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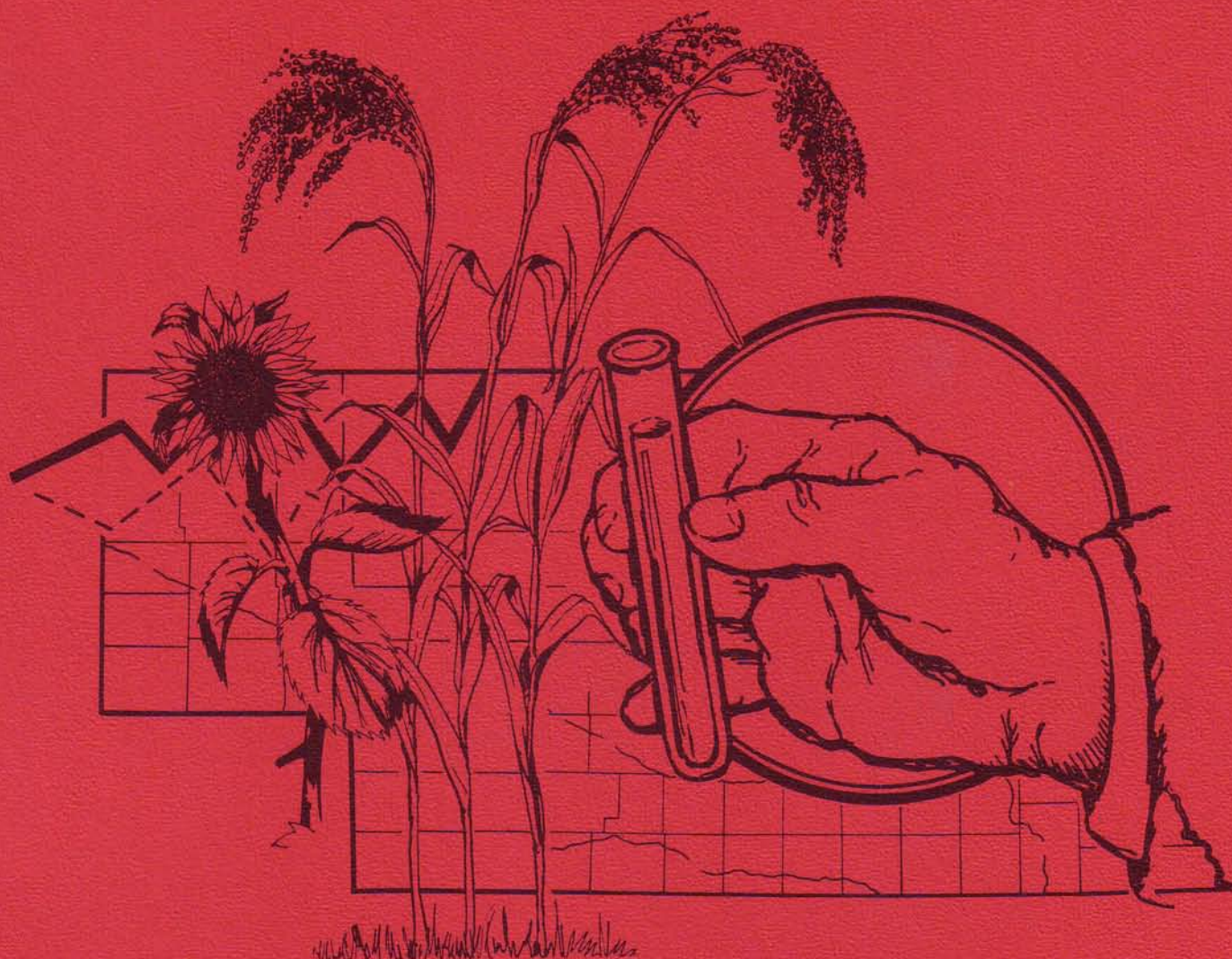
Nelson, Lenis Alton, "EC87-107 Nebraska Proso and Sunflower Variety Tests, 1987" (1987). *Historical Materials from University of Nebraska-Lincoln Extension*. 1555.

