



# 52nd Edition

# NORTH DAKOTA HYBRID CORN PERFORMANCE TESTING 1990

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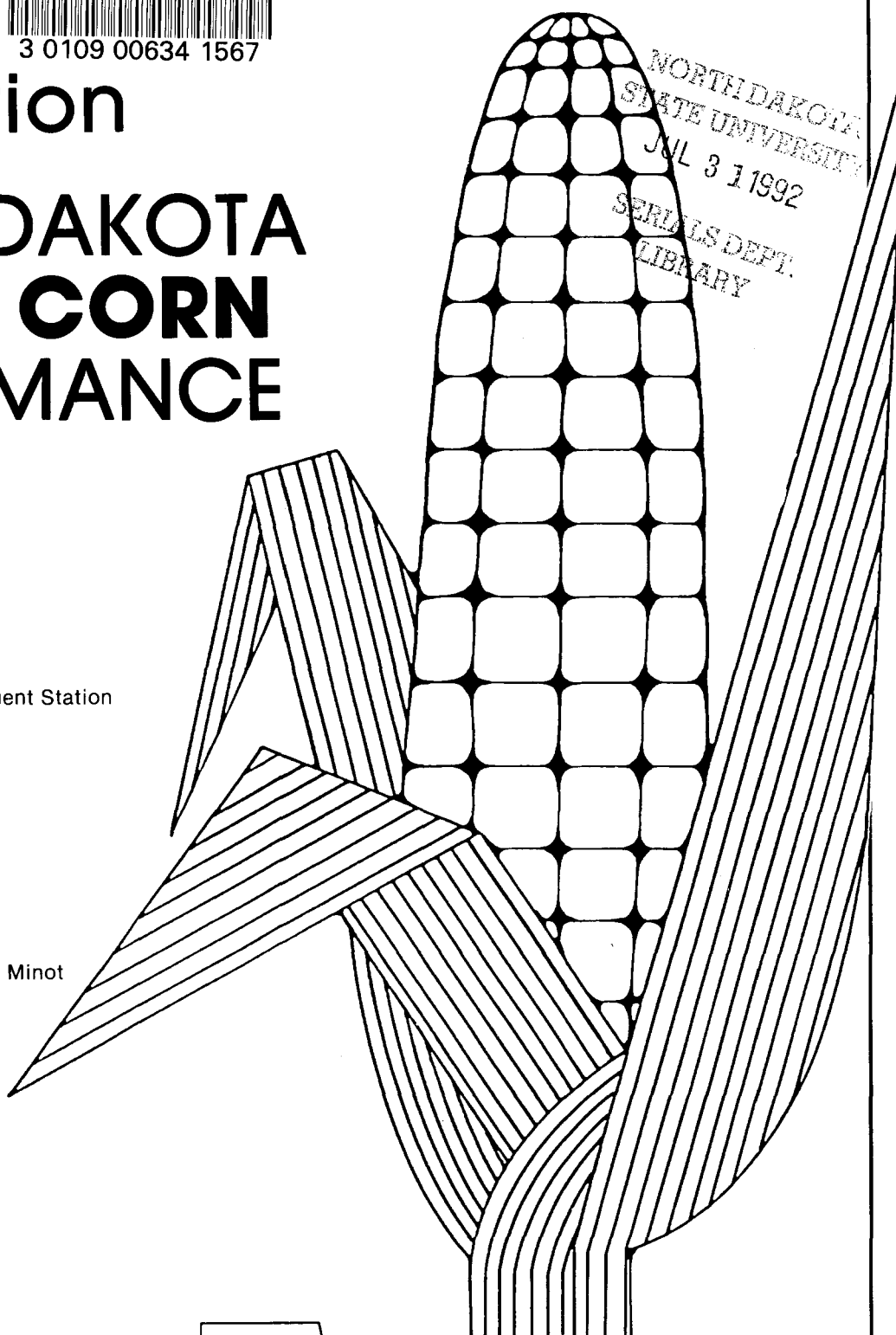
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NORTH DAKOTA STATE UNIVERSITY  
OF AGRICULTURE  
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An entry fee is charged corn companies for each hybrid entered to help defray the cost of conducting these corn performance trials and preparing the printed report. Special credit is due the farm cooperators and others for providing land and performing extra operations needed in conducting these trials: Paul Kummer, Colfax; Earl Stover, Larimore; Northern Great Plains Research Center, Mandan; and Walter Albus at the Oakes Research Site. Credit is also due the County Agricultural Extension Agents of the counties involved. The author wishes to express his appreciation for assistance to Brent Bernstein, Shannon Dahl, Sandy Franckowiak, Steve Hanson, Bridget Muga, Eike Peterson, Theresa Strickland, Steve Tucker, and Marianne Demko who helped collect the data. Special thanks is due Duane Wanner for his valuable assistance in obtaining useful data and coordinating this report.

Entry forms for entries in the hybrid corn performance trials conducted by the main station can be obtained by writing to Dr. Harold Cross, Loftsgard Hall, North Dakota State University, Fargo, ND 58105.

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## ACKNOWLEDGMENTS - Section 2

Data reported in this section were collected under the supervision of the following personnel at each of the research centers. Blaine Schatz, assistant agronomist, Carrington Irrigation Research Center; Ben Hoag, Superintendent, North Central Research Center, Minot; Neil Riveland, associate agronomist, Williston Research Center; Bryan Hanson, assistant agronomist, Langdon Research Center; Eric Eriksmoen, assistant agronomist, Hettinger Research Center; and Thomas J. Conlon, superintendent, Dickinson Research Center.

Entry forms for entries in these trials can be obtained by contacting these individual research centers.

## INTRODUCTION

The average planted corn acreage for North Dakota for the five year period 1985-1990 was 840,000 acres. About 60% of these acres were harvested for grain, and 40% for silage and forage. This represents a higher proportion of grain acres than in past periods. The 1990 estimated corn acreage was 870,000 acres planted with a predicted grain yield of 75 bushels per acre on 600,000 acres harvested for grain according to the USDA Agricultural Statistics Service.

While corn acreage has declined in North Dakota from a peak five year average of 1,344,200 acres in 1959, the total corn grain production (38,605,000 bu.) for the most recent five years (1985-1989) exceeded that of any previous six year period prior to 1982-1986 when production was 39,139,000 bu. Major yield increases coupled with moderate increases in acreage were responsible for this record production (Fig. 1).

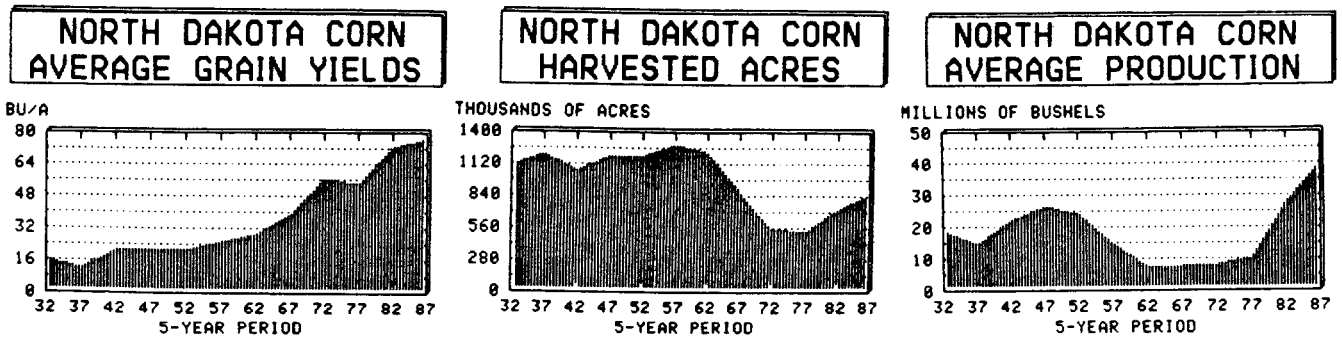


Fig. 1. North Dakota five year average corn yields, harvested acres, and grain production from 1932 to 1988.

North Dakota is about the northern limit of corn grown for grain and silage production which places the basis for selection of a hybrid not only on yield performance but also on agronomic performance, especially maturity. The seed companies and their dealers provide helpful information concerning maturity range and performance of their hybrids, however, the Hybrid Corn Performance Trials are conducted by NDSU in several crop production areas and provide a comparison of many commercial hybrids within each of these areas. Hopefully, these comparisons are of value to seedsmen and farmers in the selection of hybrids which are best adapted to particular crop production areas. The maturity of a particular hybrid is influenced by seasonal temperatures, length of the frost-free period, and cultural practices. The hybrids are ranked by maturity at each of the trial areas on the basis of ear moisture content at harvest. The Hybrid Corn Performance Trials have been conducted for 52 years. Within this 52 year period, corn was well matured in 29 years, reached fair maturity in 14 years, and was immature at harvest in 9 years.

THE 1990 GROWING SEASON

Early spring moisture was barely adequate at most test sites to achieve good seedling emergence. Below normal temperatures in May slowed early seedling development. However, above normal rainfall and temperatures at all test sites in June promoted plant development, and plots generally recovered from the slow early spring growth. Rainfall was much below normal in July and most dryland plots experienced moderate to extreme drought stress. The below average temperatures during this period prevented complete dessication of the dryland plots. Timely rains in July and August at the Larimore and Colfax plots produced yields which were average or slightly above average at those sites. Rather extreme drought stress occurred at Fargo and Mandan which reduced yields at Fargo and completely eliminated ear formation at the Mandan site. Below average precipitation and above average temperatures in September and October produced favorable harvesting conditions and permitted the grain to dry rapidly in the field producing high test weights.

The rainfall and temperature reports as recorded by the nearest climatic station maintained by the National Weather Service are presented in Table 1. In most cases the data are from stations within a few miles of the test site.

Table 1. 1990 Temperature and precipitation data at each of five trial locations.

