2000

EC00-107 Nebraska Proso, Sunflower, Bean, Pea, Oat, and Spring Wheat Variety Tests 2000

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University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

EC 00-107-A

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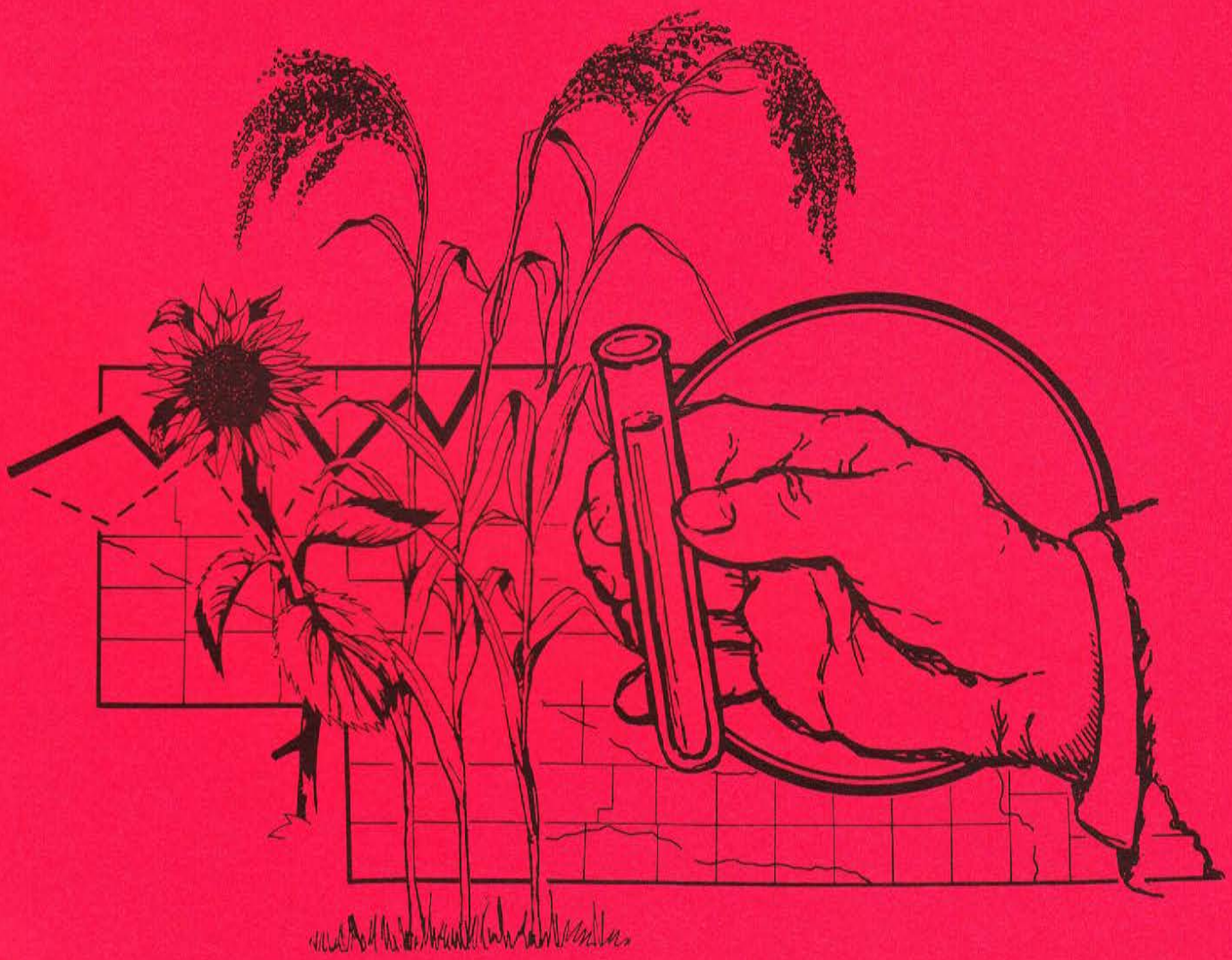

University of Nebraska—Lincoln
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EXTENSION CIRCULAR 2000-107

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This circular is a progress report of spring small grain trials grown throughout Nebraska, and proso, amaranth, sunflower, and field pea variety trials conducted by the Panhandle Research and Extension Center, Scottsbluff, and the High Plains Agricultural Laboratory, Sidney. Conduct of the experiments and publication of results is a joint effort of the Agricultural Research Division and the Cooperative Extension Service.

Thanks to Jeff Golus, John Rickertsen, Bruce Swan, John Eis, and Greg Dorn for their assistance on trial maintenance and data analysis.

METRIC EQUIVALENTS

1 centimeter = 0.394 inches	cm = inches x 2.541
1 hectare = 2.471 acres	ha = acres x 0.405
1 kilogram = 2.205 pounds	kg = pounds x 0.454
1 hectoliter = 2.838 bushels	hl = bushels x 0.352
kg/hl = lb/bu x 1.287	kg/ha = bu/A x 62.71 (56# bu)

DEFINITIONS

CWT = hundred weight

L.S.D. (.05) = A statistic (calculated at the 5% probability level in this book) used to compare the difference between two entries for significance. If the difference between two entries is larger than the LSD value at the bottom of each table, it is assumed significant.

N.S.= not significant. The differences between two entries were not statistically significant.

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Proso Millet Prices: History and Planning

by Paul A. Burgener

During the past marketing year, prices for proso millet have gone from $3.50 per cwt to $10.00 per cwt and dropped back again to $7.50 per cwt at the present time. This price volatility is the result of several different factors. First, the proso millet market has a niche market in the birdseed industry that will pay a premium price for millet if the supply and demand relationship warrants. Second, proso millet can be stored for an extended period of time to allow farmers with storage the opportunity to wait for markets to recover. Finally, there is no government loan rate for proso millet, thus forcing the market to react to market signals.