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NEBRASKA PROSO AND SUNFLOWER VARIETY TESTS

1987



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



Issued in furtherance of Cooperative Extension work. Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Leo E. Lucas, Director of Cooperative Extension Service, University of Nebraska, Institute of Agriculture and Natural Resources.



EXTENSION CIRCULAR 87-107

December 1987

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ACKNOWLEDGMENT

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

Griffeth who furnished land for the proso experiment in Kimball County, to Lanny Larson who furnished the land for the sunflower experiment in Banner County, and to the Extension Agents in the Panhandle. Thanks also go to Glen Frickel and Linda Danehy for their work in planting, tending, and harvesting the plots.

THE METRIC SYSTEM

Metric equivalents and conversions are as follows:

1 centimeter (cm) = 0.394 inches

1 hectare (ha) = 2.471 acres

1 kilogram (kg) = 2.205 pounds

1 kilogram/hectare (kg/ha) = 0.892 pounds per acre

1 kilogram/hectare (kg/ha) = 0.892 pounds per acre

1 hectoliter (hl) = 2.838 bushels

Kilogram/hectoliter = lb/bu x 1.287

Kilogram/hectare = bu/A x 53.81 (48 #/bu)

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

Kilogram/hectare = bu/A x 67.26 (60 #/bu)

cm = inches x 2.54

ha = acres x 0.405

kg = pounds x 0.454

kg/ha = lb/A x 1.121

kg/ha = cwt/A x 112.1

hl = bushels x 0.35

PROSO VARIETY TRIALS

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PROSO VARIETY TRIALS

1987

The 1987 proso test contained 22 white seeded entries of which six were named varieties used as check varieties. The other 16 entries were selections and crosses from the proso breeding program at the Panhandle Research and Extension Center. All of

these selections and crosses involve the variety Dawn and the primary purpose of this trial is to identify a tall, improved "Dawn type" plant. Rise is the first release from the Dawn crosses and has demonstrated improved height and yield over other varieties.

The following is a description of the six varieties included as check varieties. All are available from their states of origin if they are not available locally.

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 the 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. 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 standard 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

Six proso variety trials were conducted in 1987. Four were located at the High Plains Ag. Lab. near Sidney, one at the Northwest Ag. Lab. near Alliance, and one on the Doug Griffeth farm in Kimball County. The four at High Plains Ag. Lab. were early black fallow, late black fallow, early ecofallow, and late ecofallow. The early black fallow plot was not harvested due to bird damage. The test at Northwest Ag. Lab. was ecofallow. The Kimball County plot was planted on black fallow.

Plots were seeded with a 6-row double disc drill. Each plot was 22 feet long and six feet wide. The center 4 by 15 foot segment was 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 at High Plains Ag. Lab. and Northwest Ag. Lab. were treated preemergence with atrazine for weed control. The Kimball County plot was treated with 2,4-D herbicide applied post-emergence.

Table 1. List of 1987 locations and conditions.

<u>Location</u>	<u>Designation</u>	<u>Planting date</u>	<u>Stand</u>	<u>Weed control</u>	<u>Av. yield cwt/A</u>	<u>Previous crop</u>
HPAL ^{1/}	Early (black) ^{2/}	June 4	Uniform	Good	^{3/}	Fallow
HPAL	Early(ecofallow)	June 4	Uniform	Good	25.4	Wheat
HPAL	Late (black) ^{2/}	June 22	Uniform	Good	6.2	Fallow
HPAL	Late (ecofallow)	June 22	Uniform-low	Good	27.3	Wheat
NWAL	Late (ecofallow)	June 17	Uniform	Good	14.7	Wheat
Kimball	Late (black)	June 11	Uniform	Poor	6.5 ^{4/}	Safflower