Temperature in F											
Fargo		Oakes		Larimore		Colfax*		Mandan			
Month	Daily ave	Diff from normal	Daily ave	Diff from normal	Daily ave	Diff from normal	Daily ave	Diff from normal	Daily ave	Diff from normal	
May	55.0	-0.6	53.9	-1.4	52.7	-2.1	56.1	-1.5	53.6	-0.9	
June	67.0	1.8	66.1	1.1	64.6	0.3	67.8	0.8	65.4	1.4	
July	70.0	-0.6	69.0	-1.7	66.8	-2.5	70.8	-1.2	69.9	-0.2	
August	71.1	2.3	68.8	-0.3	67.3	0.4	71.1	1.0	71.4	2.7	
Sept.	62.3	4.5	59.0	0.0	61.0	4.8	62.0	2.3	58.0	0.8	

Precipitation in inches											
Fargo		Oakes		Larimore		Colfax*		Mandan			
Mon. total	Monthly total	Diff from normal	Monthly total	Diff from normal	Monthly total	Diff from normal	Monthly total	Diff from normal	Monthly total	Diff from normal	
May	1.52	-0.72	0.15	-2.53	1.25	-0.94	1.08	-1.80	2.17	-0.09	
June	6.05	2.99	4.12	0.59	4.98	1.82	4.19	0.10	5.23	1.72	
July	0.78	-2.56	1.33	-1.04	1.26	-1.51	1.37	-1.84	1.01	-1.23	
Aug.	0.99	-1.68	3.02	0.57	3.84	1.22	2.77	-0.11	1.91	-0.06	
Sept.	1.75	-0.12	2.56	0.16	1.32	-1.30	2.37	-0.51	1.62	-0.35	
Oct.	1.22		0.79		0.37		1.12		0.23		

\* Weather data for Colfax taken from the Wahpeton weather station.

## DEGREE DAYS

The Degree Days concept was developed to measure the amount of heat needed for normal corn growth and maturity, and it relates plant growth to the air temperature. Since corn grows very slowly or not at all below 50 F, this was chosen as the base temperature. The optimum temperature for corn growth is near 86 F, but higher temperatures are of little additional value and may be detrimental to growth. Therefore, 86 F was chosen for the high temperature cutoff point, for the calculation of Degree Days.

In calculating Growing Degree Days (GDD) temperatures from a lower limit of 50 F and an upper limit of 86 F are accumulated by applying the following formula to each day's maximum and minimum temperatures.

$$\text{GDD} = \frac{\text{Max. Temp.} + \text{Min. Temp.}}{2} - \text{Base Temp.}$$

Maximum temperatures higher than 86 F are entered as 86 and temperatures below 50 are entered as 50 in the calculations based on daily temperatures.

Table 2. Growing degree day accumulations as compared to the 1970-1989 average values.

Location	Year	Date planted	Date harvested	Frost date	% moisture at harvest	Accum. grow degree days*
East Central,	1970-89	May 18	Oct. 18**	Oct. 1	20.8**	2156**
Fargo	1990	May 10	Oct. 1	Sep. 23	15.8	2320
Southeastern,	1970-89	May 16	Oct. 10**	Oct. 2**	24.7**	2327**
Colfax***	1990	May 8	Oct. 10	Oct. 7	18.6	2540
Oakes Irrig.,	1970-89	May 5	Oct. 2	Sep. 28	22.4	2249
Oakes	1990	May 7	Oct. 5	Sep. 23	21.9	2244
Northeastern,	1970-89	May 20	Oct. 12	Oct. 1**	27.6**	2018
Larimore	1990	May 14	Oct. 12	Sep. 23	16.3	1964
West Central,	1970-89	May 24	Oct. 4**	Sep. 25**	24.7**	1989**
Mandan	1990	May 23		Sep. 23		

\* Degree days accumulated from planting until harvest or frost, whichever occurs first.

\*\* Means based on fewer than 20 year averages since plot was not harvested all 20 years.

\*\*\* Weather data for Colfax taken from Wahpeton weather station.

COMPANIES IN 1990 HYBRID CORN TESTS

Asgrow/ O's Gold	7000 Portage Rd., Kalamazoo, MI 49001
Betagold	P.O. Box 195, Shakopee, MN 55379
Cargill Hybrid Seeds	P.O. Box 5645, Minneapolis, MN 55440
Custom Farm Seeds	P.O. Box 160, Momence, IL 60954
Dahlgren & Co.	1220 Sunflower Street, Crookston, MN 56716
DEKALB Plant Genetics	3100 Sycamore Road, DEKALB, IL 60115
Experimental	NDSU Agric. Expt. Station, Fargo, ND 58105
Garst Seed Co.	Route 4, Box 46, Sleepy Eye, MN 56085
George's Seeds Outlet	Box 155, Prescott, WI 54021
Golden Harvest J.C. Robinson Seed Co.	100 J. C. Robinson Boulevard, Waterloo, NE 68069
Horizon Seeds	1600 Cornhusker Hwy, P.O. Box 81823, Lincoln, NE 68501
Interstate Seed Co.	P.O. Box 338, West Fargo, ND 58078
Jacques Seed Co.	720 St. Croix St., Prescott, WI 54021
Mallard Seed Co.	311 West Broadway, Plainview, MN 55964
Northrup King	P.O. Box 959, Minneapolis, MN 55440
Pioneer Hi- Bred Inter- national, Inc.	1000 West Jefferson St., Tipton IN 46072
Producers Hybrids	Box C, Battle Creek, NE 68715
Sigco Research	P.O. Box 289, Breckenridge, MN 56520

Super Cross Seeds P.O. Box 67, Kentland, IN 47951

Terning Seeds R.R1 Box 259, Cokato, MN 55321

Top Farm Hybrids P.O. Box 850, Cokato, MN 55321

## MEASURING PERFORMANCE

Corn ear moisture at harvest and silking data are good indicators of maturity. The hybrids are ranked in order of increased ear moisture content in tables dealing with grain yields. The dry matter percentage in the green forage at harvest in the silage trials is also a measure of maturity and the hybrids are ranked in descending order of dry matter accumulation in tables dealing with forage yields. Corn hybrid choices by each grower should be made with regard to maturity as well as yield performance. Other considerations in addition to maturity and yield must be kept in mind. Lodging, plant breakage, and ear height all may contribute to the total harvest yield by facilitating a more efficient harvest and a better quality crop. Test weights also give some information on grain quality. Test weights were taken on dry grain.

In a favorable season, the later maturing hybrids generally yield more than the earlier hybrids but they usually contain more moisture at harvest. Corn grown for grain must mature to produce maximum yield, therefore, early maturing hybrids should be grown for grain production in the cool, short growing season in North Dakota. Corn grown for silage may be slightly later in maturity than that grown for grain but the kernels should be starting to dent at silage harvest. Corn plants should contain 30-35% dry matter at harvest to produce good silage.

Performance of a hybrid may vary from year to year and location to location. A good way to reduce risk from such unstable performance is to plant several hybrids which have demonstrated good performance at the nearest one or more test sites during the past one or two seasons. Planting several hybrids may allow an earlier harvest since some of the hybrids will require less time to reach a harvestable moisture content.

Since the pedigrees of commercial hybrids are not public knowledge, experimental open pedigree hybrids are included in the trials to provide information on their adaptability to growing conditions in the various areas and to provide reference standards in rating commercial hybrids. The pedigrees of the station hybrids included in this year's trials are listed in Table 4.



## DESCRIPTION OF TRIAL AREAS

Trial locations are selected to represent the different maturity zones as shown on the corn maturity zones as shown on the corn maturity zone map (Fig. 2).

- E.C. - East Central Area, 85 to 92 R.M. zone, Agricultural Experiment Station, Cass County, NDSU, Fargo, Grain and Silage Trial.
- S.E. - Southeastern Area, 92 to 102 R.M. zone, Paul Kummer, Colfax, Richland County, Grain Trial.
- OKS. - Oakes Irrigated, 92 to 102 R.M. zone, NDSU Research Site, Oakes, Dickey County, Grain Trial.
- N.E. - Northeastern Area, 83 to 85 R.M. zone, Earl Stover, Larimore, Grand Forks County, Grain Trial.
- W.C. - West Central Area, 80 to 83 R.M. zone, Northern Great Plains Research Center, Mandan, Morton County, Grain Trial.

## METHOD OF TESTING

Yields shown are averages of replicated plots grown in a randomized, complete block or lattice experimental designs. The seed corn is planted at an excessive rate and the seedlings thinned to a desired stand. Stands and plot data are reported in Table 3. The yields are based on perfect or nearly perfect stands. Actual plant populations are reported in the various tables. One of the objectives of these trials is to determine the inherent performance of the hybrid entry rather than its seed quality.

Grain yields are reported in bushels of shelled corn per acre at 15.5 percent moisture. Plots were harvested with a plot combine, except at Oakes where plots were hand harvested. Grain was weighed, dried, and reweighed to determine moisture content.

Silage yields are reported in tons of silage per acre at 70 percent moisture. The entire plant is harvested except the extreme basal stem part. The ears were husked and removed from the stalk, weighed, and dried separately. Ears were shelled and weighed to determine grain percentage in the silage. The grain contains most of the carbohydrate in a corn plant and this determination is a reflection of silage quality for feeding purposes. A sample of the corn stover was chopped and dried to determine the dry matter percentage at harvest which is a measure of maturity.

Stalk lodging and root lodging counts were taken on all trials except Oakes. Root lodging and stalk lodging are reported as the percentage of ear-bearing stalks which were lodged 30 degrees or more from vertical or broken below the ear at harvest, respectively. Lodging is based on an average of all replications. Silking dates taken at Oakes were the average dates when 50% of the plants had silks emerged.

Variations in soil fertility, moisture, and other cultural or environmental factors are found in each test area which make it difficult to compare the yielding ability of hybrids with absolute accuracy. Hence, small differences in yield have no meaning. A statistical measure known as the LSD or Least Significant Difference is an aid in determining the significance of a yield difference observed between two hybrids. If the difference observed is greater than the LSD .05 value at the bottom of the table, the chances are greater than 20 to 1 that it is a real difference and not due to chance alone. If the difference is greater than the LSD .01 value the chances that a true difference exists is greater than 100 to 1.

Table 3. Agronomic data at each of the five trial locations.

