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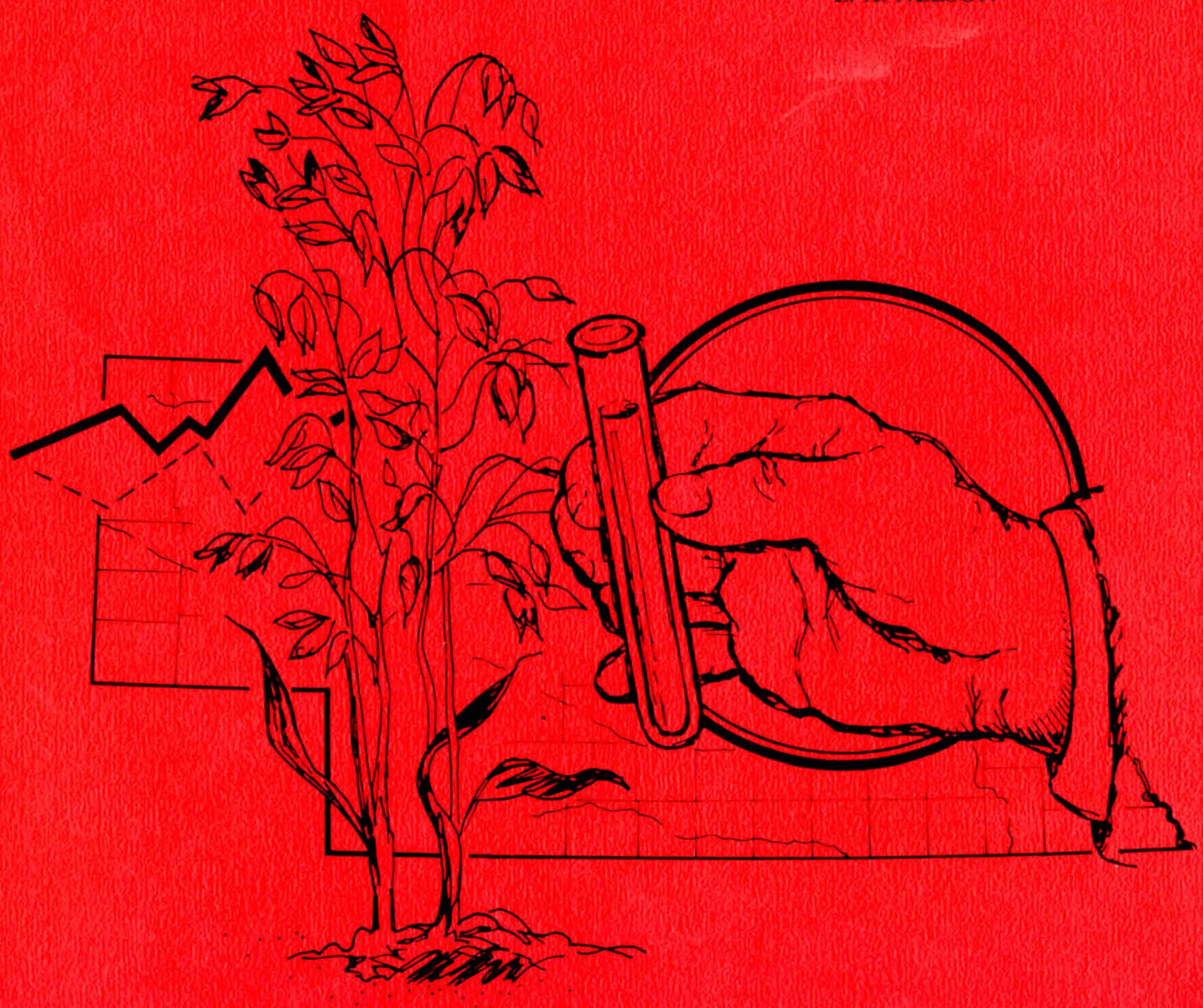
February 1984

Nebraska Cooperative Extension Service
Nebraska Agricultural Experiment Station EC 84-107

PROSO VARIETY TESTS
1983

L. A. NELSON



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EXTENSION CIRCULAR 84-107

February 1984

FOREWORD

This circular is a progress report of proso variety trials conducted by the Panhandle Station, High Plains Agricultural Laboratory, and Northwest Agricultural Laboratory. These Extension Circulars replace the Outstate Testing Series. Conduct of experiments and publications of results is a joint effort of the Agricultural Experiment Station and the Cooperative Extension Service.