^{1/} HPAL near Sidney; NWAL near Alliance; Kimball-10 mi N.E. of Kimball

^{2/} Black fallow at HPAL was not cropped previous in 1986

^{3/} Not harvested due to bird damage

^{4/} Kimball County plot had hail prior to harvest

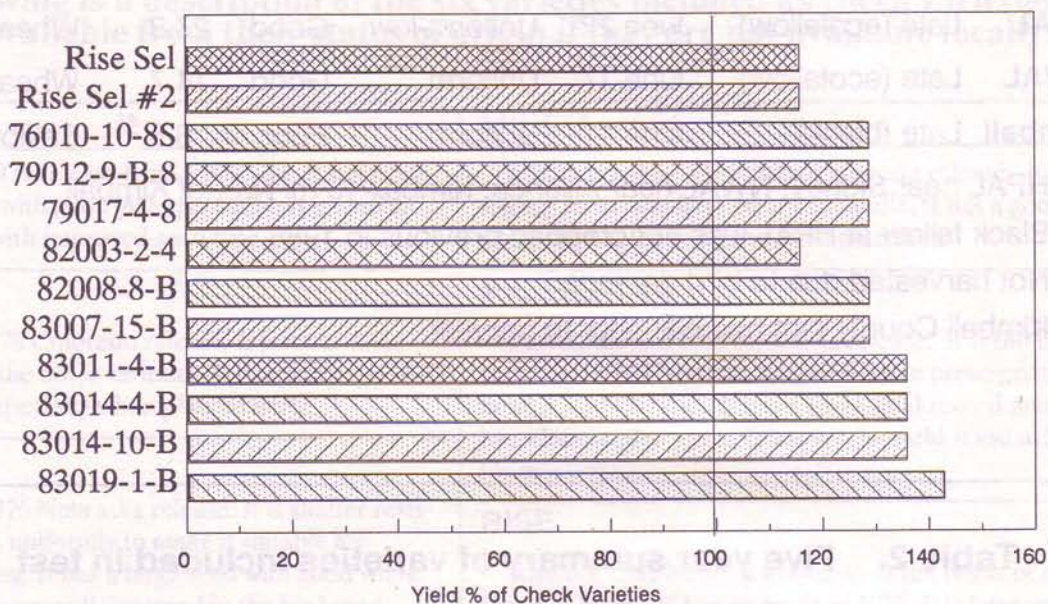
Table 2. Five year summary of varieties included in test.

<u>Variety</u>	<u>5 year average</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>	<u>1984</u>	<u>1983</u>
Rise	19	20	15	18	18	22
Minco	17	19	15	16	15	22
Cope	16	18	14	15	14	18
Panhandle	14	16	12	12	10	18
Abarr	13	16	12	10	12	17
Dawn	12	12	6	12	13	15
Mean	15	17	12	14	14	19

These two graphics show the two and three year average yields of the experimental varieties in the test as a percent of the six named varieties.

