1994

EC94-107 Nebraska Proso, Safflower, Sunflower and Amaranth Variety Tests, 1994

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University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

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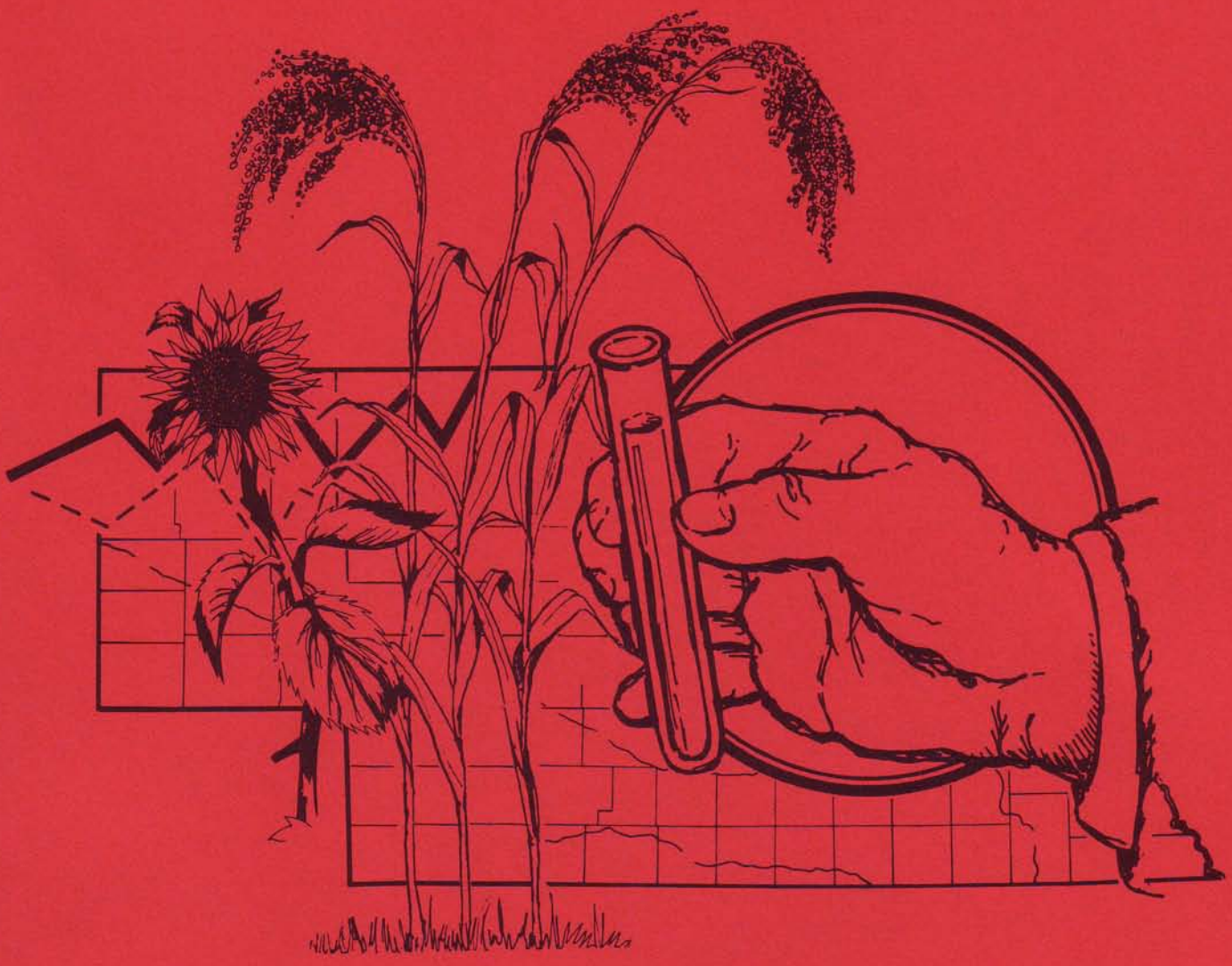
NEBRASKA PROSO, SAFFLOWER, SUNFLOWER AND AMARANTH VARIETY TESTS 1994



University of Nebraska—Lincoln
Institute of Agriculture and Natural Resources
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Cooperative Extension

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EXTENSION CIRCULAR 94-107

MARCH 1995

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ACKNOWLEDGMENT

This circular is a progress report of proso, sunflower, safflower and amaranth 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 Ray Weed, Jerry Nachtman, Don Thrailkill and Donna Fritzler 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 62.78 (56# bu)

DEFINITIONS

CWT = hundred weight

LSD = 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.

EXTENSION CIRCULAR 94 - 107

TABLE OF CONTENTS

PROSO

SAFFLOWER

AMARANTH

SUNFLOWER

Economic Consideration of Proso Millet

Tom Holman and David Baltensperger

Dryland production of proso millet in the U.S. is concentrated in Colorado, Nebraska, North Dakota and South Dakota. However it is grown to a minor degree in the South East (Alabama, Georgia), the West (Montana, Wyoming, Arizona), and the Central (Kansas, Minnesota, Ohio, Wisconsin) parts of the United States.

