	52	4	95	24	145	55	4	100	29	208	51	0	97
LG SEEDS	LG2483	26	169	51	1	89	29	167	50	2	93	--	--	--	--	--	29	148	51	3	81	24	*167	53	1	98	27	192	50	0	89
LG SEEDS	LG2499	28	*182	52	1	93	31	171	50	2	96	29	164	49	2	97	29	*161	51	0	82	24	159	53	2	100	30	*227	51	0	99
MIDWEST GENETIC	G7118	26	167	52	1	95	28	165	51	2	96	--	--	--	--	--	26	*162	53	3	86	25	147	53	1	100	27	194	50	0	99
MYCOGEN	2500	24	175	54	2	93	--	--	--	--	--	--	--	--	--	--	26	154	53	3	95	23	*170	55	3	87	25	201	52	1	97
NOVARTIS	N4640 Bt	25	*181	53	1	94	--	--	--	--	--	--	--	--	--	--	26	*172	53	2	89	22	*169	55	1	100	27	201	52	0	94
NOVARTIS	NX4446	25	176	54	1	88	--	--	--	--	--	--	--	--	--	--	27	*160	54	1	84	22	*162	56	2	95	27	207	52	0	84
PAYCO	607	24	172	53	2	97	26	168	51	3	98	--	--	--	--	--	24	*166	53	5	91	22	149	55	2	100	25	201	51	1	100
PIONEER	35N05	31	*185	54	3	95	--	--	--	--	--	--	--	--	--	--	36	149	54	6	87	25	**177	55	2	100	31	*228	53	0	97
PIONEER	3573	28	*181	52	1	94	30	171	50	2	97	30	161	49	3	97	29	*163	51	2	85	24	160	54	2	99	31	*222	50	0	98
PIONEER	36G32	27	*182	53	1	97	--	--	--	--	--	--	--	--	--	--	27	*174	53	2	93	24	*164	56	0	100	28	208	51	0	99
PIONEER	36H36	27	*186	53	2	94	--	--	--	--	--	--	--	--	--	--	27	*171	53	5	88	24	*172	55	1	99	28	215	52	0	96
PIONEER	37R71	24	176	53	1	91	--	--	--	--	--	--	--	--	--	--	24	*168	53	3	83	22	158	56	0	98	26	203	50	0	92
RENK	RK543	26	*180	55	1	92	--	--	--	--	--	--	--	--	--	--	26	*170	56	3	81	22	*169	58	1	100	29	203	52	0	96
RENK	RK611	25	*186	54	1	96	--	--	--	--	--	--	--	--	--	--	25	**181	54	1	94	23	161	56	2	100	28	217	51	0	95
RENK	RK681	26	*180	52	1	94	--	--	--	--	--	--	--	--	--	--	27	*169	51	1	87	23	*166	54	1	98	29	206	50	0	97
RUPP	XR1599	26	160	52	2	76	28	156	51	2	82	--	--	--	--	--	26	137	53	5	57	24	151	54	1	89	29	190	50	0	82
TERRA	E987	26	174	53	1	94	28	164	51	2	92	--	--	--	--	--	27	*165	52	1	83	23	144	55	2	100	28	213	52	0	99
TERRA	E989	24	158	53	1	89	--	--	--	--	--	--	--	--	--	--	25	142	53	1	71	22	142	54	1	100	24	190	51	0	95
TERRA	E1008 Bt	28	177	53	4	93	--	--	--	--	--	--	--	--	--	--	29	*159	52	2	87	22	151	54	7	100	32	*222	52	2	93
TERRA	TR1047	30	*188	51	2	97	32	174	50	3	95	--	--	--	--	--	33	*170	52	2	92	25	*162	52	2	99	31	*233	50	1	99
TRELAY	5004	26	171	53	1	93	28	169	52	2	96	--	--	--	--	--	29	156	52	2	84	23	156	55	1	99	26	202	52	1	96
AVERAGE		26	174	53	2	93	28	167	51	2	95	28	161	50	3	96	27	158	53	3	85	23	156	55	2	99	28	209	51	1	95
HIGHEST		31	194	55	4	97	32	174	53	4	98	30	165	52	5	99	36	181	56	6	95	26	177	58	7	100	33	240	53	2	100
LOWEST		24	158	50	1	76	25	161	49	1	82	25	154	48	2	92	23	132	49	0	57	21	135	52	0	87	25	190	49	0	82
LSD		2	16	1													3	24	1			1	15	1			2	19	1		
CV .05%		5	6	1													6	11	2			4	7	1			5	6	2		

** HIGHEST YIELDING HYBRID IN 1998

Table A – Weather Summary

Temperature, Precipitation, and Growing Degree Day Summary
1998 Growing Season

COUNTY		MAY OBS.	MAY NORM	MAY DEV.	JUNE OBS.	JUNE NORM	JUNE DEV.	JULY OBS.	JULY NORM	JULY DEV.	AUGUST OBS.	AUGUST NORM	AUGUST DEV.	SEPTEMBER OBS.	SEPTEMBER NORM	SEPTEMBER DEV.	SEASON OBS.	SEASON NORM	SEASON DEV.
ZONE 1																			
MONROE	TEMP	66.7	58.3	8.4	71.0	67.8	3.2	73.6	71.7	1.9	72.3	69.9	2.4	67.8	62.6	5.2	70.3	66.1	4.2
	PPT	0.78	3.04	-2.26	1.83	3.30	-1.47	3.44	3.73	-0.29	5.13	3.20	1.93	0.59	2.62	-2.03	11.77	15.89	-4.12
	GDD	509	353	156	622	542	80	719	658	61	697	616	81	545	432	113	3092	2601	491
BRANCH	TEMP	64.7	57.8	6.9	68.0	67.2	0.8	72.3	70.8	1.5	70.4	69.2	1.2	66.5	62.4	4.1	68.4	65.5	2.9
	PPT	1.77	3.03	-1.26	4.36	3.73	0.63	2.86	4.01	-1.15	8.36	3.40	4.96	2.00	3.03	-1.03	19.35	17.20	2.15
	GDD	473	342	131	557	535	22	681	646	35	681	602	79	512	427	85	29.04	2552	352
CASS	TEMP	64.1	59.2	4.9	67.1	68.4	-1.3	71.4	71.9	-0.5	70.9	70.1	0.8	65.0	63.3	1.7	67.7	66.6	1.1
	PPT	1.51	3.12	-1.61	1.86	3.95	-2.09	1.68	3.79	-2.11	5.94	3.16	2.78	1.43	3.01	-1.58	12.42	17.03	-4.61
	GDD	461	381	80	542	564	-22	646	670	-24	650	628	22	485	454	31	2784	2697	87
ZONE 2																			
KENT	TEMP	64.9	57.4	7.5	67.3	67.1	0.2	72.5	71.2	1.3	72.6	69.5	3.1	66.6	61.9	4.7	68.8	65.4	3.4
	PPT	1.85	2.86	-1.01	2.06	3.68	-1.62	2.57	2.95	-0.38	1.74	3.14	-1.40	2.63	3.24	-0.61	10.85	15.87	-5.02
	GDD	483	335	148	543	530	13	695	654	41	701	610	91	509	412	97	2931	2541	390
INGHAM	TEMP	63.7	57.5	6.2	66.3	67.0	-0.7	70.4	70.7	-0.3	69.9	69.0	0.9	65.1	62.0	3.1	67.1	65.2	1.8
	PPT	1.45	2.73	-1.28	2.68	3.54	-0.86	2.66	3.02	-0.36	3.85	3.12	0.73	1.49	2.50	-1.01	12.13	14.91	-2.78
	GDD	456	338	118	529	530	-1	630	640	-10	627	598	29	488	418	70	2730	2524	206
SAGINAW	TEMP	64.6	58.6	6.0	69.5	68.2	1.3	73.6	72.1	1.5	72.7	70.2	2.5	66.6	62.9	3.7	69.4	66.4	3.0
	PPT	1.16	2.49	-1.33	1.81	3.09	-1.28	1.30	2.83	-1.53	1.51	3.29	-1.78	1.85	2.76	-0.91	7.63	14.46	-6.83
	GDD	465	367	98	586	555	31	701	670	31	695	623	72	512	438	74	2959	2653	306
ZONE 3																			
HURON	TEMP	61.3	55.2	6.1	65.4	64.9	0.5	69.5	69.3	0.2	68.3	67.8	0.5	64.9	61.0	3.9	65.9	63.6	2.2
	PPT	1.41	2.58	-1.17	1.87	2.88	-1.01	1.75	2.93	-1.18	3.15	3.01	0.14	4.18	2.67	1.51	12.36	14.07	-1.71
	GDD	391	298	93	500	479	21	609	602	7	622	569	53	498	387	111	2620	2335	285
MONTCALM	TEMP	63.5	57.7	5.8	66.4	67.1	-0.7	70.9	71.0	-0.1	71.0	69.3	1.7	64.7	61.6	3.1	67.3	65.3	2.0
	PPT	2.20	2.88	-0.68	1.93	3.43	-1.50	0.40	2.50	-2.10	2.31	3.84	-1.53	3.12	3.12	0.00	9.96	15.77	-5.81
	GDD	452	351	101	529	536	-7	642	646	-4	658	603	55	480	414	66	2761	2550	211
MASON	TEMP	63.5	54.4	9.1	66.1	63.6	2.5	70.5	68.5	2.0	70.7	67.2	3.5	63.6	60.2	3.4	66.9	62.8	4.1
	PPT	0.94	2.48	-1.54	2.58	2.93	-0.35	1.50	2.18	-0.68	3.96	3.79	0.17	2.34	3.25	-0.91	11.32	14.63	-3.31
	GDD	468	273	195	519	450	69	636	587	49	649	552	97	446	365	81	2718	2227	491
ZONE 4																			
ALPENA	TEMP	58.5	52.0	6.5	62.2	61.7	0.5	67.8	66.6	1.2	67.9	64.9	3.0	60.7	57.2	3.5	63.4	60.5	2.9
	PPT	2.36	2.78	-0.42	2.88	3.12	-0.24	1.11	3.11	-2.00	2.47	3.23	-0.76	2.93	3.08	-0.15	11.75	15.32	-3.57
	GDD	346	251	95	421	413	8	551	534	17	572	496	76	374	317	57	2264	2011	253
GRAND TRAVERSE	TEMP	61.8	53.5	8.3	64.6	63.7	0.9	70.2	68.8	1.4	69.6	67.3	2.3	63.8	59.3	4.5	66.0	62.5	3.5
	PPT	2.05	2.48	-0.43	3.23	3.15	0.08	1.00	2.88	-1.88	4.39	2.93	1.46	3.76	3.60	0.16	14.43	15.04	-0.61
	GDD	392	273	119	470	454	16	629	587	42	630	552	78	432	348	84	2553	2214	339
DELTA	TEMP	57.2	53.6	3.6	61.1	62.7	-1.6	67.1	67.4	-0.3	67.5	65.5	2.0	60.1	57.0	3.1	62.6	61.2	1.4
	PPT	2.03	3.57	-1.54	3.55	3.72	-0.17	1.44	3.63	-2.19	2.35	3.86	-1.51	2.76	3.60	-0.84	12.13	18.38	-6.25
	GDD	338	285	53	395	438	-43	529	559	-30	555	513	42	358	319	39	2175	2114	61

TEMP = Temperature (°F)
PPT = Precipitation (inches)
GDD = Growing Degree Days calculated at base 50°, with 50°F and 85°F cutoffs
OBS = Totals observed in 1998
NORM = Normals calculated over 30 year period (1951-1980)
DEV = Deviation of observed from normal

Data provided by MSU-AGRICULTURAL WEATHER METEOROLOGY OFFICE
Jeff Andresen and Tom Cate
(517/355-0231)

Alpena, Grand Traverse, and Delta County Trials
One-, two-, three-year averages — 1998, 1997, 1996