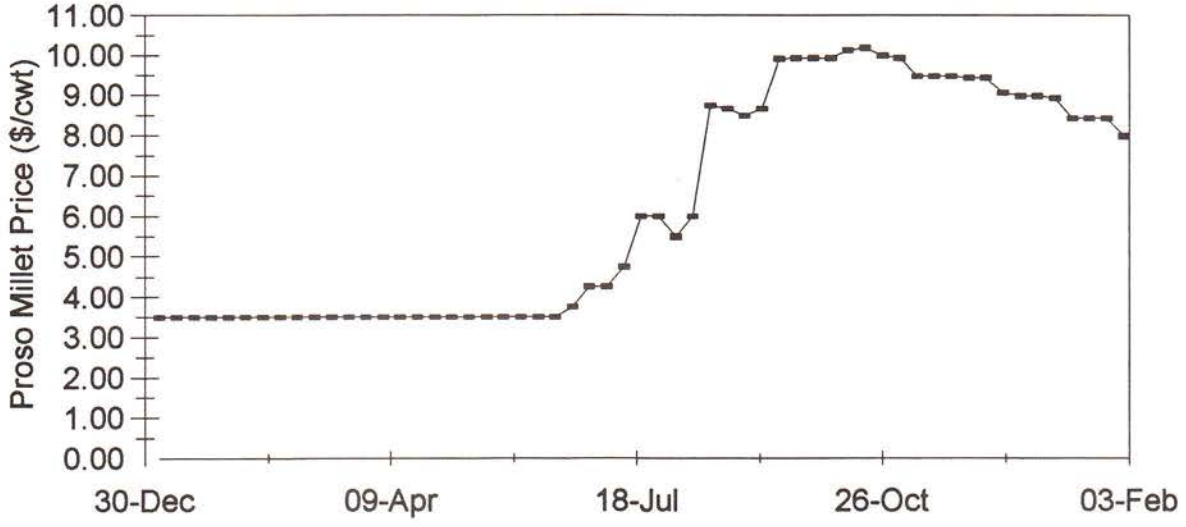

Figure 1. Price of proso millet in the Nebraska Panhandle, from January 2000 through February 2001.

Proso millet is a crop that is easy for growers to begin growing when prices warrant additional acres. At the same time, proso millet also allows the grower to stop producing the crop in any year without having to idle expensive specialized machinery. With this ease of entry and exit into the proso millet market, high prices tend to cause over production, which results in very low prices.

The other factor that influences the proso millet market is the two tiered market system that producers face in this crop. The primary market is a niche market for bird seed, while the secondary market is as a feed grain. If the birdseed market is saturated with product, the remaining proso millet on the market will fall into the traditional livestock feed market at a price low enough to entice feeders to include proso millet into the rations. Proso millet is used as a substitute for corn, grain sorghum, barley, and wheat in these feed rations. Presently the prices for all of the competing feed grains are extremely low, forcing proso millet prices to reach historic lows before being competitive in the market.

With no government price support program in place for proso millet, the producer is required to respond to the market signals as planting decisions are made. With pricing in the $3.50 per cwt range in the spring of 2000, and no possibility of a loan deficiency payment, producers cut back on the number of proso millet acres planted. The low planting numbers, coupled with poor growing conditions, were enough to increase the prices to their highest levels since July of 1994. We have seen the prices begin to back off somewhat as planting time nears, and the prime bird feeding season winds down. Expected prices for harvest in 2001 should be somewhere in the $4.00 to $5.00 per cwt area as acres increase in response to the higher prices.

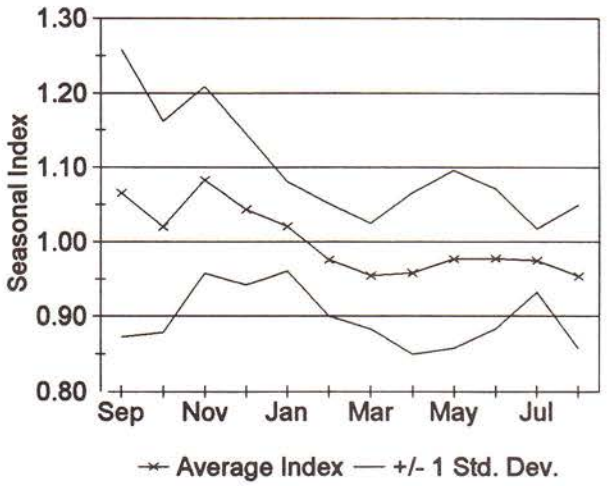

Figure 2. Season price index for proso millet in the Nebraska Panhandle, 1999-2000.

Table 1. Average monthly prices of proso millet, Western Nebraska, 1995-2000. (dollars per cwt)

YEAR	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	Annual Average
1995-96	5.51	6.26	7.26	6.26	7.50	7.00	7.25	7.75	8.00	7.50	7.00	5.25	**6.88**
1996-97	5.50	4.00	4.25	4.25	4.40	4.56	4.19	4.00	4.13	4.35	4.35	4.25	**4.35**
1997-98	4.19	4.25	4.25	4.25	4.19	4.00	4.00	4.00	4.00	4.05	4.10	4.25	**4.13**
1998-99	3.95	4.00	4.31	4.60	4.50	4.25	4.00	4.13	4.25	4.25	4.06	4.19	**4.21**
1999-00	3.80	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.70	5.25	7.23	**4.00**
5-year Average	**4.59**	**4.40**	**4.71**	**4.57**	**4.82**	**4.66**	**4.59**	**4.68**	**4.78**	**4.77**	**4.95**	**5.03**	**4.71**
St. Dev.	0.76	0.96	1.31	0.92	1.39	1.22	1.35	1.55	1.63	1.38	1.11	1.17	1.09
---------- Price Index ----------													
5-year Average	1.07	1.02	1.08	1.04	1.02	0.98	0.95	0.96	0.98	0.98	0.97	0.95	
St. Dev.	0.19	0.14	0.13	0.10	0.06	0.08	0.07	0.11	0.12	0.09	0.04	0.10	

Source: Crossroads Cooperative, Sidney, Nebraska.

PROSO VARIETY TRIALS

2000

The 2000 proso millet tests contained 19 white seeded, 3 red seeded entries, and 3 waxy types. Huntsman, Sunrise, and Earlybird are releases from the proso breeding program at the Panhandle Research and Extension Center. These varieties have demonstrated improved yield over other varieties and are larger seeded than Rise. Foundation and certified seed are now available.

DESCRIPTION OF PLOT TECHNIQUES

Five proso millet variety trials were conducted in 2000. Of the four dryland trials, two were located at the High Plains Agricultural Laboratory (HPAL) near Sidney, Nebraska (early planted and late planted). Another was at the USDA Central Great Plains Research Center at Akron, Colorado; and one was located on the Larry Novotny farm near Martin, South Dakota. Also, an irrigated trial was grown at the University of Wyoming Research Center at Torrington, WY.

All the dryland plots were severely affected by heat and drought. Rainfall was sparse and not timely.

These plots were seeded with small-plot drills, and were approximately six feet wide and 25 feet long. Row spacing was 12" at the Sidney and Akron locations, 10" at Martin, and 9" at Torrington.

Some plots were direct cut, others were windrowed with a small plot swather, and then threshed. The Sidney plots were harvested progressively as the varieties matured.

Lodging was not a problem in the dryland plots.

Four replications of each variety were planted and harvested.

