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EC 88-107

NEBRASKA PROSO AND SUNFLOWER VARIETY TESTS

1988

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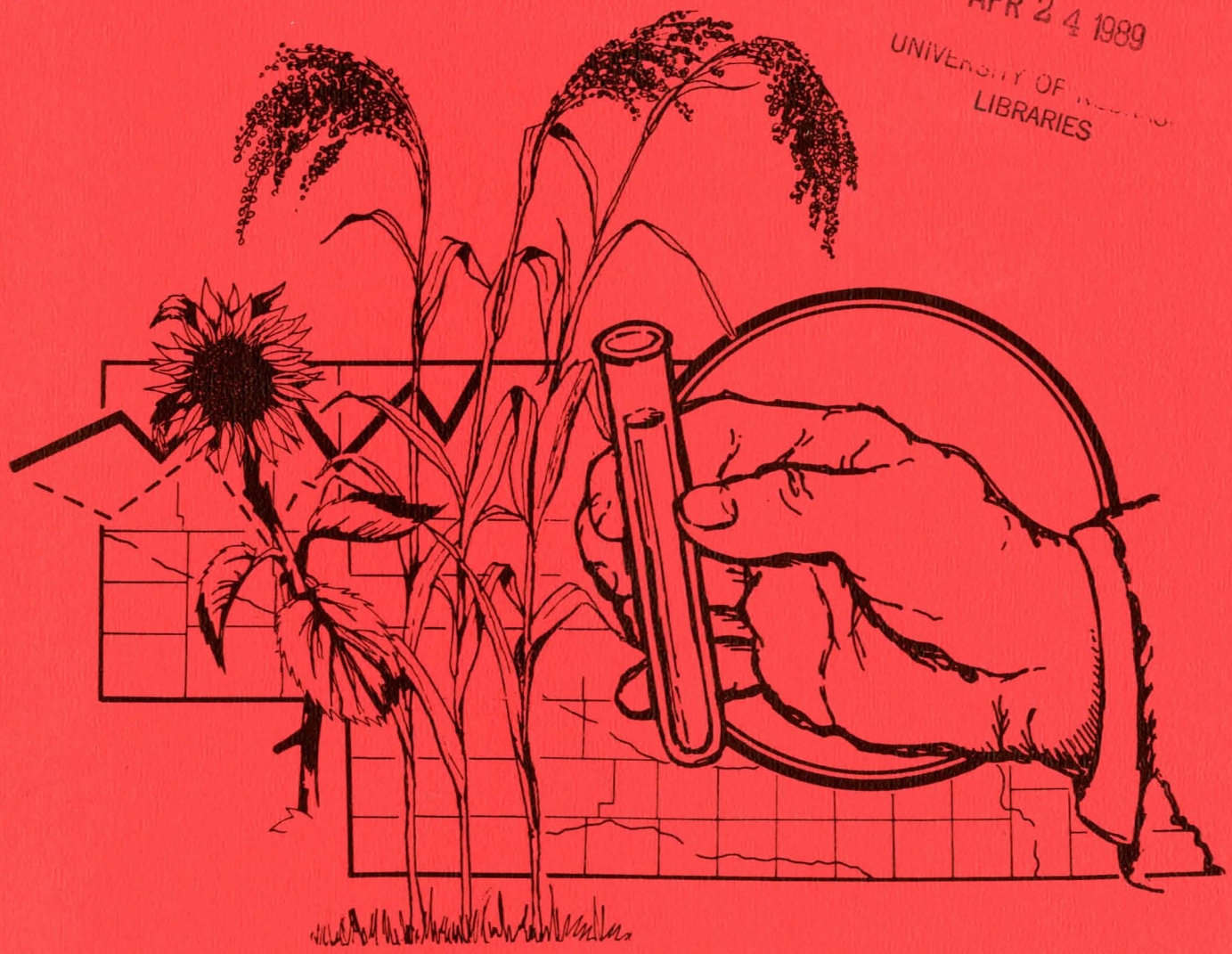

University of Nebraska–Lincoln
Institute of Agriculture and Natural Resources
Agricultural Research Division
Cooperative Extension Service

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EXTENSION CIRCULAR 88-107

February 1989

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ACKNOWLEDGEMENT

This circular is a progress report of proso and sunflower variety trials conducted by the Panhandle Research and extension Center, and the High Plains Agriculture Laboratory. Conduct of experiments and publications of results is a joint effort of the Agricultural Research Division and the Cooperative Extension Service.