		ALPENA															GRAND TRAVERSE					DELTA									
		1998					2 YEAR AVG (97 / 98)					3 YEAR AVG (96 - 98)					1998					1998					2 YEAR AVG (97 / 98)				
BRAND	HYBRID VARIETY	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD	% H2O	BU/A	TEST WT	% SL	% STD
BAYSIDE	Super 75	25	116	56	0	100	--	--	--	--	--	--	--	--	--	--	26	*74	52	0	100	24	*156	54	2	99	--	--	--	--	--
BROWN	BR1680	27	127	52	0	100	28	124	50	0	100	--	--	--	--	--	28	*77	51	0	86	26	*167	50	2	100	26	126	48	2	100
CARGILL	1877	24	120	58	1	99	26	121	55	1	99	25	124	55	4	99	25	68	55	1	99	23	*159	57	0	97	25	128	54	2	98
COUNTRYMARK COOP	3858	33	110	51	0	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Silage only									
COUNTRYMARK COOP	3969	37	109	53	2	100	--	--	--	--	--	--	--	--	--	--	33	69	49	1	100	Silage only									
DAIRYLAND	STEALTH-1496	31	130	52	0	100	33	122	49	1	94	--	--	--	--	--	27	66	50	0	97	Silage only									
DEKALB	DK355	27	105	54	0	100	--	--	--	--	--	--	--	--	--	--	27	60	51	1	100	24	*165	52	2	99	--	--	--	--	--
DEKALB	DK365	26	128	55	2	100	28	123	51	2	97	--	--	--	--	--	--	--	--	--	--	25	*157	52	7	100	27	135	48	6	100
DEKALB	DK385B	28	*135	56	1	100	29	128	52	1	96	--	--	--	--	--	--	--	--	--	--	28	*161	53	2	100	28	136	50	3	100
DEKALB	DK405	27	**150	53	2	99	--	--	--	--	--	--	--	--	--	--	31	*88	49	0	97	26	*168	49	3	97	--	--	--	--	--
DEKALB	DK417	27	122	54	1	100	--	--	--	--	--	--	--	--	--	--	27	*77	52	1	100	Silage only									
DEKALB	DK440	31	*147	52	0	99	--	--	--	--	--	--	--	--	--	--	32	*88	52	1	100	Silage only									
GREAT LAKES	3362	29	111	51	1	100	29	107	48	1	100	28	122	48	3	99	29	44	49	1	100	26	149	49	3	99	27	118	46	5	98
GREAT LAKES	3807	25	120	56	0	100	--	--	--	--	--	--	--	--	--	--	24	*83	53	0	100	24	*161	55	2	101	--	--	--	--	--
GREAT LAKES	4526	33	122	51	1	100	--	--	--	--	--	--	--	--	--	--	31	48	50	1	100	Silage only									
GREAT LAKES	4758	34	133	54	2	99	--	--	--	--	--	--	--	--	--	--	32	**97	51	1	94	Silage only									
JUNG	2232	29	111	53	0	100	29	107	50	3	100	27	114	50	5	100	25	*78	52	1	100	25	*164	52	5	99	25	134	49	8	99
JUNG	2285	29	108	53	0	100	--	--	--	--	--	--	--	--	--	--	28	*94	51	3	100	25	*156	53	4	101	--	--	--	--	--
LG SEEDS	LG2367	30	115	55	2	100	--	--	--	--	--	--	--	--	--	--	30	*72	52	1	100	27	*168	54	7	100	--	--	--	--	--
LG SEEDS	LG2408	31	109	51	1	100	34	106	47	1	99	--	--	--	--	--	33	33	48	1	100	29	147	48	4	99	35	118	45	4	100
MYCOGEN	2110	24	114	58	0	100	--	--	--	--	--	--	--	--	--	--	26	40	54	1	100	23	*160	58	2	99	--	--	--	--	--
MYCOGEN	2250	29	125	55	1	100	31	119	51	2	100	30	129	50	3	100	--	--	--	--	--	25	**169	54	4	99	27	134	50	9	100
PIONEER	38W36	30	128	53	0	100	--	--	--	--	--	--	--	--	--	--	30	65	51	1	99	Silage only									
PIONEER	38D66	27	130	52	2	100	--	--	--	--	--	--	--	--	--	--	29	*96	51	0	100	Silage only									
RENK	RK221	26	117	55	0	100	--	--	--	--	--	--	--	--	--	--	25	*74	53	2	100	25	148	54	5	99	--	--	--	--	--
RENK	RK272	26	117	52	0	100	28	112	49	1	97	--	--	--	--	--	24	*81	51	1	100	25	*155	51	2	99	26	127	47	3	99
RENK	RK277	26	*136	55	0	100	--	--	--	--	--	--	--	--	--	--	25	*96	53	1	100	24	*162	53	6	101	--	--	--	--	--
RENK	RK366	30	111	51	1	100	--	--	--	--	--	--	--	--	--	--	31	65	49	0	100	27	*165	49	4	99	--	--	--	--	--
RENK	RK376	30	102	50	0	100	31	105	48	2	99	--	--	--	--	--	32	57	47	3	100	27	*164	48	2	100	29	134	46	5	100
TERRA	E858	30	109	54	0	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	26	139	52	5	100	--	--	--	--	--
TERRA	TR906	31	112	51	1	100	30	111	48	2	98	28	117	48	5	95	30	65	50	1	99	25	*160	50	5	100	27	134	46	4	99
TRELAY	1003	26	120	54	1	100	28	117	51	2	98	--	--	--	--	--	24	71	51	1	99	24	*155	53	5	99	25	135	49	8	100
TRELAY	1007	26	127	54	2	100	--	--	--	--	--	--	--	--	--	--	26	*95	52	0	100	24	*166	52	3	100	--	--	--	--	--
TRELAY	2006	32	110	51	0	100	--	--	--	--	--	--	--	--	--	--	28	67	49	1	100	26	*161	50	5	86	--	--	--	--	--
AVERAGE		29	120	53	1	100	30	115	50	1	98	28	121	50	4	99	28	80	51	1	99	25	159	52	4	99	27	130	48	5	99
HIGHEST		37	150	58	2	100	34	128	55	3	100	30	129	55	5	100	33	97	55	3	100	29	169	58	7	100	35	136	54	9	100
LOWEST		24	102	50	0	99	26	105	47	0	94	25	114	48	3	95	24	33	47	0	86	23	139	48	0	86	25	118	45	2	98
LSD		2	15	1													3	25	2			1	16	1							
CV .05%		4	9	1													7	21	2			4	7	2							

** HIGHEST YIELDING HYBRID IN 1998

* NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

TABLE B AGRONOMIC TABLE - GRAIN TRIALS

COUNTY	PLANTING/ HARVEST DATES	SOIL TYPE	PREVIOUS CROP	PLANTING RATE/ AVG. STAND	FERTILIZER	SOIL TEST	FARM COOPERATOR	LOCATION
MONROE - **Zone 1**	May 19 Oct. 29	Selfridge Pewamo Complex	Soybeans	28,512 26,687	218-70-120	pH 6.7 P 81, K 324	Gary Kreps	Temperance
BRANCH	May 7 Oct. 6	Oshtemo Sandy Loam	Corn	30,096 29,614	191-0-0	pH 6.1 P 196, K 545	Remus Riggs	Coldwater
CASS	April 28 Oct. 9	Kalamazoo Loam	Corn	30,096 29,524	179-44-139 +Zinc Mg	pH 6.6 P 175, K 352	Dave & Mel Cripe	Cassopolis
KENT - **Zone 2**	May 8 Oct. 8	Thetfod & Spinks Loamy Sand	Alfalfa	28,512 27,543	115-42-42	pH 6.5 P 98, K 376	Gerald Kayser	Caledonia
INGHAM	April 30 Oct. 2	Capac Loam	Soybeans	28,512 27,001	213-46-0	pH 6.5 P 74, K 319	Joregensen Farms	Williamston
SAGINAW	April 29 Sept. 29	Mistequay Silty Clay	Dry Beans	30,096 29,539	170-0-0	pH 8.0 P 61, K 460	Saginaw Bean & Beet Research Farm	Saginaw
HURON - **Zone 3**	May 13 Oct. 27	Kilmanagh Loam	Soybeans	26,928 22,646	179-57-60	pH 6.5 P 75, K 248	Wil-Le Farms William, Ron & Ed McCrea	Bad Axe
MONTCALM	May 15 Oct. 24	McBride & Isabella Sandy Loam	Soybeans	28,512 28,099	165-38-38	pH 6.4 P 295, K 286	Thorlund Brother Farms	Greenville
MASON	May 6 Oct. 14	Ogemaw Sandy Loam	Corn	26,928 25,460	146-0-0	pH 6.7 P 196, K 376	Robert & August Oshe	Scottville
ALPENA - **Zone 4**	May 12 Oct. 15	Selkirk Loam	Dry Beans	26,928 26,901	132-48-48	pH 6.4 P 182, K 281	Allen Schiellard	Hubbard Lake
GRAND TRAVERSE	May 6 Oct. 14	Karlin Sandy Loam	Alfalfa/Sod	26,136 25,875	93-65-185	pH 6.5 P 76, K 42	Richard Dennett	Buckley
DELTA	May 5 Oct. 15	Onaway Fine Sandy Loam	Alfalfa	26,136 26,796	51-51-51 9,000 Gal. Liq. Manure	pH 7.3 P 185, K 400	Benny Herioux	Bark River

1998 GROWING SEASON...*Continued from page 8*

deficits were the most acute since the summer of 1988. Rainfall totals during July were less than one inch in many central and northern areas of the state, and were in some cases the lowest July totals since 1936. By early August, Palmer Drought Severity Index (PDSI) values, which are based on the principles of long-term balance between moisture supply and demand and indicate the severity of a wet or dry spell, fell below -3.0 in central and northern sections of the state for the first time since the summer of 1988 (A PSDI value of -2.0 is considered 'moderate drought' and a value of -3.0 or lower is considered 'severe drought'). On a regional scale, the drought conditions were most intense across central and northern sections of Michigan, northern Minnesota and Wisconsin, and southern Ontario. Ironically, wetter than normal conditions were common in areas as close as the southern two tiers of counties in lower Michigan, northern Indiana and central Illinois, where crop performance was reported as average or better than average.

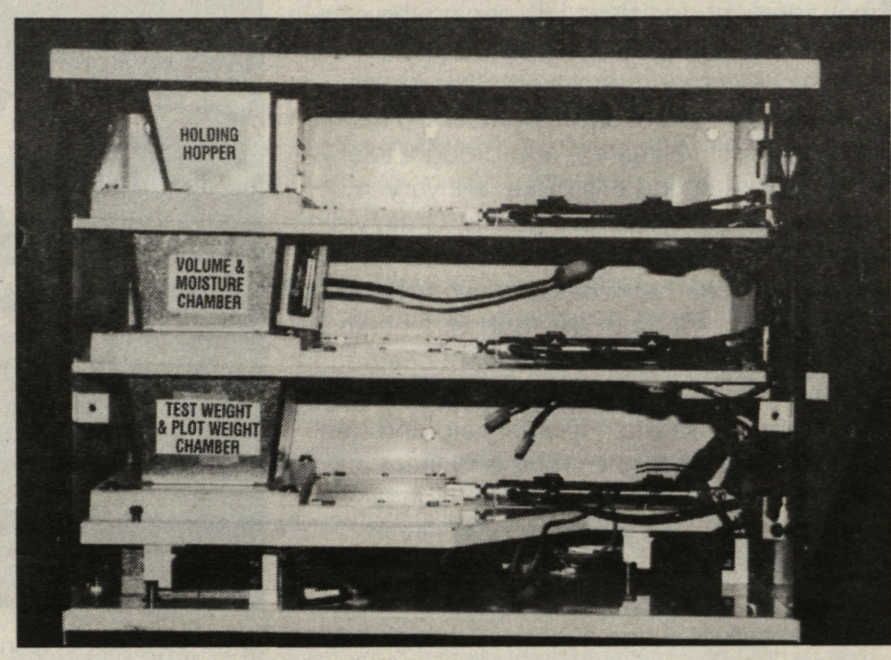
Similar to the spring, warmer and drier than normal weather dominated the fall season, accelerating fall drydown and leading to an early finish of harvesting operations for many growers. Given the earlier drought conditions and the mild, dry fall weather, drying costs in most production areas of the state were expected to remain well below normal. Finally, the persistent nature of the mild weather during 1998 (January-December) was extremely unusual from a climatological point of view. For most locations in the state, the abnormal warmth during the winter, spring, and fall/early winter seasons will put it in the record books as either the mildest or one of the mildest on record.

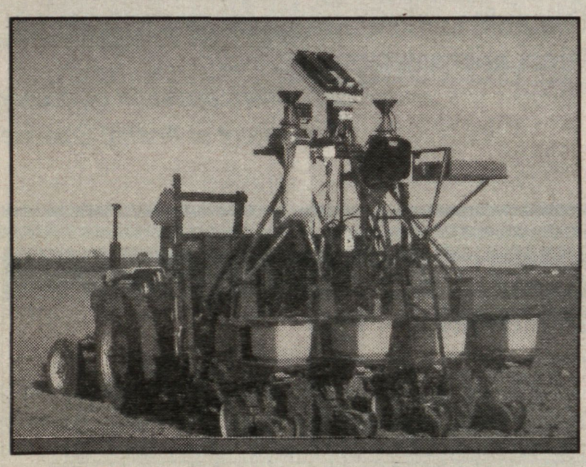
PLOTS REQUIRE SPECIALIZED EQUIPMENT

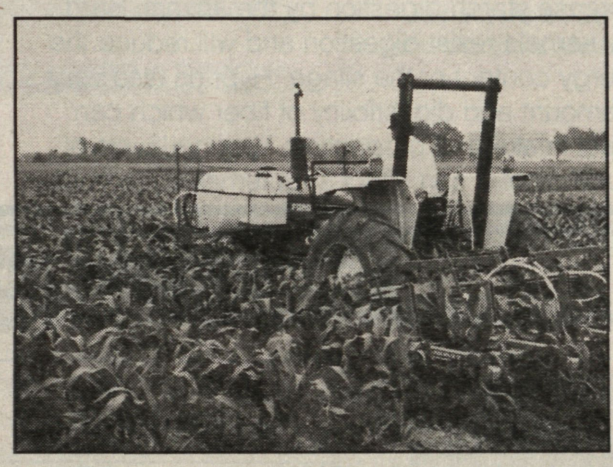
From planting through harvest, specialized equipment is needed to conduct variety trials around the state. Up to 140 hybrids are tested at a location. The plot planter allows for planting of individual seed packets of each hybrid and divides the seed equally into four rows. Plots are 22-feet long with a 3-foot alley between plots.