1987 Dryland Production

	Bushels	% of U.S. Production
Colorado	2,262,863	27.65
Nebraska	2,184,227	26.69
South Dakota	2,037,316	24.90
North Dakota	1,437,299	17.57
Total Regional Production	7,921,705	96.81

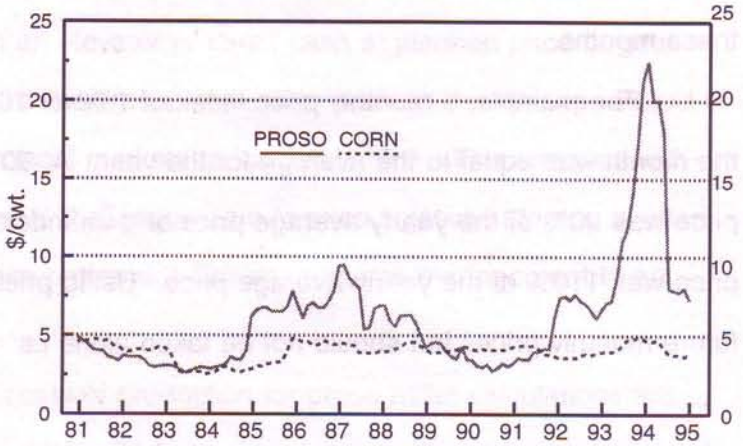
Of Nebraska's total proso millet production, the '87 Census of Agriculture indicates that 55.6% of the farms, 69.94% of the acres and 74.76% of the bushels are produced in Cheyenne County.

Feed Value of Corn, Proso Millet and Grain Sorghum in Beef Cattle

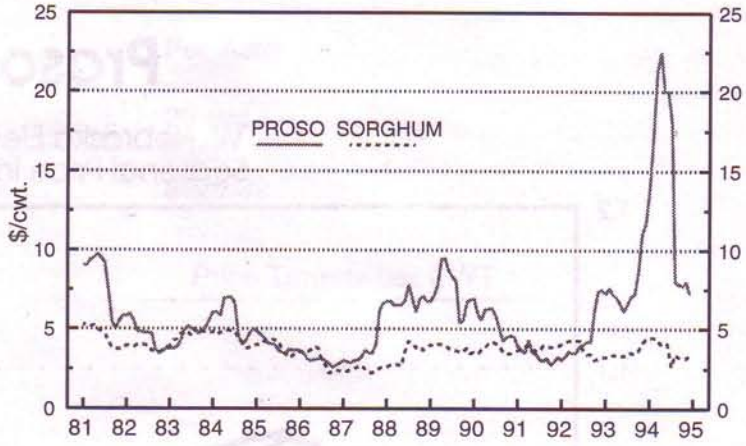
		ENERGY		
Feed:	Crude Protein %	NEM Mcal	NEG Mcal	TDN %
Corn, dry rolled	10.0	102.0	70.0	90.0
Millet	12.9	93.0	64.0	84.0
Sorghum, dry rolled	10.0	93.0	64.0	84.0
Wheat, hard, dry rolled	12.5	99.0	68.0	88.0

Although not a major world grain, proso millet is used as bird and livestock feed in the United States, and for livestock feed and human consumption in other countries of the world. In '92/'93 the U.S. exported 41,425 metric tons with a value of $8,282,000 ($199.45 per metric ton). The same marketing season U.S. imported 894 metric tons valued at $1,015,000 ($1,135.35 per metric ton). Major world producers of proso millet are the former Soviet Union, Nigeria, India, and China.

PANHANDLE PROSO AND NEBRASKA CORN PRICES



PANHANDLE PROSO AND NEBRASKA SORGHUM PRICES



Proso millet is valued as livestock feed based on the relative feed value to other feed grains for cattle, swine, and poultry. It is generally considered to be equal to feed value, for cattle and swine, of grain sorghum or milo and corn (when ≤ 50% of corn is replaced). The price of sorghum serves as a floor for millet prices and the price of corn serves as a support for proso prices.

Cheyenne County cash millet prices vary widely from a recent average monthly low of $2.62 per cwt in October of 1985, to a recent high of $22.50 per cwt in April of 1994. Seasonally, using monthly price indexes, prices tend to peak in December and again in April. The average price index for a month shows the average relationship of prices in that month to the average for all months in the year.

Index numbers are available from the Panhandle Research and Extension Center.

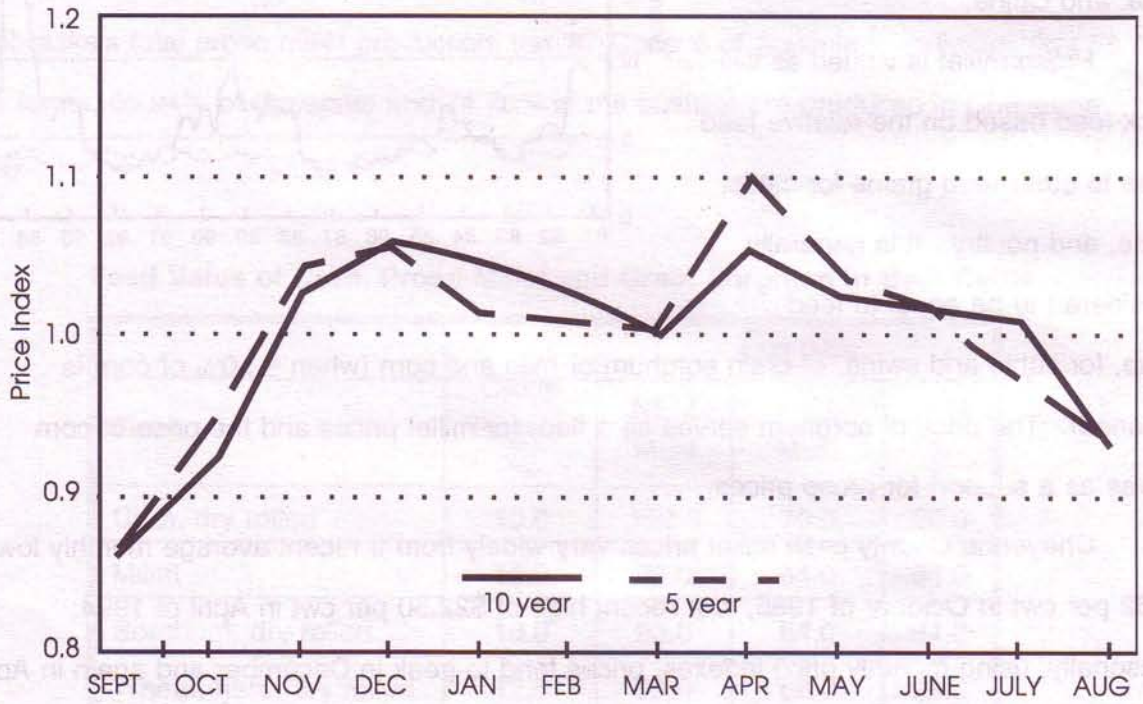
Calculating indexes indicates peaks in December and April, but prices tend to peak around these months.