The author relocated during the year from Scottsbluff to Lincoln. Because of that change in location, a large responsibility for these tests fell on Glen Frickel. I would like to thank him for his extra efforts during the summer and fall of 1988 to bring these tests to completion.

METRIC EQUIVALENTS

1 centimeter = 0.394 inches	cm = inches x 2.54
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

Kilogram/hectoliter = lb/bu x 1.287

Kilograms/hectare = bu/A x 62.78 (56# bu)

EXTENSION CIRCULAR 88-107

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PROSO VARIETY TRIALS

1988

The 1987 proso test contained 23 white seeded entries of which six were named varieties used as check varieties. The other 17 entries were selections and crosses from the proso breeding program at the Panhandle Research and Extension Center. All these selections and crosses involve the variety Dawn and the primary purpose of this trial is to identify a taller better yielding, larger seeded "Dawn type" variety. Rise is the first release from the Dawn crosses and has demonstrated improved height and yield over other named varieties.

VARIETY DESCRIPTION OF CHECK VARIETIES

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.

COPE

Cope is a 1978 Colorado release. It is much later maturing than other varieties. It has yielded well in Nebraska, especially when planted early.

DAWN

Dawn is a 1976 Nebraska release. It is shatter resistant and ripens uniformly to make it suitable for direct combining. It has a large seed with good white color and has been well accepted in the bird seed trade. Its early maturity and short stature have made it less suitable under environmental stress conditions. It has not performed well under ecofallow in University of Nebraska tests. Its yield potential is good when fertilizer and moisture are favorable.

MINCO

MInco is a joint Minnesota-Colorado release. It is slightly taller and later than Panhandle. It has a good white seed color and good yield potential.

PANHANDLE

Panhandle is a 1968 Nebraska release. It is the first variety selected from the common white proso grown in western Nebraska. It has a good yield record and has white seeded grain. It has set the yield standards for many years.

RISE

Rise is a 1983 Nebraska release. It is the result of a Dawn X Minn 402 cross made in 1975. It is later and taller than Dawn with many of the same characteristics in head type and lodging resistance. It has had a good yield record in the time it has been tested. It does not have the large seed size of Dawn. In comparison to Panhandle, it is slightly shorter and earlier.

DESCRIPTION OF PLOT TECHNIQUES

Four proso variety trials were conducted in 1988. All were located at the High Plains Agriculture Laboratory near Sidney, Nebraska. These four trials included an early black fallow site, a continuous cropping site, a notill site, and a late black fallow. Table shows the conditions of each of those sites.

Plots were seeded with a 6-row double disc drill. Each plot was 22 feet long and six feet wide. The center 4 rows were harvested from each plot with a self-propelled combine when the variety was mature. Four replications of each variety in each location were planted and harvested. The plots were treated with a preemergence herbicide, atrazine, for weed control.

Table 1. List of 1988 plot conditions.

Location	Designation	Planting date	Stand	Weed control	Av. yield cwt/A	Previous crop
HPAL	Early black	June 8	Variable	good	21.7	Fallow
HPAL	Continuous	June 7	Uniform	good	14.7	Wheat
HPAL	Notill	June 7	Uniform	good	19.9	Fallow
HPAL	Late black	June 29	Variable	good	20.8	Fallow

Table 2. Five year summary of varieties included in test.

Variety	5 year Average	1988	1987	1986	1985	1984
Rise	19	19	20	15	18	22
Minco	18	18	19	16	18	18
Cope	16	17	18	14	15	14
Panhandle	13	16	16	12	12	10
Abarr	13	17	16	12	10	12
Dawn	11	10	12	6	12	13
Mean	15	19	17	12	14	14

Table 3. Proso Yields for 1988 yield trials.