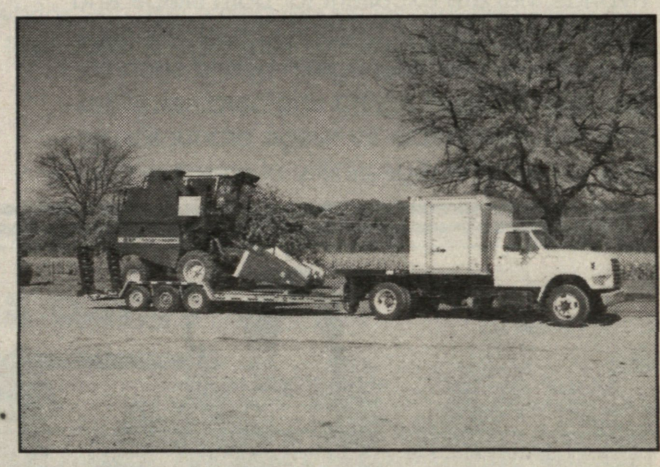
A mounted sprayer and an adjustable 4-row cultivator make it possible to care for the plots at the different locations. Weed control and side dressing are both possible with one machine.

Grain harvesting is done with a 2-row combine designed for plot harvest. All data are measured by the GrainGage™ system pictured here. The grain cycles through the system via pneumatically-controlled gates at the base of each chamber. The first chamber determines the volume for each cycle taken (size of the plot determines the number of cycles per plot), the second chamber determines moisture while the third chamber measures weight. At the end of each plot, all cycles are averaged for moisture and test weight, and plot weights are totaled. These data are then stored in the memory of the HarvestMaster Data System.™ This complete system allows for one person to handle the harvesting operations.







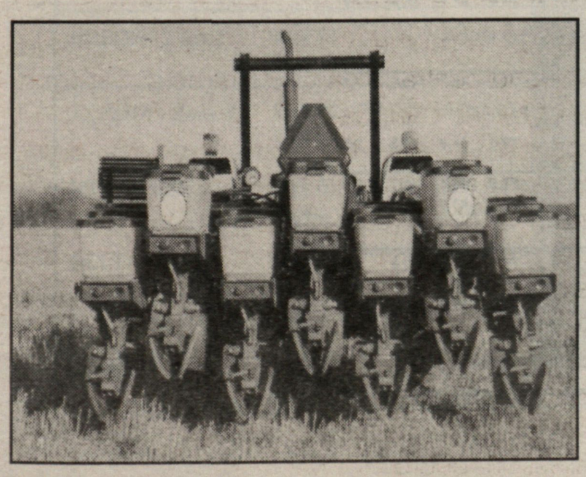


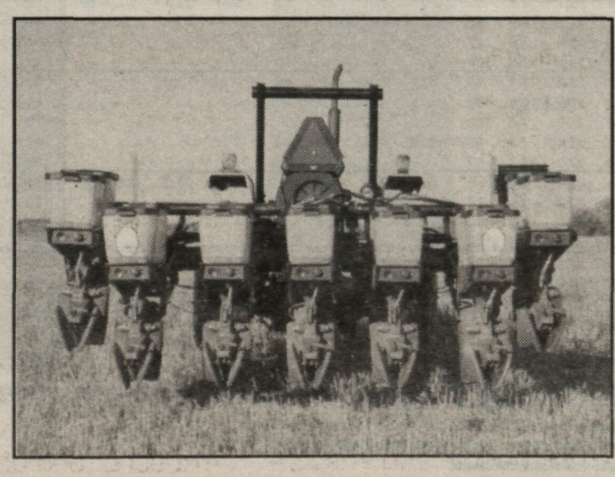
Narrow Row Corn Trials...*Continued from page 3*

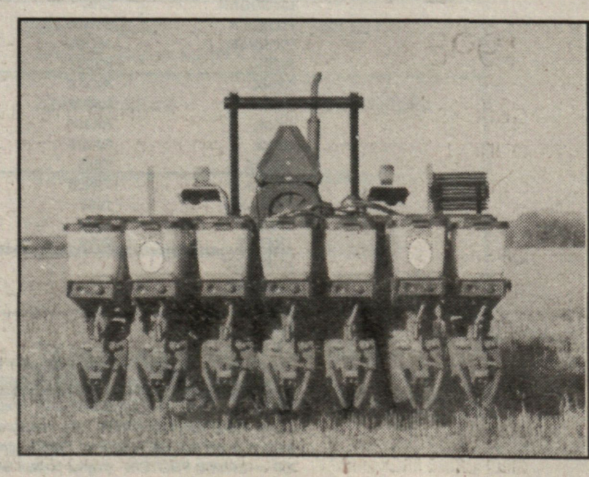
30" Row Configuration

22" Row Configuration

15" Row Configuration







A Nutritionist's Perspective

Hybrid selection is one of the most important management decisions influencing the economics of corn silage production. Hybrids should be selected from a group that is well adapted to the area in terms of maturity, disease and insect resistance and drought tolerance. Hybrids among this group will vary in grain yield, forage yield and quality. Grain yield has been the most widely used criterion for selection of silage hybrids. However, grain yield is not related to silage quality and is not highly related to forage yield, two important criteria for silage hybrids. Although there is a slight negative relationship between forage yield and quality, the relationship is not strong and there is variation in quality even among the highest yielding hybrids. This allows opportunity to select for high quality with little reduction in yield.

While excellent silage hybrids with high forage yield and high quality exist, dual purpose hybrids that are excellent for both silage and grain do not. This is because characteristics that make an excellent grain hybrid such as fast rate of kernel drying and hard kernel texture are undesirable for silage production as they reduce the digestibility of starch in the grain. Kernels in corn silage should have high moisture and be of soft kernel texture to increase starch digestion by the animal. Hard, dry kernels resist digestion and will reduce the energy content of the silage. Hybrids also vary in amount and digestibility of fiber which can affect intake and production. Varying levels of crude protein can affect supplementation costs.

SPECIFIC RECOMMENDATIONS

Any hybrid selected for silage should be among the top 50 percent in forage yield. The hybrid should have a slow to medium rate of kernel drying so the kernel will not be too dry when the whole plant is dry enough to ensile. This is particularly important for upright silos that require drier silage to reduce seepage. The kernel should have soft texture so that it is easily fractured during chopping and chewing. Additional recommendations vary by animal type and level of performance. Hybrids with high digestibility due to highly digestible NDF should be selected for high producing dairy cattle in early lactation. Hybrids with low NDF and high crude protein should be selected for growing animals consuming high corn silage diets to increase dry matter intake and reduce protein supplementation costs. As research becomes available, hybrid selection indexes will be able to more accurately rank hybrids for different animal types.

M.S. Allen, assistant professor
Department of Animal Science

Table 7 — Northern Michigan

Alger County Silage – 1998

HYBRID BRAND	VARIETY	SILAGE YIELD % DryM	Tons Gwt/A	Tons Dwt/A	% STD	IN-VITRO QUALITY ANALYSIS % DMD	% FD	% NDF	% CP
CARGILL	XB227	27.1	16.0	4.3	98	89.0	74.6	43.5	7.4
CARGILL	1527	35.0	12.9	4.5	100	85.3	64.4	41.3	7.9
CARGILL	1877	31.0	16.0	*5.0	100	85.8	64.0	39.3	7.5
CARGILL	FQ2411	31.0	16.3	*5.0	100	84.1	63.7	40.5	6.9
NOVARTIS	MAX40	32.5	13.9	4.5	98	86.9	66.0	38.6	7.3
NOVARTIS	N15-B4	31.3	16.2	**5.1	99	83.1	60.9	43.6	6.6
PIONEER	3893	31.0	13.6	4.2	100	83.9	62.9	43.3	7.1
PIONEER	3941	32.7	14.1	*4.6	98	86.3	65.2	39.5	7.6
PIONEER	39K72	37.7	10.1	3.8	95	84.5	62.5	41.4	8.1
WOLF RIVER VALLEY	9373	35.6	11.0	3.9	89	84.0	58.0	38.1	7.4
AVERAGE		32.5	14.0	4.5	98	85.3	64.2	40.9	7.4
HIGHEST		37.7	16.3	5.1	100	89.0	74.6	43.6	8.1
LOWEST		27.1	10.1	3.8	95	83.1	58.0	38.1	6.9
LSD		2.3	1.7	0.5		2.1	3.7	0.5	0.5
CV .05%		4.9	8.2	8.4		1.1	2.5	0.6	3.2

**HIGHEST YIELDING HYBRID FOR DRY WEIGHT PER ACRE
*DRY WEIGHT NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Table 4B — NORTHERN MICHIGAN — ZONE 4

Average of Delta County Silage Trials
One-, two-, three-year averages — 1998, 1997, 1996

HYBRID BRAND	VARIETY	SILAGE YIELD 1998 % DryM	Tons Gwt/A	Tons Dwt/A	% STD	2 YEAR AVG (97 / 98) % DryM	Tons Gwt/A	Tons Dwt/A	% STD	3 YEAR AVG (96 - 98) % DryM	Tons Gwt/A	Tons Dwt/A	% STD	IN-VITRO QUALITY ANALYSIS 1998 % DMD	% FD	% NDF	% CP	2 YEAR AVG (97 / 98) % DMD	% FD	% NDF	% CP
BAYSIDE	Super 75	32.4	24.2	*7.7	100	–	–	–	–	–	–	–	–	78.7	49.6	42.5	8.0	–	–	–	–
BROWN	BR1680	33.2	23.6	*7.8	100	32.2	19.8	6.4	100	–	–	–	–	82.6	53.7	37.5	8.1	79.5	50.2	40.8	8.3
CARGILL	1877	29.7	21.6	6.4	99	28.9	21.1	6.1	99	29.5	19.8	5.8	95	81.4	52.5	39.3	8.5	80.0	50.2	40.2	8.5
COUNTRYMARK COOP	3858	32.4	22.9	7.5	99	–	–	–	–	–	–	–	–	81.5	54.4	40.5	9.4	–	–	–	–
COUNTRYMARK COOP	3969	33.0	22.8	7.6	100	–	–	–	–	–	–	–	–	81.9	56.0	41.0	8.0	–	–	–	–
DAIRYLAND	STEALTH-1496	29.8	23.1	6.8	99	28.7	24.1	6.9	99	–	–	–	–	80.4	54.3	42.9	8.9	77.4	50.8	45.7	8.6
DEKALB	DK355	32.0	25.1	*7.9	100	–	–	–	–	–	–	–	–	82.6	60.1	43.5	7.9	–	–	–	–
DEKALB	DK365	31.0	25.1	*7.7	98	29.6	23.2	6.9	99	–	–	–	–	81.8	54.6	39.8	7.6	79.0	50.2	41.9	7.3
DEKALB	DK385B	31.2	25.0	*7.7	99	29.8	23.1	6.8	97	–	–	–	–	81.2	51.7	39.4	8.2	78.5	48.0	41.4	8.0
DEKALB	DK405	30.3	23.7	7.2	94	–	–	–	–	–	–	–	–	82.1	58.7	43.4	8.7	–	–	–	–
DEKALB	DK417	33.8	25.1	*8.3	94	–	–	–	–	–	–	–	–	86.6	67.7	41.3	7.9	–	–	–	–
DEKALB	DK440	32.3	23.7	*7.7	98	–	–	–	–	–	–	–	–	78.1	51.2	44.4	7.3	–	–	–	–
GREAT LAKES	3362	33.1	25.3	*8.3	100	31.5	22.5	7.1	100	32.0	20.6	6.5	94	83.4	57.8	39.2	8.8	79.2	52.1	43.1	8.5
GREAT LAKES	3807	32.3	24.1	*7.8	98	–	–	–	–	–	–	–	–	82.5	57.6	41.3	7.8	–	–	–	–
GREAT LAKES	4526	30.5	25.7	*7.8	100	–	–	–	–	–	–	–	–	81.9	52.5	37.4	7.9	–	–	–	–
GREAT LAKES	4758	31.5	23.3	7.3	98	–	–	–	–	–	–	–	–	80.5	51.8	39.8	7.3	–	–	–	–
JUNG	2232	33.3	21.4	7.0	100	32.5	20.6	6.6	100	32.6	19.1	6.1	97	82.9	57.5	40.1	7.7	79.0	51.9	43.3	7.6
JUNG	2285	28.0	28.6	*8.0	100	–	–	–	–	–	–	–	–	79.1	51.0	43.1	7.4	–	–	–	–
LG SEEDS	LG2367	30.3	24.2	7.2	100	–	–	–	–	–	–	–	–	84.2	59.5	38.6	8.9	–	–	–	–
LG SEEDS	LG2408	34.7	20.4	7.1	100	29.4	23.9	6.8	100	–	–	–	–	84.2	56.7	36.4	7.7	80.1	52.5	41.6	8.2
MYCOGEN	2110	33.2	25.7	*8.4	100	–	–	–	–	–	–	–	–	83.9	62.5	42.5	7.3	–	–	–	–
MYCOGEN	2250	30.5	26.1	*7.9	96	29.8	22.7	6.7	98	30.7	20.6	6.3	97	75.1	47.1	47.0	7.2	75.8	47.3	45.6	7.7
PIONEER	38W36	29.0	27.5	*7.9	95	–	–	–	–	–	–	–	–	81.1	54.7	41.0	8.3	–	–	–	–
PIONEER	38D66	33.0	23.8	*7.8	97	–	–	–	–	–	–	–	–	81.4	53.2	39.3	8.4	–	–	–	–
RENK	RK221	32.7	23.8	7.6	100	–	–	–	–	–	–	–	–	83.4	56.2	37.5	9.0	–	–	–	–
RENK	RK272	30.7	23.9	7.3	98	31.1	21.6	6.7	99	–	–	–	–	80.6	51.2	40.3	7.6	77.6	48.7	43.8	7.7
RENK	RK277	34.0	25.9	**8.8	100	–	–	–	–	–	–	–	–	81.6	56.1	41.5	7.7	–	–	–	–
RENK	RK366	28.8	26.3	7.5	100	–	–	–	–	–	–	–	–	78.3	51.1	45.0	8.6	–	–	–	–
RENK	RK376	32.8	23.4	7.6	99	30.2	21.5	6.6	99	–	–	–	–	82.8	58.0	40.6	8.4	79.6	51.9	41.8	8.3
TERRA	E858	32.3	27.0	*8.7	97	–	–	–	–	–	–	–	–	83.2	55.6	37.9	8.5	–	–	–	–
TERRA	TR906	30.1	25.0	7.5	96	30.0	23.2	7.0	98	30.4	20.9	6.3	93	82.4	52.9	37.6	8.1	78.6	49.6	41.7	8.1
TRELAY	1003	31.0	23.8	7.4	96	31.8	22.5	7.1	97	–	–	–	–	79.1	51.3	42.8	8.4	76.6	49.0	45.7	8.1
TRELAY	1007	33.6	24.6	*8.2	98	–	–	–	–	–	–	–	–	83.2	55.2	37.6	8.1	–	–	–	–
TRELAY	2006	31.3	23.7	7.4	100	–	–	–	–	–	–	–	–	81.1	52.2	39.9	8.3	–	–	–	–
AVERAGE		31.7	24.4	7.7	98	30.4	22.3	6.8	99	31.0	20.2	6.2	95	81.7	55.0	40.6	8.1	78.5	50.2	42.8	8.1
HIGHEST		34.7	28.6	8.8	100	32.5	24.1	7.1	100	32.6	20.6	6.5	97	86.6	67.7	47.0	9.4	80.1	52.5	45.7	8.5
LOWEST		28.0	20.4	6.4	94	28.7	19.8	6.1	97	29.5	19.1	5.8	93	75.1	47.1	36.4	7.2	75.2	47.3	40.2	7.3
LSD		3.5	4.0	1.1										2.5	6.0	0.7	0.3				
CV .05%		7.6	11.1	9.8										1.5	6.8	0.9	1.9				