For example, a monthly price index of 1.00 or 100% means that the average price for the month was equal to the average for the year. A .90 index indicates the monthly average price was 90% of the yearly average price and an index of 1.1 means the monthly average price was 110% of the yearly average price. Using price indexes can be useful in estimating future monthly prices but should not be taken alone i.e. without regard to price trends.

$$\frac{\text{INDEX OF FUTURE MONTH} \times \text{PRICE CURRENT MONTH}}{\text{INDEX OF CURRENT MONTH}} = \text{ESTIMATED PRICE IN FUTURE MONTH}$$

Proso

W. Nebraska Elevators
Seasonal Price Indexes



The best approach to pricing proso millet is to calculate production costs and seek price protection i.e. cash contracts with an elevator or direct cash at planned price targets. Without the benefits of established futures contracts institutions such as the Chicago Board of Trade for grains and with relatively thin local markets, price risk is high. This, coupled with extreme price volatility makes marketing a challenge. Due to price volatility, storage is often used to take advantage of seasonal price patterns. Storage requires management to be disciplined and to set price targets.

The '94 University of Nebraska costs of production for proso millet calculations are briefly listed below on a per acre basis. Using 20 cwt as an average yield results in costs of $7.39 per cwt. The Univ. of Nebraska cost of production estimates should be used as a guide only. Producers should calculate their own costs and price portions or all of their production to meet management objectives.

		Per Acre
Assumed Yield		20 cwt
Assumed Land Cost		$350
Assumed Machinery Investment		$220.32

	Per Acre		Price Targets per CWT	
Operating Costs	$43.38			
Machinery Interest	$15.20			
RE Taxes	$14.40			
		$ 72.98		$ 3.65
Machinery Depreciation	$26.98			
Land Interest	$40.60			
		$ 67.58	140.56/20 =	$ 7.03
Overhead	$ 2.17			
Unpaid Management	$ 5.00		147.73/20 =	$ 7.39
Profits	$ 7.39			
		$ 14.56		
Total		$155.12		$ 7.76

PROSO VARIETY TRIALS

1994

David Baltensperger, Randy Anderson, Jim Krall, Glen Frickel and Mark Swanson

The 1994 proso test contained 16 white seeded entries. Huntsman, Sunrise, and Earlybird are new 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 seed will be available in 1995.

DESCRIPTION OF PLOT TECHNIQUES

Six proso variety trials were conducted in 1994. Four were located at the High Plains Agricultural Laboratory (HPAL) near Sidney, Nebraska, one was located at the USDA Central Great Plains Research Center at Akron, CO, and one was located at the University of Wyoming Research and Extension Center at Archer, WY. One HPAL plot had a very poor stand due to crusting, the HPAL irrigated plot was destroyed by a windstorm, and the Archer plot suffered extreme drought. These three were not harvested. Plots were seeded with a 6-row double disc or hoe drill depending on planting conditions. Each plot was 24 feet long and six feet wide, except for the 15 feet long irrigated plot. The center four rows were harvested from each plot with a self-propelled combine when the variety was mature. Four replications of each variety were planted and harvested.

Table 1. 1994 Proso Millet Plots

Location	Cropping system	Previous crop	Planting date	Fertilizer	Yield cwt/ac
HPAL	Conventional	fallow	June 16	8#N-28#P	17.6
HPAL	Conventional	wheat	May 27	48#N-28#P	no yield
HPAL	No-till	wheat	June 2	58#N-28#P	21.9
HPAL	Irrigated	wheat	June 17	58#N-28#P	no yield
Akron	No-till	wheat	June 1	60#N	18.7
Archer	Conventional	wheat	June 9	none	no yield

DESCRIPTION OF VARIETIES

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. Sunup is currently the most widely grown proso variety in Nebraska.

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 Minnesota 402. It has a white seedcoat. 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.

RISE

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

NE1

NE1 is a 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 germpasm 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.

COPE

Cope is a 1978 Colorado release. It is a 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 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 potential 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 2. Agronomic characteristics of white-seeded proso millet varieties.

VARIETY	Seed Size	Maturity	Straw Strength	Panicle Type	Height	Test Weight
DAWN	Large	V. Early	Good	Compact	V. Short	Good
NE1	Average	Mid	Good	Compact	Short	Good
EARLYBIRD	Large	Early	Good	Compact	Short	Fair
SUNRISE	Large	Mid	Good	Compact	Short	Good
RISE	Small	Mid	Good	Compact	Average	Fair
HUNTSMAN	Large	Late	Good	Compact	Average	Good
SUNUP	Average	Mid	Good	Compact	Average	Good
SNOWBIRD	Large	Early	Good	Open	Tall	Good
PANHANDLE	Average	Early	Poor	Open	Tall	Good
MINCO	Average	Early	Poor	Open	Tall	Good
COPE	Average	Late	Fair	Compact	V. Tall	Good
MINSUM	Large	Early	Poor	Loose	Average	Fair
ABARR	Large	Mid	Poor	Open	Tall	Fair

Table 3. Proso yields for 1994 variety trials at three locations.