Two Year Average Yield

VARIETIES



THREE YEAR AVERAGE YIELD

Varieties

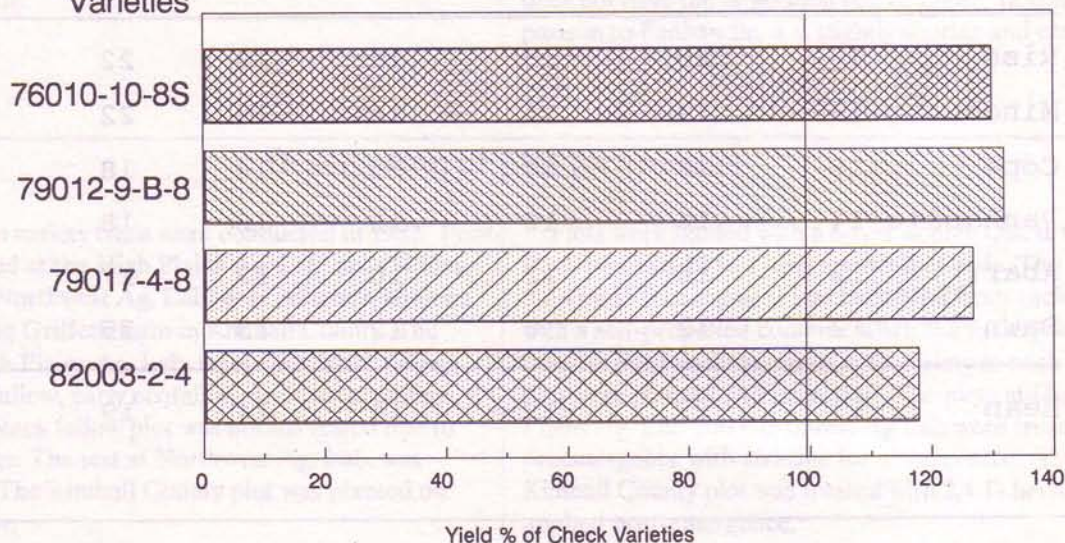


Table 3. Proso Yields from 1987 yield trials. (CWT/A)

Variety	High Plains Ag Lab				NWAL	Kimball
	Avg 5 tst	early eco	late black	late eco	late eco	late black
83014-10-B	23.7	31.8	30.5	31.8	16.0	8.2
83014-4-B	23.4	30.6	28.3	30.6	19.7	7.8
83019-1-B	23.1	30.7	29.1	30.8	17.5	7.4
79012-9-B-8	22.5	26.7	28.1	31.7	17.3	8.5
83011-4-B	22.5	28.9	27.6	32.1	16.0	8.0
76010-10-8-S	22.2	27.1	30.1	29.8	16.7	7.5
83003-1-10-B	21.9	31.0	24.7	30.2	15.8	7.8
79017-4-8	21.8	27.0	27.7	31.5	13.9	9.0
76004-3-2-S	21.1	27.1	28.9	27.9	15.8	5.6
83007-13-B	21.1	27.4	27.0	29.8	15.2	6.2
RISE SEL	20.6	26.2	25.5	29.3	15.4	7.0
83007-15-B	20.5	25.8	28.6	26.2	16.0	5.7
82008-8-B	20.4	23.2	27.9	26.9	16.7	7.2
RISE	19.9	23.4	25.7	27.2	17.2	5.8
RISE SEL #2	19.5	21.5	28.8	29.3	11.0	6.6
RISE SEL #3	18.9	24.1	28.3	25.7	11.4	5.0
MINCO SEL	18.6	24.0	22.1	26.2	16.0	5.0
82003-2-4	18.4	23.5	23.3	22.7	15.4	7.0
COPE	18.1	26.6	19.9	22.8	14.5	6.5
ABARR	15.8	20.1	19.1	22.7	12.8	4.0
PANHANDLE	15.6	18.0	22.4	20.1	12.3	5.0
DAWN	11.7	15.0	22.6	16.2	1.8	2.9
Mean Yield	20.1	25.4	26.2	27.3	14.7	6.5
L.S.D. .05	2.7	3.1	4.8	3.8	3.3	1.8

Table 4. Agronomic characteristics of lines and varieties tested in the 1987 yield trial.
(Ranked according to heading date)

<i>Variety</i>	<i>Head date August</i>	<i>Height inches</i>	<i>Seeds / 5 g</i>	<i>Straw Strength</i>
DAWN	4	25.9	668	Fair
PANHANDLE	5	31.1	688	Weak
ABARR	6	32.7	664	Weak
MINCO-SEL	7	32.0	700	Weak
RISE-SEL-#2	7	27.9	710	Fair
RISE-SEL-#3	7	28.0	708	Weak
RISE	8	27.7	715	Fair
82008-8-B	8	28.7	645	Fair
83007-13-B	8	32.0	677	Fair
RISE-SEL	9	29.8	697	Fair
76004-3-2-SEL	9	29.8	675	Weak
76010-10-8S	9	30.0	661	Fair
79012-9-B-8	9	30.4	683	Good
79017-4-8	9	28.5	674	Good
82003-2-4	9	33.7	663	Weak
83007-15-B	9	28.9	644	Weak
COPE	11	35.7	688	Good
83003-1-10-B	11	32.1	663	Good
83011-4-B	11	31.6	684	Excellent
83014-4-B	11	32.0	669	Fair
83014-10-B	12	32.3	658	Fair
83019-1-B	12	30.6	733	Fair
Mean	9	30.5	680	-
L.S.D..05	1.2	1.1	15	-