	High Plains Ag Lab - Sidney				
	Average Yield	Early Black	Continuous Cropping	Notill	Late Black
83014-10-B	22.7	26.4	18.2	23.3	22.8
83019-5-B	22.5	25.6	18.4	24.0	21.8
83019-1-B	21.9	25.3	17.9	22.9	21.5
85007-1	21.8	24.9	15.9	21.0	25.6
83014-4-B	21.5	23.2	16.1	23.7	22.9
83011-4-B	20.8	23.4	14.2	22.9	22.6
76010-10-8S	20.7	24.3	14.8	23.1	20.8
85011-2	20.6	23.7	16.9	19.3	22.3
79012-9-B-8	20.5	23.4	15.7	21.9	21.1
76010-3-10-S	20.4	23.8	15.3	21.3	21.1
79012-9-B	20.3	22.7	13.6	21.6	23.4
83012-6-B	19.6	21.5	14.1	22.1	20.7
82003-2-4-S	19.4	20.4	16.7	20.4	20.2
79017-4-B-S	19.4	22.0	13.4	20.4	22.4
79012-9-16-S	19.0	20.9	14.1	20.3	20.8
Rise	18.6	20.3	13.1	18.8	22.1
82007-1-B	18.4	19.7	15.4	17.8	20.7
Minco	18.2	19.1	14.5	19.5	19.8
Cope	17.3	18.7	14.5	18.3	17.7
76004-18-4-S	16.9	19.2	15.0	18.2	15.3
Abarr	16.7	20.5	14.3	14.6	17.3
Panhandle	16.3	18.5	12.6	15.9	18.3
Dawn	9.6	12.1	3.0	5.7	17.4
Average	19.3	21.8	14.7	19.9	20.8
Dif Req Sig 5%	2.4	3.1	3.9	2.4	2.9
25%	1.4	1.8	2.3	1.4	1.7

Table 4. Agronomic characteristics of lines and varieties in 1988 yield trial

VARIETY	PLANTS / 3 FT	HEADING JULY	HEIGHT INCHES	HARVEST SEPT	WEIGHT LB/BU	SEEDS 5 G
83014-10-B	11.9	19.9	34.1	7.8	56.4	679
83019-5-B	11.8	21.0	31.8	7.8	56.1	753
83019-1-B	13.1	21.2	31.7	7.8	56.0	737
85007-1	14.0	15.6	32.2	5.8	57.3	706
83014-4-B	13.3	18.6	33.8	10.8	57.2	690
83011-4-B	13.8	18.1	33.8	5.8	55.3	693
76010-10-8S	12.6	17.0	30.6	5.8	55.7	679
85011-2	13.4	18.1	33.8	7.8	56.0	668
79012-9-B-8	13.5	15.7	32.1	5.8	57.3	699
76010-3-10-S	13.4	15.6	33.6	5.8	55.4	659
79012-9-B	12.1	16.1	31.8	5.8	57.2	687
83012-6-B	12.9	18.8	36.1	11.3	57.1	700
82003-2-4-S	12.4	19.8	38.6	11.3	57.6	697
79017-4-B-S	12.8	16.4	34.0	11.3	57.3	690
79012-9-16-S	12.8	15.3	31.8	5.8	57.3	694
Rise	13.2	17.6	29.9	5.8	56.6	711
82007-1-B	11.9	16.8	34.6	7.8	57.1	666
Minco	12.9	16.6	35.1	5.8	57.0	700
Cope	13.4	19.0	40.5	11.3	57.3	683
76004-18-4-S	14.0	22.8	41.0	11.3	56.6	707
Abarr	13.6	15.7	37.8	5.8	57.0	654
Panhandle	13.8	14.8	36.4	5.8	56.9	679
Dawn	14.1	13.5	24.8	0.8	56.3	686
Average	13.1	16.5	33.9	7.4	56.7	692
Dif Req Sig 5%	1.8	2.6	2.1	3.5	0.8	29
25%	1.1	1.5	1.2	2.1	0.5	17

Sunflower Test - 1988

The 1988 sunflower test was conducted under dryland conditions in Cheyenne County. It was planted in a 20 acre sunflower field at the High Plains Agriculture Lab near Sidney, Nebraska. The test was planted on June 19. Each plot consisted of 4 30 inch rows and each hybrid was replicated 5 times. Plots were planted 30 ft long of which 21 ft were harvested. Four rows were planted and the center two of each plot were harvested with a small plot combine. A starter fertilizer was applied at the rate of 8-26-0. Seeding rate was 22,000 seeds per acre (about 5 pounds) except for two Sunwheat plots (labeled as 2X) which were planted at 44,000 seeds per acre. Six companies entered 21 hybrids in the test. One hybrid was confectionery type. The herbicide used on this test was Prowl at a rate of 1 1/2 pints/A. The plots were harvested on Oct. 16.