** HIGHEST YIELDING HYBRID FOR DRY WEIGHT PER ACRE
* DRY WEIGHT NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

DMD = DRY MATTER DIGESTIBILITY (higher percentage means greater energy content)
FD = FIBER DIGESTIBILITY (the measure of the degree of fermentation of fiber, high FD is desirable)
NDF = NEUTRAL DETERGENT FIBER (the measure of fiber content, higher levels mean lower energy)
CP = CRUDE PROTEIN (higher protein levels require less supplementation)

RELIABLE SILAGE QUALITY ESTIMATES ARE NOW POSSIBLE

Seven locations containing 10 silage tests were harvested.

Table 8 contains a list of all hybrids planted in the 1998 silage trials. The 10 silage tests included 101 hybrids from 26 seed companies comprising 228 entries. Company names used in association with hybrid numbers refer to their brands. The numbers are the companies' designations.

Methods

Testing procedures (randomization, replication, planting rates, etc.) for silage evaluation are the same as used in the grain trials except for the use of 2-row plots. Silage tables are arranged by company order.

Chopped silage (fodder plus grain) samples are weighed. A representative sample is collected for use in determining moisture content. Percent dry matter for estimating silage yield is based on an air-dried sample. A second sample is collected and ensiled in a PVC mini silo to ferment for 30 days. It is then opened, air-dried and finely ground for further evaluation by means of in-vitro silage digestibility analysis* conducted by the Department of Animal Science.

Trials conducted in Ionia, Ingham, and Huron counties contain two maturity groups with yield data presented in Table 5. Additional silage trials were conducted in Alpena and Missaukee counties in 1998 (Table 6).

The Delta County silage trial (Table 4B) contains the same entries as the Zone 4 grain trials (Table 4A). Table 4B contains one-, two- and three-year yield data while the analyses for digestibility started in 1997 contain one- and two-year data. Alger County started a silage trial in 1998 and has one year data for yield and digestibility (Table 7).

The results from the 1998 silage digestibility trials are presented in the adjoining tables.

*All analyses were determined by wet-chemical methods.

Results of four analyses are presented. They are:

1. **DMD=dry-matter digestibility.** This is a measure of energy available from the corn forage. The higher the DMD, the greater the energy content. It is determined by a laboratory method which incubates a sample of the corn forage with microbes from the rumen of a cow. Thirty hours is used to represent the average retention time of feed in the rumen. Differences among hybrids in DMD are approximately equal to differences in total digestible nutrients of TDN. A high DMD is desirable.
2. **FD=fiber digestibility.** This is a measure of the degree of fermentation of fiber by ruminant animals. It is determined as the disappearance of neutral detergent fiber during an in-vitro rumen fermentation. High fiber digestibility has been found to increase intake of ruminants as it decreases the filling effect of the feed and provides energy to microbes in the rumen increasing microbial protein production. A high FD is desirable.
3. **NDF=neutral detergent fiber.** This is a measure of the fiber content of the corn forage. Fiber must be fermented by microbes in the gastrointestinal tract to be utilized by ruminants. It is less digestible than non-fiber constituents of the forage. Forages with high levels of NDF have lower energy. It is also a measure of the gut-filling properties of the forage and high NDF decreases forage intake. A low NDF content is desirable.
4. **CP=crude protein.** Forages are generally supplemented with high protein concentrates such as soybean meal to increase the protein content of ruminant diets. Corn hybrids with high protein require less supplementation and therefore lowered feed costs. A high protein content is desirable.

HARVESTING AND HANDLING SILAGE DATA

Silage plots are harvested with a single row, side-mounted forage chopper. Plot weights are measured by electronic scales mounted on the tractor and chopper. After weighed samples are dumped, subsamples are collected for use in determining percent dry matter and quality analysis.

Samples for dry matter are weighed, air dried till weight loss is zero, then weighed again to determine the percent dry matter. Multiple replications of the quality samples are then combined and dried. At this point, samples are finely ground for analysis.

IN-VITRO SILAGE ANALYSIS

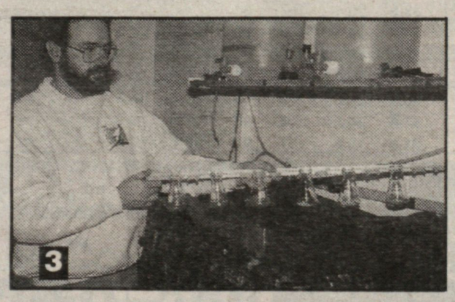
In-vitro analysis is an in-the-laboratory (literally "in glass") system to estimate the actual nutrient content of a silage sample. A few of the steps are illustrated by a series of pictures.

1 A sample of the rumen contents of a cow is removed, blended, and filtered to remove fiber.

2 Measured amounts of rumen fluid and media are added to weighed amounts of the ground silage sample (flasks 1 & 2).

3 This media and silage is incubated in a heated water bath at 40°C for 30 hours. In this step, the microbes from the rumen sample attack the ground silage sample in a process similar to the digestive processes of the ruminant animal. Following this digestion step, the undigested materials can be separated and measured.

4 Other evaluation procedures estimate the protein and fiber content of the silage. Here the samples are shown on a fiber reflux condenser. Samples are boiled for an hour in detergent solutions and filtered to determine fiber.



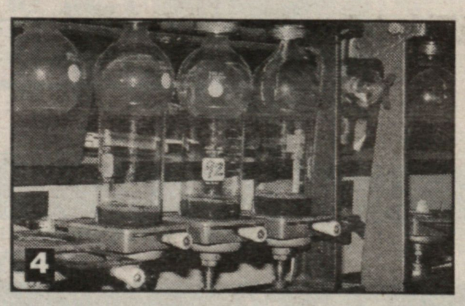


TABLE C AGRONOMIC TABLE - SILAGE TRIALS

COUNTY	PLANTING/ HARVEST DATES	SOIL TYPE	PREVIOUS CROP	PLANTING RATE/ AVG. STAND	FERTILIZER	SOIL TEST	FARM COOPERATOR	LOCATION
IONIA - **Zone 2**	May 7 Sept. 1, 8	Miami Clay Loam	Soybeans	30,096 29,675	151-15-51	pH 6.8 P 172, K 352	Clarksville Hort. Res. Stn. Michigan State University	Clarksville
INGHAM	May 7 Aug 27, Sept 3	Capac Loam	Soybeans	30,096 29,780	175-51-51	pH 5.9 P 52 , K 79	Crop & Soil Scs. Res. Fac. Michigan State University	East Lansing
HURON - **Zone 3**	May 13 Sept. 5, 21	Kilmanagh Loam	Soybeans	26,928 24,222	179-57-60	pH 6.5 P 75 , K 248	Wil-Le Farms William, Ron & Ed McCrea	Bad Axe
ALPENA - **Zone 4**	May 12 Sept 11	Selkirk Loam	Dry Beans	26,928 26,874	132-48-48	pH 6.4 P 182, K 281	Allen Schiellard	Hubbard Lake
MISSAUKEE	May 6 Sept 2	East Lake Rubicon Sands	Corn	28,512 26,887	175-50-50	pH 6.7 P 356, K 570	Ken Dezeeuw	McBain
DELTA	May 5 Sept. 10	Onaway Fine Sandy Loam	Alfalfa	26,136 25,718	51-51-51 9,000 Gal. Liq. Manure	pH 7.3 P 185, K 400	Benny Herioux	Bark River
ALGER	May 5 Sept. 10	Chatham Stoney Loam	Barley	25,340 24,860	65-19-19	N/A	UP Experiment Station Michigan State University	Chatham

Table 5E (A) SOUTH & NORTH CENTRAL MICHIGAN — ZONES 2 & 3

Average of Ionia, Ingham & Huron County EARLY Silage Trials
One-, two-, three-year averages — 1998, 1997, 1996

EARLY TRIAL (103 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		1998				2 YEAR AVG (97 / 98)				3 YEAR AVG (96 - 98)				IONIA				INGHAM				HURON			
BRAND	VARIETY	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD
AGRIPRO	AP9272	33.4	17.7	5.9	100	--	--	--	--	--	--	--	--	34.5	15.3	5.3	100	34.9	18.9	6.6	100	30.7	19.0	*5.9	99
ASGROW	RX490	32.4	19.4	*6.3	96	--	--	--	--	--	--	--	--	33.4	17.1	*5.7	94	34.0	21.0	7.1	100	29.9	20.2	*6.0	94
BALDRIDGE	BH510	27.6	18.7	5.1	99	--	--	--	--	--	--	--	--	27.7	16.8	4.7	100	30.0	19.9	5.9	100	25.1	19.3	4.8	98
BAYSIDE	Super 88	34.1	16.3	5.6	96	--	--	--	--	--	--	--	--	33.7	14.8	5.0	100	37.5	17.7	6.6	100	31.1	16.3	5.1	88
CALLAHAN	7526XS	28.6	23.0	*6.6	99	--	--	--	--	--	--	--	--	27.0	20.3	*5.5	100	31.9	24.9	*7.9	98	26.8	23.8	*6.4	98
CALLAHAN	7938X	32.5	17.2	5.6	98	--	--	--	--	--	--	--	--	32.3	14.4	4.7	99	34.6	20.6	7.0	99	30.6	16.7	5.1	95
CALLAHAN	7941X	34.3	17.8	*6.1	95	--	--	--	--	--	--	--	--	36.7	15.3	*5.6	98	35.5	21.0	*7.4	100	30.8	17.0	5.3	87
DAIRYLAND	STEALTH-1203	34.5	18.3	*6.3	99	35.0	19.3	6.6	96	35.5	18.3	6.4	97	36.0	15.2	*5.5	100	36.9	22.3	*8.2	100	30.5	17.3	5.3	98
DAIRYLAND	STEALTH-1297	33.8	19.1	*6.4	98	33.6	20.5	6.8	97	--	--	--	--	35.5	16.8	*6.0	100	36.8	20.7	*7.5	98	29.1	19.9	*5.8	96
DAIRYLAND	STEALTH-1496	34.4	18.2	*6.2	96	35.3	19.6	6.9	95	--	--	--	--	37.9	15.7	*5.9	96	36.0	22.1	*7.8	100	29.2	16.7	4.9	91
DAIRYLAND	STEALTH-1500	33.0	17.3	5.7	98	32.2	19.5	6.2	97	--	--	--	--	34.7	15.6	5.4	100	35.2	17.3	6.1	99	29.2	18.9	5.5	96
DAIRYLAND	DST10208	33.5	18.6	*6.2	95	--	--	--	--	--	--	--	--	35.3	15.7	*5.5	96	35.2	21.4	*7.4	100	29.9	18.8	5.6	88
DAIRYLAND	DST10212	33.7	18.6	*6.3	93	--	--	--	--	--	--	--	--	35.6	16.2	*5.8	99	36.5	22.0	*8.0	100	29.1	17.5	5.1	81
GARST	8707	32.8	19.9	*6.5	97	--	--	--	--	--	--	--	--	34.2	16.5	*5.6	100	34.8	23.8	**8.3	100	29.4	19.5	5.7	91
GOLDEN HARVEST	H2382	34.6	16.2	5.7	98	--	--	--	--	--	--	--	--	34.0	14.0	4.8	100	39.9	18.7	*7.5	100	30.0	15.8	4.8	95
GREAT LAKES	4848	33.9	17.3	5.9	92	33.8	19.6	6.6	93	--	--	--	--	35.2	15.7	*5.5	99	33.8	21.6	*7.3	98	32.7	14.5	4.8	78
LG SEEDS	LG2499	31.5	18.7	5.9	97	31.3	21.2	6.6	96	--	--	--	--	30.6	17.3	5.3	99	34.3	19.5	6.7	100	29.6	19.3	5.7	91
MIDWEST GENETIC	G7380	31.0	20.6	*6.4	95	--	--	--	--	--	--	--	--	31.3	18.3	*5.7	96	32.9	23.3	*7.7	100	28.8	20.3	*5.8	88
MYCOGEN	TMF100	32.0	21.4	**6.8	97	--	--	--	--	--	--	--	--	34.2	18.5	**6.3	100	32.5	23.0	*7.4	98	29.3	22.6	**6.6	93
PAYCO	468	35.0	16.1	5.7	97	--	--	--	--	--	--	--	--	35.1	12.7	4.5	98	39.8	19.0	*7.6	99	30.0	16.6	5.0	93
PIONEER	3573	30.6	19.0	5.8	98	30.7	22.1	6.8	96	31.2	20.8	6.5	96	32.1	17.3	*5.6	100	30.9	21.3	6.6	100	28.8	18.4	5.3	95
PIONEER	36H36	34.4	19.4	*6.7	95	--	--	--	--	--	--	--	--	35.5	16.1	*5.7	96	35.9	21.9	*7.8	97	31.8	20.2	*6.5	92
PIONEER	36K50	33.8	18.3	*6.2	97	--	--	--	--	--	--	--	--	36.5	16.1	*5.9	100	33.7	20.3	6.8	98	31.2	18.5	*5.8	93
PIONEER	37R71	35.2	16.8	5.9	90	--	--	--	--	--	--	--	--	38.0	15.6	*5.9	99	34.6	20.9	7.1	95	32.9	13.8	4.6	75
RENK	RK543	33.1	18.1	5.9	97	--	--	--	--	--	--	--	--	34.5	16.5	*5.7	98	34.2	18.8	6.3	99	30.6	19.0	*5.8	95
RENK	RK552	35.2	16.9	*6.0	96	--	--	--	--	--	--	--	--	36.1	13.8	5.0	100	36.8	20.3	*7.5	98	32.8	16.6	5.4	89
TRELAY	5004	32.3	18.6	*6.0	98	--	--	--	--	--	--	--	--	32.9	14.9	4.9	100	34.0	20.3	6.8	99	30.1	20.5	*6.2	94
AVERAGE		33.0	18.4	6.1	97	33.1	20.3	6.6	96	33.4	19.3	6.5	97	34.1	16.0	5.4	99	34.9	20.8	7.2	99	30.0	18.4	5.5	91
HIGHEST		35.2	23.0	6.8	100	35.0	22.1	6.9	97	35.5	20.8	6.5	97	38.0	20.3	6.3	100	39.9	24.9	8.3	100	32.9	23.8	6.6	99
LOWEST		27.6	16.1	5.1	90	30.7	19.3	6.2	93	31.2	18.3	6.4	96	27.0	12.7	4.5	94	30.0	17.3	5.9	95	25.1	13.8	4.6	75
LSD		2.4	2.1	.8										2.6	2.1	.8		2.7	2.9	1.0		2.4	2.1	.8	
CV .05%		4.5	6.9	8.0										5.3	9.1	10.6		5.6	9.8	10.4		5.7	8.0	10.6	