Location	Prev crop	Fertilizer N-P205-K20 (lbs/A)	Date plant	Date harv	Plants /acre	Row space	Inches irrig water	No of Irrig
-----								
East Central								
Grain	soybeans	0-0-0	May 12	Oct. 4	22000	30		
Silage	soybeans	0-0-0	May 12	Sep. 7	22000	30		
Southeastern	corn	20-50-35	May 11	Oct. 6	22000	30		
Oakes Irrigated								
Grain	corn	291-0-0	May 7	Oct. 7	25000	30	16.0	23
Northeastern								
Grain	corn	56-28-22	May 16	Oct. 12	19000	36		
Silage	corn	56-28-22	May 16	Sep. 12	20000	36		
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Table 4. North Dakota experimental hybrids included in the 1990 hybrid corn performance trials.

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Single Cross Hybrids

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Number	Pedigree	Number	Pedigree
NDC368	W64A X ND309	NDG383	ND262 X CM105
NDC707	ND245 X A509	NDG491	ND261 X CM105
NDF415	ND301 X CM105	NDG514	ND261 X ND250
NDF718	ND245 X ND474	NDG697	A654 X ND262
NDF831	CM105 X ND250	NDG705	ND262 X ND256
NDG059	ND258 X ND246	NDG958	ND266 X ND246
NDG068	ND257 X CM105	NDG974	ND266 X ND264
NDG082	A654 X ND257		

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Three-way Cross Hybrids

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Number	Pedigree
NDD5	(A639 X A641) X ND301
NDD16	(ND474 X ND468) X ND253
NDD34	(A665 X CM105) X ND259
NDD45	(A665 X CM105) X ND261

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Synthetics

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Number
NDSAB
NDSB(MS)C8

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Table 5. Grain yields of North Dakota hybrid corn performance trials.1/

Year	Southeastern bu/acre	East Central bu/acre	Northeastern bu/acre	West Central bu/acre	Oakes Irrig bu/acre
1959	51.3 d	59.9 wd	51.9	27.5 d	
1960	59.1 d, ws	55.4 ws	66.8	52.0 d, sf	
1961	63.4 d	73.0 ws	55.8 d	47.8 d, sf	
1962	68.7 lp, wd	56.4 lp, wd	53.4 d	59.0	
1963	81.3 wd	88.3	40.3 d	52.4 ws	
1964	78.7	53.5 pm, d	43.4 pm	38.2 pm, d	
1965	69.1 pm	61.9 pm	51.5 pm	63.0	
1966	70.9 wd	hailed out	79.0	64.5	
1967	92.3	62.0 d	64.7	42.3 d	
1968	65.9	69.1	53.7	68.3 d	
1969	64.4 d	84.1 wd	80.1	58.7	
1970	120.3	67.3	75.8	60.1	141.9
1971	109.2	75.3 ws	90.4	46.0 d	152.8
1972	84.5 lp, pm	106.4 lp	84.7	42.0 d	148.9
1973	129.8	129.9	84.4 pm	drought	153.1
1974	60.8 lp, pm	35.2 lp, h, pm	74.0 pm	15.1 d, pm	128.8
1975	flood	106.1 wd	93.8	66.0 d	154.4
1976	drought	52.3 d	59.1 d	50.1 d	164.9
1977	137.0	156.6	139.6	drought	192.0
1978	103.5 wd	126.0	91.5	47.1 d	172.7
1979	120.6	95.5	67.9	71.8	188.6
1980	92.3 d	125.5	48.7 d, pm	23.2 d	167.2
1981	112.3	121.5	109.0	68.7	154.1
1982	116.7	76.4 d	70.4	57.0	164.8
1983	71.6 d	83.9 d	lost	23.0 d	138.2
1984	103.0	54.3 d	62.1 d	53.3	173.1
1985	80.6 pm, wd	87.0 pm	38.3 pm	46.5 pm	170.4
1986	hailed out	128.7	114.0	93.3	187.7
1987	114.0	93.2 wd	120.5	91.4	150.6
1988	102.6	drought	47.3 d	drought	183.1
1989	94.4	118.2	64.5 d	2.4 d	215.4
1990	107.6	87.1 d	106.7	drought	202.5

1/ Grain yields are averages of all hybrids tested and all at 15% moisture content.

ws-windstorm damage      h-hail damage      d-drought damage  
 sf-summer fallow wd-early season water damage      lp-late planting  
 pm-corn was poorly matured

Table 6. Plant population and silage yields of North Dakota hybrid corn performance trials.1/

Year	Larimore		Oakes (irrigated)		Fargo	
	Population, Plants/acre	Yield, Tons/ acre	Population, Plants/acre	Yield, Tons/ acre	Population, Plants/acre	Yield, Tons/ acre
1967	17,000	14.5				
1968	17,500	10.0				
1969	18,000	19.9				
1970	18,000	13.4	26,000	26.5		
1971	18,000	19.9	23,000	30.8		
1972	15,000	12.5	23,000	28.7		
1973	18,000	17.8	25,000	25.9		
1974	18,000	16.0	27,000	23.8	18,000	12.8
1975	17,500	17.6	25,000	20.0	17,000	16.9
1976	--	--	25,000	25.6	17,000	9.4
1977	17,000	21.6	25,000	29.8	18,000	20.0
1978	18,000	16.2	25,000	29.6	18,000	15.5
1979	18,000	15.5	25,000	35.5	18,000	13.6
1980	18,000	11.8	25,000	34.9	20,000	25.5
1981	17,500	29.2	25,500	36.2	18,500	24.2
1982	15,000	17.7	25,500	30.1	18,500	15.0
1983	15,000	14.3	25,000	27.4	20,000	20.6
1984	17,000	11.6	25,000	28.5	20,000	13.7
1985	17,000	14.2	28,000	30.3	25,000	23.0
1986	20,000	20.7	28,000	29.3	19,000	27.5
1987	22,000	22.7	30,000	32.6	14,000	15.4
1988	19,000	10.3	28,000	29.2	19,000	15.4
1989	20,000	15.9	26,000	31.4	22,000	18.4
1990	21,000	17.8	--	--	20,000	15.0

1/ Plant populations are approximate and yields are averages at 70% moisture for all hybrids tested.

Table 7. 1990 Oakes irrigated area grain test. Yield and agronomic data for corn hybrids tested on the NDSU Oakes Experimental Site, Oakes, North Dakota.

Brand	Hybrid	Grain moist.	Grain yld.	Plant pop.	Silk date	Test wt.
		%	bu/a	plts/A	July	lb/bu
ND EXP	NDG068	18.1	142.1	27830	22	57.7
GEORGE'S SEED	7092	18.8	202.1	30492	27	58.3
PRODUCERS HY	500	18.9	185.0	27830	23	60.4
HORIZON	7082	19.2	207.2	29040	25	60.7
ASGROW	RX406	19.8	195.2	28314	28	57.9
MALLARD	UC-411A	19.8	205.3	28314	27	58.0
GEORGE'S SEED	9095	19.9	185.5	28798	27	58.3
CENEX/LOL	385	19.9	196.7	28556	27	58.6
HORIZON	8095	20.0	187.2	28314	26	57.6
GARST	8952	20.0	187.8	28072	24	59.2
CARGILL	3027	20.4	185.3	28072	27	57.2
ND EXP	NDG697	20.4	117.9	23958	18	59.8
INTERSTATE	1S463	20.6	185.5	28556	27	57.4
ASGROW	RX409	20.7	206.9	29182	26	58.4
PIONEER	3787	20.7	209.9	30008	24	59.8
TOP FARM	TFSX1194A	20.7	199.3	29524	24	58.8
DAHLGREN	DC-492	21.0	224.5	30976	25	59.4
ND EXP	NDG705	21.3	131.3	27346	18	60.0
PIONEER	3751	21.4	222.0	30492	26	57.1
JACQUES	4900	21.5	200.4	27830	26	56.7
GARST	8882	21.6	203.2	27830	27	59.3
TOP FARM	TFSX1102	21.8	196.6	28798	28	57.7
GEORGE'S SEED	7095	21.8	198.0	30976	28	57.8
BETAGOLD	KARLA	21.9	180.8	29282	27	57.5
SUPERCROST	1900	21.9	204.8	29282	26	54.4
CENEX/LOL	4453	21.9	203.7	29282	25	57.5
SUPERCROST	2000	22.0	201.3	29040	25	57.6
JACQUES	4440	22.1	196.6	29524	26	54.8
PRODUCERS HY	534	22.1	201.5	28072	27	57.5
JACQUES	4170	22.2	213.8	30008	26	57.9
CENEX/LOL	432	22.2	202.8	31218	28	58.0
CARGILL	3427	22.2	207.8	29040	27	54.8
CUSTOM FARM	CFS4330	22.3	196.2	28314	26	57.3
GOLDEN HARVEST	H-2295	22.4	217.9	28798	24	58.2
GOLDEN HARVEST	H-2343	22.5	240.4	29766	24	56.9
TERNING	SPIRIT	22.5	213.6	29766	26	57.5
INTERSTATE	1S443	22.6	218.5	30250	25	58.0
CUSTOM FARM	CFSW3767	22.7	189.5	28314	24	57.0
DEKLB PL G	DK485	22.8	215.2	30734	29	54.7
MALLARD	UC-612	22.9	196.5	30250	28	56.9
NORTHRUP KIN	N3624	22.9	213.7	28072	26	55.7

Table 7. Continued.