Sunflower yields were below average in 1988 due to the excessive heat during the summer. Soil moisture at planting was good and the crop started well. Bird and insect problems appeared minimal in this trial.

I would like to thank Glen Frickel for the extra effort he gave this plot in order to make it a success. Without his help, this test could not have been conducted in 1988.

Oil percent is based on a 10% moisture basis. Analysis was provided by Dr. J. F. Miller, USDA-ARS, Fargo, ND. Samples were cleaned of all foreign material before the analysis.

I would like to thank Dr. Miller and his assistants for their contributions to this test.

Companies entering the 1988 Sunflower Test

Conti-Seed,	Huron, SD 57350
Dahlgren & Co.,	Crookston, MN 56716
Interstate Seed Co.,	Fargo,ND,58107
Jacques Seed,	Lingle, WY 82223
SeedTec,	Hereford,TX,79045
Triumph Seed Co.,	Ralls,TX,79357

Table 5. Sunflower data from Cheyenne County. 1988.

Company	Hybrid name	YIELD LBS/A	FLOWER AUGUST	HEIGHT INCHES	WEIGHT LB/BU	OIL %
Jacques	Columbia II	1307.9	7.8	59.5	27.5	41.8
ContiSeed	Hysun 354	1273.2	15.0	65.2	26.6	42.0
Triumph	550	1256.4	13.0	63.0	28.4	43.0
Triumph	565	1254.8	15.0	61.5	31.4	44.9
SeedTec	S-317	1248.9	15.5	64.0	28.3	42.8
Dahlgren	DO-855	1232.2	8.8	61.0	27.5	41.4
Interstate	IS Exp. 33076	1227.6	13.8	59.2	28.8	43.0
Interstate	IS 3001	1223.1	15.3	64.5	27.2	40.9
SeedTec	Sunwheat 102 (2x)	1210.0	1.0	35.5	27.7	41.1
Triumph	560 A	1206.5	11.3	61.2	29.0	44.7
SeedTec	Sunwheat 101 (2x)	1190.8	3.8	41.0	26.3	37.8
ContiSeed	Hysun 33	1184.7	17.3	78.0	32.2	43.7
Jacques	Capri	1183.6	7.8	58.0	25.6	40.7
Interstate	IS 7116	1164.1	14.3	66.5	27.2	40.7
Triumph	557 DW	1158.2	15.5	44.5	28.0	41.3
Jacques	Exp8713	1146.8	9.8	60.0	28.4	40.3
Interstate	IS Exp. 61289	1082.0	15.8	68.2	31.3	46.7
Interstate	IS Exp. 31007	1080.0	15.5	73.2	28.3	42.3
Triumph	548A	1074.1	15.5	66.2	27.9	43.4
Jacques	Discovery	1048.3	12.8	65.5	27.3	40.3
SeedTec	Sunwheat 101	1009.9	3.8	38.5	26.4	37.4
ContiSeed	Sunbird II	954.5	17.8	75.5	28.4	**
SeedTec	S-338	851.4	10.5	69.7	29.1	41.3
Average		1155.2	12.0	60.9	28.2	41.9
Dif Req for Sig.	5%	270.5	1.6	4.5	0.7	1.2
	25%	157.7	0.9	2.6	0.4	0.7