Sunflower Test - 1987

The 1987 sunflower test was conducted under dryland conditions in Banner County. It was planted in a large sunflower field belonging to Lanny Larson. The test was planted on June 1. Each plot consisted of 4 30 inch rows and each hybrid was replicated 5 times. Plots were planted 30 ft long of which 28 ft were harvested. Seeding rate was 22,500 seeds per acre (about 5 pounds). Four companies entered 18 hybrids in the test. One hybrid was confectionery type. The herbicide used on this test was Prowl at a rate of 2 pints/A. The plots were harvested on Oct. 6.

Sunflower yields were good in 1987 due to a higher than average rainfall. Soil moisture at planting was excellent and the crop started well. Bird and insect problems appeared minimal in this trial.

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 Lanny Larson for their contributions to this test.

Companies making entries in 1987

CARGILL, Box 5645, Minneapolis, MN 55440

INTERSTATE, Box 470, Fargo, ND 58107

SEEDTEC, P.O. Box 5692, Fargo, ND 58107

TRIUMPH, P.O. Box 1050, Ralls, TX 79357

Sunflower Test - 1987

Table 4. Agronomic characteristics of selected sunflower lines tested in the 1987 yield trial.

Table 6. Two Year Averages of Yield and Oil on Sunflower.

Company	Hybrid	Yield lb/A	% Oil
Cargill	SF-100	1463	39.6
Triumph	548	1422	41.8
SeedTec	317	1413	44.3
Triumph	550	1394	47.2
SeedTec	316	1340	41.2
Cargill	SF-102	1330	43.2
Cargill	SF-103	1327	42.1
Cargill	207	1283	40.2
Interstate	IS3001	1230	43.1
Interstate	IS3007	1225	43.0
Interstate	IS7116	1202	43.1
Interstate	IS7111	1144	42.5
Triumph	505C	923	*