Brand	Hybrid	Grain	Grain	Plant	Silk	Test wt.
		moist.	yld.	pop.	date	
		%	bu/a	plts/A	July	lb/bu
SIGCO	1095	22.9	213.2	29766	26	57.3
SIGCO	1099	22.9	214.0	27830	26	58.7
INTERSTATE	1S549	22.9	218.9	30008	27	57.5
SIGCO	1701	23.1	213.3	28798	27	57.3
ASGROW	RX469	23.1	207.5	28072	26	58.7
TOP FARM	TFSX1101	23.2	227.0	29766	27	59.1
CUSTOM FARM	CFS4209	23.2	215.1	29766	26	59.1
PIONEER	3733	23.2	211.0	30492	29	59.6
JACQUES	4770	23.2	212.7	28798	28	56.4
BETAGOLD	KATRINA	23.5	214.8	29040	27	58.0
CARGILL	3627	23.5	232.2	30008	25	59.7
DAHLGREN	DC-494	23.5	222.4	28314	27	58.7
DAHLGREN	DC-510	23.6	200.6	28556	28	56.7
PRODUCERS HY	560	23.6	222.9	28314	26	58.2
DAHLGREN	D5999	23.8	191.7	27830	26	59.2
NORTHRUP KIN	N4350	24.0	218.9	30250	28	55.8
BETAGOLD	HANNA	24.1	206.9	29040	27	56.3
HORIZON	9107	27.4	213.7	30492	27	58.3
Expt. mean		21.9	202.5	29040	26	57.8
Low mean		18.1	117.9	23958	18	54.4
High mean		27.4	240.4	31218	29	60.7
C.V. %		4.1	7.2	6	4	1.8
LSD 5%		1.2	20.1	2545	1	1.4

Table 8. Irrigated Oakes area grain trial averages. Ear moisture percentage at harvest and yield performance.

BRAND	HYBRID	Ear moisture percentage				Bushels per acre			
		1989-90	88-90	87-90	86-90	89-90	88-90	87-90	86-90
		2Yrs	3Yrs	4Yrs	5Yrs	2Yrs	3Yrs	4Yrs	5Yrs
HORIZON	7082	17.9	17.6	15.8		206.4	201.2	191.2	
GEORGE'S S	7092	17.9	17.7	16.4		208.7	205.4	197.0	
MALLARD	UC-411A	18.7				211.5			
ASGROW	RX406	18.9	18.3	16.8		202.6	194.9	186.8	
CENEX/LOL	385	19.2	18.4			210.3	199.6		
HORIZON	8095	19.7	18.8			202.9	197.9		
DAHLGREN	DC-492	19.7	19.4			213.3	211.0		
CARGILL	3027	19.7	18.8			203.4	194.9		
GEORGE'S S	7095	19.9				202.5			
PIONEER	3751	19.9	19.1			218.5	206.3		
GEORGE'S S	9095	20.0	19.4			206.1	202.7		
GARST	8882	20.1	19.4	18.5	19.0	212.6	206.6	199.1	200.1
INTERSTATE	IS463	20.1	18.9	17.4		202.1	194.6	186.8	
BETAGOLD	KARLA	20.6	20.0			204.9	205.6		
JACQUES	4900	20.7	19.9			218.3	221.7		
TOP FARM	TFSX1102	20.8	20.0	19.0		209.7	204.2	197.1	
GOLDEN HAR	H-2295	20.8				218.6			
NORTHRUP K	N3624	21.0	19.6			214.0	203.9		
TERNING	SPIRIT	21.0				215.3			
CUSTOM FAR	CFSW3767	21.0				190.6			
CENEX/LOL	432	21.2				216.9			
JACQUES	4170	21.2	20.2			213.8	211.5		
DEKLB PL G	DK485	21.3				224.5			
PIONEER	3733	21.4				221.9			
SIGCO	1095	21.5				218.7			
INTERSTATE	IS443	21.8	21.1			217.6	212.4		
CARGILL	3627	21.9				226.4			
SIGCO	1099	22.0				225.0			
BETAGOLD	KATRINA	22.1				219.2			
CUSTOM FAR	CFS4209	22.3				218.7			
SIGCO	1701	22.4	21.1	20.6	21.8	221.9	216.0	207.6	209.5
MALLARD	UC-612	22.4	21.4	20.7		216.1	215.8	206.2	
DAHLGREN	DC-510	22.7				215.0			
NORTHRUP K	N4350	22.7	22.0			220.8	216.3		
BETAGOLD	HANNA	22.8	21.6			211.8	208.9		
LSD 5%		1.3	1.1	1.5	2.4	23.5	18.9	9.60	3.00



Table 9. 1990 East Central area grain test. Yield and agronomic data for corn hybrids tested on the NDSU Experiment Station, Fargo, North Dakota.

Brand	Hybrid	Grain moist.	Grain yld.	Root ldg.	Stalk ldg.	Plant pop.	Test wt.
		%	bu/a	-----%	-----%	plts/A	lb/bu
PIONEER	3963	8.59	88.8	0.00	0.00	22864	56.7
ND EXP	NDG059	8.78	82.3	0.00	0.00	23082	60.5
ND EXP	NDF718	9.70	87.0	0.00	0.75	21122	61.3
ND EXP	NDC707	9.84	72.0	0.00	0.10	21775	60.3
ND EXP	NDG958	10.76	86.0	0.00	1.12	20904	61.7
DEKLB PL G	DK332	11.33	85.3	0.00	0.00	23517	56.2
ND EXP	NDB564	11.48	65.8	0.00	1.26	18944	57.5
ND EXP	NDG068	11.73	80.2	0.00	3.34	23299	54.9
JACQUES	2750	11.84	84.0	0.00	0.12	23299	58.4
NORTHROP K I	N2001	12.05	86.1	1.92	0.00	23082	55.7
ND EXP	NDF415	12.60	86.7	0.00	7.57	20251	56.6
BETAGOLD	824	12.65	84.4	0.00	2.02	22210	57.2
BETAGOLD	ADA	12.73	76.4	0.00	1.77	22864	58.5
ND EXP	NDG974	13.07	62.5	0.00	3.44	20033	58.8
INTERSTATE	IS353	13.09	72.6	0.00	1.96	23082	55.2
SIGCO	1885	13.09	93.8	0.00	2.10	22428	57.8
ND EXP	NDF831	13.21	76.3	0.00	1.12	21340	57.4
INTERSTATE	IS239	13.30	85.6	0.00	0.10	22428	58.5
GARST	8952	13.33	94.9	0.00	0.10	23299	57.9
PIONEER	3831	13.88	98.7	0.00	1.18	22428	57.2
PIONEER	3921	13.92	94.8	0.00	0.00	23299	57.3
CARGILL	2137	13.99	87.4	0.00	0.00	23517	58.6
ND EXP	NDD005	14.34	60.5	1.12	7.75	19162	56.0
ASGROW	RX337	14.50	84.1	0.00	0.33	22428	57.5
SUPERCROST	1548	14.56	101.4	0.00	0.19	22864	58.0
INTERSTATE	IS313A	14.63	86.5	0.00	0.20	23517	59.0
CARGILL	2227	14.69	92.4	0.00	1.11	22646	57.4
CARGILL	809	14.69	88.7	0.00	1.48	23517	56.5
BETAGOLD	GERDA	14.73	82.9	0.93	0.99	22864	57.8
DEKLB PL G	DK372	15.51	88.8	0.00	0.00	23299	58.8
GARST	R8990	15.66	84.9	0.00	1.07	23082	57.3
NORTHROP K	N2440	15.67	87.7	1.85	0.40	22646	56.8
BETAGOLD	ANNA	16.79	84.4	0.00	0.00	23517	58.2
INTERSTATE	IS406	16.93	95.2	0.00	0.00	23299	57.4
TOP FARM	TFSX1194A	18.26	85.1	0.00	0.00	22646	56.4
SIGCO	1793	18.89	111.8	0.95	0.00	23735	55.3
CARGILL	2037	18.95	95.9	0.00	0.22	23517	54.1
BETAGOLD	IDA	19.01	99.6	0.00	0.00	21775	54.9
TOP FARM	TFSX1195A	19.40	93.4	3.70	2.13	23299	55.2
SUPERCROST	1594	20.51	98.8	0.00	1.01	23299	54.9
ASGROW	XP3598	21.25	82.4	0.00	0.00	22646	56.5
SIGCO	1190	21.60	93.3	0.00	0.29	23735	55.1
BETAGOLD	INGRID	21.79	89.3	0.00	1.76	23082	56.1
NORTHROP K	N3624	22.37	89.8	0.00	1.11	22210	52.0

Table 9. Continued.

Brand	Hybrid	Grain moist.	Grain yld.	Root ldg.	Stalk ldg.	Plant pop.	Test wt.
		%	bu/a	-----%-----		plts/A	lb/bu
JACQUES	4120	22.64	79.5	0.00	0.09	23082	55.2
DEKLB PL G	DK421	24.12	87.6	0.00	0.00	22864	54.2
TOP FARM	TFSX1101	25.38	90.0	5.68	3.06	22428	52.6
TOP FARM	TFSX1102	25.92	105.8	0.00	0.90	22864	54.7
TOP FARM	TFSX1097	26.32	96.9	0.93	0.29	22210	52.1
Expt. mean		15.80	87.1	0.35	1.02	22557	56.8
Low mean		8.59	60.5	0.00	0.00	18944	52.0
High mean		26.32	111.8	5.68	7.75	23735	61.7
C.V. %		13.87	17.0	280.34	317.27	6	1.4
LSD 5%		3.04	20.8	1.78	ns	1808	1.1

Table 10. East central area grain trial averages. Ear moisture percentage at harvest and yield performance.