ENTRY	NO-TILL	FALLOW	NO-TILL AKRON	AVERAGE
	----------CWT/ACRE----------			
EARLYBIRD	27.3	18.6	24.3	23.4
860214	25.3	19.4	24.2	22.9
SUNRISE	24.5	20.9	23.0	22.8
SUNUP	25.1	19.0	22.5	22.2
HUNTSMAN	24.1	20.2	22.3	22.2
RISE	26.0	19.9	16.6	20.8
NE 1	23.4	20.0	18.8	20.7
880035	22.3	17.1	21.7	20.4
87004-1P	20.6	16.8	23.5	20.3
COPE	19.9	13.4	24.6	19.3
MINCO	20.8	17.5	15.6	18.0
SNOWBIRD	19.3	18.3	15.1	17.6
PANHANDLE	18.7	16.7	15.3	16.9
ABARR	17.3	15.2	12.0	14.9
MINSUM	18.1	10.5	13.4	14.0
DAWN	17.3	17.8	5.8	13.6
MEAN	21.9	17.6	18.7	19.4
LSD 0.05	4.7	4.2	4.0	2.4

Table 4. Agronomic characteristics of entries in 1994 proso trials averaged over three locations.

ENTRY	TEST WT Lbs/Bu	SEEDS /5g	HEIGHT Inches	LODGE %	HEADING days after July 1
EARLYBIRD	56.2	758	32	5	28
860214	57.8	781	34	5	33
SUNRISE	57.1	761	31	3	31
SUNUP	57.3	823	33	7	30
HUNTSMAN	57.8	778	33	5	32
RISE	56.6	822	32	10	28
NE 1	57.2	831	28	4	30
880035	57.3	839	31	10	34
87004-1P	57.4	848	33	2	34
COPE	57.2	795	41	10	32
MINCO	57.1	826	38	43	28
SNOWBIRD	56.7	806	35	25	26
PANHANDLE	57.1	818	36	10	26
ABARR	56.3	765	38	60	27
MINSUM	56.6	774	33	39	26
DAWN	56.6	785	28	21	24
MEAN	57.0	800	33	16	30
LSD 0.05	0.5	15	2	10	1

Table 5. Eight year yield summary of proso varieties included in test.

VARIETY	8 yr Avg	1994	1993	1992	1991	1990	1989	1988	1987
		----------cwt/acre----------							
SUNUP	**23**	22	21	24	26	21	23	21	23
RISE	**21**	21	22	24	25	19	19	22	19
MINCO	**19**	18	21	17	22	16	17	18	19
COPE	**18**	19	18	21	18	14	18	17	18
PANHANDLE	**17**	17	17	17	21	16	17	16	16
DAWN	**14**	14	16	15	15	15	12	10	12
SNOWBIRD	**19**	18	20	17	22	-	-	-	-
HUNTSMAN	**24**	22	21	24	27	-	-	-	-
SUNRISE	**23**	23	25	22	27	20	-	-	-
EARLYBIRD	**24**	23	22	21	28	-	-	-	-
NE 1	**23**	21	25	22	28	20	-	-	-
AVERAGE	**20**	20	21	20	24	18	18	17	18

DESCRIPTION OF SAFFLOWER PLOTS

David Baltensperger, James Krall, Jerry Nachtman, and Glen Frickel.

The 1994 safflower trials were conducted at the High Plains Ag Lab near Sidney, Nebraska and at the University of Wyoming Research and Extension Center at Archer, Wyoming.

The HPAL safflower trial was planted May 12, 1994. A hard rain as the plants were emerging covered most plants and the plot was not harvested.

The Archer, Wyoming safflower trial was planted May 11, 1994. The field had grown wheat in 1993, and was prepared with conventional tillage. A six-row small grain drill with a 9-inch row spacing was used The 5 feet by 25 feet plots were harvested on September 23 using a small plot grain combine. No fertilizer or herbicide were applied. Very dry summer growing conditions contributed to low overall yields.

Oil% is at 10% moisture. Thanks to Dr. Jerry Miller and his USDA/ARS staff at Fargo, ND for their assistance with oil analysis. Thanks to Dr. Jerald Bergman, Eastern Montana Research Center, for providing the public entries. Companies entering the 1994 tests were Mycogen Plant Sciences, Prescott, Wisconsin; and Seedtech International, Inc., Woodland, California.

Table 6. 1994 Laramie Co. Wyoming safflower trial.

ENTRY	YIELD Lbs/Ac	TEST WT Lbs/Bu	HEIGHT Inches	OIL %
MPS 3037	490	41.9	13	35.4
MPS 3013	480	44.0	14	36.4
MONTOLA 2000	460	42.9	11	42.7
MPS 3004	440	42.7	13	34.9
S-208	440	42.8	13	40.3
GIRARD	410	43.8	14	40.3
FINCH	400	46.4	13	39.5
MORLIN	380	40.5	12	40.2
CENTENNIAL	380	42.8	12	43.0
OKER	330	41.5	13	39.9
MEAN	420	42.9	13	39.3
LSD 0.05	120	1.4	3	1.2

Table 7. Laramie Co. Wyoming safflower yields averaged over two years.

ENTRY	YIELD LBS/ACRE			OIL PERCENTAGE		
	1993	1994	AVE	1993	1994	AVE
MONTOLA 2000	570	460	520	28.8	42.7	35.8
S-208	530	440	490	26.0	40.3	33.2
GIRARD	320	410	360	22.0	40.3	31.2
FINCH	340	400	370	23.4	39.5	31.5
MORLIN	480	380	430	18.9	40.2	29.6
CENTENNIAL	420	380	400	26.5	43.0	34.8
OKER	300	330	320	23.4	39.9	31.7
MEAN	420	400	410	24.1	40.8	32.5

Table 8. Cheyenne County safflower yields averaged over three years.