CONTENTS

Introduction. 2

List of locations & conditions. 4

Five-year yield data 1979-1983. 4

Variety characteristics. 5

Grain yield and other data, 1983

Proso yields, 6 locations. 6

Heading date, harvest date, test weight, and seed weight. . . 7

PROSO VARIETY TRIALS
1983

L. A. NELSON[1]

Proso acreage in Nebraska took a sharp decline in 1980. Although there was some recovery in 1981 and 1982, the acreage did not come back to its previous level:[2]

Year	Yield (lb/A)	Area (acres)
1979	1360	63,000
1980	1350	27,000
1981	1950	33,000
1982	1700	44,000
1983	1500	43,000

As evidenced by this table, yields in 1981 were excellent. This was primarily because of the abundant and timely rain in the Cheyenne County region. Yields have not been as good in 1982 and 1983. Acreage has remained constant the past two years.

'Dawn' and 'Minco' were the two most popular varieties grown in 1983. Together they comprised about 45% of the millet acreage. 'Panhandle' and 'Abarr' decreased in acreage and accounted for about 28% together. 'Cope' stayed about constant at 13% while White Proso decreased appreciably. 'Rise' is a new, better yielding variety that was not available in 1983.

The 1983 proso test contained 20 entries of which nine were named varieties used as check varieties. The other 11 entries were selections and crosses from the proso breeding program at the Panhandle Station. 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. A large number of the experimental lines had improved yields over the named varieties.

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

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.

Cerise is a 1974 release from Nebraska. It is the only red seeded variety included in this years yield trial. It is about one day earlier than Turghai, the variety it replaced, and has a yield and height similar to Panhandle. Cerise is probably a better forage than the other varieties. There is some demand for red seed in the bird seed trade but it generally is easier to keep pure if raised outside the normal proso producing areas.

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.

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[1] Associate Professor of Agronomy, Panhandle Station, Scottsbluff, Nebraska.
[2] Nebraska Crop & Livestock Reporting Service.

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 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.

Minsum is a 1980 release from Minnesota. It is quite early and medium in height. Its most noticeable characteristic is an extremely loose panicle (effusum). It has a good yield potential and may have some potential in Nebraska.

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 is a 1983 Nebraska release. It 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.

Six proso variety trials were conducted in 1983. Three were located at the High Plains Ag. Lab. near Sidney and three at the Northwest Ag. Lab. near Alliance. The three at High Plains Ag. Lab. were early black fallow, late black fallow, and ecofallow. The three tests at Northwest Ag. Lab. were black fallow, ecofallow, and irrigated planted the same day.

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 were treated preemergence with atrazine for weed control. The plots at Northwest Ag. Lab. were treated with 2,4-D for weed control.

THE METRIC SYSTEM

Metric equivalents and conversions are as follows:

1 centimeter (cm = 0.394 inches)	cm = inches x 2.54
1 hectare (ha) = 2.471	ha = acres x 0.405
1 kilogram (kg) = 2.205 pounds	kg = pounds x 0.454
1 kilogram/hectare (kg/ha) = 0.892 pounds per acre	kg/ha = lb/A x 1.121
1 kilogram/hectare (kg/ha) = 0.892 pounds per acre	kg/ha = cwtA x 112.1

Table 1. List of 1983 locations and conditions.

Location	Designation	Planting date	Stand	Weed control	Av. yield cwt/A
HPAL (Sidney)	Early (black)	June 3	Uniform-low	Good	22.3
HPAL (Sidney)	Ecofallow	June 10	Uniform-low	Good	19.2
HPAL (Sidney)	Late (black)	June 30	Uniform-low	Good	23.3
NWAL (Alliance)	Black	June 8	Uniform-low	Good	19.7
NWAL (Alliance)	Ecofallow	June 8	Uniform-high	Good	12.4
NWAL (Alliance)	Irrigated	June 8	Uniform-high	Good	20.2

Table 2. Five year summary of varieties included in test. Cwt/A.