Table 2. 2000 Proso Millet Plots

Location	Tillage System	Previous Crop	Plant Date	Harvest Date	Fertilizer	Herbicide
Sidney	Conventional	sunflower	May 31	Sept. 1-21	47#N 24# P_2O_5	Peak
Sidney	Conventional	wheat	June 29	Sept. 26	47#N 24# P_2O_5	None
Akron	No-till	wheat	June 5	Sept.13	40# N	Roundup
Martin	No-till	sunflower	June 14	Sept.8	7#N 24# P_2O_5	Roundup 2,4-D
Torrington	Irrigated Conventional	wheat	June 26	Sept. 13	150# N 60# P_2O_5	2,4-D

DESCRIPTION OF VARIETIES

SUNRISE

Sunrise is a high yielding, large seeded, mid-maturing line developed cooperatively by the University of Nebraska Agricultural Research Division and the USDA/ARS. It was previously tested as NE860053. It has good straw strength, short plant height, and good test weight. The parentage of Sunrise includes Sunup, Rise, Dawn, Panhandle, Minco, and Minn 402. It has a white seed coat. It is expected to be a replacement for Rise and Sunup where they have been grown successfully.

HUNTSMAN

Huntsman is a large seeded, moderately late variety developed cooperatively by the University of Nebraska Agricultural Research Division and the USDA/ARS. It was tested as NE870063. Yield performance, test weight, plant height, and straw strength have all been similar to Sunup. Huntsman's parentage includes Cope, Sunup, Rise, Dawn, and Minn 402. It has a white seed coat. Huntsman is expected to be best adapted to production systems where Cope has done well.

EARLYBIRD

Earlybird is a large seeded, early maturing variety developed by the University of Nebraska Agricultural Research Division. It was previously tested as NE870041. Plant height is slightly shorter than Sunup with good straw strength. It has a white seed coat and larger seed size than most other varieties. Earlybird's parentage includes Rise, Dawn, Panhandle, and Minco. Earlybird is not as early maturing as Dawn, but should be early enough to replace it in most systems.

SUNUP

Sunup is a 1989 release from the University of Nebraska. It is a white seeded variety with good yield potential. Its height is greater than Rise but not as tall as Panhandle. Sunup has good stem strength. Maturity is similar to Rise and Sunrise. Sunup's parentage includes Rise and Dawn.

RISE

Rise is a 1983 University of Nebraska release. It is the result of a Dawn X Minn 402 cross made in 1975. It is white seeded and has had a good yield record. It does not have the large seed size of Sunrise or Earlybird.

NE1

NE1 is a white seeded, high yielding, mid maturing line. It has good straw strength, short plant height and a good test weight. NE1 was tested as NE 860203. It includes Sunup and Rise in its parentage. It was released as a germplasm rather than a variety because of its small seed size.

DAWN

Dawn is a 1976 University of Nebraska release. It is very early maturing. It has been used as a parent because it has a large seed with good white color that has been well accepted in the bird seed trade.

CERISE

Cerise is a red seeded proso with a loose panicle. It is similar in height to Turghai and Panhandle, It heads about one day earlier than Turghai, and one and a half days earlier than Panhandle. The color is very similar to Turghai.

COPE

Cope is a 1978 Colorado release. It is a white seeded, late maturing variety. It has yielded well in Nebraska, especially when planted early, but has severe lodging problems.

MINCO

Minco is a joint Colorado-Minnesota release. It is taller and later than Panhandle. It has white seed and produces fair yields.

PANHANDLE

Panhandle is a 1968 University of Nebraska release. It is the first variety selected from the common white proso grown in western Nebraska. It has fair yield compared with newer varieties. It is white seeded.

MINSUM

Minsum is a 1980 release from Minnesota. It is white seeded, quite early, and medium in height. It's most noticeable characteristic is an extremely loose panicle. It has a good yield potential and may have some utility in Nebraska.

ABARR

Abarr is a 1974 release from Colorado. It is a white seeded variety with good yield potential. It is similar to Panhandle, with improved seed type.

SNOWBIRD

Snowbird is a Minnesota release. It is a white seeded variety with an open panicle and early maturity. Yields have been poor in Nebraska.

Table 3. Agronomic characteristics of proso millet varieties.

VARIETY	Seed Size	Maturity	Straw Strength	Panicle Type	Height	Test Weight
9217	Large	Mid	Fair	Compact	Short	Good
SUNRISE	Large	Mid	Good	Compact	Short	Good
HUNTSMAN	Large	Mid	Good	Compact	Average	Good
EARLYBIRD	Large	Early	Good	Compact	Short	Fair
SUNUP	Small	Mid	Good	Compact	Average	Good
DAWN	Large	V. Early	Good	Compact	V. Short	Good
CERISE (red)	V. Small	Early	Poor	Loose	Average	Good
9239 (red)	Small	Mid	Poor	Compact	Tall	Good
9241 (red)	Small	Late	Poor	-	Tall	Good
436623 (waxy)	V. Small	V. Late	Poor	-	Average	Fair
436625 (waxy)	Small	V. Late	Fair	-	V. Tall	Fair
436626 (waxy)	V. Small	V. Late	Poor	-	V. Tall	Low
NE1	Small	Mid	Good	Compact	Short	Good
RISE	Small	Mid	Good	Compact	Average	Fair
COPE	Average	Late	Fair	Compact	Tall	Good
MINCO	Average	Early	Poor	Open	Tall	Good
PANHANDLE	Average	Early	Poor	Open	Tall	Good
MINSUM	Large	Early	Poor	Loose	Average	Fair
ABARR	Large	Mid	Poor	Open	Tall	Fair
SNOWBIRD	Large	Early	Good	Open	Tall	Good

Table 4. Proso Yields for 2000 Dryland Variety Trials at Four Locations.

ENTRY	AVERAGE	SIDNEY NE Early Plant	SIDNEY NE Late Plant	AKRON CO	MARTIN SD
	----------CWT/ACRE----------				
9217	12.5	16.1	13.8	12.0	8.4
9307	12.2	17.0	11.7	13.2	6.4
9668-17	11.8	16.0	10.8	13.1	7.1
9668-16	11.7	13.6	14.1	11.1	7.9
9308	11.7	12.5	15.0	12.2	7.0
SUNUP	11.6	14.6	12.4	11.3	7.8
SUNRISE	11.5	14.3	12.4	12.0	7.2
HUNTSMAN	11.2	14.0	11.7	10.8	8.0
9304	10.9	17.1	9.7	10.9	6.4
9668-5	10.8	14.9	10.4	11.5	6.4
9210	10.8	13.8	10.0	12.3	7.2
EARLYBIRD	10.6	14.0	12.5	10.2	5.4
9668-6	10.6	14.5	10.7	10.4	6.8
9213	10.5	11.1	13.2	10.4	7.4
9668-18	10.5	12.5	11.1	10.1	8.1
COPE	10.1	12.1	10.9	12.9	4.9
9668-1	9.8	15.0	9.4	10.1	4.0
9668-10	9.2	11.9	9.1	10.6	5.3
DAWN	9.1	16.3	7.8	8.3	4.1
9239 (red)	8.0	8.9	8.8	10.3	4.5
CERISE (red)	7.8	11.0	7.2	8.5	4.5
9241 (red)	7.1	7.5	8.9	9.2	2.8
436623 (waxy)	6.5	-	7.8	6.4	5.2
436625 (waxy)	6.1	-	8.0	7.7	2.7
436626 (waxy)	5.5	-	7.9	5.3	3.2
AVERAGE	9.9	13.6	10.6	10.4	5.9
L.S.D. (.05)	2.0	4.3	3.7	2.0	1.4

Table 5. Agronomic characteristics for 2000 Dryland Variety Trials Averaged over Four Locations.