BRAND	HYBRID	Ear moisture percentage				Bushels per acre			
		1989-90 2Yrs	87-90 3Yrs	86-90 4Yrs	85-90 5Yrs	89-90 2Yrs	87-90 3Yrs	86-90 4Yrs	85-90 5Yrs
PIONEER	3963	11.4	11.8			95.4	95.1		
ND EXP	NDC707	11.6	11.2	11.8	12.3	82.9	81.6	85.6	87.3
ND EXP	NDF718	11.6	12.1	12.9	13.2	97.4	89.7	96.7	96.9
ND EXP	NDG068	12.6	12.3			109.1	101.8		
SIGCO	1885	13.7				118.9			
ND EXP	NDB564	13.7	13.3	14.7	14.9	70.0	65.5	82.4	85.2
JACQUES	2750	13.9				107.5			
INTERSTATE	IS239	14.0				112.1			
ND EXP	NDF415	14.2	14.6	15.8	17.5	104.9	97.1	105.0	102.1
ND EXP	NDF831	14.7				94.4			
BETAGOLD	ADA	14.8				95.1			
INTERSTATE	IS313A	14.8				108.5			
CARGILL	2227	14.8				121.3			
INTERSTATE	IS353	15.0	13.9			93.5	90.1		
BETAGOLD	GERDA	15.2				105.5			
CARGILL	809	15.8	15.2	16.2	17.2	113.1	110.2	118.8	113.4
ND EXP	NDD005	16.6	15.5	16.6	17.1	82.9	83.4	92.2	94.9
SIGCO	1793	19.0	18.3			120.3	120.7		
BETAGOLD	INGRID	19.9	18.5			102.1	102.5		
TOP FARM	TFSX1195A	20.0				104.3			
TOP FARM	TFSX1102	23.9	22.9			113.2	113.7		
TOP FARM	TFSX1101	24.0				113.7			
LSD 5%		3.9	3.2	1.5	2.1	22.6	16.8	17.8	16.7

Table 11. 1990 Northeastern area grain test. Yield and agronomic data for corn hybrids tested on the Earl Stover Farm, Larimore, North Dakota.

Brand	Hybrid	Grain moist.	Grain yield	Root ldg.	Stalk ldg.	Plant pop.	Test wt.
		%	bu/a	-----%	-----	plts/A	lb/bu
PIONEER	3963	11.30	115.4	0.00	0.18	22280	58.49
INTERSTATE	ISEX130	13.06	112.5	0.00	13.23	22419	59.24
INTERSTATE	ISEX120	13.12	99.6	0.00	6.93	21773	58.99
BETAGOLD	ADA	14.06	117.9	0.00	0.00	23419	58.36
ND EXP	NDG082	14.54	97.3	0.00	1.26	17324	59.52
DAHLGREN	DE0 511	14.61	98.8	0.00	0.84	20978	60.05
DAHLGREN	DC-430	14.72	121.7	0.00	1.12	22909	58.78
INTERSTATE	IS353	14.80	106.0	0.00	2.42	23359	58.43
DEKLB PL GEN	DK332	15.06	103.1	0.00	1.85	22423	57.87
ND EXP	NDD45	15.39	79.7	0.00	0.00	21312	58.60
DAHLGREN	K-127	15.46	110.8	0.00	1.97	22848	58.00
BETAGOLD	824	15.47	103.7	0.00	2.77	22075	58.85
NORTHRUP KING	N2001	15.63	121.0	0.00	2.32	21807	57.40
SIGCO	1885	15.79	111.7	0.00	2.77	21834	58.88
INTERSTATE	IS239	15.83	106.0	0.00	1.43	22292	58.35
PIONEER	3921	15.95	114.6	0.00	1.22	23283	57.87
CARGILL	2137	16.72	109.9	0.00	0.09	21780	57.23
CARGILL	2037	18.13	95.0	0.00	0.00	23887	54.91
BETAGOLD	GERDA	18.33	120.0	0.00	1.83	23254	57.58
INTERSTATE	IS313A	18.52	108.0	0.00	0.00	24311	57.33
GARST	R 8990	18.62	99.1	0.00	0.00	20562	57.51
GARST	8952	19.00	108.8	0.00	0.86	23117	57.47
BETAGOLD	ANNA	20.19	100.3	0.00	0.74	24355	57.58
SIGCO	1180	20.80	99.3	0.00	0.00	23117	56.56
PIONEER	3831	22.04	106.1	0.00	0.41	23027	55.19
Expt. mean		16.29	106.7	0.00	1.63	22390	57.96
Low mean		11.30	79.7	0.00	0.00	17324	54.91
High mean		22.04	121.7	0.00	13.23	24355	60.05
C.V. %		8.22	11.7	0.00	160.66	6	1.52
LSD 5%		1.90	17.7	ns	3.70	2006	1.24

Table 12. Northeastern area grain trial averages. Ear moisture percentage at harvest and yield performance.

BRAND	HYBRID	Ear moisture percentage					Bushels per acre			
		1989-90 2Yrs	88-90 3Yrs	87-90 4Yrs	86-90 5Yrs	89-90 2Yrs	88-90 3Yrs	87-90 4Yrs	86-90 5Yrs	
PIONEER	3963	14.6	11.4	12.2		95.3	78.7	90.0		
ND EXP	NDG082	15.2	12.4	12.9		88.2	77.1	86.0		
DAHLGREN	K-127	16.6				94.6				
DAHLGREN	DC-430	16.7	13.6			94.7	77.4			
BETAGOLD	ADA	17.1				100.3				
SIGCO	1885	17.7	14.0			95.8	82.4			
INTERSTATE	IS353	17.8	13.9	13.9		90.2	79.9	89.7		
INTERSTATE	IS313A	17.9	14.1			92.2	77.8			
BETAGOLD	GERDA	20.4				98.5				
LSD 5%		4.1	3.0	2.8		16.1	14.0	12.3		

Table 13. 1990 Southeastern area grain test. Yield and agronomic data for corn hybrids tested on the Paul Kummer Farm, Colfax, North Dakota.

Brand	Hybrid	Grain moist.	Grain yield	Root Idg.	Stalk Idg.	Plant pop.	Test wt.
		%	bu/a	-----%-----		plts/A	lb/bu
ND EXP	NDG068	11.54	77.1	0.00	4.89	21672	57.1
ND EXP	NDG082	11.80	108.7	0.00	4.54	22314	57.9
GARST	8952	12.19	100.1	0.00	0.84	25061	58.7
BETAGOLD	GERDA	12.60	100.8	0.85	4.09	25973	57.6
ND EXP	NDF831	13.31	102.1	1.85	3.48	23107	58.5
ND EXP	NDD16	13.46	83.9	0.82	0.84	24076	55.9
ND EXP	NDG514	13.60	73.3	1.38	1.23	19093	57.4
ND EXP	NDF415	14.50	103.1	0.00	12.43	20962	58.1
DEKLB PL GEN	DK372	14.58	90.1	0.00	2.45	26878	58.1
INTERSTATE	IS406	14.59	117.0	0.00	0.00	25709	57.8
PIONEER	3787	14.72	127.7	0.00	1.63	26531	57.1
ND EXP	NDD5	14.75	84.8	0.00	1.19	21277	57.2
ND EXP	NDG491	15.68	94.3	0.00	1.19	18472	57.4
ND EXP	NDG383	15.77	109.7	0.00	2.51	22672	58.8
TOP FARM	TFSX1195A	15.77	111.6	0.00	0.60	24707	56.4
BETAGOLD	INGRID	15.93	113.8	0.00	9.18	24743	57.5
BETAGOLD	IRENE	15.95	105.2	0.00	4.08	26018	57.2
SUPERCROST	1594	16.57	104.1	0.00	4.15	25886	55.6
GOLDEN HARVEST	H-2295	16.86	118.9	0.00	4.39	26417	57.9
CARGILL	3427	17.29	129.8	0.00	0.53	25574	54.7
SUPERCROST	1900	17.58	135.1	0.00	6.15	25239	54.2
PIONEER	3751	17.59	108.7	0.00	1.64	25408	55.4
DEKLB PL GEN	DK464	17.67	125.2	0.00	1.02	25121	56.2

Table 13. Continued.

Brand	Hybrid	Grain moist.	Grain yield	Root ldg.	Stalk ldg.	Plant pop.	Test wt.
		%	bu/a	-----%-----		plts/A	lb/bu
INTERSTATE	IS463	17.71	101.3	0.00	4.31	24832	56.3
BETAGOLD	IDA	17.84	104.1	0.00	5.23	25416	56.2
GARST	8882	18.45	109.3	0.00	10.78	25216	57.4
SIGCO	1190	18.62	114.6	0.00	2.62	25113	56.5
CARGILL	3027	18.79	112.5	0.00	3.15	26348	56.2
CUSTOM/FARM	CFSE92024	18.81	96.1	0.00	7.17	26244	55.7
SIGCO	1095	19.01	93.1	0.00	2.68	24763	57.2
CUSTOM/FARM	CFS2223	19.63	126.5	0.00	1.58	26460	56.1
GOLDEN HARVEST	H-2343	20.45	110.1	0.82	2.57	23743	56.1
PIONEER	3733	20.71	137.5	0.00	1.76	24927	56.9
TOP FARM	TFSX1097	21.06	117.6	0.00	0.88	23806	53.3
DEKLB PL GEN	DK421	21.15	102.2	0.00	4.39	27141	54.6
DEKLB PL GEN	DK485	21.81	103.0	0.00	6.67	25276	51.4
GOLDEN HARVEST	H-2327	21.91	124.7	0.00	0.77	25763	52.9
BETAGOLD	KARLA	22.00	102.0	0.00	3.40	26156	55.8
CUSTOM/FARM	CFSW3857	22.48	105.8	0.00	2.64	25614	56.9
TOP FARM	TFSX1102	22.87	97.4	0.00	3.52	24921	55.6
NORTHRUP KING	N3624	22.96	101.1	0.00	1.49	24328	51.4
INTERSTATE	IS549	23.32	109.2	0.00	1.81	24918	54.6
TOP FARM	TFSX1101	23.35	115.6	0.95	2.71	24623	55.4
BETAGOLD	KATRINA	23.59	118.9	0.00	6.04	24712	55.3
SIGCO	1099	24.03	118.7	0.95	3.79	23763	52.1
SIGCO	1701	24.64	126.4	0.00	1.99	24379	53.3
BETAGOLD	HANNA	25.44	121.4	0.00	2.60	24841	53.0
CARGILL	3627	26.18	85.0	1.80	0.92	24789	53.8
ND EXP	NDC368	27.85	94.0	0.00	8.99	24021	55.9
Expt. mean		18.55	107.6	0.19	3.41	24592	56.0
Low mean		11.54	73.3	0.00	0.00	18471	51.4
High mean		27.85	137.5	1.85	12.43	27141	58.8
C.V. %		10.11	16.3	473.05	121.01	6	2.3
LSD 5%		2.63	24.6	ns	5.79	2119	1.8

Table 14. Southeastern area grain trial averages. Ear moisture percentage at harvest and yield performance.