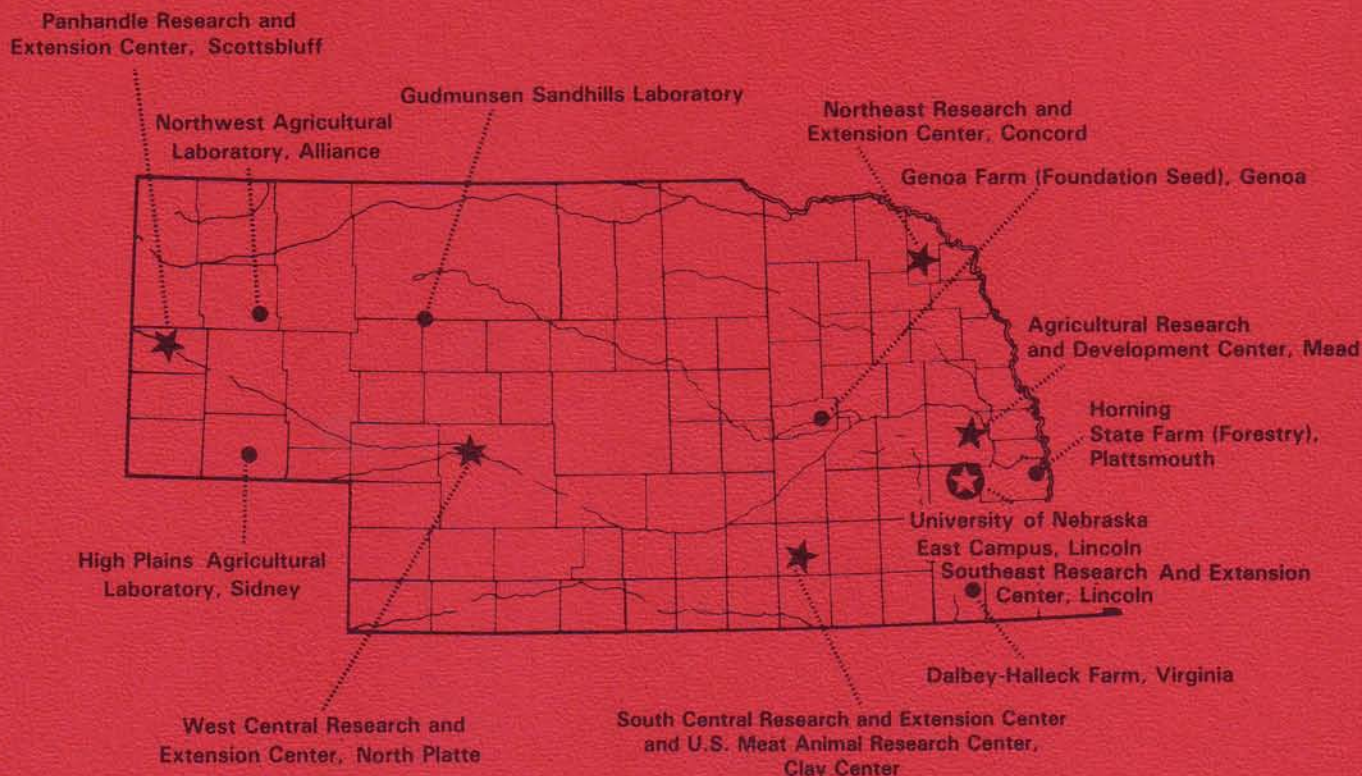
* Confectionery type

1987 Sunflower test

<i>Company</i>	<i>Hybrid</i>	<i>Yield #/A</i>	<i>Test Weight</i>	<i>Height inches</i>	<i>Harvest Moisture</i>	<i>% oil</i>
Cargill	SF-100	1985	30.5	52.2	5.8	39.1
Triumph	548	1958	28.6	56.0	5.7	41.9
Triumph	550	1835	33.1	61.6	5.2	48.7
SeedTec	317	1820	30.0	58.8	6.8	42.5
Triumph	565	1755	33.0	61.4	7.2	48.1
Interstate	IS897	1753	30.6	58.6	6.2	41.8
SeedTec	316	1720	27.7	59.0	6.6	38.4
Interstate	IS7116	1646	30.2	61.4	5.6	42.8
SeedTec	XR-28	1597	29.1	63.6	8.0	41.0
Interstate	IS3001	1593	29.9	57.4	6.7	43.4
Interstate	IS3007	1590	29.1	56.6	5.4	41.9
Cargill	X409687	1530	29.5	50.2	8.0	38.9
Cargill	SF-103	1525	31.7	64.4	7.0	42.1
Cargill	207	1511	31.4	63.0	6.5	39.7
Cargill	SF-102	1510	31.0	64.0	7.3	43.1
Interstate	IS7111	1386	29.4	58.2	6.3	41.8
SeedTec	S-338	1172	32.5	63.2	7.6	45.4
Triumph	505C	962	21.9	55.4	10.9	*
Mean		1603	30.0	59.2	6.8	42.4
LSD .05		444	1.4	4.1	2.3	2.2

* Confectionery type

AGRICULTURAL RESEARCH AND EXTENSION FOR ALL OF NEBRASKA



The Agricultural Research Division of the Institute of Agriculture and Natural Resources is responsible for studies to broaden our basis of knowledge for agricultural production. Research centers and field laboratories provide applied information for development of Nebraska's largest industry — agriculture.

The Cooperative Extension Service transmits data and provides interpretation to users through Extension Agents and Specialists. Extension Agents may be contacted through 85 local Extension offices for additional information and more specific recommendations.

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.