** HIGHEST YIELDING HYBRID FOR DRY WEIGHT PER ACRE

* DRY WEIGHT NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Table 5L (A) SOUTH & NORTH CENTRAL MICHIGAN — ZONES 2 & 3

Average of Ionia, Ingham & Huron County LATE Silage Trials
One-, two-, three-year averages — 1998, 1997, 1996

LATE TRIAL (104 DAY RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		1998				2 YEAR AVG (97 / 98)				3 YEAR AVG (96 - 98)				IONIA				INGHAM				HURON			
BRAND	VARIETY	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD
AGRIPRO	AP521	35.0	20.1	*7.0	95	--	--	--	--	--	--	--	--	35.2	19.1	6.7	99	35.1	22.8	*8.0	100	34.6	18.4	*6.4	86
AGRIPRO	AP9560	31.5	19.6	6.1	92	34.2	21.7	7.4	93	--	--	--	--	33.4	19.2	6.4	99	32.3	23.3	7.5	98	28.7	16.4	4.5	78
BALDRIDGE	BH612	28.6	19.9	5.7	96	--	--	--	--	--	--	--	--	27.5	20.2	5.6	100	31.3	20.7	6.5	100	27.1	18.7	5.0	87
CORN BELT	C567	35.4	19.7	*7.0	97	38.2	20.6	7.9	96	--	--	--	--	37.9	17.9	6.8	99	34.5	23.4	*8.1	100	33.8	17.7	6.0	91
DAIRYLAND	STEALTH-1406	36.6	19.1	*7.0	93	37.8	20.7	7.8	92	--	--	--	--	40.4	16.8	6.8	91	36.8	23.3	*8.6	97	32.5	17.1	5.5	91
DAIRYLAND	STEALTH-1407	35.0	18.6	6.5	95	38.4	19.7	7.5	95	36.5	19.3	7.0	95	37.4	16.5	6.2	100	35.6	22.8	*8.1	100	32.0	16.5	5.3	86
DAIRYLAND	STEALTH-1508	34.5	20.9	*7.2	98	36.0	21.3	7.6	95	--	--	--	--	36.0	19.5	*7.0	100	34.4	23.9	*8.3	99	33.2	19.4	*6.3	95
GARST	8524SB	33.3	19.3	6.4	95	--	--	--	--	--	--	--	--	34.4	19.1	6.6	100	33.2	21.8	7.2	100	32.2	16.9	5.3	85
GOLDEN HARVEST	Ex674	34.6	18.7	6.5	94	--	--	--	--	--	--	--	--	36.9	18.1	6.7	99	34.3	21.8	7.4	97	32.5	16.3	5.3	87
GREAT LAKES	5456	36.3	20.1	*7.3	95	--	--	--	--	--	--	--	--	38.3	18.7	*7.2	96	38.6	22.6	*8.6	98	32.0	19.0	*6.1	90
GREAT LAKES	5675	37.4	18.8	*7.0	98	--	--	--	--	--	--	--	--	40.6	17.5	*7.1	97	36.9	20.6	7.6	100	34.8	18.2	*6.2	98
GREAT LAKES	5816	33.4	21.3	*7.1	93	34.8	22.6	7.8	91	34.5	21.6	7.4	93	35.9	20.1	*7.2	96	32.8	24.8	*8.1	99	31.6	19.0	*6.1	83
LG SEEDS	LG2583	33.2	21.4	*7.1	97	34.7	22.6	7.8	95	--	--	--	--	34.3	21.0	*7.2	100	33.6	23.5	7.9	99	31.6	19.6	*6.3	92
MYCOGEN	TMF108	35.0	19.9	*7.0	97	--	--	--	--	--	--	--	--	37.7	19.9	*7.5	100	36.8	22.1	*8.1	100	30.4	17.6	5.3	92
MYCOGEN	TMF114	30.4	24.2	*7.4	95	--	--	--	--	--	--	--	--	32.7	24.0	**7.9	100	30.4	27.2	*8.3	100	28.1	21.3	6.0	84
PAYCO	746	32.8	22.0	*7.3	97	--	--	--	--	--	--	--	--	33.2	20.4	6.8	100	34.7	24.7	*8.6	100	30.6	20.8	*6.4	90
PIONEER	33V08	31.9	21.7	*6.9	95	33.1	23.9	7.9	93	--	--	--	--	33.8	22.7	*7.7	100	32.2	24.1	7.7	99	29.6	18.4	5.4	85
PIONEER	33Y18	33.0	23.0	**7.6	98	--	--	--	--	--	--	--	--	34.0	21.6	*7.4	100	33.1	25.5	*8.4	100	31.8	21.8	**7.0	94
RENK	RK775	37.8	19.7	*7.4	91	38.6	20.7	7.9	91	--	--	--	--	42.8	17.5	*7.5	97	36.9	24.7	**9.1	98	33.6	16.9	5.7	78
RENK	RK778	33.5	20.4	6.7	94	--	--	--	--	--	--	--	--	34.7	19.2	6.7	96	34.3	23.5	*8.0	96	31.5	18.6	5.5	89
RENK	RK864	34.2	20.4	*7.0	96	35.3	22.1	7.8	95	34.5	21.5	7.4	95	35.1	18.8	6.6	98	34.4	23.2	*8.0	97	33.2	19.2	*6.3	93
TERRA	TR1066	35.2	19.7	*6.9	96	--	--	--	--	--	--	--	--	36.3	18.5	6.7	98	34.5	21.0	7.3	100	34.8	19.6	*6.8	90
TRELAY	9700	31.7	22.8	*7.2	98	--	--	--	--	--	--	--	--	34.4	21.5	*7.4	100	30.0	25.1	7.6	100	30.6	21.7	*6.6	95
AVERAGE		33.9	20.5	6.9	95	36.1	21.6	7.7	94	35.2	20.8	7.3	94	35.8	19.5	6.9	98	34.2	23.3	8.0	99	31.1	18.6	5.9	
HIGHEST		37.8	24.2	7.6	98	38.6	23.9	7.9	96	36.5	21.6	7.4	95	42.8	24.0	7.9	100	38.6	27.2	9.1	100	34.8	21.8	7.0	
LOWEST		28.6	18.6	5.7	91	33.1	19.7	7.4	91	34.5	19.3	7.0	93	27.5	16.5	5.6	91	30.0	20.6	6.5	96	27.1	16.3	4.5	
LSD		2.4	1.8	.7										3.4	1.7	.9		2.6	3.4	1.1		3.1	1.9	.9	
CV .05%		4.3	5.2	6.4										6.7	6.1	9.3		5.4	10.4	9.8		6.8	7.2	7.2	

** HIGHEST YIELDING HYBRID FOR DRY WEIGHT PER ACRE

* DRY WEIGHT NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Table 6A NORTHERN MICHIGAN — ZONE 4

Average of Alpena & Missaukee County Silage Trials
One-, two-, three-year averages — 1998, 1997, 1996

HYBRID		1998				2 YEAR AVG (97 / 98)				3 YEAR AVG (96 - 98)				ALPENA				MISSAUKEE			
BRAND	VARIETY	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD	% DryM	Tons Gwt/A	Tons Dwt/A	% STD
BAYSIDE	Super 88	34.4	19.7	*6.8	100	--	--	--	--	--	--	--	--	33.5	17.2	*5.8	100	35.3	22.2	*7.8	99
DAIRYLAND	STEALTH-1195	33.5	18.3	6.2	99	33.0	20.2	6.6	99	34.1	19.7	6.7	96	31.9	16.2	5.2	100	35.0	20.4	7.1	98
DAIRYLAND	STEALTH-1289	33.0	19.6	6.4	99	32.6	21.1	6.8	99	34.6	20.0	6.8	99	33.5	17.2	*5.8	100	32.4	22.0	7.0	97
GEERTSON	GS998	30.2	22.0	*6.6	99	--	--	--	--	--	--	--	--	30.5	18.7	*5.7	99	29.8	25.3	7.4	98
GREAT LAKES	3362	34.6	18.3	6.4	97	33.9	18.9	6.3	98	35.4	18.3	6.4	96	32.9	16.0	*5.3	100	36.3	20.6	7.5	94
GREAT LAKES	4563	30.1	21.3	6.4	98	--	--	--	--	--	--	--	--	30.8	18.5	*5.7	99	29.3	24.1	7.0	97
GREAT LAKES	4758	33.5	20.7	*6.9	99	--	--	--	--	--	--	--	--	31.1	18.9	**5.9	100	35.8	22.4	*7.9	97
LG SEEDS	LG2367	35.7	20.2	**7.2	100	--	--	--	--	--	--	--	--	34.6	17.1	**5.9	100	36.7	23.3	**8.5	99
LG SEEDS	LG2448	31.2	20.7	*6.5	98	30.1	22.0	6.5	94	31.8	21.7	6.8	94	29.2	17.2	5.0	100	33.1	24.2	*7.9	95
MYCOGEN	TMF94	31.6	21.1	*6.6	98	--	--	--	--	--	--	--	--	29.7	19.6	*5.8	100	33.5	22.5	7.4	95
MYCOGEN	TMF2202	34.1	19.9	*6.9	100	--	--	--	--	--	--	--	--	29.3	19.0	*5.6	100	38.8	20.8	*8.1	99
PIONEER	37M81	33.4	19.9	*6.6	100	32.2	22.1	7.1	100	--	--	--	--	33.5	17.3	*5.8	100	33.3	22.4	7.4	100
PIONEER	38W36	34.3	19.7	*6.8	99	--	--	--	--	--	--	--	--	32.3	17.3	*5.6	100	36.3	22.1	*8.0	97
PIONEER	38D66	33.7	20.3	*6.8	100	--	--	--	--	--	--	--	--	34.3	17.0	*5.8	100	33.1	23.6	*7.8	100
RENK	RK366	34.0	19.4	*6.6	99	--	--	--	--	--	--	--	--	33.1	16.5	*5.5	100	34.8	22.3	*7.7	98
RENK	RK376	34.0	19.7	*6.7	99	32.8	20.3	6.6	99	--	--	--	--	32.0	16.8	*5.4	100	35.9	22.5	*8.0	98
RENK	RK552	34.2	19.6	*6.7	99	--	--	--	--	--	--	--	--	32.2	17.1	*5.5	98	36.1	22.0	*7.9	99
TERRA	E968	33.0	19.8	*6.5	100	--	--	--	--	--	--	--	--	30.3	17.7	*5.4	100	35.6	21.8	*7.6	100
AVERAGE		33.2	20.0	6.6	99	32.4	20.8	6.7	98	34.0	19.9	6.7	96	31.9	17.5	5.6	100	34.4	22.5	7.7	98
HIGHEST		31.2	22.0	7.2	100	33.9	22.1	7.1	100	35.4	21.7	6.8	99	33.5	19.0	5.9	100	38.8	25.3	8.5	100
LOWEST		30.1	18.3	6.2	97	30.1	18.9	6.3	94	31.8	18.3	6.4	94	29.2	16.0	5.0	98	29.3	20.4	7.0	94
LSD		2.4	2.0	.7										1.9	1.6	.6		3.7	3.9	.9	
CV .05%		6.0	4.7	5.0										4.3	6.6	7.4		7.5	12.0	8.5	