ENTRY	TEST WT Lbs/Bu	HEIGHT Inches	NO. SEEDS /5 grams	HEADING Days From Aug 1
9217	57.6	22	886	4
9307	57.1	25	922	2
9668-17	57.3	22	857	2
9668-16	57.1	23	862	6
9308	56.9	23	842	5
SUNUP	57.4	23	916	6
SUNRISE	57.5	24	882	4
HUNTSMAN	57.6	24	923	6
9304	58.0	25	899	5
9668-5	57.3	23	867	2
9210	58.1	23	920	4
EARLYBIRD	57.2	22	866	4
9668-6	57.4	24	915	3
9213	54.4	24	904	9
9668-18	57.0	23	875	6
COPE	56.2	28	878	5
9668-1	58.2	22	902	-1
9668-10	57.5	22	914	3
DAWN	56.6	20	871	-4
9239 (red)	58.5	25	920	4
CERISE (red)	58.5	25	981	-5
9241 (red)	57.2	27	944	8
436623 (waxy)	55.8	23	1109	14
436625 (waxy)	53.7	29	937	14
436626 (waxy)	53.1	26	1050	14
AVERAGE	**56.9**	**24**	**913**	**5**
L.S.D. (.05)	**2.1**	**3**	**33**	**3**

Table 6. 2000 Torrington Wyoming Irrigated Proso Millet Variety Trial

ENTRY	YIELD CWT/A	TEST WT Lbs/Bu	HEIGHT Inches	NO. SEEDS /5 grams
9210	44.4	54.2	38	764
9668-6	43.4	53.8	38	784
9668-5	43.3	54.6	35	724
SUNUP	43.0	53.8	37	774
9668-18	42.8	54.0	36	743
9307	42.8	53.7	38	764
9304	42.7	54.8	40	749
9217	42.3	54.8	37	716
9668-10	42.1	54.8	38	747
HUNTSMAN	42.0	54.8	41	740
9668-16	41.5	54.2	38	736
SUNRISE	39.7	53.5	38	748
EARLYBIRD	39.0	53.1	37	713
DAWN	38.6	55.3	36	718
9213	38.0	53.0	39	761
9668-1	37.6	54.9	37	760
9668-17	36.4	54.2	34	719
9308	34.9	52.7	35	766
COPE	33.2	53.3	41	781
CERISE red	33.0	56.3	39	918
9239 red	32.6	54.9	45	845
9241 red	29.2	53.7	44	896
436625 waxy	27.4	49.7	41	839
436623 waxy	27.1	51.2	36	1177
436626 waxy	22.8	46.6	40	1069
AVERAGE	**37.5**	**53.6**	**38**	**798**
L.S.D. (.05)	**5.3**	**1.0**	**N.S.**	**50**

Table 7. Ten year yield summary of proso varieties included in tests

VARIETY	10 yr Avg	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
	----------CWT/ACRE----------										
SUNRISE	22	12	30	18	24	21	15	23	25	22	27
HUNTSMAN	22	11	31	17	25	22	16	22	21	24	27
EARLYBIRD	21	11	31	17	25	22	14	23	22	21	28
SUNUP	21	12	30	17	23	21	16	22	21	24	26
COPE	18	10	24	13	21	21	13	19	18	21	18
AVERAGE	21	11	24	16	24	21	15	18	21	22	25

Table 8. Three year dryland yield summary of proso varieties currently being tested

VARIETY	3 yr Avg	2000	1999	1998	3 yr Avg	2000	1999	1998
	----------CWT/ACRE---------				-----Seeds / 5 grams-----			
9217	**21**	13	32	17	**796**	886	754	748
9213	**19**	11	32	15	**806**	904	762	751
HUNTSMAN	**20**	11	31	17	**819**	923	777	758
EARLYBIRD	**20**	11	31	17	**786**	866	740	752
SUNUP	**20**	12	30	17	**839**	916	798	803
SUNRISE	**20**	12	30	18	**787**	882	741	739
9210	**19**	11	30	17	**841**	920	793	811
9308	**19**	12	30	16	**768**	842	726	735
9304	**19**	11	29	17	**812**	899	777	759
9307	**19**	12	28	17	**843**	922	789	818
9239 red	**15**	8	25	12	**863**	920	825	844
COPE	**16**	10	24	13	**811**	878	778	777
DAWN	**14**	9	21	11	**810**	871	767	791
9241 red	**13**	7	21	11	**899**	944	868	886
CERISE red	**13**	8	20	11	**941**	981	912	929
AVERAGE	**18**	11	28	15	**828**	904	787	793

Table 9. Five year yield summary of proso varieties grown in previous years

VARIETY	5 yr Avg	1997	1996	1995	1994	1993
	----------CWT/ACRE----------					
SUNRISE	**22**	24	21	15	23	25
EARLYBIRD	**21**	25	22	14	23	22
NE 1	**21**	24	21	15	21	25
HUNTSMAN	**21**	25	22	16	22	21
SUNUP	**21**	23	21	16	22	21
RISE	**20**	20	21	16	21	22
MINCO	**18**	21	16	13	18	21
COPE	**18**	21	21	13	19	18
SNOWBIRD	**17**	17	17	11	18	20
PANHANDLE	**16**	16	17	12	17	17
MINSUM	**15**	18	17	12	14	16
ABARR	**14**	15	16	10	15	-
DAWN	**13**	12	13	9	14	16
AVERAGE	**18**	20	19	13	19	20

AMARANTH TRIALS

Two amaranth variety trials were planted in 2000. One was at the High Plains Ag Lab north of Sidney Nebr., and the other at the Panhandle Research and Extension Center at Scottsbluff, Nebr. Both were planted into tilled seedbeds, and were irrigated. Twelve varieties and lines were planted.

The Sidney plot was planted on June 12, and the Scottsbluff plot on June 21. The stands at Sidney were reduced by a hard rain soon after planting.