Variety	5 year average	1983	1982	1981	1980	1979
Abarr	17	17	20	23	15	11
Cerise	16	16	20	19	11	13
Cope	20	18	25	26	14	16
Dawn	16	15	22	15	14	14
Minco	21	22	26	25	16	14
Minsum	18	18	20	25	14	14
Panhandle	18	18	22	24	16	11
Rise	23	22	26	29	19	19

Table 3. Agronomic characteristics of lines and varieties tested in 1982.

Variety or line (parentage)	Seed color	Height in inches	Straw strength	Maturity
ABARR	White	42.4	Weak	Medium
CERISE	Lt.red	41.3	Weak	Early
COPE	White	46.8	Fair	Late
DAWN	White	27.3	Good	V. Early
MINCO SELECT	White	39.0	Fair	Early
MINSUM	White	38.9	Weak	Early
PANHANDLE	White	40.6	Weak	Early
RED LEONARD	Red	42.3	Good	Late
RISE	White	33.6	Good	Medium
DAWN SELECT	White	27.6	Good	V. Early
75074-3-3 (Dawnx(346938 x 1130-2)	White	38.3	Fair	Medium
76004-3-2 (Rise Sib.)	White	35.8	Fair	Late
76004-3-8 SELECT (Rise Sib)	White	36.0	Good	Medium
76004-19-1 (Rise Sib.)	White	42.6	Fair	Late
76004-19-1 SELECT (Rise Sib)	White	40.5	Good	Late
76010-10-8 SELECT (Panhandle x Dawn)	White	34.9	Good	Late
76036-7 (170603WLT x (Dawn x 346935)	White	39.6	Good	Late
79001-4-11 (Minco x 75072)	White	38.0	Fair	Late
79012-9-16 (Dawn x 76004)	White	35.4	Exc.	Medium
79017-4-8 (Dawn x 76010)	White	39.1	Good	Late

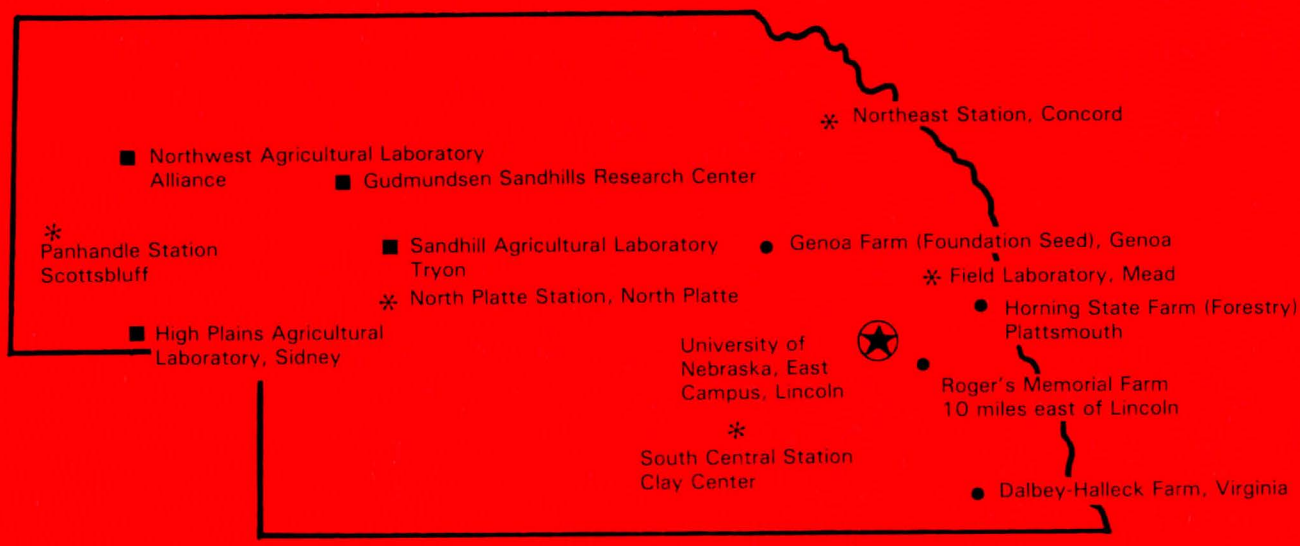
Table 4. Yields of proso lines and varieties at all locations in 1982. Cwt/A.