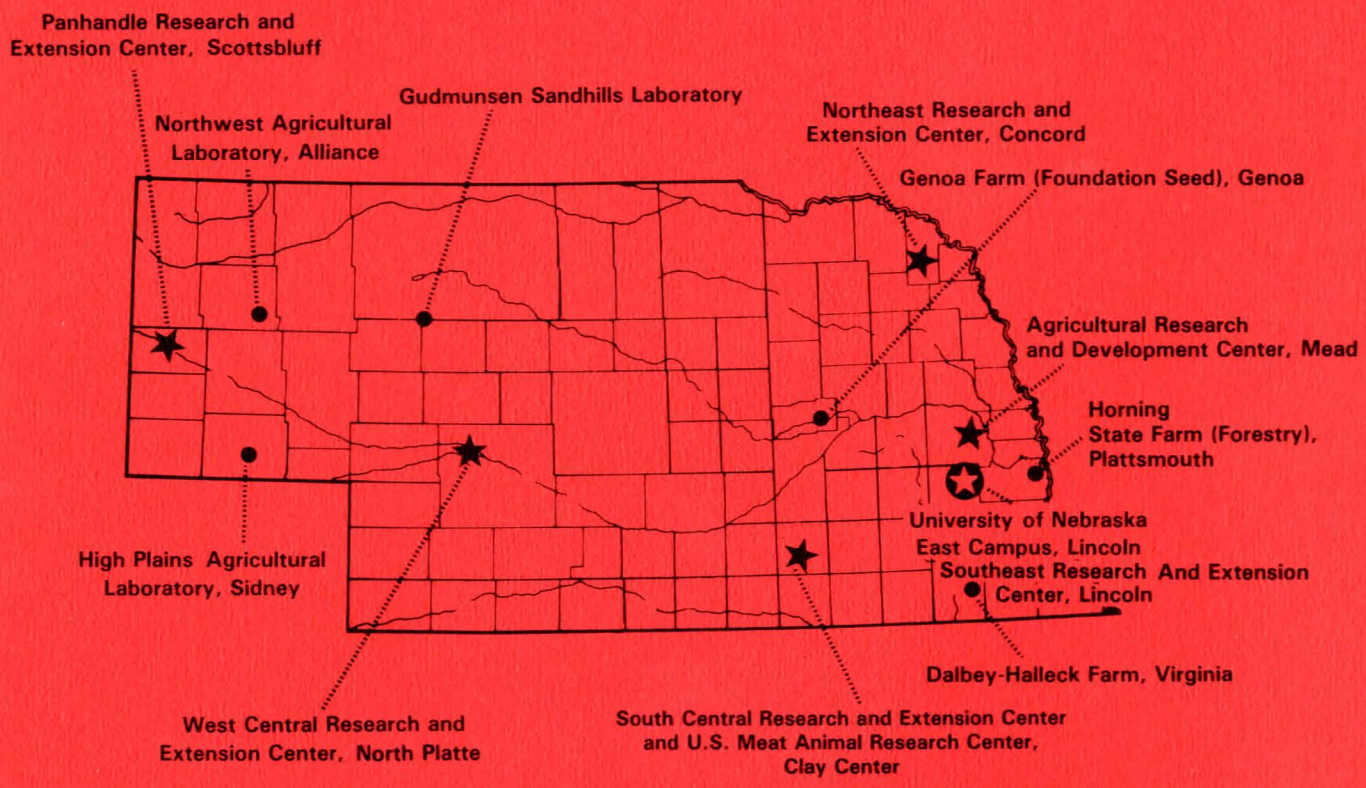
** Oil % not taken on confectionary type.

Table 6. Sunflower data from western Nebraska. 1986 - 1988.

Company	Hybrid name	1988 YIELD LBS/A	1988 OIL %	1987 YIELD LBS/A	1986 YIELD LBS/A	1986 OIL %	Three Year Average YIELD LBS/A	Three Year Average OIL %
Triumph	550	1256.4	43.0	1835	953	45.7	1348	45.8
Triumph	565	1254.8	44.9	1755	---	----	----	----
SeedTec	S-317	1248.9	42.8	1820	1006	46.1	1358	43.8
Interstate	IS 3001	1223.1	40.9	1593	867	42.8	1228	42.4
Interstate	IS 7116	1164.1	40.7	1646	758	43.4	1189	42.3
Triumph	548A [1]	1074.1	43.4	1958	886	41.7	1306	42.3
SeedTec	S-338	851.4	41.3	1172	---	----	----	----
Average		1153.3	42.4	1682	894	43.9	1280	43.7

[1] Triumph 548 in 1986 and 1987.

AGRICULTURAL RESEARCH AND EXTENSION FOR ALL OF NEBRASKA



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Nebraska is a large state and has great variation due to topography and the continental type of climate. The elevation ranges from 1,000 feet to near a mile high in the northwest portion of the state, rainfall varies from less than 15 to more than 35 inches per year, and the soil types vary from sands to heavy clays. The research and extension programs thus are broad in subject matter and geography, resulting in the need for various centers, satellite locations, and local offices.