Above average temperatures accelerated maturity of both plots, and the crop was mostly mature when killed by frost on Sept. 22. An early fall storm on Sept. 23, with high winds and several inches of snow caused considerable, and variable lodging in both plots. The Sidney plot was harvested on Oct. 12, and the Scottsbluff plot on Oct. 20.

Table 10. 2000 AMARANTH TRIALS

ENTRY	SIDNEY	SCOTTSBLUFF	AVERAGE
	----------LBS/ACRE----------		
1998 Dry Population #2	900	1540	1220
1998 Irri Population #1	940	1490	1215
K432	740	1390	1065
Plainsman	650	1460	1055
A200D	640	1060	850
K433	590	1090	840
K283	510	870	690
K436	410	810	610
K593	710	440	575
K266	190	940	565
Non shattering Plainsman	90	240	165
D136	80	240	160
AVERAGES	**540**	**960**	**750**
LSD .05	**250**	**310**	

GRAIN PEA TRIALS

As more farmers diversify their cropping systems, legumes such as peas are being grown on more acres in western Nebraska to bring a broadleaf crop into the system and to add nitrogen to the soil.

Plot Techniques

In 2000, a dryland grain pea trial was grown near Hemingford, and an irrigated trial was planted at Sidney. Plots were planted with a hoe drill with 12" row spacing. Peas were cut when ripe, and threshed with a small plot thresher.

The Box Butte County trial was planted on the Brad Hansen farm west of Hemingford. On April 5, it was direct seeded into winter wheat stubble. A starter containing 8 lbs. N and 28 lbs. P_2O_5 was applied. Precipitation was favorable, and contributed to good yields. Peas were harvested on July 21.

Table 11. 2000 Dryland Pea Trial

Variety	Yield Lbs/Acre
Alma	2320
Early Dun	2160
Wirrega	2130
WyoDun	2020
PS510718	1820
PS610150	1820
Majoret	1770
Carneval	1730
PS610152	1690
PS510737	1070
Average	**1850**
L.S.D. (.05)	**240**

The Cheyenne County irrigated pea trial was planted on the High Plains Ag Lab north of Sidney. On April 4, peas were planted into a tilled seedbed. A starter containing 8 lbs. N and 28 lbs. P_2O_5 was applied. Temperatures much higher than normal throughout the growing season had an adverse effect on yields. Plot was harvested on July 20.

Yields for the 2000 plot are shown below, and the two year averages on the next page. 1999 irrigated peas were hailed out.

Table 12. 2000 Irrigated Pea Trial

Variety	Yield Lbs/Acre
Carneval	1460
PS610152	1150
Majoret	1150
PS510718	1100
Wirrega	1060
WyoDun	1060
PS510737	940
Early Dun	940
PS610150	880
Alma	870
Average	**1060**
L.S.D. (.05)	**290**

Table 13. Dryland Pea 2 yr. Average

Variety	Yield Lbs/Acre		
	2 Yr Ave	2000	1999
Wirrega	2230	2130	2320
Alma	2130	2320	1940
Early Dun	2040	2160	1920
Carneval	1980	1730	2230
Majoret	1970	1770	2160
WyoDun	1900	2020	1770
Average	**2040**	**2020**	**2060**

Table 14. Irrigated Pea 2 yr. Average

Variety	Yield Lbs/Acre		
	2 Yr Ave	2000	1998
WyoDun	1190	1060	1320
Wirrega	1045	1060	1030
Majoret	945	1150	740
Alma	930	870	990
Early Dun	845	940	750
Carneval	815	1460	170
Average	**965**	**1090**	**840**

Table 15. Characteristics of grain pea varieties.

Variety	Type	Growth habit	Seed color	Seed size	Maturity
Pro 2100	food	viney	green	small	late
Columbian	food	viney	green	medium	early
Dundale	feed	viney	dull green	medium	early
Integra	food	semi-leafless	yellow	large	early
Highlight	food	semi-leafless	yellow	medium	early
Wirrega	food	viney	white	small	late
Trapper	feed	viney	yellow	small	late
Alma	feed	viney	dull green	medium	late
Grande	food	viney	white	large	mid
Profi	food/feed	semi-leafless	yellow	large	early
Majoret	food	semi-leafless	green	medium	mid
Early Dun	feed	viney	dull green	medium	late
Carneval	food	semi-leafless	yellow	medium	mid
Austrian winter pea	feed	viney	dark green, speckled	small	late
Arvika	feed	viney	grey-slate,	medium	late
Miranda	feed	viney	yellow	large	mid-early

SUNFLOWER TRIALS - 2000

The 2000 dryland sunflower tests were conducted in Cheyenne County, NE; Hitchcock County, NE; Perkins County, NE; and Laramie County, WY. An irrigated sunflower trial was also planted in Cheyenne County .

All trials were subjected to extreme heat and drought. The Wyoming trial was abandoned due to these reasons. Stands and yields in dryland plots were greatly affected by this weather.

These plots were planted with 30 inch row spacing. Plots were approximately 30 feet long. Each hybrid was replicated four times.

The two Cheyenne County trials were planted at the University of Nebraska High Plains Agriculture Laboratory (HPAL) near Sidney, Nebraska. For the Cheyenne County irrigated sunflower trial, herbicide was 2.4 pints/acre Prowl 3.3, incorporated into a conventional seedbed. A starter containing 7 lbs. N and 24 lbs. P_2O_5 was applied. Seeding rate was 23,000 seeds per acre for oil types, and 20,000 for confections.

The Cheyenne County dryland plot was direct seeded into millet stubble. Prowl, Roundup, and Spartan were applied preemergence, and Poast was applied in July to control millet. A starter of 7 lbs. N and 24 lbs. P_2O_5 per acre was applied. This plot was sprayed with Asana in August to control head moth and seed weevils. Drydown occurred quickly after a Sept. 22 frost. There was no lodging. Harvest stand was approximately 15,000 per acre for oil types, and 12000 for confections.

The Hitchcock County sunflower trial was planted on Ron Bley's farm near Wauneta, Nebraska. 100 lbs. N and 1.5 pints/acre Treflan were applied preplant, and incorporated in a conventionally prepared seedbed. Lorsban was applied with the seed. Harvest was delayed due to snow and cold.

The Perkins County sunflower trial was planted on Mike McArtor's farm near Grant, Nebraska. The plot was direct seeded into corn stalks. A starter of 15 lbs. N and 11lbs. P_2O_5 was applied, along with an additional 50 lbs. of liquid N/acre. Lorsban was also applied with the seed. Roundup and 3 pints/acre Prowl 3.3 were applied pre-emergence.

