Agronomic and Vegetable Crop Research

Southern Oregon
Agricultural Experiment Station

Special Report 795
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Agricultural Experiment Station
Oregon State University, Corvallis

AGRONOMIC AND VEGETABLE CROP RESEARCH

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PRECIPITATION TOTALS, TEMPERATURE MEANS, AND WEATHER NOTES
Southern Oregon Experiment Station, Hanley Research Center
569 Hanley Road, Medford, OR 97502. Elevation: 1,390 feet

Precipitation Totals
Agricultural Year, 1985-86

Month	Inches
September	1.14
October	1.50
November	2.44
December	1.35
January	2.61
February	6.46
March	1.42
April	0.40
May	1.45
June	0.13
July	0.00
August	0.00
TOTAL	18.90

Precipitation Totals and Temperature Means
Calendar Year, 1986

Month	Inches	Max, °F	Min, °F
January	2.61	51.3	35.7
February	6.46	53.2	38.0
March	1.42	63.3	37.9
April	0.40	63.6	37.5
May	1.45	73.1	43.6
June	0.13	84.2	52.4
July	0.00	84.6	51.0
August	0.00	93.9	55.2
September	2.83	72.4	46.2
October	1.91	71.0	40.1
November	2.98	51.9	36.4
December	1.21	43.3	31.1
TOTAL	21.40		

The 1941-1980 annual average precipitation as recorded by the U. S. Department of Environmental Service Weather Bureau at the Medford Airport was 18.69 inches.

WEATHER NOTES

1. The 1985-1986 agricultural year precipitation was 101% of the 40-year average recorded at the airport, mainly because of heavy rainfall in February.

2. Calendar year rainfall was 114% of the 40-year average because of heavy February and September rains.

3. The winter of 1985-1986 was characterized by mild temperatures with a low of 19° November 12 and 13, 1985. Temperatures dipped to 25° February 9 and 10, 1986.

4. The fruit-frost protection period was long, extending from March 14 to May 14. Warm weather in January and February advanced the development of fruit buds, requiring protection from freezing be provided over the two-month period.

5. May and June maximum temperatures were higher than normal, July maximums were lower than normal, and August maximums were the highest in many years.

6. No precipitation was recorded in July and August, but September was wetter than normal.

7. Fall weather in 1986 was mild, with only a few very light frosts until the temperature dipped to 28° on November 29.

WINTER BARLEY SELECTIONS, 1985-86 SEASON

Southern Oregon Experiment Station, Medford

Winter barley is an important cereal crop in Southern Oregon, occupying nearly as much acreage as winter wheat. Yields can be high, often exceeding 100 bushels or 2½ tons per acre. Barley seeded in late September, October, or early November has the potential to outyield spring barley when growing conditions are favorable by utilizing winter and spring precipitation and the longer growth period effectively. While winter wheat in the area is almost wholly of a single variety, Stephens, barley seedings include several major varieties. Wade, Scio, and Kamiak winter barleys along with Steptoe and Wocus spring types are seeded. Each has a place, considering soil type, soil drainage, elevation, and targeted harvest date. Many other varieties and experimental selections are available for seeding or trial. This report presents information on a planting made October 17 on a Central Point sandy loam soil in which 42 barleys were seeded in a replicated yield test.

The experimental area was plowed, and 40 pounds of N, 50 P_2O_5, and 35 S were applied during seedbed preparation. An additional 100 pounds of N was broadcast February 27 as ammonium sulfate. Overhead sprinklers were used to irrigate the barleys April 7, April 28, and May 23.

The barleys all had satisfactory stands, and they grew well. November, and December were the coldest months of the winter, but January, February, and March temperatures were mild, allowing rapid growth to begin early. There was some competition from grassy weeds, but broadleaf weeds were well-controlled. Diseases were not serious, although barley scald was mildly prevalent in March, partly because of excessive rainfall in February that provided favorable conditions for the pathogen to develop.

Yields of barley were considered quite high, averaging 80.9 bushels per acre, although the range from 62.9 to 107.2 bushels per acre was wide. Many of the winter barley elite and winter barley quality test entries from the OSU cereals project yielded more grain than either of the five named varieties in the test. Several will be included in the 1986-87 test.