BRAND	HYBRID	Ear moisture percentage				Bushels per acre			
		1989-90 2Yrs	88-90 3Yrs	87-90 4Yrs	85-90 5Yrs	89-90 2Yrs	88-90 3Yrs	87-90 4Yrs	85-90 5Yrs
ND EXP	NDG514	12.9				77.9			
ND EXP	NDD16	13.2				85.0			
BETAGOLD	GERDA	13.5				90.4			
ND EXP	NDG491	13.9				86.3			
ND EXP	NDF831	14.1	12.1			92.8	88.6		
ND EXP	NDG383	14.8				92.5			
ND EXP	NDF415	15.0	13.0	13.8	14.9	99.1	94.2	92.6	96.2
ND EXP	NDD5	15.8				83.8			
INTERSTATE	IS406	16.0	13.9			101.4	103.9		
BETAGOLD	INGRID	16.3	13.9	14.1		119.1	112.7	115.2	
PIONEER	3751	17.1	14.8			113.6	114.4		
GARST	8882	17.7	15.1	15.7		99.8	107.5	112.1	
BETAGOLD	IRENE	18.3				100.0			
INTERSTATE	IS463	18.6	15.7	16.4		101.5	106.0	112.0	
DEKLB PL G	DK464	18.8	16.1	16.8		114.7	110.6	111.5	
TOP FARM	TFSX1195A	19.3	15.9			112.7	107.9		
CARGILL	3027	19.3	16.2			107.3	108.9		
PIONEER	3733	19.3				124.7			
GOLDEN HAR	H-2327	20.3				115.5			
NORTHRUP K	N3624	21.2	17.3			100.1	104.3		
BETAGOLD	KARLA	21.4	18.5			93.7	99.8		
GOLDEN HAR	H-2343	21.4	18.1			109.2	113.2		
TOP FARM	TFSX1102	23.1	19.5	19.0		101.3	107.3	112.0	
SIGCO	1701	24.5	21.5	22.1		118.4	111.8	111.4	
TOP FARM	TFSX1101	24.7	20.0			105.1	105.8		
CARGILL	3627	25.4				94.0			
BETAGOLD	KATRINA	26.2				104.2			
SIGCO	1099	26.3				106.8			
ND EXP	NDC368	30.1	26.7			86.6	91.8		
LSD 5%		4.0	2.9	1.9		20.3	17.4	17.6	

Table 15. 1990 East central area silage trial. Yield and agronomic performance for corn hybrids tested on the NDSU research plots at Fargo, North Dakota.

Brand	Hybrid	Lodging		Dry matter	Forage yield	Grain in forage	
		root	stalk			%	tons/A
INTERSTATE	IS503AS	0.0	0.0	39.14	17.42	26.96	4.65
ND EXP	NDSAB	7.2	3.2	50.05	14.96	37.77	5.62
ND EXP	NDSB(MS)C8	6.1	0.9	50.53	14.08	35.89	5.06
ND EXP	NDD34	0.0	0.0	59.03	16.88	39.31	6.62
ND EXP	NDD5	0.0	0.0	58.13	11.76	46.89	5.53
Expt. mean		2.6	0.8	51.37	15.02	37.37	5.50
Low mean		0.0	0.0	59.03	17.42	46.89	6.62
High mean		7.2	3.2	39.14	11.76	26.96	4.65
C.V. %		180	262	5.37	17.60	9.78	16.82
LSD (0.05)		ns	ns	4.25	ns	5.63	ns

Table 16. East central area silage trial averages. Dry matter percentage at harvest and yield performance.

BRAND	HYBRID	Dry matter percentage				Tons per acre			
		1989-90 2Yrs	88-90 3Yrs	87-90 4Yrs	86-90 5Yrs	89-90 2Yrs	88-90 3Yrs	87-90 4Yrs	86-90 5Yrs
INTERSTATE	IS503AS	34.5	33.3	33.1		18.4	17.0	18.0	
ND EXP	NDSB(MS)C8	41.6				15.1			
ND EXP	NDSAB	41.7	38.4	37.8	44.5	17.0	16.0	15.1	17.4
ND EXP	NDD34	46.4				17.2			
LSD 5%		14.0	12.0	6.9		3.10	3.30	6.60	

Table 17. 1989 Northeastern area silage trial. Yield and agronomic performance for corn hybrids tested on the Earl Stover farm, Larimore, North Dakota.

Brand	Hybrid	Lodging		Dry matter	Forage yield	Grain in forage	
		root	stalk			%	tons/A
INTERSTATE	SILO KING	0.9	3.8	41.86	18.98	42.70	8.10
INTERSTATE	SF80 A	0.0	2.7	40.57	17.12	40.46	6.93
INTERSTATE	EXSF78	0.0	4.1	41.72	17.74	45.28	8.06
ND EXP	NDSB(MS)C8	0.0	2.5	33.88	16.82	27.07	4.57
ND EXP	NDD34	0.0	1.6	37.71	18.50	35.98	6.69
Expt. mean		0.2	2.9	39.15	17.83	38.30	6.87
Low mean		0.0	1.6	33.88	16.82	27.07	4.57
High mean		0.9	4.1	41.86	18.98	45.28	8.10
C.V. %		447	100	5.39	4.43	7.25	9.05
LSD (0.05)		ns	ns	3.25	1.22	4.28	0.96

Table 18. Northeastern area silage trial averages. Dry matter percentage at harvest and yield performance.

BRAND	HYBRID	Dry matter percentage				Tons per acre			
		1989-90 2Yrs	88-90 3Yrs	87-90 4Yrs	86-90 5Yrs	89-90 2Yrs	88-90 3Yrs	87-90 4Yrs	86-90 5Yrs
ND EXP	NDSB(MS)C8	32.3				16.8			
ND EXP	NDD34	34.4				17.3			
INTERSTATE	SILO KING	38.3				16.9			
LSD 5%		6.6				6.1			



Table 19. Summary by area and company of moisture at harvest and yield per acre of 1990 corn grain trials.

Brand	Hybrid	Dryland						Irrigated	
		Fargo		Colfax		Larimore		Oakes	
		Mst.	Yld.	Mst.	Yld.	Mst.	Yld.	Mst.	Yld.
		%	bu	%	bu	%	bu	%	bu
ASGROW	RX337	14.5	84.1						
ASGROW	RX406							19.8	195.2
ASGROW	RX409							20.7	206.9
ASGROW	RX469							23.1	207.5
ASGROW	XP3598	21.2	82.4						
BETAGOLD	824	12.7	84.4			15.5	103.7		
BETAGOLD	ADA	12.7	76.4			14.1	117.9		
BETAGOLD	ANNA	16.8	84.4			20.2	100.3		
BETAGOLD	GERDA	14.7	82.9	12.6	100.8	18.3	120.0		
BETAGOLD	HANNA			25.4	121.4			24.1	206.9
BETAGOLD	IDA	19.0	99.6	17.8	104.1				
BETAGOLD	INGRID	21.8	89.3	15.9	113.8				
BETAGOLD	IRENE			15.9	105.2			21.9	180.8
BETAGOLD	KARLA			22.0	102.0				
BETAGOLD	KATRINA			23.6	118.9			23.5	214.8
CARGILL	809	14.7	88.7						
CARGILL	2037	18.9	95.9			18.1	95.0		
CARGILL	2137	14.0	87.4			16.7	109.9		
CARGILL	2227	14.7	92.4						
CARGILL	3027			18.8	112.5			20.4	185.3
CARGILL	3427			17.3	129.8			22.2	207.8
CARGILL	3627			26.2	85.0			23.5	232.2
CENEX/LOL	385							19.9	196.7
CENEX/LOL	432							22.2	202.8
CENEX/LOL	4453							21.9	203.7
CUSTOM FARM	CFS2223			19.6	126.5				
CUSTOM FARM	CFS4209							23.2	215.1
CUSTOM FARM	CFS4330							22.3	196.2
CUSTOM FARM	CFSE92024			18.8	96.1				
CUSTOM FARM	CFSW3767							22.7	189.5
CUSTOM FARM	CFSW3857			22.5	105.8				
DAHLGREN	D5999							23.8	191.7
DAHLGREN	DC-430					14.7	121.7		
DAHLGREN	DC-492							21.0	224.5
DAHLGREN	DC-494							23.5	222.4
DAHLGREN	DC-510							23.6	200.6
DAHLGREN	DEO 511					14.6	98.8		
DAHLGREN	K-127					15.5	110.8		
DEKALB PL GEN	DK332	11.3	85.3			15.1	103.1		
DEKALB PL GEN	DK372	15.5	88.8	14.6	90.1				

Table 19. Continued.

Brand	Hybrid	Dryland						Irrigated	
		Fargo		Colfax		Larimore		Oakes	
		Mst.	Yld.	Mst.	Yld.	Mst.	Yld.	Mst.	Yld.
		%	bu	%	bu	%	bu	%	bu
DEKALB PL GEN	DK421	24.1	87.6	21.1	102.2				
DEKALB PL GEN	DK464			17.7	125.2				
DEKALB PL GEN	DK485			21.8	103.0			22.8	215.2
GARST	8882			18.4	109.3			21.6	203.2
GARST	8952	13.3	94.9	12.2	100.1	19.0	108.8	20.0	187.8
GARST	R8990	15.7	84.9			18.6	99.1		
GEORGE'S SEED	7092							18.8	202.1
GEORGE'S SEED	7095							21.8	198.0
GEORGE'S SEED	9095							19.9	185.5
GOLDEN HARV	H-2295			16.9	118.9			22.4	217.9
GOLDEN HARV	H-2327			21.9	124.7				
GOLDEN HARV	H-2343			20.4	110.1			22.5	240.4
HORIZON	7082							19.2	207.2
HORIZON	8095							20.0	187.2
HORIZON	9107							27.4	213.7
INTERSTATE	IS239	13.3	85.6			15.8	106.0		
INTERSTATE	IS313A	14.6	86.5			18.5	108.0		
INTERSTATE	IS353	13.1	72.6			14.8	106.0		
INTERSTATE	IS406	16.9	95.2	14.6	117.0				
INTERSTATE	IS443							22.6	218.5
INTERSTATE	IS463			17.7	101.3			20.6	185.5
INTERSTATE	IS549			23.3	109.2			22.9	218.9
INTERSTATE	ISEX120					13.1	99.6		
INTERSTATE	ISEX130					13.1	112.5		
JACQUES	2750	11.8	84.0						
JACQUES	4120	22.6	79.5						
JACQUES	4170							22.2	213.8
JACQUES	4440							22.1	196.6
JACQUES	4770							23.2	212.7
JACQUES	4900							21.5	200.4
MALLARD	UC-411A							19.8	205.3
MALLARD	UC-612							22.9	196.5
ND EXP	NDB564	11.5	65.8						
ND EXP	NDC368			27.9	94.0				
ND EXP	NDC707	9.8	72.0						
ND EXP	NDD5	14.3	60.5	14.8	84.8				
ND EXP	NDD16			13.5	83.9				
ND EXP	NDD45					15.4	79.7		
ND EXP	NDF415	12.6	86.7	14.5	103.1				
ND EXP	NDF718	9.7	87.0						
ND EXP	NDF831	13.2	76.3	13.3	102.1				

Table 19. Continued.