The Laramie County sunflower trial was planted on Stan Butler's farm near Carpenter, Wyoming. This was planted into a conventionally prepared seedbed, where wheat had been grown in 1999. Not harvested due to drought.

EXPLANATION OF TABLES

In the following tables, "FLWR" refers to the days after Aug 1 that the variety was judged to have half of the flowers open. "HT" is the height of the neck or the head, whichever is greatest, at harvest time.

"%>20/64" refers to confection seed size. This is the total percentage of seed that passes over a 20/64 sieve.

Oil percentage is based on 10% moisture. Analysis was provided by Dr. J.F. Miller, USDA-ARS in Fargo, North Dakota. Thanks to Dr. Miller and all of his assistants for their contributions to these tests.

Multiple year averages are shown for those hybrids that the seed companies entered in the tests year after year.

Companies Entering the 2000 Sunflower Test

Agway, Inc.	Grandin, ND
Monsanto	Dekalb, IL
Interstate Seed Co.	West Fargo, ND
Kaystar Seed	Huron, SD
Mycogen Seeds	Indianapolis, IN
Pioneer Hi-Bred Int., Inc.	Lincoln, NE
Seeds 2000	Breckenridge, MN
Sigco Sun Products, Inc.	Breckenridge, MN
Triumph Seed Co., Inc.	Ralls, TX
Croplan Genetics	Minot, ND

Table 16. 2000 Sunflower Variety Trial Summary.

Location	Rotation	Plant Date	Harvest Date	Yield Lbs/A	Oil % / Conf > 20/64
Cheyenne County, NE	Millet-Sunflower-Fallow	6-2	10-10	Oils 660 Conf 800	41.5 34
Cheyenne County, NE	Irrigated Corn-Sunflower	6-8	10-11	Oils 1780 Conf 2290	45.4 61
Hitchcock County, NE	Wheat-Sunflower-Fallow	6-6	11-9	Oils 690 Conf 610	43.7 37
Perkins County, NE	Corn-Sunflower-Fallow	5-30	10-26	Oils 340 Conf 550	41.8 32
Laramie County, WY	Wheat-Sunflower-Fallow	5-16	-	not harvested	-

Table 17. 2000 CHEYENNE CO NEBRASKA SUNFLOWER HYBRIDS

DRYLAND OIL TYPES

BRAND	HYBRID	YIELD LBS/A	TEST WT Lbs/Bu	HT Inches	FLWR Aug	OIL Pct
Triumph	562	890	23.7	52	6	41.4
Triumph	540	860	22.9	47	5	42.5
Mycogen	8377NS*	840	23.4	51	6	41.4
Triumph	652*	790	25.7	46	10	40.8
DeKalb	DK3875	760	25.7	43	9	39.0
Pioneer	63M80*	740	22.7	44	6	42.7
Pioneer	63M91*	710	22.4	46	7	42.5
Pioneer	63A70	710	24.3	47	5	42.7
Seeds 2000	Bronco*	670	23.8	40	12	41.9
Garst	IS 4049	670	26.0	49	9	42.2
Garst	Hysun 450*	670	24.7	37	12	41.8
DeKalb	DK3900	670	26.0	46	11	41.0
Garst	IS 6767	660	27.1	43	7	42.8
Garst	IS 4340	630	26.6	38	12	41.2
Kaystar	9404	630	24.5	44	7	39.2
Mycogen	8372	620	23.2	42	5	41.4
Pioneer	63A21	620	23.9	35	2	39.5
Croplan Genetics	CL380 NS*	600	26.1	44	8	41.4
Seeds 2000	Maverick*	590	24.9	47	8	40.9
Croplan Genetics	CL345 NS*	590	22.2	44	4	40.7
Croplan Genetics	CL385 NS*	550	24.1	36	12	41.3
Garst	IS X74066	480	30.1	41	14	44.4
Seeds 2000	Mustang*	440	26.6	46	8	40.3
Garst	IS X74091	420	27.9	39	10	43.0
	AVERAGES	660	24.9	44	8	41.5
	L.S.D. (.05)	220	2.7	5	1	1.1

*denotes NuSun hybrid

Table 18. 2000 CHEYENNE CO NEBRASKA SUNFLOWER HYBRIDS

DRYLAND CONFECTION TYPES

BRAND	HYBRID	YIELD LBS/A	TEST WT Lbs/Bu	HT Inches	FLWR Aug	SEED %>22/64	SIZE %>20/64
Pioneer	63C40	930	18.4	54	7	22	59
Triumph	765C	910	16.9	47	11	11	33
Garst	IS 8048	850	18.6	50	5	13	40
Sigco Sun	Exp3228	790	18.9	48	9	11	29
Triumph	766CRT	670	16.6	54	11	4	23
Triumph	TRX0451CRT	650	15.5	53	10	4	21
	AVERAGES	800	17.5	51	9	11	34
	L.S.D. (.05)	NS	1.3	NS	2	NS	NS

Variability of plant spacing made it impossible to accurately compare seed size.

Table 19. 2000 CHEYENNE CO NEBRASKA SUNFLOWER HYBRIDS

IRRIGATED OIL TYPES

BRAND	HYBRID	YIELD LBS/A	TEST WT Lbs/Bu	HT Inches	FLWR Aug	OIL Pct
Garst	Hysun 450*	2090	27.2	47	14	46.1
Pioneer	63M91*	2090	27.6	56	11	46.9
DeKalb	DK3875	2060	28.3	47	12	42.8
DeKalb	DK3868	2040	28.7	50	12	46.3
Pioneer	63A70	2000	25.2	53	8	47.1
Kaystar	9501	2000	28.7	55	13	41.9
Garst	IS 4340	2000	28.5	49	15	44.0
Pioneer	63M80*	1990	26.8	54	9	45.2
Garst	IS X41978	1910	25.8	52	11	44.5
DeKalb	DK3900	1850	29.6	50	14	45.7
Garst	IS 4049	1840	29.0	58	12	46.0
Garst	IS 6767	1830	30.1	50	11	47.0
DeKalb	EX9915NS*	1830	31.4	55	12	46.1
Mycogen	8377NS*	1810	27.5	51	8	46.9
DeKalb	DKF29-90	1780	29.3	52	8	46.2
Mycogen	Cavalry	1760	29.1	55	13	46.7
Triumph	545A	1750	27.2	52	10	48.8
DeKalb	DKF29-99NS*	1690	28.7	52	8	47.3
Garst	IS X74066	1690	29.7	47	15	45.0
DeKalb	DKF36-40NS*	1670	30.4	59	10	43.3
DeKalb	EX9917NS*	1620	31.3	60	8	45.3
DeKalb	DKF31-01NS*	1550	31.3	58	11	44.3
DeKalb	EX9910NS*	1550	28.5	57	8	42.9
Garst	IS X74091	1540	28.6	50	14	45.8
DeKalb	DK3872NS*	1500	28.0	58	14	47.2
DeKalb	EX9918NS*	1330	31.5	57	8	45.0
Pioneer	63A21	1260	25.5	46	4	40.6
	AVERAGES	1780	28.6	53	11	45.4
	L.S.D. (.05)	330	1.5	4	1	1.4