Favorable growth conditions helped the barleys grow quite tall, and also contributed to lodging. Wocus and Steptoe, two spring types, reached heights of 44 inches and had lodging ratings of 75 and 41%, respectively. Several others lodged nearly as much as Wocus.

Bushel weights were quite high, averaging 49.7 pounds, well over the U.S. standard of 48 pounds per bushel. Test weights of nine two-row barleys all exceeded 50 pounds per bushel, averaging 52.6 pounds.

Because of their tall growth habit, most winter barleys produce an abundance of straw. This can be an asset if the farmer wishes to bale and market straw to supplement income from the sale of grain. It may also impede plowing and disking unless it has been properly spread by the combine at harvest.

Data are shown in the following table.

WINTER BARLEY DATA
Southern Oregon Experiment Station, 1985-86 Season

Entry	Grain Yield Bu/A	Grain Yield Lbs/A	Test Wt, Lbs/Bu	Height, inches	Percent Lodging	Kernel Rows
WBELT 18	107.2	5145	50.1	41	45	6
WBELT 21	102.8	4934	47.5	35	42	6
WBELT 25	101.5	4874	46.2	40	12	6
WBQT 1	96.8	4647	49.6	39	23	6
WBELT 6	96.4	4629	47.9	44	39	6
WBELT 16	95.6	4588	52.9	36	12	6
WBELT 11	94.7	4545	50.0	40	50	6
WBQT 10	94.4	4533	49.7	36	25	6
WBELT 7	92.8	4456	50.6	41	41	6
WBQT 5	90.3	4335	54.8	35	22	2
WBELT 1	89.0	4271	54.3	40	25	6
WBQT 11	85.9	4121	47.9	44	36	6
WBQT 12	85.4	4097	52.5	33	10	2
WBQT 9	84.6	4062	49.8	36	46	6
WBELT 13	84.1	4037	47.4	40	24	6
WBELT 8	80.3	3856	48.7	43	21	6
WBELT 15	79.4	3812	47.4	36	32	6
WBQT 7	79.1	3796	50.2	37	47	2
WBQT 3	78.5	3766	53.4	36	44	2
WBELT 12	78.0	3742	48.8	31	25	6
Steptoe	77.4	3714	50.3	44	41	6
WBELT 10	77.2	3706	48.5	38	24	6
WBELT 20	77.2	3703	49.6	36	30	6
WBELT 14	77.0	3697	48.4	41	24	6
WBELT 19	76.5	3671	54.0	34	44	2
WBELT 17	76.0	3650	50.7	34	25	6
WBELT 2	74.5	3577	47.0	38	12	6
Wade	74.3	3566	50.8	42	25	6
Kamiak	73.9	3548	49.0	42	55	6
WBELT 23	73.3	3518	46.7	36	24	6
WBELT 9	73.2	3515	52.7	32	12	2
WBELT 24	73.1	3510	45.9	38	70	6
Wocus	73.1	3508	48.9	44	75	6
WBELT 22	73.0	3503	50.1	37	50	2
WBQT 4	72.9	3500	53.0	37	12	2
WBELT 3	72.7	3491	49.7	41	25	6
Columbia	71.7	3440	49.5	31	22	6
WBQT 8	69.1	3315	48.4	37	32	6
WBELT 5	68.3	3277	50.1	40	47	6
WBQT 6	67.2	3228	52.8	35	20	2
WBELT 4	65.3	3133	49.3	40	30	6
WBQT 2	62.9	3020	47.4	39	50	6
Mean	80.9	3882	49.7			
LSD, 5%	21.5	1034	1.2			
C.V., %	19.0	19.0	1.7			

Notes

1. The barleys were seeded October 17 in a Central Point sandy loam soil.
2. The planting area was fertilized with 40 pounds of N, 50 P_2O_5, and 35 S in the fall, and with 100 N as ammonium sulfate February 27.
3. The barleys were irrigated April 7 and 28, and May 23.
4. Wocus and Columbia barleys had smooth awns; the others had rough awns.