Brand	Hybrid	Dryland						Irrigated	
		Fargo		Colfax		Larimore		Oakes	
		Mst.	Yld.	Mst.	Yld.	Mst.	Yld.	Mst.	Yld.
		%	bu	%	bu	%	bu	%	bu
ND EXP	NDG059	8.8	82.3						
ND EXP	NDG068	11.7	80.2	11.5	77.1			18.1	142.1
ND EXP	NDG082			11.8	108.7	14.5	97.3		
ND EXP	NDG383			15.8	109.7				
ND EXP	NDG491			15.7	94.3				
ND EXP	NDG514			13.6	73.3				
ND EXP	NDG697							20.4	117.9
ND EXP	NDG705							21.3	131.3
ND EXP	NDG958	10.8	86.0						
ND EXP	NDG974	13.1	62.5						
NORTHRUP KING	N2001	12.1	86.1			15.6	121.0		
NORTHRUP KING	N2440	15.7	87.7						
NORTHRUP KING	N3624	22.4	89.8	23.0	101.1			22.9	213.7
NORTHRUP KING	N4350							24.0	218.9
PIONEER	3733			20.7	137.5			23.2	211.0
PIONEER	3751			17.6	108.7			21.4	222.0
PIONEER	3787			14.7	127.7			20.7	209.9
PIONEER	3831	13.9	98.7			22.0	106.1		
PIONEER	3921	13.9	94.8			15.9	114.6		
PIONEER	3963	8.6	88.8			11.3	115.4		
PRODUCERS HYB	500							18.9	185.0
PRODUCERS HYB	534							22.1	201.5
PRODUCERS HYB	560							23.6	222.9
SIGCO	1095			19.0	93.1			22.9	213.2
SIGCO	1099			24.0	118.7			22.9	214.0
SIGCO	1180					20.8	99.3		
SIGCO	1190	21.6	93.3	18.6	114.6				
SIGCO	1701			24.6	126.4			23.1	213.3
SIGCO	1793	18.9	111.8						
SIGCO	1885	13.1	93.8			15.8	111.7		
SUPERCROST	1548	14.6	101.4						
SUPERCROST	1594	20.5	98.8	16.6	104.1				
SUPERCROST	1900			17.6	135.1			21.9	204.8
SUPERCROST	2000							22.0	201.3
TERNING	SPIRIT							22.5	213.6
TOP FARM	TFSX1097	26.3	96.9	21.1	117.6				
TOP FARM	TFSX1101	25.4	90.0	23.4	115.6			23.2	227.0
TOP FARM	TFSX1102	25.9	105.8	22.9	97.4			21.8	196.6
TOP FARM	TFSX1194A	18.3	85.1					20.7	199.3
TOP FARM	TFSX1195A	19.4	93.4	15.8	111.6				

Table 20. Summary by area and company of dry matter at harvest and yield per acre of 1990 silage trials.

		Dryland			
Brand	Hybrid	Fargo		Larimore	
		DM	Yield	DM	Yield
		%	Tons/A	%	Tons/A
INTERSTATE	EXSF78			41.72	17.74
INTERSTATE	IS503AS	39.14	17.42		
INTERSTATE	SF80A			40.57	17.12
INTERSTATE	SILO KING			41.86	18.98
ND EXP	NDD34	59.03	16.88	37.71	18.50
ND EXP	NDD5	58.13	11.76		
ND EXP	NDSAB	50.05	14.96		
ND EXP	NDSB(MS)C8	50.53	14.08	333.88	16.82

Table 21. Grain Corn Variety Trial (Dryland), Carrington, ND., 1990.

Brand	Hybrid	FM	Days to Silk	Ear Height inches	Harvest moisture %	Test Weight lbs/bu	Yield bu/ac
BETAGOLD	ANNA	85	88	36.5	33.0	49	78.5
BETAGOLD	ADA	85	89	42.0	30.8	49	91.3
BETAGOLD	X824	80	84	39.0	28.8	50	104.2
BETAGOLD	GERDA	90	88	42.5	31.4	49	99.2
PIONEER	3921	85	87	42.5	34.1	47	98.5
PIONEER	3831	90	88	41.5	35.3	47	88.8
TERNING	EXPRESS	85	90	39.5	37.0	46	109.1
TERNING	SELECT	90	90	41.0	34.5	48	92.3
AGRIPRO	AP097	85	90	40.5	31.4	49	89.8
AGRIPRO	AP077	82	88	38.0	29.8	49	95.3
CARGILL	2037	80	88	43.5	33.3	47	62.6
CARGILL	2137	82	87	41.0	33.5	48	89.8
CARGILL	809	85	87	38.0	32.4	49	114.5
JACQUES	2750	80	88	37.0	30.7	50	106.2
JACQUES	4120	90	88	44.5	35.0	47	100.5
DEKALB	DK332	83	87	36.0	29.9	50	79.1
DEKALB	DK372	87	87	41.5	33.0	49	112.4
INTERSTATE	IS353	83	86	39.5	30.5	49	106.9
INTERSTATE	IS313A	84	90	42.5	32.5	49	103.1
INTERSTATE	IS239	83	88	41.0	30.5	49	95.2
MALLARD	UC-383	85	88	44.0	30.5	49	93.7
MALLARD	UC-385A	85	87	41.0	33.1	50	95.0
HORIZON	8095	0	91	45.5	37.1	47	89.5
HORIZON	7082	0	90	45.5	31.9	48	77.9
NORTHRUP KING	PX9055	75	84	33.0	28.6	49	89.7
NORTHRUP KING	N2001	85	86	41.0	29.3	50	93.8
Mean			87.6	40.7	32.2	48.5	95.7
LSD .05			2.2	5.1	3.5	2.4	20.6

Table 22. Grain Corn Variety Trial (Irrigated), Carrington, ND., 1990.

Brand	Hybrid	FM	Days to Silk	Ear	Harvest	Test	Yield
				Height	moisture	Weight	
				inches	%	bs/bu	bu/ac
DAHLGREN	K-127	80	87	44	32.8	47	127.0
DAHLGREN	DC-430	85	94	45	35.1	46	128.5
DAHLGREN	DC-440	90	91	43	39.1	44	114.7
DAHLGREN	DE0511	85	87	41	35.9	46	120.7
BETAGOLD	ANNA	85	86	40	33.1	47	111.5
BETAGOLD	ADA	85	89	46	35.8	46	128.3
BETAGOLD	X824	80	87	42	33.8	48	133.6
BETAGOLD	GERDA	90	91	45	37.0	45	129.0
BETAGOLD	INGRID	95	93	45	38.7	43	134.5
PIONEER	3921	85	86	48	34.7	48	150.5
PIONEER	3845	90	93	50	39.9	42	120.4
PIONEER	3831	90	90	47	39.0	44	142.9
TERNING	SPIRIT	95	91	48	39.9	44	136.6
AGRIPRO	AP097	85	91	49	35.5	46	139.9
CARGILL	2037	80	88	46	39.9	42	131.2
CARGILL	2137	82	87	47	34.5	47	130.3
CARGILL	809	85	88	44	36.1	45	127.9
CARGILL	37058	90	93	40	38.7	43	132.0
JACQUES	4170	90	91	45	39.7	42	120.8
DEKALB	DK332	83	89	40	33.1	47	129.5
DEKALB	DK372	87	90	42	35.3	46	116.7
DEKALB	DK421	92	93	53	39.6	41	140.5
INTERSTATE	IS313A	84	91	43	37.3	44	113.6
INTERSTATE	IS406	90	89	44	38.1	44	139.6
HORIZON	8095	0	93	44	40.1	43	126.9
HORIZON	7082	0	89	44	35.5	46	129.7
NORTHRUP KING	PX9055	75	84	36	29.1	49	116.0
NORTHRUP KING	N2001	85	86	46	33.4	46	130.9
Mean			89.4	44.4	36.4	45.0	128.8
LSD .05			2.3	5.9	2.2	2.7	NS

Table 23. Grain Corn Variety Trial (Dryland Early Corn), Carrington, ND., 1990.

Brand	Hybrid	FM	Days to Silk	Ear	Harvest	Yield
				Height	moisture	
				cm	%	bu/ac
BETAGOLD	X824	80	85	35	26.7	73.1
CARGILL	2037	80	89	42	29.9	63.1
DAHLGREN	K-127	80	84	37	27.6	81.4
INTERSTATE	IS353	83	87	37	26.5	71.4
INTERSTATE	ISX120	77	83	35	24.4	72.8
INTERSTATE	ISX130	78	83	36	28.5	70.8
JACQUES	2750	80	88	41	29.3	86.2
Mean			85.4	37.6	27.6	74.1
LSD .05			0.9	3.7	NS	9.3

Table 24. Grain Corn Yield (Conventional Re-Crop), Minot, ND., 1990.