*denotes NuSun hybrid

Table 20. 2000 CHEYENNE CO NEBRASKA SUNFLOWER HYBRIDS
IRRIGATED CONFECTION TYPES

BRAND	HYBRID	YIELD LBS/A	TEST WT Lbs/Bu	H2O %	HT Inches	HEAD AUG.	SEED %>22/64	SIZE %>20/64
Sigco Sun	SS-62	2470	19.1	8.3	61	11	12	45
Garst	IS 8048	2430	21.3	11.0	60	9	31	71
Pioneer	63C40	2420	19.5	9.3	59	9	23	70
Triumph	765C	2390	20.1	10.5	61	10	24	68
Triumph	766CRT	2330	18.5	12.3	62	11	18	62
Agway RoyalHybrid	RH Exp 001	2290	19.7	11.3	62	13	34	66
Sigco Sun	Exp3228	2220	21.0	9.5	60	13	12	46
Triumph	TRX0451CRT	2140	17.8	12.6	61	12	27	68
Sigco Sun	Exp3994	2100	18.2	10.6	58	11	16	64
Sigco Sun	Exp3993	2080	18.1	13.0	68	15	10	46
	AVERAGES	2290	19.3	10.8	61	11	21	61
	L.S.D. (.05)	N.S.	1.4	1.1	3	2	11	9

Table 21. 2000 PERKINS CO NEBRASKA SUNFLOWER HYBRIDS
DRYLAND CONFECTION TYPES

BRAND	HYBRID	YIELD LBS/A	HT Inches	SEED %>22/64	SIZE %>20/64
Sigco Sun	Ex3993	670	54	5	31
Mycogen	9450	620	45	7	33
Sigco Sun	SS-62	570	43	15	32
Sigco Sun	Ex3228	490	42	7	33
Pioneer	63C40	420	44	6	33
	AVERAGES	550	47	8	32
	L.S.D. (.05)	160	4	NS	NS

Table 22. 2000 PERKINS CO NEBRASKA SUNFLOWER HYBRIDS
DRYLAND OIL TYPES

BRAND	HYBRID	YIELD LBS/A	HT Inches	LODG %	OIL Pct
http://varietytest.u	8377NS*	630	45	4	42.5
Triumph	562	550	42	3	42.6
Pioneer	63M91*	480	42	3	41.7
DeKalb	DK3875	440	42	9	41.2
Pioneer	63A70	420	50	6	42.3
Mycogen	Cavalry	400	44	4	42.5
Seeds 2000	Bronco*	390	42	4	42.3
CroplanGenetics	CL345NS*	370	39	3	42.1
Seeds 2000	Mustang*	360	47	5	41.3
Garst	Hysun 450*	360	39	1	40.8
Garst	IS 4340	340	39	3	42.6
Garst	IS 6767	310	43	6	42.5
CroplanGenetics	CL385NS*	300	38	4	41.0
Seeds 2000	Maverick*	290	44	4	42.4
Kaystar	9501	290	47	6	40.6
Pioneer	63A21	270	34	10	40.9
Pioneer	63M80*	270	40	6	42.2
Garst	IS X74091	240	40	13	41.4
Garst	IS X74066	230	40	8	42.4
DeKalb	DK3900	210	38	5	41.9
Garst	IS 4049	200	44	5	42.0
Triumph	652*	180	44	14	41.4
	AVERAGES	340	42	6	41.8
	L.S.D. (.05)	170	6	7	1.2

*denotes NuSun hybrid

Table 23. 2000 HITCHCOCK CO NEBRASKA SUNFLOWER HYBRIDS
DRYLAND OIL TYPES

BRAND	HYBRID	YIELD LBS/A	TEST WT Lbs/Bu	HT Inches	LODG %	OIL Pct
DeKalb	DK3900	900	29.3	40	11	43.7
Pioneer	63M91*	880	27.7	47	6	43.5
Mycogen	8377NS*	860	27.8	46	18	43.8
Garst	Hysun 450*	770	29.0	38	6	43.5
Garst	IS X74091	760	26.9	41	6	44.1
Triumph	545A	750	27.5	41	6	46.7
Garst	IS 4049	740	25.7	43	14	44.1
Garst	IS 6767	740	27.6	41	8	44.7
Mycogen	Cavalry	690	27.1	43	7	43.5
Triumph	652*	680	29.0	47	11	43.8
Pioneer	63A70	680	27.6	42	5	44.6
Pioneer	63M80*	660	28.3	42	6	43.6
DeKalb	DK3875	620	28.1	38	4	43.0
Cargill	128	600	27.7	40	15	42.1
Garst	IS 4340	540	28.6	39	1	44.7
Cargill	290NL*	540	27.5	38	5	43.2
Pioneer	63A21	520	28.3	36	6	41.2
Garst	IS X74066	480	27.5	41	4	43.7
	AVERAGES	690	27.8	41	8	43.7
	L.S.D. (.05)	190	1.5	6	N.S.	1.5

*denotes NuSun hybrid

Table 24. 2000 HITCHCOCK CO NEBRASKA SUNFLOWER HYBRIDS
DRYLAND CONFECTION TYPES

BRAND	HYBRID	YIELD LBS/A	TEST WT Lbs/Bu	HT Inches	LODG %	SEED %>22/64	SIZE %>20/64
Triumph	766CRT	680	19.5	49	4	10	29
Agway	Royal Hybrid RH Exp001	620	18.7	44	3	20	44
Pioneer	63C40	600	20.0	45	3	19	45
Garst	IS 8048	590	20.7	44	4	19	37
Triumph	765C	540	19.7	44	5	11	37
	AVERAGES	610	19.7	45	4	15	37
	L.S.D. (.05)	NS	1.0	NS	NS	NS	NS