SPRING BARLEY PRODUCTION NURSERY, 1986 SEASON
Southern Oregon Experiment Station, Medford

Spring barley makes up most of the cereal acreage seeded after February 15 in Southern Oregon. Only small amounts of wheat and oats are seeded after that date. Steptoe, a 6-row feed barley, is the leading variety, with small acreages of Wocus, Kombar, and Gus making up most of the remaining plantings. All the barley is used for livestock feed since Southern Oregon is a deficit area, usually necessitating the bringing in of barley from other production areas to meet the feedstock demand. This report presents information and yield data from a trial that included 35 experimental selections from the OSU cereals project and 6 named varieties.

The experimental area was fertilized with 66 pounds of N as ammonium sulfate. The soil was mapped as Central Point sandy loam. A total of five inches of water was applied by overhead sprinklers in irrigations on April 18 and June 5. Between seeding and harvest, a total of 3.40 inches of precipitation was recorded.

Stands were satisfactory with all entries. Growth progressed well with several entries exceeding 35 inches in height. Lodging occurred to a certain extent with Lindy, Wocus, and Advance, and with four experimental selections. Columbia, Kombar, Wocus, and four of the others were smooth-awned. Fourteen barleys were of the 2-row type, mostly representing a malting barley elite group; the other experimental selections were part of a spring barley elite group.

Results

Some of the grain yields were high, but the range was wide, from 61.0 to 101.3 bushels per acre. Four of the named barleys, Sunbar 550, Steptoe, Lindy, and Columbia, were among the six highest yielding entries. A number of the OSU experimental selections performed well. Twenty-four of the barleys yielded above the mean of 81.4 bushels per acre.

Bushel weights averaged 48.8 pounds, slightly above the U.S. standard of 48 pounds. Although 2-row barleys generally have the higher test weights, several 6-row barleys exceeded 50 pounds per bushel, indicative of excellent kernel fill and development.

A number of the experimental selections are worthy of further testing. They combined good yield potential with high test weight, semi-dwarf growth habit, and lodging resistance.

Data are shown in the following table.

SPRING BARLEY TEST DATA, 1986 SEASON
Southern Oregon Experiment Station, Medford

Selection	Grain Yield Bu/A	Grain Yield Lbs/A	Test Wt. Lbs/Bu	Height, inches	Kernel Rows	Awns	Percent Lodging
Sunbar 550	101.3	4,864	53.2	30	2	r	
SBELT 31	98.2	4,713	50.3	37	6	4	
Steptoe	95.7	4,594	48.8	35	6	r	
Lindy	93.8	4,503	49.6	34	6	r	20
MELT 21	93.4	4,481	50.3	30	2	r	
Columbia	91.0	4,367	49.9	27	6	s	
SBELT 23	90.8	4,357	52.2	29	6	r	
SBELT 39 (84)	89.9	4,314	49.0	35	6	r	25
MELT 22	89.7	4,307	52.4	26	2	r	
SBELT 25	88.6	4,254	52.3	34	6	r	15
SBELT 26	88.5	4,249	49.5	32	2	r	
LSBEL 17 (85)	87.4	4,197	44.6	26	6	s	
MELT 18	86.9	4,169	52.0	25	2	r	
Wocus	86.2	4,139	49.6	37	6	s	10
83-B19	85.2	4,087	49.1	30	6	r	
MELT 17	84.8	4,068	53.5	28	2	r	
MELT 19	83.5	4,007	53.6	27	2	r	
SBELT 36	83.4	4,002	54.4	29	6	s	
SBELT 34	83.0	3,985	49.8	24	6	r	
SBELT 30	83.0	3,985	48.8	26	6	r	
PMELT 8 (85)	82.9	3,978	48.4	25	6	r	
MELT 16	82.7	3,971	44.1	25	6	r	
SBELT 32	82.5	3,959	49.4	28	6	sr	
SBELT 29	81.6	3,914	48.0	31	6	r	
Kombar	81.4	3,908	47.4	25	6	s	
SBELT 24	78.5	3,769	47.8	34	6	r	15
SBELT 21	77.7	3,728	46.7	24	6	r	
ESBEL 5 (85)	77.2	3,704	45.9	33	6	r	15
Advance	77.0	3,697	49.9	33	6	r	15
MELT 24	76.6	3,676	48.0	21	2	r	
ISBEL 26 (85)	76.4	3,667	47.2	26	6	s	
SBELT 35	75.6	3,630	49.1	26	6	s	
SBELT 28	73.0	3,503	48.0	22	2	r	
MELT 20	72.0	3,456	51.2	23	2	r	
SBELT 33	71.2	3,416	48.8	26	6	r	
MELT 23	66.7	3,200	43.4	19	2	r	
SBELT 22	66.4	3,187	44.5	30	6	r	
PMELT 25	65.0	3,122	46.3	21	2	r	
MELT 26	63.8	3,065	50.7	22	2	r	
SBELT 27	62.4	2,994	39.6	28	6	r	
MELT 25	61.0	2,929	44.1	20	2	r	
Mean	81.4	3,905	48.8				
LSD, 5%	18.0	863					
1%	23.8						
C.V., %	15.8	15.8					