** HIGHEST YIELDING HYBRID FOR DRY WEIGHT PER ACRE

* DRY WEIGHT NOT SIGNIFICANTLY DIFFERENT FROM TOP YIELDING HYBRID

Table 5E (B) SOUTH & NORTH CENTRAL MICHIGAN ZONES 2 & 3

Average of Ionia, Ingham & Huron County EARLY In-vitro Analyses
One-, two-, three-year averages — 1998, 1997, 1996

EARLY TRIAL (103 DAY RELATIVE MATURITY OR EARLIER (BASED ON COMPANY RATING)

HYBRID		1998				2 YEAR AVG (97 / 98)				3 YEAR AVG (96 - 98)				IONIA				INGHAM				HURON			
BRAND	VARIETY	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP
AGRIPRO	AP9272	81.9	54.6	39.7	7.9	–	–	–	–	–	–	–	–	83.7	56.4	42.5	6.9	81.6	53.3	39.1	8.0				
ASGROW	RX490	83.2	56.6	38.4	7.7	–	–	–	–	–	–	–	–	85.8	61.1	36.5	7.9	82.5	54.6	38.4	7.3	81.2	54.2	40.0	7.9
BALDRIDGE	BH510	83.2	58.4	40.4	8.0	–	–	–	–	–	–	–	–	82.5	62.1	46.1	9.8	80.5	53.9	42.3	6.8	86.5	59.1	32.9	7.5
BAYSIDE	Super 88	82.0	54.6	39.3	8.5	–	–	–	–	–	–	–	–	85.8	57.3	32.4	9.4	78.9	49.6	41.9	7.4	81.2	56.8	43.5	8.6
CALLAHAN	7526XS	81.6	55.1	41.1	7.1	–	–	–	–	–	–	–	–	82.2	55.6	40.1	7.5	81.2	54.9	41.8	6.1	81.3	54.7	41.3	7.6
CALLAHAN	7938X	82.2	55.7	40.2	8.1	–	–	–	–	–	–	–	–	84.5	57.0	38.2	8.1	79.5	52.5	43.2	8.1	82.6	57.5	41.1	8.2
CALLAHAN	7941X	82.6	54.1	37.5	7.6	–	–	–	–	–	–	–	–	86.0	54.3	30.6	7.8	79.4	50.6	40.9	7.2	82.5	57.5	41.1	7.7
DAIRYLAND	STEALTH-1203	83.7	57.3	38.0	7.6	81.1	51.4	38.9	7.7	79.9	50.0	40.2	7.3	86.6	61.5	34.9	8.5	81.0	51.1	38.8	7.0	83.4	59.2	40.2	7.3
DAIRYLAND	STEALTH-1297	83.8	58.0	38.5	7.6	81.5	51.9	38.9	7.5	–	–	–	–	84.1	57.7	37.5	8.0	84.3	57.1	36.7	7.1	83.1	59.1	41.2	7.6
DAIRYLAND	STEALTH-1496	82.8	54.0	37.4	8.0	79.0	47.5	39.9	7.6	–	–	–	–	85.7	56.3	32.6	7.5	80.0	48.4	38.7	7.2	82.6	57.4	40.8	9.2
DAIRYLAND	STEALTH-1500	82.6	56.4	39.7	7.6	79.5	49.1	39.7	7.6	–	–	–	–	85.8	59.0	34.5	7.8	79.0	51.1	42.8	5.4	82.9	59.0	41.7	9.5
DAIRYLAND	DST10208	82.2	55.9	40.3	8.0	–	–	–	–	–	–	–	–	84.9	57.7	35.8	8.4	78.6	50.2	43.0	7.3	83.0	59.8	42.1	8.3
DAIRYLAND	DST10212	84.0	61.1	40.8	8.4	–	–	–	–	–	–	–	–	87.3	64.9	35.6	8.2	82.6	56.8	40.4	6.9	82.2	61.6	46.4	10.2
GARST	8707	80.3	54.6	43.2	7.1	–	–	–	–	–	–	–	–	81.9	53.7	39.1	6.8	77.0	50.3	46.3	6.7	82.1	59.7	44.3	7.9
GOLDEN HARVEST	H2382	83.8	58.2	38.6	8.1	–	–	–	–	–	–	–	–	85.6	58.8	35.1	9.6	81.5	55.4	41.1	6.4	84.2	60.3	39.7	8.2
GREAT LAKES	4848	82.9	57.5	40.2	7.8	79.5	49.6	40.7	7.4	–	–	–	–	84.8	58.6	36.6	7.7	80.0	53.5	43.0	7.7	83.8	60.4	41.0	7.9
LG SEEDS	LG2499	83.1	58.6	39.0	7.9	80.3	51.7	40.0	7.7	–	–	–	–	83.0	56.7	38.5	8.0	81.8	55.7	41.2	6.7	84.4	63.3	37.3	9.0
MIDWEST GENETIC	G7380	82.7	58.1	41.2	7.0	–	–	–	–	–	–	–	–	84.6	59.9	38.2	8.0	80.8	54.8	42.6	6.1	82.7	59.7	42.9	7.0
MYCOGEN	TMF100	83.7	59.1	39.5	7.2	–	–	–	–	–	–	–	–	85.8	62.0	37.3	7.0	80.1	53.6	42.8	6.6	85.3	61.8	38.4	7.9
PAYCO	468	84.9	59.1	36.9	7.8	–	–	–	–	–	–	–	–	86.6	62.1	34.8	8.5	83.4	55.0	37.0	7.1	84.5	60.1	38.8	7.7
PIONEER	3573	83.6	57.5	38.6	7.9	80.8	51.2	39.2	7.5	79.1	48.5	40.3	7.3	85.4	61.1	37.4	9.2	81.6	51.9	38.3	7.1	83.8	59.5	40.1	7.5
PIONEER	36H36	83.1	58.4	40.2	7.6	–	–	–	–	–	–	–	–	86.8	64.8	37.5	8.8	80.5	52.0	40.6	6.4	82.1	58.3	42.6	7.6
PIONEER	36K50	83.3	57.6	39.0	7.8	–	–	–	–	–	–	–	–	87.0	62.6	34.7	8.8	79.3	51.2	42.5	7.0	83.7	59.1	39.7	7.5
PIONEER	37R71	83.8	57.1	37.2	8.4	–	–	–	–	–	–	–	–	88.3	62.9	31.5	9.0	79.9	51.1	41.1	7.4	83.1	57.2	39.1	8.8
RENK	RK543	84.1	56.5	36.5	7.5	–	–	–	–	–	–	–	–	85.8	57.5	33.5	8.2	83.5	56.7	38.0	6.8	82.9	55.2	38.0	7.4
RENK	RK552	82.8	57.4	40.2	7.7	–	–	–	–	–	–	–	–	86.5	60.8	34.5	7.5	81.9	53.8	39.1	6.8	80.0	57.5	46.9	8.8
TRELAY	5004	82.9	56.7	39.1	8.0	–	–	–	–	–	–	–	–	87.6	64.0	34.4	8.7	79.7	51.7	42.2	8.0	81.4	54.5	40.8	7.4
AVERAGE		83.0	57.0	39.3	7.8	80.2	50.3	39.6	7.6	79.5	49.3	40.3	7.3	85.4	59.5	36.1	8.3	80.7	53.0	41.0	6.9	82.9	58.4	40.8	8.1
HIGHEST		84.9	61.1	43.2	8.5	81.5	51.9	40.7	7.7	79.9	50.0	40.3	7.3	87.6	64.9	46.1	9.8	84.3	57.1	46.3	8.1	86.5	63.3	46.9	10.2
LOWEST		80.3	54.0	36.5	7.0	79.0	47.5	39.8	7.4	79.1	48.5	40.2	7.3	81.9	53.7	30.6	6.8	77.0	48.4	36.7	5.4	80.0	53.3	32.9	7.0
LSD		2.5	4.1	4.5	1.2									1.3	3.9	0.7	0.5	1.1	2.5	0.6	0.3	1.2	3.6	0.7	0.4
CV .05%		1.9	4.4	7.0	9.2									0.8	3.1	0.9	2.7	0.7	2.3	0.7	2.4	0.7	3.0	0.8	2.2

Table 5L (B) SOUTH & NORTH CENTRAL MICHIGAN ZONES 2 & 3

Average of Ionia, Ingham & Huron County LATE In-vitro Analyses
One-, two-, three-year averages — 1998, 1997, 1996

LATE TRIAL (104 DAY RELATIVE MATURITY OR LATER (BASED ON COMPANY RATING)

HYBRID		1998				2 YEAR AVG (97 / 98)				3 YEAR AVG (96 - 98)				IONIA				INGHAM				HURON			
BRAND	VARIETY	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP
AGRIPRO	AP521	83.0	57.5	39.7	6.9	–	–	–	–	–	–	–	–	85.8	60.5	35.9	7.6	79.5	52.3	43.0	6.7	83.8	59.7	40.3	6.4
AGRIPRO	AP9560	84.8	60.9	38.5	7.7	81.5	53.4	40.0	7.4	–	–	–	–	87.1	62.6	34.5	8.2	80.5	53.9	42.4	6.6	86.9	66.1	38.5	8.2
BALDRIDGE	BH612	81.0	58.2	45.5	8.3	–	–	–	–	–	–	–	–	82.2	60.6	45.4	9.4	79.4	55.1	45.9	7.6	81.4	58.8	45.2	7.8
CORN BELT	C567	85.9	61.1	36.3	7.0	81.1	52.3	39.3	7.1	–	–	–	–	87.7	61.5	31.9	7.8	82.3	55.1	39.5	6.1	87.6	66.8	37.5	7.0
DAIRYLAND	STEALTH-1406	84.5	59.3	38.1	7.1	80.4	52.3	40.9	7.2	–	–	–	–	86.7	63.0	36.0	7.6	82.6	53.3	37.2	6.4	84.2	61.5	41.2	7.3
DAIRYLAND	STEALTH-1407	84.4	59.0	37.2	6.6	81.3	52.1	39.6	7.0	78.3	47.1	40.7	6.9	85.4	59.7	36.1	6.6	81.4	52.2	38.8	5.9	86.3	65.0	36.8	7.3
DAIRYLAND	STEALTH-1508	84.5	59.9	39.2	6.6	80.7	53.3	41.3	7.2	–	–	–	–	87.1	65.3	36.3	7.4	83.5	50.5	34.1	6.0	83.0	63.8	41.7	6.4
GARST	8524SB	83.8	57.8	38.2	7.4	–	–	–	–	–	–	–	–	85.5	60.0	36.2	8.0	80.0	52.8	42.3	6.6	85.8	60.7	36.0	7.6
GOLDEN HARVEST	Ex674	84.3	59.4	38.5	7.2	–	–	–	–	–	–	–	–	83.7	59.2	39.1	7.6	82.4	53.3	37.7	6.7	86.7	65.7	38.8	7.3
GREAT LAKES	5456	83.4	54.8	36.6	7.0	–	–	–	–	–	–	–	–	84.7	56.2	34.9	7.4	80.8	50.8	38.9	6.2	84.6	57.3	36.1	7.5
GREAT LAKES	5675	84.8	59.4	37.3	6.5	–	–	–	–	–	–	–	–	85.7	59.0	34.4	7.2	82.1	54.7	39.5	5.9	86.6	64.6	37.9	6.4
GREAT LAKES	5816	85.6	62.6	38.4	7.5	81.5	53.6	39.6	7.4	79.5	50.4	41.0	7.1	87.1	64.3	36.1	7.2	82.4	58.4	42.4	6.2	87.2	65.2	36.8	9.0
LG SEEDS	LG2583	85.7	62.5	37.7	6.9	81.7	54.8	40.1	7.2	–	–	–	–	86.6	65.1	37.3	7.3	83.0	59.0	41.4	6.0	87.5	63.5	34.4	7.5
MYCOGEN	TMF108	83.0	59.1	41.5	6.2	–	–	–	–	–	–	–	–	82.2	59.2	43.7	6.6	81.1	55.0	42.1	5.5	85.7	63.2	38.7	6.5
MYCOGEN	TMF114	80.7	56.7	44.7	5.9	–	–	–	–	–	–	–	–	80.2	58.6	47.7	6.3	81.4	53.0	39.6	6.2	80.6	58.5	46.7	5.1
PAYCO	746	85.1	60.9	38.0	7.1	–	–	–	–	–	–	–	–	85.7	63.8	39.4	8.4	82.3	54.2	38.7	5.2	87.4	64.8	35.8	7.6
PIONEER	33V08	83.8	59.7	40.1	6.6	79.9	51.6	41.2	6.9	–	–	–	–	84.2	59.3	38.8	6.9	80.6	56.8	45.0	4.9	86.6	63.1	36.4	7.9
PIONEER	33Y18	81.8	57.5	42.6	6.4	–	–	–	–	–	–	–	–	82.5	59.4	42.5	7.0	79.6	53.9	44.4	6.0	83.3	59.1	40.8	6.1
RENK	RK775	81.4	56.1	42.4	6.6	79.3	49.3	40.3	7.2	–	–	–	–	85.0	58.4	35.7	7.2	76.4	57.3	55.3	5.0	82.9	52.7	36.1	7.5
RENK	RK778	84.1	59.1	38.7	7.2	–	–	–	–	–	–	–	–	86.3	63.0	37.0	7.8	80.1	53.7	43.1	6.4	85.8	60.5	35.9	7.3
RENK	RK864	84.9	60.1	37.7	7.2	81.6	52.1	38.3	7.3	79.7	49.9	40.2	7.0	84.1	59.5	39.0	8.2	83.6	56.1	37.5	6.0	87.1	64.7	36.5	7.3
TERRA	TR1066	83.0	58.8	41.5	6.7	–	–	–	–	–	–	–	–	83.3	58.2	40.5	7.6	82.4	58.7	42.5	5.6	83.2	59.5	41.6	6.8
TRELAY	9700	83.2	59.7	41.1	6.4	–	–	–	–	–	–	–	–	84.4	62.0	41.0	7.1	80.2	53.7	42.8	6.1	85.0	63.3	40.5	6.1
AVERAGE		83.8	59.1	39.6	6.9	80.9	52.5	40.0	7.2	79.2	49.1	40.6	7.0	84.9	60.8	38.2	7.5	81.2	54.5	41.5	6.1	85.2	62.1	38.9	7.1
HIGHEST		85.9	62.6	45.5	8.3	81.7	54.8	41.3	7.4	79.7	50.4	41.0	7.1	87.7	65.3	47.7	9.4	83.6	59.0	55.3	7.6	87.6	66.8	46.7	9.0
LOWEST		80.7	54.8	36.3	5.9	79.3	49.3	38.3	6.9	78.3	47.1	40.2	6.9	80.2	56.2	31.9	6.3	79.4	50.5	34.1	4.9	80.6	57.3	34.4	5.1
LSD		2.4	4.1	5.9	1.0									1.0	2.6	0.6	0.5	1.1	2.5	0.8	0.3	1.1	3.1	0.5	0.3
CV .05%		1.7	4.2	9.0	8.4									0.5	2.0	0.8	3.0	0.6	2.3	0.9	2.8	0.6	2.4	0.7	2.2