ENTRY	1991 YIELD Lbs/Ac	1992 YIELD Lbs/Ac	1993 YIELD Lbs/Ac	AVERAGE Lbs/Ac
MONTOLA 2000	1260	1710	1320	1430
MORLIN	-	1680	1220	1450
FINCH	940	1620	1200	1250
CENTENNIAL	1130	1690	1190	1340
S-208	1130	1820	1150	1370
GIRARD	1080	1940	980	1330
S-541	1170	1760	940	1290
OKER	1200	1410	860	1160
MEAN	1130	1700	1110	1310

Table 9. Cheyenne County safflower oils averaged over three years.

ENTRY	1991 OIL %	1992 OIL %	1993 OIL %	AVERAGE OIL %
MONTOLA 2000	44.7	36.6	46.3	42.5
MORLIN	-	34.5	43.7	39.1
FINCH	40.8	32.5	41.9	38.4
CENTENNIAL	47.4	37.2	46.7	43.8
S-208	42.4	34.6	41.8	39.6
GIRARD	41.7	35.2	42.2	39.7
S-541	46.4	37.6	46.3	43.4
OKER	44.3	35.1	45.0	41.5
MEAN	44.0	35.4	44.2	41.2

AMARANTH TRIALS

David Baltensperger, Glen Frickel, and Mark Swanson

The 1994 amaranth trial was planted at the Panhandle Research and Extension Center at Scottsbluff, Nebraska. Residual herbicide in the field caused variations across plots, so the plots were not harvested for yield. Table 10 shows the yields from amaranth trials planted in 1991, 1992, and 1993 at the High Plains Ag Lab near Sidney, Nebraska. These plots were planted in June with a modified 30 inch corn planter. A small amount of fertilizer was applied, and no herbicide or insecticide was used. The plots were harvested with a small plot combine after a hard frost in the fall.

Table 10. Amaranth yields at High Plains Ag. Lab. averaged over three years.

ENTRY	1991 YIELD Lbs/Ac	1992 YIELD Lbs/Ac	1993 YIELD Lbs/Ac	AVERAGE Lbs/Ac
PLAINSMAN	820	1550	640	1000
K432	610	1460	670	910
K433	680	1330	650	890
D70-1	620	1480	440	850
D34-1-1	860	-	780	820
K593	510	1600	330	810
A200D	520	1490	290	770
K549	830	-	690	760
K709	840	-	580	710
D43B	810	-	590	700
D106	800	-	600	700
D107	900	-	470	680
K433-B	730	-	600	670
D108	660	-	650	660
K551	700	-	610	660
K578	750	-	550	650
D113	790	-	510	650
AMONT	650	1090	190	640
K432-B	680	-	430	550
K583	650	-	440	550
K591	650	-	440	540
K283	500	780	200	490
A5198	650	-	330	490
D141	600	-	370	480
A5200	430	-	510	470
K266	360	760	220	450
D136-1	210	980	110	430
A5188	570	-	280	430
A5183	500	-	270	390
A5199	380	-	380	380
A5192	420	-	290	360
K436	270	630	120	340
A5196	390	-	250	320
MEAN	620	1200	440	750

SUNFLOWER TRIALS - 1994

David Baltensperger, Robert Klein, James Krall, Glen Frickel and Mark Swanson

The 1994 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 conducted in Cheyenne County . Each plot consisted of four, 30 inch rows and each hybrid was replicated four times. Plots were planted approximately 30 feet long. Of the four planted rows, the two center rows were harvested with a small plot combine.

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.

The Cheyenne County wheat-fallow-sunflower-fallow trial was planted at the High Plains Agriculture Laboratory (HPAL) near Sidney, Nebraska. 2.4 pints/acre Prowl 3.3 and 30 lbs. N were applied preplant. 7 lbs. N and 24 lbs. P starter was applied at planting. Harvest stand was approximately 16,000 plants/acre.

The Cheyenne County wheat-sunflower-fallow trial was also planted at HPAL. 40 lbs. N and 2.4 pints/acre Prowl were applied preplant. 7 lbs. N and 24 lbs. P starter was applied at planting. Harvest stand was approximately 16,000 plants/acre. This field became infected with Rhizopus head rot, which causes heads to fall to the ground before harvest.

The Cheyenne County irrigated sunflower trial was planted at HPAL. 60 lbs. N and 2.4 pints/acre Prowl were applied preplant. 7 lbs. N and 24 lbs. P starter was applied at planting. The plant population was reduced by a hail storm soon after emergence, with a harvest stand of approximately 19,000 plants/acre.

The Hitchcock County sunflower trial was planted on Jim Faimon's farm near Trenton, Nebraska. 50 lbs. N and 1.5 pints/acre Treflan were applied preplant. 19,100 seeds/acre were planted, and harvest stand was good. The plot received adequate rainfall.

The Perkins County sunflower trial was planted on Steve Martens' farm near Grant, Nebraska. A midsummer hail storm destroyed this plot.

The Laramie County sunflower trial was planted on Stan Butler's farm at Carpenter, Wyoming. Only a few plants emerged due to extreme drouth, and the plot was abandoned.

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. "Dropped heads" refers to the percentage of heads that had broken off and fallen to the ground as a result of Rhizopus. "HT" is the height of the neck or the head, whichever is greatest, at harvest time. "% over size 20/64" refers to confections, and is the percentage of seeds that passes over a 20/64 sieve.