Variety		Relative Maturity	Yield bu/A	Plant Height inches	Test Ear Weight lb/bu
Betagold	824	80	55.8	90.0	54.9
Betagold	Ada	85	50.0	84.9	58.3
Jacques	2750	80	48.0	88.8	57.1
Betagold	Anna	85	46.4	84.7	56.4
N. King	N 0565	70	46.0	81.5	57.3
Interstate	IS 353	83	45.5	89.7	55.2
Interstate	IS EX 120	77	42.2	88.4	54.2
N. King	PX 9055	75	39.1	83.4	52.2
Cargill	3027	95	35.1	84.0	56.7
Interstate	IS EX 130	78	34.8	88.9	54.0
Cargill	37058	85	29.7	92.9	55.3
EXP MEAN			42.9	87.0	55.6
C.V. %			19.8	5.2	1.9
LSD 5%			12.3	6.5	NS

Table 25. Silage Corn Variety Trial (Conventional Re-Crop), Minot, ND., 1990.

Silage Corn Variety Yield & Agronomic Data on Conventional Recrop, Minot 1990.

Variety		Yield tons/A	Plant Height inches	Dry Matter %
Jacques	4120	13.6	89.7	34.6
N. King	S-2101 WX	12.7	91.6	34.2
Interstate	IS Silo King	12.2	85.2	38.2
Jacques	3630	11.2	86.4	29.2
Interstate	IS EX SF78	11.2	89.4	41.5
Interstate	IS SF80A	10.1	88.0	34.1
EXP MEAN		11.8	88.4	35.3
C.V. %		11.3	4.9	8.1
LSD 5%		2.0	5.7	NS

Table 26. Grain Corn and Silage Hybrid Trial, Dickinson, ND., 1990.

Hybrid	Silage Tons/A	Harvest Moisture	Grain bu/A	Test Wt lbs.
Cargill 809	7.07	74.5	33.6	52.0
Cargill 2037	8.49	74.0	10.7	53.0
Cenex 809	8.16	71.5	37.0	51.5
Dahlgren K2204	8.22	71.0	6.2	52.5
Hammel H85	7.85	73.5	26.3	53.0
Hammel H90	8.89	73.5	17.7	52.0
Interstate 232A	7.45	71.5	18.6	52.5
Interstate Silo King	6.56	74.5	18.0	53.0
Interstate SF80A	6.55	74.5	23.0	54.5
Interstate SF78	6.95	68.5	37.3	55.5
Jaques 2750	7.02	70.5	10.3	59.0
Jaques 3630	7.10	75.0	8.0	53.0
Pioneer 3831	8.90	72.5	11.9	52.5
Pioneer 3921	7.68	73.5	18.0	52.5
Pioneer 3965A	6.59	77.0	15.5	54.5
Moisture Basis:	70%		15.5%	
Seeding Date:	April 14			
Harvest Date:	Aug. 23		Sept. 8	
LSD .05% =	1.05 Tons/A		6.67 bu/A	
C.V. =	7.00%		16.0%	
Seeding Rate:	18,000 seeds/A			
Harvest Population:	14,500 plants/A			
Row Width:	36 inches			
Herbicide Applied:	Prowl, preemergence			

Table 27. Grain Corn Variety Trial, Langdon, ND., 1990.

Brand	Hybrid	Days to tassel	Harvest Moist. %	15.5% TWT lbs/bu	Moisture Yield bu/a
Interstate Ex 130		73	24.1	24.1	92.3
Interstate Ex 120		74	21.5	21.5	90.1
Cargill 809		79	32.7	54.1	89.2
Interstate 353		78	30.3	56.9	80.5
Cargill 2037		82	38.0	49.5	75.0
Cargill 2137		81	31.4	57.3	72.7
LSD 5%		1.3	4.1	3.6	7.7



Brand	Hybrid	1988	1989	1990	Average		1990
					3 yr	2 yr	
		-----Yield Bu/a-----					TWT
Cenex LO'L	809	29.6	10.8	11.7	17.4	11.2	53.6
NDSU	NDC 686	29.6	7.7	13.5	16.9	10.6	58.0
NDSU	NDG 068	28.3	9.0	8.4	15.2	8.7	52.8
NDSU	NDG 060	28.0	6.3	8.7	14.3	7.5	52.0
Cenex LO'L	232	19.3	3.7	2.6	8.5	3.2	49.3
Jacques	2750		8.7	4.6		6.7	53.5
Interstate	IS 353			10.9			50.6
Cenex LO'L	4038			3.0			50.5
Jacques	3630			4.0			46.0
Cenex LO'L	2124			7.2			53.7
Interstate	IS EX120			8.2			52.5
Interstate	IS EX130			11.4			53.9
LSD 5%		11.5	3.1	3.4			

Table 29. Grain Corn and Silage Hybrid Trial, Regent, ND., 1990.

Hybrid	Silage tons/A	Grain bu/A
Betagold 824	6.0	46.5
Betagold Ingrid	5.9	46.0
Betagold Gerda	7.5	41.2
Interstate EXSF78	5.1	38.6
Betagold Anna	7.4	36.7
Interstate 232A	6.1	34.1
Interstate SF80A	5.0	33.8
Interstate Silo king	6.7	31.2
C.V. %	18.1	24.4
LSD 5%	1.6	n.s.

Table 30. Grain Corn and Silage Hybrid Trial, New Leipzig, ND., 1990.

Hybrid	Silage tons/A	Grain bu/A
Betagold Anna	5.8	32.7
Betagold Ingrid	5.8	25.9
Interstate Silo king	6.3	21.7
Interstate EXSF78	5.7	20.0
Betagold Gerda	5.4	17.8
Interstate 232A	6.0	15.8
Interstate SF80A	4.9	15.7
Betagold 824	5.3	8.8
C.V. %	21.9	57.7
LSD 5%	n.s.	n.s.

Table 31. Silage Corn Hybrid Trial, Hettinger, ND., 1990.

Hybrid	Silage tons/A
Interstate 232A	4.5
Jacques 3630	3.8
Cargill 2137	3.5
Betagold 824	3.3
Betagold Ingrid	3.1
Betagold Anna	2.9
Cargill 809	2.6
Interstate SF80A	2.5
Interstate EXSF78	2.5
Interstate Silo king	2.1
Betagold Gerda	2.1
Jacques 2750	1.7
C.V. %	54.1
LSD 5%	n.s.

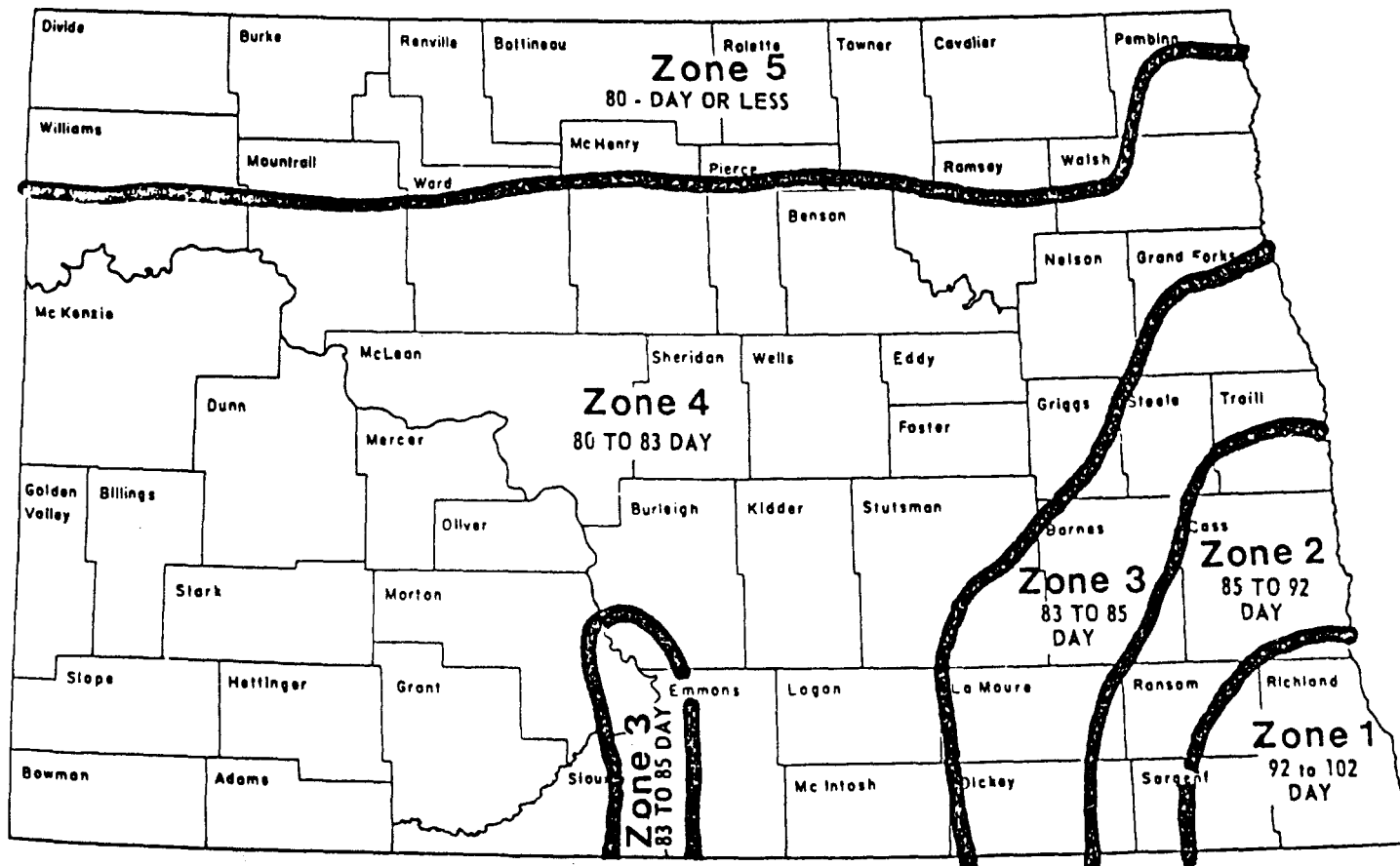


Figure 2. Corn Maturity Zones of North Dakota.

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