Table 25. Cheyenne County Sunflower Hybrids

DRYLAND AVERAGED OVER FOUR YEARS

BRAND	HYBRID	YIELD LBS/ACRE AVERAGES 97-00	99-00	2000	1999	1998	1997	OIL % AVERAGES 97-00	99-00	2000	1999	1998	1997
	Oil Types												
Triumph	562	**1470**	**1540**	890	2190	1320	1460	**41.4**	**42.0**	41.4	42.6	38.0	43.4
DeKalb	DK3875	**1350**	**1430**	760	2100	1410	1120	**39.9**	**41.0**	39.0	42.9	36.3	41.3
Garst	IS4049	**1340**	**1320**	670	1960	1380	-	**41.4**	**42.6**	42.2	42.9	39.0	-
DeKalb	DK3900	**1280**	**1260**	670	1850	1310	-	**41.5**	**42.6**	41.0	44.1	39.3	-
Garst	IS6767	**1280**	**1280**	660	1890	1300	-	**41.5**	**42.9**	42.8	43.0	38.7	-
Mycogen	8372	**1200**	**1190**	620	1750	1230	-	**41.5**	**43.0**	41.4	44.6	38.4	-
Triumph	540	-	**1450**	860	2040	-	-	-	**43.9**	42.5	45.3	-	-
Kaystar	9404	-	**1390**	630	2140	-	-	-	**40.0**	39.2	40.8	-	-
Pioneer	63A70	-	**1320**	710	1930	-	-	-	**44.1**	42.7	45.5	-	-
Garst	Hysun 450	-	**1240**	670	1810	-	-	-	**43.1**	41.8	44.3	-	-
	Oil Averages	**1320**	**1340**	**710**	**1970**	**1330**	**1290**	**41.2**	**42.5**	**41.4**	**43.6**	**38.3**	**42.4**
Confection Types										**% over 20/64**			
Triumph	765C	**1120**	**910**	910	910	1540	-	**68**	**60**	33	86	85	-
Garst	IS 8048	-	**890**	850	930	-	-	-	**63**	40	86	-	-
Triumph	766CRT	-	**870**	670	1070	-	-	-	**51**	23	78	-	-
Confection Averages		**1120**	**890**	**810**	**970**	**1540**	-	**68**	**58**	**32**	**83**	**85**	

SPRING GRAIN TRIALS - 2000

Three oat and three spring wheat tests were planted in 2000. The dryland oat and spring wheat tests in Saunders County were heavily infected with weeds and were not harvested for yield. An irrigated and dryland test of each crop was conducted at the High Plains Ag Lab. These plots were planted with a 6' drill, 12" spacing.

The dryland oat and spring wheat had drought and heat throughout the season which reduced yields. The plots were direct seeded into millet stubble on March 27. The previous crop was proso millet. The oat plots were harvested on July 25 and the spring wheat on Aug. 11.

The irrigated oats and spring wheat plots had above average temperatures throughout the season which reduced yields. Also, Russian wheat aphids reduced yields considerably in the spring wheat. The irrigated plots were planted on March 24 into a tilled seedbed. The previous crop was irrigated corn. Fertilizer included a starter containing 8 lbs. N and 28 lbs. P_2O_5 followed by 40# N. The oat plots were harvested on July 25 and the spring wheat plots on Aug. 11.

A malt barley variety trial was planted at the High Plains Ag Lab north of Sidney Nebr. Eight varieties were planted. The plot was planted on March 24 in an irrigated field that had been plowed. A starter containing 8 lbs. N and 28 lbs. P_2O_5 was applied. Soil tests showed a high level of N, so only 40# was topdressed.

Temperatures much higher than normal throughout the growing season had an adverse effect on yields. Russian wheat aphids were also present and reduced yields somewhat. Plot was harvested on July 24.

Table 30. 2000 IRRIGATED MALTING BARLEY TRIAL

ENTRY	YIELD BU.	HT INCHES	HEAD JUNE	TEST WT	PROTEIN %	PLUMP %
Moravian 14	95	28	12	52.1	13.5	78
Moravian 37	86	26	20	49.8	14.5	85
C40 exp	80	26	14	49.0	14.4	80
C47 exp	73	29	17	47.3	14.3	86
Harrington	76	31	18	48.5	15.2	84
B2978	82	32	16	47.7	14.3	73
B1202	82	28	17	49.1	15.5	82
MERIT	71	30	19	47.2	15.1	66
AVERAGES	**81**	**29**	**17**	**48.8**	**14.6**	**81**
LSD .05	**12**	**2**	**3**	**0.9**		

Cheyenne Co Irrigated Oat Test - 2000

Variety	Grain yield bu/a	Bushel weight lb/bu	Plant height inches
Don	82	37.2	28
Rodeo	78	35.7	30
Ogle	77	35	33
Burton	75	38	28
Chairman	75	34.6	28
Jerry	74	37.8	32
MN97166	74	36.7	32
Belle	70	35.1	31
Ida	69	33.9	30
Judd	66	36.1	35
Riser	66	34.5	27
MN97201	65	37.8	30
Richard	63	35.7	33
Vista	63	35.7	33
Settler	62	35.3	35
Average	70.6	35.94	31
Dif req for sig 5%	9.9	N.S.	4

Cheyenne Co Dryland Oat Variety Test - 2000

Variety	Grain yield bu/a	Bushel weight lb/bu	Plant height inches
MN97201	42	36.4	28
Rodeo	39	33.4	29
MN97166	38	36.6	30
Ogle	38	33.8	27
Ida	37	35.7	29
Vista	35	34.2	31
Richard	35	34.2	31
Burton	33	34.2	26
Riser	33	35.3	25
Don	31	35.5	25
Judd	30	32.8	33
Jerry	29	37.1	30
Belle	28	33.1	28
Chairman	27	33.2	27
Settler	20	33.3	28
Average	33.0	34.6	28.5
Dif req for sig 5%	6.6	1.1	1.6

Cheyenne Co Irrigated Spring Wheat Test - 2000

Variety	Grain yield bu/a	Bushel weight lb/bu	Plant height inches
Oxen	30	56.0	24
GM40001	30	55.6	24
HW9420 MT	29	56.3	22
GM40019	29	56.5	21
GM40002	25	57.5	26
GM40016	23	59.8	24
GM40011	23	57.4	25
377S	23	56.9	25
McVey	22	54.4	24
Ivan	22	56.6	25
Ingot	21	58.9	29
Argent	20	57.5	27
Norpro	18	55.9	23
Russ	15	53.9	26
Scholar	13	56.1	26
Average	22.9	56.6	24.7
Dif req for sig 5%	3.9	0.8	3

Cheyenne Co Dryland Spring Wheat Test - 2000

Variety	Grain yield bu/a	Bushel weight lb/bu	Plant height inches
Ingot	18	58.8	28
GM40016	18	58.9	22
McVey	17	50.9	21
Oxen	17	55.2	23
GM40019	16	55.7	20
HW9420 MT	15	54.3	20
Ivan	15	54.6	21
Argent	14	56	25
GM40001	14	53.3	21
Scholar	14	56.3	25
GM40002	13	57.3	23
GM40011	13	54.2	22
377S	13	54.7	24
Russ	13	53.6	24
Norpro	13	54.5	23
Average	14.9	55.2	22.8
Dif req for sig 5%	2.7	1.5	1.9

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