Notes

1. The plot area was fertilized with 66 pounds of N per acre and 76 S.
2. The barleys were seeded March 4 in the Central Point sandy loam soil.
3. Irrigation water was applied April 18 and June 5.
4. Awns: r = rough; s = smooth; sr = moderately rough.

SPRING WHEAT PRODUCTION NURSERY, 1986 SEASON
Southern Oregon Experiment Station, Medford

Although most grain seeded after February 15 in Southern Oregon is barley, there continues to be interest in spring wheat, particularly of the hard red class. Most winter and spring wheats grown in the area are classed as soft white. The changing demands of the export market and the prospect of a higher price have sparked interest in the hard wheats. This report presents results from a March 4 planting that included 17 experimental selections from the OSU cereals project and two proprietary varieties. Sixteen were classed as red wheats.

The experimental area was fertilized in February with 66 pounds of N as ammonium sulfate. The wheats were seeded March 4 in the Central Point sandy loam soil. The experimental design was of a randomized complete block design with four replications. The wheats were irrigated April 18 and June 5, using overhead sprinklers. A total of about five inches of water was applied. Between seeding and maturity, a total of 3.40 inches of precipitation was recorded.

Results

Stands were good, and the wheats grew well. All the wheats were awned or bearded. There was no lodging with any of the entries. Yields were moderate and considerably less than spring barleys grown in adjacent plots. The relative lateness of the planting probably contributed to the average yield of only 53.2 bushels per acre. Spring wheats usually benefit from early planting such as late January or February.

Bushel weights were high, indicating good fill and development of the kernels. Values ranged from 59.9 to 64.2 with a mean of 62.0 pounds. Plant heights were moderate, averaging 32 inches. Most entries had semi-dwarf characteristics which contributed to stiff straw and lodging resistance.

Data are shown in the following table.

SPRING WHEAT YIELD DATA, 1986 SEASON
Southern Oregon Experiment Station, Medford

Selection	Grain Yield Bu/A	Grain Yield Lbs/A	Test Wt., Lbs/Bu	Height, inches	
SPHRE 24	61.5	3,688	64.2	32	
ORS 8516	60.5	3,628	61.7	32	
NK 751	58.0	3,479	61.2	32	
ORS 8505	57.5	3,450	61.2	32	
ORS 8508	56.9	3,412	62.3	33	
ORS 8509	54.7	3,284	61.7	31	
ORS 8519	54.6	3,277	61.9	33	
SPHRE 25	53.9	3,236	64.1	31	
SPSWE 5	53.2	3,194	62.2	32	
SPSWE 4	53.1	3,187	61.7	33	
906-R	52.7	3,161	61.1	31	
ORS 8506	52.6	3,158	61.2	32	
SPHRE 27	51.4	3,085	63.9	35	
SPHRE 24	51.2	3,074	64.0	33	brown chaff
ORS 8517	51.1	3,068	61.7	32	
W-444	50.5	3,030	62.4	31	brown chaff
ORS 8504	49.6	2,977	60.8	31	
ORS 8518	46.1	2,766	60.5	30	
SPHRE 26	41.1	2,468	59.9	27	
Mean	53.2	3,191			
LSD, 5%	N.S.	N.S.			
C.V., %	19.3	19.3			