Table 6B NORTHERN MICHIGAN ZONE 4

Average of Alpena & Missaukee County In-vitro Analyses
One-, two-, three-year averages — 1998, 1997, 1996

HYBRID		1998				2 YEAR AVG (97 / 98)				3 YEAR AVG (96 - 98)				ALPENA				MISSAUKEE			
BRAND	VARIETY	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP	% DMD	% FD	% NDF	% CP
BAYSIDE	Super 88	82.6	58.6	42.4	7.8	–	–	–	–	–	–	–	–	84.5	64.4	43.6	7.4	80.7	52.8	41.1	8.2
DAIRYLAND	STEALTH-1195	81.8	60.0	45.2	7.8	79.5	54.4	44.9	7.7	77.3	50.4	45.5	7.6	85.2	64.7	42.0	7.7	78.4	55.3	48.4	7.8
DAIRYLAND	STEALTH-1289	82.5	60.0	43.7	8.0	79.6	53.5	44.0	8.1	78.2	59.7	43.4	7.9	85.1	64.1	41.6	7.9	79.8	55.8	45.7	8.0
GEERTSON	GS998	84.8	63.9	42.0	8.6	–	–	–	–	–	–	–	–	86.9	66.9	39.5	7.7	82.7	60.9	44.4	9.5
GREAT LAKES	3362	80.6	55.4	43.0	8.0	77.8	50.5	44.5	7.9	76.5	48.1	44.9	7.8	84.6	60.8	39.2	8.3	76.5	50.0	46.8	7.7
GREAT LAKES	4563	82.2	60.2	44.0	8.0	–	–	–	–	–	–	–	–	86.3	65.8	39.8	8.0	78.1	54.6	48.1	7.9
GREAT LAKES	4758	79.6	55.5	43.6	8.1	–	–	–	–	–	–	–	–	84.8	62.8	40.8	8.4	74.4	48.1	46.3	7.8
LG SEEDS	LG2367	84.7	61.7	40.6	6.8	–	–	–	–	–	–	–	–	85.4	66.0	43.0	6.5	83.9	57.4	38.1	7.0
LG SEEDS	LG2448	82.0	57.8	42.4	8.0	79.7	52.8	43.0	7.9	78.5	50.1	43.0	7.5	85.1	62.3	39.5	8.5	78.8	53.3	45.3	7.4
MYCOGEN	TMF94	83.2	60.8	42.9	7.0	–	–	–	–	–	–	–	–	85.0	64.0	41.6	6.6	81.3	57.6	44.2	7.4
MYCOGEN	TMF2202	82.7	60.5	44.0	8.3	–	–	–	–	–	–	–	–	84.1	63.4	43.6	7.9	81.3	57.6	44.3	8.6
PIONEER	37M81	83.4	58.2	39.5	7.9	80.6	52.8	40.9	7.9	–	–	–	–	85.9	62.0	37.0	8.0	80.9	54.3	41.9	7.7
PIONEER	38W36	81.0	56.5	43.7	7.8	–	–	–	–	–	–	–	–	82.4	58.8	42.7	7.4	79.5	54.1	44.7	8.1
PIONEER	38D66	84.7	59.7	38.5	7.3	–	–	–	–	–	–	–	–	86.2	64.3	39.4	7.0	83.1	55.0	37.5	7.6
RENK	RK366	83.5	59.2	40.5	7.8	–	–	–	–	–	–	–	–	85.0	62.9	40.5	7.2	81.9	55.4	40.5	8.3
RENK	RK376	80.9	54.7	42.0	7.7	78.9	50.4	42.4	7.7	–	–	–	–	84.9	60.5	38.5	7.9	76.8	48.8	45.4	7.5
RENK	RK552	83.1	57.8	40.1	7.9	–	–	–	–	–	–	–	–	84.6	61.7	40.3	8.0	81.6	53.8	39.8	7.7
TERRA	E968	82.3	57.7	41.7	7.4	–	–	–	–	–	–	–	–	84.3	61.0	40.2	7.1	80.3	54.3	43.1	7.7
AVERAGE		82.5	58.8	42.2	7.8	79.4	52.4	43.3	7.9	77.6	52.1	44.2	7.7	85.0	63.1	40.7	7.6	80.0	54.4	43.6	7.9
HIGHEST		84.8	63.9	45.2	8.6	80.6	54.4	44.9	8.1	78.5	59.7	45.5	7.9	86.9	66.9	43.6	8.5	83.9	60.9	48.4	9.5
LOWEST		79.6	54.7	38.5	6.8	77.8	50.4	40.9	7.7	76.5	48.1	43.0	7.5	82.4	58.8	37.0	6.5	74.4	48.1	37.5	7.0
LSD		3.6	3.8	5.6	1.1									3.6	9.2	0.6	0.3	1.5	2.7	1.0	0.5
CV .05%		2.1	3.1	6.3	6.6									2.0	6.9	0.7	2.1	0.9	2.3	1.0	2.8

DMD = DRY MATTER DIGESTIBILITY (higher percentage means greater energy content)
FD = FIBER DIGESTIBILITY (the measure of the degree of fermentation of fiber, high FD is desirable)
NDF = NEUTRAL DETERGENT FIBER (the measure of fiber content, higher levels mean lower energy)
CP = CRUDE PROTEIN (higher protein levels require less supplementation)

TABLE 8 INDEX FOR 1998 CORN HYBRIDS COMPARED

TABLE 1E/L	TABLE 2E/L	TABLE 3E/L	TABLE 4A	TABLE 4B	TABLE 5E/L	TABLE 6	TABLE 7
MONROE	KENT	HURON	ALPENA	DELTA SILAGE	IONIA	ALPENA	ALGER
BRANCH-IRR	INGHAM	MONTCALM-IRR	GRAND TRAVERSE		INGHAM	MISSAUKEE	
CASS-IRR	SAGINAW	MASON-IRR	DELTA GRAIN		HURON		

There were 303 hybrids from 37 seed companies entered in 1,376 county tests in the 1998 Michigan Corn Performance Trials. Numbers within parentheses refers to the Table in which the hybrid appears. The map shows the zones where the hybrids were entered. Early and late hybrids are designated by an E or L respectively. Company names used in association with hybrid numbers refer to the brand and the numbers are the variety (hybrid) designation.

AgriPro Seeds, Inc.
AGRIPRO AP5907 (5L)
AGRIPRO AP9195 (2E)
AGRIPRO AP9272 (5E)
AGRIPRO AP9300 (2E)
AGRIPRO AP9313 (2E)
AGRIPRO AP9340 (1E)
AGRIPRO AP9363 (1E)
AGRIPRO AP9560 (5L)
AGRIPRO AP9568 (1L)

The Andersons
ANDERSONS NC5401 (2L)
ANDERSONS NC5801 (1L)

Asgrow Seed Company
ASGROW RX352 (3E)
ASGROW RX355 (3E)
ASGROW RX456 (2E)
ASGROW RX490 (2L,5E)
ASGROW RX492 (2E)
ASGROW RX505BT (1E)
ASGROW RX530 (2L*)
ASGROW RX587 (1E)
ASGROW RX601 (1E)

Baldridge Hybrids
BALDRIDGE BH-510 (5E)
BALDRIDGE BH-612 (5L)

Bayside Seeds
BAYSIDE Super 75 (4A,4B)
BAYSIDE Super 88 (2E,3E,5E,6)
BAYSIDE Super 91 (3E)
BAYSIDE Super 93 (2E,3E)
BAYSIDE Super 95 (3E)
BAYSIDE Super 97 (3E)
BAYSIDE Super 99 (2E)
BAYSIDE Super 100 (2E,3L)
BAYSIDE Super 101 (2E)
BAYSIDE Super 105 (1E)
BAYSIDE 1792 (2E,3E)

Beck's Superior Hybrids
BECK'S 5105 (1E)
BECK'S 5305 (1E)
BECK'S 5360 (1L)
BECK'S 5405 (1L)
BECK'S 5414 (1E)
BECK'S X5505Bt (1L)

Bio Gene
BIO GENE BG090 (3E)
BIO GENE BG095 (2E)
BIO GENE BG105 (2L)
BIO GENE BG307 (1L)
BIO GENE BG309 (1L)

Brown Seed Farms
BROWN BR1680 (4A,4B)
BROWN BR5140 (3L)
BROWN BR6850 (2L)
BROWN BR7050 (1L)

Callahan Seeds
CALLAHAN 7526XS (5E)
CALLAHAN 7658 (1L)
CALLAHAN 7737 (2E,3E)
CALLAHAN 7741 (2E,3L)
CALLAHAN 7847X (1E)
CALLAHAN 7938X (2E,3E,5E)
CALLAHAN 7939X (2E,3L)
CALLAHAN 7941X (5E)
CALLAHAN 7942X (1E,2L)
CALLAHAN 7946X (1E)

Cargill Hybrid Seeds
CARGILL XB227 (7)
CARGILL 1527 (7)
CARGILL 1877 (4A,4B,7)
CARGILL FQ2411 (7)
CARGILL 2827 (3E)
CARGILL 3677 (2E,3L)
CARGILL 4111 (1E)
CARGILL 4127 (3L)
CARGILL 6303 (2L)
CARGILL 6888 (1L)

Corn Belt Hybrids
CORN BELT C 467 (3E)
CORN BELT C 498 (3L)
CORN BELT C 555 (1E)
CORN BELT C 567 (2L,5L)
CORN BELT C 588 (1L)
CORN BELT EXP 5258 (2E)
CORN BELT EXP 5388 (1E)
CORN BELT EXP 5998 (1L)

Countrymark Cooperative, Inc.
COUNTRYMARK CO-OP 447 (2L*)
COUNTRYMARK CO-OP 627 (1L)
COUNTRYMARK CO-OP 3858 (3E,4B)
COUNTRYMARK CO-OP 3969 (3L,4B)
COUNTRYMARK CO-OP 4949 (2L,3L)
COUNTRYMARK CO-OP 5308 (1E,2L)

Crow's Hybrid Corn Company
CROW'S 200 (1E,2E)
CROW'S 365 (1L*)
CROW'S 366 (1L*,2L)
CROW'S 492 (1L)
CROW'S 496 (1L)

Dairyland Seed Company, Inc.
DAIRYLAND STEALTH-1195 (6)
DAIRYLAND STEALTH-1203 (3L,5E)
DAIRYLAND STEALTH-1289 (6)
DAIRYLAND STEALTH-1297 (2E,3L*,5E)
DAIRYLAND STEALTH-1401 (2E,3L)
DAIRYLAND STEALTH-1402 (1E)
DAIRYLAND STEALTH-1406 (1E,2L,5L)
DAIRYLAND STEALTH-1407 (5L)
DAIRYLAND STEALTH-1410 (2L)
DAIRYLAND STEALTH-1412 (1L)
DAIRYLAND STEALTH-1496 (2E,3E,4B,5E)
DAIRYLAND STEALTH-1500 (3L,5E)
DAIRYLAND STEALTH-1505 (1E)
DAIRYLAND STEALTH-1508 (5L)
DAIRYLAND STEALTH-1509 (2L)
DAIRYLAND STEALTH-1595 (3E)
DAIRYLAND DST-10208 (2L,5E)
DAIRYLAND DST-10212 (5E)