Companies entering the 1994 Sunflower Test

Kaystar Seed	Huron, SD 57350
DeKalb Plant Genetics	Dekalb, IL 60115
Cargill Hybrid Seeds	Fargo, ND 58102
Mycogen Plant Sciences	Prescott, WI 54021
Pioneer Hi-Bred Int., Inc.	W. Des Moines, IA 50265
Interstate Payco Seed Co.	West Fargo, ND 58078
Sigco Sun Products	Breckenridge, MN 56520
Triumph Seed Co., Inc.	Ralls, TX 79357609
Red River Commodities, Inc.	Colby, KS 67701
Proseed	Harvey, ND 58341

Table 11. 1994 Sunflower Plot Summary.

Location	Rotation	Plant Date	Harvest Date	Yield Lbs/A	Oil %
Cheyenne County, NE	Wheat-Sunflower-Fallow	6-15	10-20	380	36.7
Cheyenne County, NE	Wheat-Fallow Sunflower-Fallow	6-15	10-26	1420	35.3
Cheyenne County, NE	Irrigated Wheat-Sunflower	6-7	10-21	1000	36.5
Hitchcock County, NE	Wheat-Sunflower-Fallow	6-16	10-20	1920	44.6
Perkins County, NE	Wheat-Sunflower-Fallow	5-31	Hailed	out	
Laramie County, WY	Wheat-Sunflower-Fallow	6-8	Drouth		

Table 12. Sunflower hybrids grown in Cheyenne County, NE on wheat stubble in 1994.

BRAND	HYBRID	YIELD Lbs/Ac	TEST WT Lbs/Bu	FLWR Aug	HT In	LODGE %	Dropped Heads %	OIL %
OIL TYPES								
PIONEER	XF444	550	30.9	18	55	0	4	36.6
PIONEER	XF443	540	27.7	17	41	1	0	38.3
PROSEED	141	510	23.2	16	42	3	3	34.9
PIONEER	XF435	480	26.0	18	50	3	4	38.4
TRIUMPH	565	450	29.5	17	49	4	8	39.8
MYCOGEN	632	450	24.8	16	47	3	4	38.8
PROSEED	121	440	24.9	17	47	6	1	36.5
PROSEED	229	440	25.7	18	45	3	5	37.1
MYCOGEN	COMET	440	24.7	15	42	1	1	36.0
PIONEER	DO827	420	26.6	15	47	4	4	35.2
PROSEED	107	410	23.9	16	48	0	8	34.8
DEKALB	DK3790	410	27.2	15	35	1	1	36.2
PIONEER	XF426	400	24.6	16	42	0	1	38.1
PIONEER	6451	400	28.0	18	45	0	3	40.0
MYCOGEN	CAVALRY	380	27.4	18	47	1	5	37.8
PROSEED	143	370	22.5	18	54	3	6	32.5
PROSEED	109	370	30.6	18	49	1	9	36.3
TRIUMPH	546	340	26.7	16	45	4	0	37.9
TRIUMPH	520C	330	20.1	15	48	3	6	28.0

(continued on next page)

Table 12. (cont.) Sunflower hybrids grown in Cheyenne County, NE on wheat stubble in 1994.

BRAND	HYBRID	YIELD Lbs/Ac	TEST WT Lbs/Bu	FLWR Aug	HT In	LODGE %	Dropped Heads %	OIL %
PIONEER	DO707	320	27.2	16	34	3	1	35.6
TRIUMPH	571	320	28.1	19	41	0	1	40.0
DEKALB	DK3868	310	24.7	17	35	0	1	35.3
MYCOGEN	658	290	28.0	17	41	1	4	38.8
PIONEER	XF4217HO	280	25.4	19	51	1	6	38.2
DEKALB	DK3881	260	22.4	17	32	0	1	35.3
PIONEER	6661HO	260	27.5	20	52	1	28	38.0
DEKALB	DK3904	230	21.3	18	37	1	1	35.1
PIONEER	6415HO	160	26.3	18	45	3	28	39.2
CONFECTION TYPES								
PIONEER	6946	490	18.4	16	54	1	4	-
PIONEER	D181	290	20.5	17	39	3	0	-
	MEAN	380	25.5	17	45	2	5	37
	LSD 0.05	170	2.5	1	10	4	7	2

Table 13. Sunflower hybrids grown in Cheyenne County, NE on fallow ground in 1994.

BRAND	HYBRID	YIELD Lbs/Ac	TEST WT Lbs/Bu	FLWR Aug	HT In	OIL %
OIL TYPES						
PIONEER	DO827	1770	27.4	15	66	35.3
PROSEED	EXP4931	1760	25.2	16	65	36.6
PROSEED	121	1760	24.7	18	68	35.6
PROSEED	141	1710	23.4	16	66	34.6
INTPAYCO	IS6363	1700	29.3	21	75	35.1
PIONEER	XF444	1660	30.5	19	75	35.6
PIONEER	XF426	1640	24.6	17	62	36.7
PIONEER	XF435	1540	24.9	20	75	36.5
INTPAYCO	ISX73307	1520	26.9	17	67	37.1
PIONEER	DO707	1520	26.2	15	65	34.1
PIONEER	6451	1480	27.4	19	66	36.5
INTPAYCO	IS3311	1430	27.6	17	66	36.0
MYCOGEN	CAVALRY	1380	27.4	18	73	36.0
MYCOGEN	658	1370	26.6	17	66	35.4
PROSEED	107	1350	24.1	17	69	32.6
PROSEED	109	1340	25.8	20	71	33.3
PIONEER	6415HO	1230	27.6	17	69	36.4
PIONEER	XF443	1200	26.2	18	68	33.9
PIONEER	XF4217	1130	25.1	18	72	35.4
INTPAYCO	ISX01480	1060	27.4	20	76	34.1
INTPAYCO	ISX83324	1050	25.7	15	58	34.5
PIONEER	6661HO	970	25.6	21	78	35.0
CONFECTION TYPES						**% Over Size 20/64**
PIONEER	6946	1380	20.1	18	67	68.4
PIONEER	D181	1210	19.8	17	66	42.9
	MEAN	1420	25.8	18	69	35.3
	LSD 0.05	510	1.4	1	6	2.2

Table 14. Irrigated sunflower hybrids grown in Cheyenne County, Nebraska in 1994.