Notes

1. The wheats were seeded March 4 in a Central Point sandy loam soil.

2. Sixty-six pounds of N was applied per acre as ammonium sulfate during seedbed preparation.

3. The wheats were irrigated April 18 and June 5 using overhead sprinklers.

4. Data are means of four replications.

THE EFFECT OF SEEDING DATE ON STEPHENS WINTER WHEAT
Southern Oregon Experiment Station, Medford. 1985-86

Winter wheat is usually seeded between September 15 and December 1 in Southern Oregon. Most is seeded in October, unless unfavorable weather delays seeding until November. Early plantings utilize favorable growing conditions and become well established before low temperatures slow growth. Early planted stands usually yield well, but actual data from wheat seeded on different dates were not available until the trial reported here was completed.

The field of Central Point sandy loam soil was plowed October 1 and was fertilized with 32 pounds of N as 16-20-0-14 during seedbed preparation. The first seeding was made October 8, with succeeding plantings at 3-week intervals until December 10. A final seeding was made January 31, which is nearly the end of the time when winter wheat should be seeded in Southern Oregon. The plot size was 240 feet in length and 10 feet in width with four replications in a randomized complete block design. Karmex (diuron) was applied as a pre-emergence herbicide treatment to the plantings at 1.2 pounds active ingredient per acre. Hoelon (diclofop methyl) was applied March 4, at 0.75 pound active ingredient per acre for wild oat control. Ammonium nitrate was the source of 82 N applied March 11. Overhead sprinklers were used to irrigate the wheat April 16 and May 24. The wheat was harvested August 12.

Results

Plant emergence was rapid with the October 8 seeding, slightly slower with the October 29 seeding, and very slow from the November 20 and December 10 seedings. Stands were full with the first two seedings, and barely adequate with the other plantings. Temperatures in November were lower than normal, resulting in very little plant growth. There were very few weeds in the experimental area.

Growth differences were apparent at harvest. Plants in plots of the two October seedings were taller and of greater density than with the other seeding dates. There was no lodging. Grain yields were highest with the two October plantings, much lower for the November and December plantings, and even lower for the January 31 seeding. Data are presented in Table 1 and are shown in Figure 1. Test weights per bushel were highest with the October seedings, decreasing in a linear fashion to a low of 56.4 pounds for the January planting. The decreases in bushel weights were sufficient with the three later plantings to lower the wheat's grade from Number 1 to Number 2 and 3 grades of the White Wheat class. Bushel weights closely paralleled grain yields as shown in Figure 1.

Number of heads per unit area was affected by planting dates. The numbers of heads from the two October seedings were approximately 50% greater than from November and December seedings for the same area. The January seeding had even fewer heads. This indicates earlier plantings formed more tillers than later ones, which was an important factor in grain yield. The data are shown in Figure 2.

Weight per head was greatest with the November 20 planting as shown in Figure 2, but grain yield was lower than from earlier plantings because there were fewer heads to harvest. The smallest heads were found in the January 31 planting. The most seeds per head were from the November 20 planting; the fewest were from the earliest seeding which had the greatest heads per unit area. Figure 3 shows the data graphically. The weight per 100 seeds was highest for the early seedings, progressing in a linear fashion downward to the January 31 planting as shown in Figure 3.

The tallest plants were found in the two October plantings. Figure 4 shows the near-linear decline in plant heights for each succeeding planting. Shorter plants with less straw production have long been an objective of wheat breeding programs but shorter plants in this case indicated less complete development and lower yields.

Discussion

The earliest two seedings of Stephens wheat resulted in the most tillers and heads per unit area, the highest grain yields and bushel weights, the largest seeds by weight, and the tallest plants. The results point to the advantage of early planting over late ones. In most years this is probably the case. In those years when wet winters and mild temperatures are present, diseases such as foot rot and strawbreaker stem rot can be serious, especially on large plants from early plantings. In this trial, the unusually cold weather in November caused a long delay in emergence of that month's seeding.

Early seeding, followed by moderate temperatures in the fall, provide conditions favorable to vectors that transmit yellow dwarf virus into the wheat from nearby host plants. Infected plants are often seen near the edges of fields that are close to ornamentals, wild grasses, and other host plants. Usually, the advantage of early seeding overrides problems caused by the virus. In most cases, seeding should not be done before September 10 in Southern Oregon.