Dekalb Genetics Corporation
DEKALB DK355 (2E,3E,4A,4B)
DEKALB DK365 (2E,3E,4A,4B)
DEKALB DK385B (2E,3E,4A,4B)
DEKALB DK405 (2E,3E,4A,4B)
DEKALB DK417 (2E,3E,4B)
DEKALB DK440 (2E,3E,4B)
DEKALB DK471 (1E,2E,3E)
DEKALB DK477 (1E,2E,3E)
DEKALB DK493BtX (1E,2E,3L)
DEKALB DK525 (1E,2L,3L)
DEKALB DK537 (1E,2L,3L)
DEKALB DK551 (1E,2L,3L)
DEKALB DK585 (1L,2L)
DEKALB DK595BtX (1L,2L)
DEKALB DK618BtX (1L)

Fontanelle
FONTANELLE F4193 (1E)
FONTANELLE F4997 (1L)
FONTANELLE F5306 (1L)

Garst Seed Co.
GARST N5542 (1E)
GARST 8524 SB (5L)
GARST 8640 (1E,2L)
GARST 8707 (5E)
GARST 8766 (2E)
GARST 8780 HpH (2E,3L)
GARST 8830 (2E,3E)

Geertson Seed Farm
GEERTSON GS998 (3L,6)
GEERTSON GS1067 (2L)
GEERTSON GS1117 (1L)

Genesis Ag Ltd.
GENESIS 1904 (1E)
GENESIS 1909 (1L)
GENESIS 1996 (2E)
GENESIS 2900 (2E)
GENESIS 2903 (2L)
GENESIS 2990 (3E)
GENESIS 2995 (2E)
GENESIS 2999 (2E)

Golden Harvest
GOLDEN HARVEST Ex674 (1E,5L)
GOLDEN HARVEST Ex685 (1E)
GOLDEN HARVEST Ex816 (2E,3E)
GOLDEN HARVEST H-2309 (2E,3E)
GOLDEN HARVEST H-2382 (2E,3L,5E)
GOLDEN HARVEST H-2495 (1L)

Great Lakes Hybrids, Inc.
GREAT LAKES 3362 (4A,4B,6)
GREAT LAKES 3807 (3E,4A,4B)
GREAT LAKES 4526 (3E,4B)
GREAT LAKES 4563 (6)
GREAT LAKES 4758 (1E,2E,3E,4B,6)
GREAT LAKES 4848 (2E,3L,5E)
GREAT LAKES 5322 (1E,2L,3L)
GREAT LAKES 5456 (1E,5L)
GREAT LAKES 5675 (5L)
GREAT LAKES 5715 (1E,2L)
GREAT LAKES 5816 (1L,2L,5L)
GREAT LAKES 5849 (1L)

Gries Seed Farms, Inc.
GRIES GSF-2285 (2E,3E)
GRIES GSF-4203 (1E,2L)

Gutwein Seed
GUTWEIN EX 799 (1L)
GUTWEIN 2066 (2E)
GUTWEIN 2087 (2E)
GUTWEIN 2110 (2E)
GUTWEIN 2400 (1E)
GUTWEIN 2424 (1E,2L)
GUTWEIN 2520 (1L)

AgriBiotech, Inc.
HYTEST HT4310 (3E)
HYTEST HT4395 (3E)
HYTEST HT4404 (2E)
HYTEST BH4531 (2L)
HYTEST BH4602 (1E,2L)
HYTEST HT4680 (1L)
HYTEST HTX7512 (1L)

Jung Farms, Inc.
JUNG 2232 (4A,4B))
JUNG 2285 (4A,4B)
JUNG 2488 (3E)
JUNG 2577 (3L)

LG Seeds
LG SEEDS LG2367 (4A,4B,6)
LG SEEDS LG2408 (4A,4B)
LG SEEDS LG2421 (3E)
LG SEEDS LG2442 (3E)
LG SEEDS LG2448 (6)
LG SEEDS LG2473 (2E,3E)
LG SEEDS LG2483 (2E,3L)
LG SEEDS LG2499 (2E,3L,5E)
LG SEEDS LG2512 (2L)
LG SEEDS LG2530 (2L)
LG SEEDS LG2539 (2L)
LG SEEDS LG2583 (1L,5L)
LG SEEDS LG2587 (1L)

Midwest Seed Genetics
M/W GENETICS G6970 (3E)
M/W GENETICS G6980 (2E)
M/W GENETICS G7010 (2E,3E)
M/W GENETICS G7118 (3L)
M/W GENETICS G7380 (5E)
M/W GENETICS G7610 (1L)
M/W GENETICS G7636 (1L)

Mycogen Plant Sciences
MYCOGEN TMF94 (6)
MYCOGEN TMF100 (5E)
MYCOGEN TMF108 (5L)
MYCOGEN TMF114 (5L)
MYCOGEN 2110 (4A,4B)
MYCOGEN TMF2202 (6)
MYCOGEN 2250 (4A,4B)
MYCOGEN 2395 (3E)
MYCOGEN 2420 (3E)
MYCOGEN 2500 (3L)
MYCOGEN 2545 (2E)
MYCOGEN 2598 (1E,2L)
MYCOGEN 2620 (2L)
MYCOGEN 2725 (1L)
MYCOGEN X28700(1L)

Novartis Seeds, Inc.
NK BRAND MAX21 (1E,2L)
NK BRAND MAX40 (7)
NK BRAND MAX86 (3E)
NK BRAND MAX454 (1L)
NK BRAND N15-B4 (7)
NK BRAND N3030Bt (3E)
NK BRAND N4446 (2E,3L)
NK BRAND N4640Bt (2L,3L)
NK BRAND NX5297 (1E,2L)
NK BRAND N6800Bt (1L)

Garst Seed Co.
PAYCO 468 (5E)
PAYCO 607 (2E,3L)
PAYCO 746 (5L)
PAYCO 834 (1L)

Pfister Hybrid Corn Co.
PFISTER 2015 (1E)
PFISTER 2025 (1E)
PFISTER 2650 (1L)

Pioneer Hi-Bred International, Inc.
PIONEER 33V08 (1L,2L,5L)
PIONEER 33Y18 (1L,5L)
PIONEER 34E79 (1L)
PIONEER 34G81 (1L,2L)
PIONEER 35N05 (1E,2L,3L)
PIONEER 3573 (3L,5E)
PIONEER 36G32 (2E,3L)
PIONEER 36H36 (1E,2E,3L,5E)
PIONEER 36K50 (1E,5E)
PIONEER 3730 (2E)
PIONEER 37R71 (2E,3L,5E)
PIONEER 37M81 (2E,3E,6)
PIONEER 38P05 (3E)
PIONEER 38W36 (3E,4B,6)
PIONEER 38D66 (4B,6)
PIONEER 3893 (7)
PIONEER 3941 (7)
PIONEER 39K72 (7)

Renk Seed Company, Inc.
RENK RK221 (4A,4B)
RENK RK272 (4A,4B)
RENK RK277 (4A,4B)
RENK RK366 (4A,4B,6)
RENK RK376 (4A,4B,6)
RENK RK450 (3E)
RENK RK543 (2E,3L,5E)
RENK RK546 (3E)
RENK RK552 (2E,3E,5E,6)
RENK RK611 (2E,3L)
RENK RK641 (1E)
RENK RK681 (2L,3L)
RENK RK691 (1E,2L)
RENK RK775 (2L,5L)
RENK RK778 (1L,2L,5L)
RENK RK818 (1L,2L)
RENK RK835 (1L)
RENK RK864 (1L,2L,5L)

Rupp Seeds, Inc.
RUPP XR 1357 (3E)
RUPP XR 1522 (2E,3E)
RUPP XR 1599 (2E,3L)
RUPP XR 1682 (1E,2L)
RUPP XR 1688 (1E,2L)
RUPP XR 1698 (1E,2L)
RUPP XR 1733 (1L)

Sunstar Hybrids
SUNSTAR 4408 (1L)
SUNSTAR 4409 (1L)
SUNSTAR 4706 (1E)

Terra International, Inc.
TERRA E858 (4A,4B)
TERRA TR906 (4A,4B)
TERRA E958 (3E)
TERRA E968 (3E,6)
TERRA E987 (1E,2E,3L)
TERRA E989 (1E,2E,3L)
TERRA TR1008BT (1E,2E,3L)
TERRA TR1047 (1E,2L,3L)
TERRA TR1058BT (1E,2L)
TERRA TR1066 (1E,2L,5L)
TERRA TR1087 (1L,2L)
TERRA TR1097 (1L,2L)
TERRA TR1106 (1L,2L)

Trelay, Inc.
TRELAY 1003 (4A,4B)
TRELAY 1007 (4A,4B)
TRELAY 2006 (4A,4B)
TRELAY 3700 (3E)
TRELAY 4002 (2E,3E)
TRELAY 4600 (2E,3E)
TRELAY 5004 (2E,3L,5E)
TRELAY 7002 (1E,2L)
TRELAY 8002 (1L)
TRELAY 9700 (1L,5L)
TRELAY 9095 (1L)

Wolf River Valley
WOLF RIVER VALLEY 9373 (7)

*These hybrids have changed maturity groups in the indicated tables. Two and three year averages were calculated from different tables.

COMPANIES WITH HYBRIDS ENTERED IN 1998 TRIALS

BRAND	COMPANY NAME AND ADDRESS
AGRIPRO	Agripro Seeds Inc., 4850 W. CR 350N., Danville, IN 46122
ANDERSONS	The Andersons,480 W Dusse Dr., Maumee, OH 43537
ASGROW	Asgrow Seed Company, P.O. Box 7570, DesMoines, IA 50322-7570
BALDRIDGE	Baldridge Hybrids, P.O. Box 99, Cherry Fork, OH 45618
BAYSIDE	Bayside Seeds, 464 E. Munger Rd., Munger, MI 48747
BECK'S	Beck's Superior Hybrids, 6767 E. 276th St., Atlanta, IN 46031
BIO GENE	Bio Gene 5491 Tri County Hwy., Sardinia, OH 45171
BROWN	Brown Seed Farms, P.O. Box 540, Dewitt, MI 48820
CALLAHAN	Callahan Seeds, 1122 E. 169th St., Westfield, IN 46074
CARGILL	Cargill Hybrid Seeds, P.O. Box 5645, Minneapolis, MN 55440
CORN BELT	Corn Belt Hybrids, P.O. Box 95, St. Marys, OH 45885
COUNTRYMARK COOP	Countrymark Cooperative, Inc., 1701 Towanda Ave., Bloomington, IL 61701
CROW'S	Crow's Hybrid Corn Co., P.O. Box 306, Milford, IL 60953

BRAND	COMPANY NAME AND ADDRESS
DAIRYLAND	Dairyland Seed Co, Inc., P.O. Box 958, West Bend, WI 53095-0958
DEKALB	Dekalb Genetics Corp., 3100 Sycamore Rd., Dekalb, IL 60115
FONTANELLE	Fontanelle, 294 Crescent Dr., Portland, MI 48875
GARST	Garst Seed Co., 9877 W. Britton Rd., Laingsburg, MI 48848
GEERTSON	Geertson Seed Farms, 1665 Burroughs Rd, Adrian, OR 97901
GENESIS	Genesis Ag Ltd., P.O. Box 21085, Lansing, MI 48909
GOLDEN HARVEST	Golden Harvest, P.O. Box 248, Pekin, IL 61555
GREAT LAKES	Great Lakes Hybrids, P.O. Box 637, Ovid, MI 48866
GRIES	Gries Seed Farms, Inc., 2348 N. Fifth St., Fremont, OH 43420
GUTWEIN	Gutwein Seeds, Rt. 1 Box 40, Francesville, IN 47946
HYTEST	AgriBiotech, Inc., 120 Corporate Park Dr., Henderson, NV 89014
JUNG	Jung Seed Genetics, 341 S. High St., Randolph, WI 53956

BRAND	COMPANY NAME AND ADDRESS
LG SEEDS	LG Seeds, P.O. Box 457, Windfall, IN 46076
MIDWEST GENETICS	Midwest Seed Genetics, P.O. Box 518, Carroll, IA 51401
MYCOGEN	Mycogen Seeds, P.O. Box 21428, St. Paul, MN 55121-1428
NOVARTIS	Novartis Seeds, Inc., 12275 S. Sherman Lake Dr., Augusta, MI 49012
PAYCO	Garst Seed Co., 9877 W. Britton Rd, Laingsburg, MI 48848
PFISTER	Pfister Hybrid Corn Co., P.O. Box 187, El Paso, IL 61738
PIONEER	Pioneer Hi-Bred International Inc., PO Box 756, Bryan, OH 43506-0756
RENK	Renk Seed Co., R-2 6800 Wilburn Rd., Sun Prairie, WI 53590
RUPP	Rupp Seed, Inc., 17919 Co. Rd. B, Wauseon, OH 43567
SUNSTAR	Sunstar Hybrids, 14993 State Rd. 17, Culver, IN 46511-9642
TERRA	Terra Industries Inc., P.O. Box 6000, Sioux City, IA 51102-6000
TRELAY	Trelay Seed Co.,11623 State Rd. 80, Livingston, WI 53554

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