BRAND	HYBRID	YIELD Lbs/Ac	TEST WT Lbs/Bu	FLWR Aug	HT In	LODG %	OIL %
CARGILL	SF270	1350	26.6	10	51	11	37.3
CARGILL	SF128	1300	28.3	12	54	9	34.7
KAYSTAR	HYSUN341	1210	29.2	14	53	11	37.0
CARGILL	SF100	1120	27.6	15	52	11	34.1
KAYSTAR	8806	1060	29.4	14	63	9	38.1
CARGILL	SF187	1000	25.2	14	52	6	33.8
PROSEED	141	1000	25.5	11	54	8	38.2
MYCOGEN	COMET	990	27.4	11	56	10	37.4
KAYSTAR	9101	950	27.3	14	60	8	37.5
PROSEED	107	880	25.3	13	55	10	35.8
CARGILL	SF177	840	25.6	15	57	15	35.9
PROSEED	109	820	25.0	15	58	13	35.9
PROSEED	229	760	25.2	13	54	11	36.1
PROSEED	121	710	25.9	12	57	15	38.5
	MEAN	1000	26.7	13	55	10	36.5
	LSD 0.05	240	1.1	1	10	7	1.0

Table 15. Sunflower hybrids grown in Hitchcock County, Nebraska in 1994.

BRAND	HYBRID	YIELD Lbs/Ac	TEST WT Lbs/Bu	HT In	H_2O %	OIL %
OIL TYPES						
CARGILL	SF128	2340	31.5	57	7.1	43.3
PIONEER	XF443	2240	31.4	59	7.9	44.6
CARGILL	SF187	2220	27.7	49	7.4	43.1
INTPAYCO	IS6363	2220	30.7	62	7.9	44.3
DEKALB	DK3881	2140	29.0	53	6.9	44.9
PIONEER	XF444	2130	33.1	62	8.0	42.8
DEKALB	EXP5646	2110	29.7	56	7.5	42.6
PIONEER	6451	2100	31.7	53	7.7	46.2
PROSEED	229	2090	28.1	58	6.7	44.6
PIONEER	XF435	2090	30.7	61	7.0	46.0
INTPAYCO	ISX01480	2040	29.5	62	8.4	44.8
CARGILL	SF177	2040	29.4	59	8.2	44.3
DEKALB	DK3904	2020	30.6	56	7.3	44.1
CARGILL	SF100	2010	30.8	53	7.7	41.9
PROSEED	141	1960	26.5	57	6.4	44.9
KAYSTAR	9101	1950	32.0	60	8.4	42.0
KAYSTAR	HYSUN341	1950	30.5	52	7.0	43.8
INTPAYCO	ISX83324	1950	30.2	58	6.4	45.0
PIONEER	XF426	1900	28.7	58	7.1	46.2
KAYSTAR	8806	1890	31.6	59	7.3	45.0
INTPAYCO	ISX73307	1870	30.3	56	7.3	47.7
PROSEED	121	1840	28.2	54	7.0	45.4
CARGILL	SF270	1830	30.7	52	7.2	43.5

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Table 15. (cont.) Sunflower hybrids grown in Hitchcock County, Nebraska in 1994.

BRAND	HYBRID	YIELD Lbs/Ac	TEST WT Lbs/Bu	HT In	H_2O %	OIL %
TRIUMPH	565	1820	32.1	54	7.1	48.0
INTPAYCO	IS3311	1810	29.9	54	7.2	45.5
DEKALB	DK3868	1800	30.7	47	6.4	44.3
PIONEER	DO707	1800	32.1	58	7.1	44.4
PROSEED	109	1790	28.6	56	6.8	43.7
DEKALB	DK3790	1780	31.3	50	6.9	44.9
PIONEER	XF4217HO	1780	30.0	61	7.9	44.6
PROSEED	107	1770	26.6	58	6.6	44.1
TRIUMPH	546	1750	29.4	58	8.1	46.6
INTPAYCO	IS6111	1740	29.7	53	7.3	42.5
TRIUMPH	571	1740	30.7	57	7.3	47.1
PIONEER	6415HO	1690	29.9	56	7.5	45.6
PIONEER	DO827	1600	30.7	54	7.1	42.5
PIONEER	6661HO	1520	27.9	63	7.8	43.9
CONFECTION TYPES						**% Over Size 20/64**
PIONEER	6946	2070	25.8	56	7.5	75.1
RED RIVER	2211	2060	23.7	59	7.5	71.2
PIONEER	D181	1940	25.2	56	7.1	47.3
RED RIVER	2331EX	1700	22.4	60	8.4	67.9
RED RIVER	954	1600	25.9	56	7.8	52.3
	MEAN	1920	29.4	56	7.4	44.6/62.8
	LSD 0.05	340	2.9	3	0.9	1.5/13.6

Table 16. Hitchcock County sunflower trial yields and oils, averaged over three years.