VARIETY	HPAL ECO.	HPAL LATE	HPAL EARLY	NWAL ECO.	NWAL BLACK	NWAL IRR.	AVG. 6 Loc.
ABARR	14.3	20.3	22.0	13.4	15.3	14.6	16.7
CERISE	10.9	19.9	20.5	12.1	17.7	16.9	16.3
COPE	15.0	20.6	21.7	13.9	19.1	18.0	18.1
DAWN	18.9	18.8	12.7	4.2	13.8	21.8	15.0
MINCO SELECT	20.9	25.0	26.6	14.0	22.7	22.6	22.0
MINSUM	18.4	23.3	22.5	12.7	17.8	9.7	17.4
PANHANDLE	16.9	21.6	21.0	12.9	18.0	16.8	17.9
RED LEONARD	13.5	22.7	20.8	11.1	20.2	14.5	17.1
RISE	22.3	24.2	23.6	13.4	20.3	26.0	21.6
DAWN SELECT	21.6	17.9	15.1	6.3	17.2	19.8	16.3
75074-3-3	18.8	22.9	21.1	13.3	19.7	24.6	20.1
76004-3-2	23.6	23.1	25.7	14.1	22.2	21.4	21.7
76004-3-8 SELECT	19.7	26.5	26.8	11.1	20.4	28.6	22.2
76004-19-1	21.2	25.8	23.3	14.1	23.0	18.3	21.0
76004-19-1 SELECT	20.0	25.8	23.0	10.6	21.0	23.5	20.7
76010-10-8 SELECT	24.7	25.2	25.7	15.0	21.2	20.4	22.0
76036-7	16.2	22.8	20.9	13.4	20.6	21.3	19.2
79001-4-11	20.4	25.6	24.9	15.0	21.5	17.3	20.8
79012-9-16	24.0	24.7	23.5	13.1	20.4	25.9	21.9
79017-4-8	22.2	28.3	25.2	14.3	22.0	22.8	22.5
AVERAGE	19.2	23.3	22.3	12.4	19.7	20.2	19.5
L.S.D.^V.05^V	3.3	3.6	3.9	2.3	4.3	5.5	1.6

Table 5. Agronomic characteristics of lines and varieties tested in 1983 yield trial.

Variety	Heading date After July 1	Harvest date After Sept. 1	Test wt. lb/bu	Seed Wt. seeds/5g
ABARR	24.6	27.3	57.3	697.6
CERISE	23.9	22.3	59.9	818.9
COPE	26.9	29.0	57.1	732.4
DAWN	20.6	20.3	57.0	736.3
MINCO SELECT	23.4	28.4	57.6	758.9
MINSUM	23.5	25.0	57.3	703.3
PANHANDLE	22.4	29.0	57.5	732.4
RED LEONARD	30.0	29.0	60.7	781.2
RISE	24.2	26.3	56.8	768.8
DAWN SELECT	20.9	20.3	56.9	735.6
75074-3-3	25.3	29.0	56.8	698.6
76004-3-2	27.1	27.3	56.2	728.7
76004-3-8 SELECT	25.4	27.8	56.4	756.1
76004-19-1	30.3	29.0	57.0	765.4
76004-19-1 SELECT	29.9	29.0	57.0	757.4
76010-10-8 SELECT	27.8	28.4	56.1	713.7
76036-7	29.0	29.0	56.2	732.0
79001-4-11	29.0	26.7	55.1	810.0
79012-9-16	24.8	26.7	57.8	739.6
79017-4-8	28.5	29.0	57.0	728.2
AVERAGE	25.8	26.9	57.2	744.8
L.S.D.^V.05^V	.6	.6	.8	9.7

Agricultural Research for All of Nebraska



The agricultural research division of the Institute of Agriculture and Natural Resources is the Nebraska Agricultural Experiment Station. The Experiment Station relies on its research centers and field laboratories to provide applied knowledge for development of Nebraska's largest industry—agriculture. In addition, many Nebraska farmers cooperate by furnishing land and other facilities for research projects. This provides information from areas not well represented by stations.

The Cooperative Extension Service transmits data to users through District and County Extension Offices. Area and County Extension Agents are available to provide additional interpretation 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 14 to 40 inches per year, and the soil types vary from sands to heavy clays. The research program thus is broad in subject matter and geography, resulting in the need for various stations and satellite locations.

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