BRAND	HYBRID	----------YIELD LBS\A----------				----------OIL %----------			
		1992	1993	1994	AVE	1992	1993	1994	AVE
Cargill	SF187	2150	1550	2220	1970	35.1	44.4	43.1	40.9
Delkalb	DK3904	2350	1520	2020	1960	35.0	45.1	44.1	41.4
Cargill	SF100	2170	1590	2010	1920	35.3	44.5	41.9	40.6
Kaystar	8806	2060	1500	1890	1820	34.8	45.2	45.0	41.7
Pioneer	6451	2160	1120	2100	1790	38.0	49.2	46.2	44.5
Cargill	SF270	2110	1340	1830	1760	36.7	46.0	43.5	42.1
Dekalb	DK3790	2030	890	1780	1570	37.8	47.2	44.9	43.3
Interstate	IS6363	-	1460	2220	1840	-	46.0	44.3	45.2
Red River	2211	-	1420	2060	1740		Confection		
Pioneer	DO707	-	1380	1800	1590	-	45.6	44.4	45.0
Kaystar	Hysun341	-	1230	1950	1590	-	46.4	43.8	45.1
Interstate	IS6111	-	1310	1740	1525	-	45.3	42.5	43.9
Proseed	109	-	1230	1790	1510	-	45.5	43.7	44.6
Triumph	546	-	1230	1620	1425	-	48.3	46.7	47.5
Interstate	IS3311	-	980	1810	1395	-	46.5	45.5	46.0
Red River	2331EX	-	1030	1700	1365		Confection		
Red River	954	-	1050	1600	1325		Confection		
Pioneer	6415 HO	-	940	1690	1315	-	47.1	45.6	46.4
Pioneer	6661 HO	-	960	1520	1240	-	46.3	43.9	45.1

Table 17. Cheyenne County Sunflower Hybrids Averaged Over Two Years

WHEAT-SUNFLOWER-FALLOW ROTATION							
BRAND	HYBRID	YIELD LBS\A			OIL %		
		1993	1994	AVE	1993	1994	AVE
DEKALB	DK3790	1710	410	1060	41.3	36.2	38.8
DEKALB	DK3904	1960	230	1095	38.6	35.1	36.9
MYCOGEN	Comet	1860	440	1150	39.3	36.0	37.7
MYCOGEN	658	1910	290	1105	41.7	38.8	40.3
PIONEER	DO707	1550	320	935	37.6	35.6	36.6
PIONEER	6415HO	1460	160	810	39.6	39.2	39.4
PIONEER	6451	1770	400	1085	42.9	40.0	41.5
PIONEER	6661HO	1350	260	805	37.9	38.0	38.0
PROSEED	109	1470	370	920	37.8	36.3	37.1
TRIUMPH	546	1750	340	1045	42.4	37.9	40.2
TRIUMPH	565	1890	450	1170	42.9	39.8	41.4
	MEAN	1700	335	1015	40.2	37.5	38.9
WHEAT-FALLOW-SUNFLOWER-FALLOW ROTATION							
BRAND	HYBRID	YIELD LBS\A			OIL %		
		1993	1994	AVE	1993	1994	AVE
INTPAYCO	IS6363	1370	1700	1535	38.0	35.1	36.6
INTPAYCO	IS3311	1280	1430	1355	37.1	36.0	36.6
MYCOGEN	658	1380	1370	1375	40.4	35.4	37.9
PIONEER	DO707	1750	1520	1635	37.9	34.1	36.0
	MEAN	1445	1505	1475	38.4	35.2	36.8
IRRIGATED							
BRAND	HYBRID	YIELD LBS\A			OIL %		
		1993	1994	AVE	1993	1994	AVE
CARGILL	SF270	1220	1350	1285	40.3	37.3	38.8
CARGILL	SF100	1450	1120	1285	39.2	34.1	36.7
CARGILL	SF187	1350	1000	1175	39.8	33.8	36.8
KAYSTAR	8806	880	1060	970	40.2	38.1	39.2
MYCOGEN	COMET	1360	990	1175	39.8	37.4	38.6
	MEAN	1250	1105	1180	39.9	36.1	38.0

Table 18. Laramie County Wyoming sunflower trial yields and oils averaged over two years.

BRAND	HYBRID	1992 YIELD Lbs/Ac	1993 YIELD Lbs/Ac	AVG Lbs /Ac	1992 OIL %	1993 OIL %	AVG OIL %
CARGILL	SF-100	1430	920	1180	30.9	36.9	33.9
CARGILL	SF-187	1340	750	1050	31.4	40.4	35.9
JACQUES	COMET	1250	700	980	35.9	42.3	39.1
JACQUES	CADILLAC	1240	710	980	37.1	48.5	42.8
CARGILL	SF-270	1240	670	960	35.1	42.0	38.6
SIGCO	675	1140	700	920	-	47.4	47.4
	MEAN	1270	740	1010	34.1	42.9	38.5

Table 19. Perkins County sunflower yields and oils, averaged over two years.

BRAND	HYBRID	1992 YIELD Lbs/Ac	1993 YIELD Lbs/Ac	AVG Lbs /Ac	1992 OIL %	1993 OIL %	AVG OIL %
CARGILL	SF-270	2220	2210	2220	38.8	43.1	41.0
PIONEER	6451	2410	1940	2180	39.5	45.5	42.5
CARGILL	SF-100	2150	2160	2160	35.4	40.7	38.1
INTERSTATE	IS-6111	2350	1850	2100	38.3	43.0	40.7
CARGILL	SF-187	2020	2070	2050	37.2	39.3	38.3
KAYSTAR	8806	2090	1890	1990	39.5	42.0	40.8
PIONEER	6322	1930	1910	1920	38.3	43.8	41.1
PIONEER	6425HO	1880	1930	1910	37.3	43.2	40.3
SIGCO	675	2100	1650	1880	39.6	44.5	42.1
SIGCO	658	1870	1790	1830	39.6	44.7	42.2
PIONEER	6400HO	1880	1670	1780	38.6	42.1	40.4
INTERSTATE	IS-3311	1940	1620	1780	38.4	41.8	40.1
KAYSTAR	SUNBIRD II	1730	1460	1600	32.9	37.9	35.4
	MEAN	2040	1860	1950	38.0	42.4	40.2

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