The protein content of the grain was not affected significantly by planting date. The average value was 9.9% with a range of 9.6% for the November 20 planting to 10.1% for the December 10 seeding. These values are within the desired range for soft white winter wheat.

Hardness ratings ranged from 28 for the December 10 planting to 54 for the November 20 planting. The average hardness value was 40. A general rule is that values under 50 are found in soft wheats, while values greater than 50 are associated with hard wheats. The values were within an acceptable or desired range except that the December 10 planting had seeds that were slightly high for soft wheats.

Table 1.

The effect of seeding date upon the yield, bushel weight, and height of Stephens winter wheat at Medford, 1985-86 season

Seeding Date	Yield of Grain Bu/A	Yield of Grain Lbs/A	Test Wt, Lbs/Bu	Plant Height, inches
October 8	93.0	5,581	61.5	39.7
October 29	88.6	5,319	60.7	38.0
November 20	48.5	2,912	59.0	33.0
December 10	44.5	2,669	57.8	31.7
January 31	36.1	2,168	56.4	28.7
Mean	62.2	3,730	59.1	34.2
LSD, 5%	7.9	474	2.4	1.8
1%	11.1	667	3.3	2.5
C.V., %	8.3	8.3	2.6	3.4

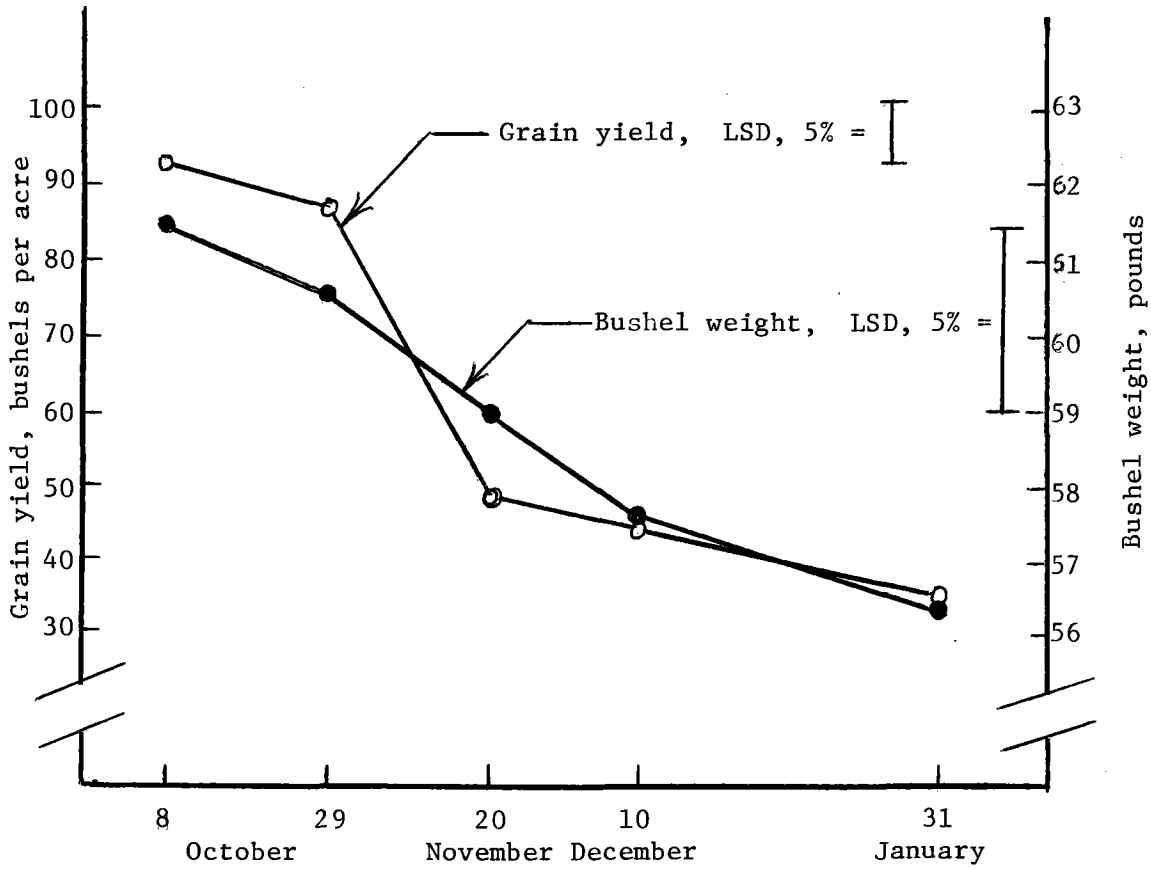

Figure 1: The effect of planting date on the yield and bushel weight of Stephens winter wheat. Medford. 1985-86.

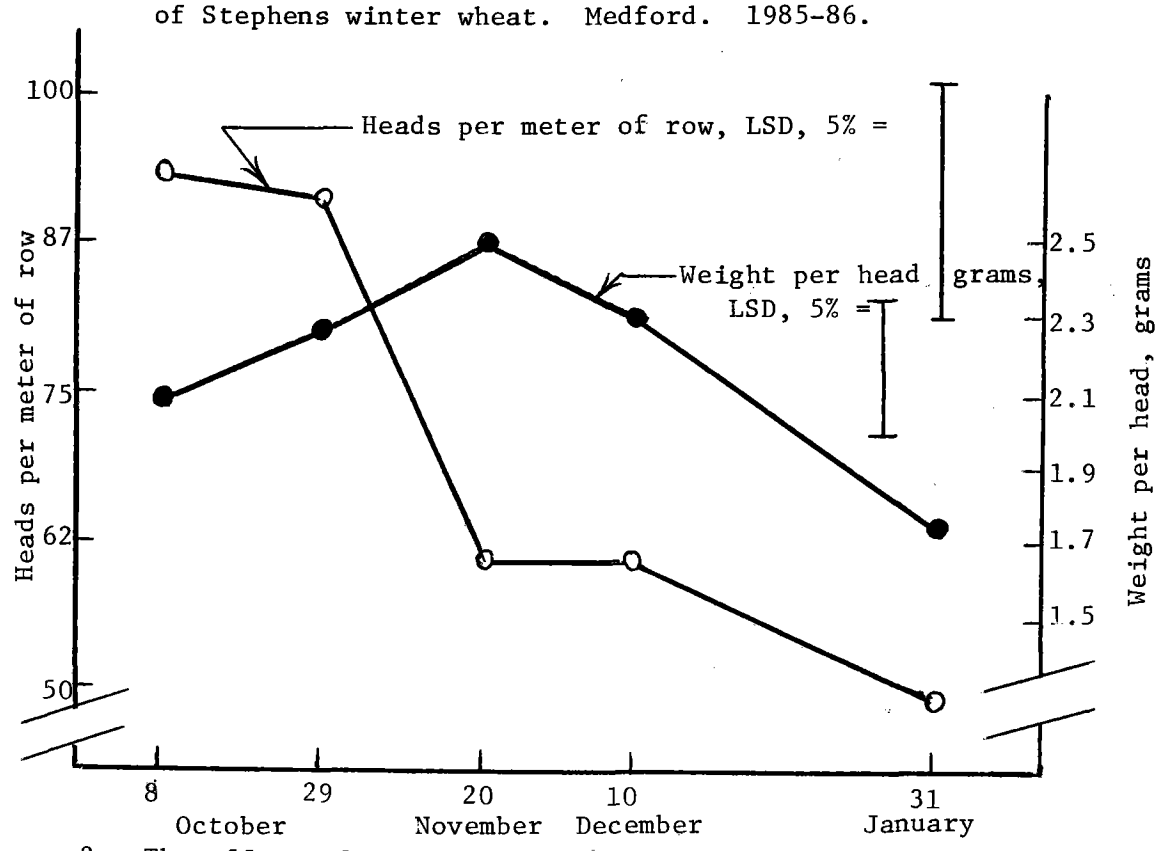

Figure 2: The effect of planting date on seeds per head and seed weight of Stephens winter wheat at Medford. 1985-86.

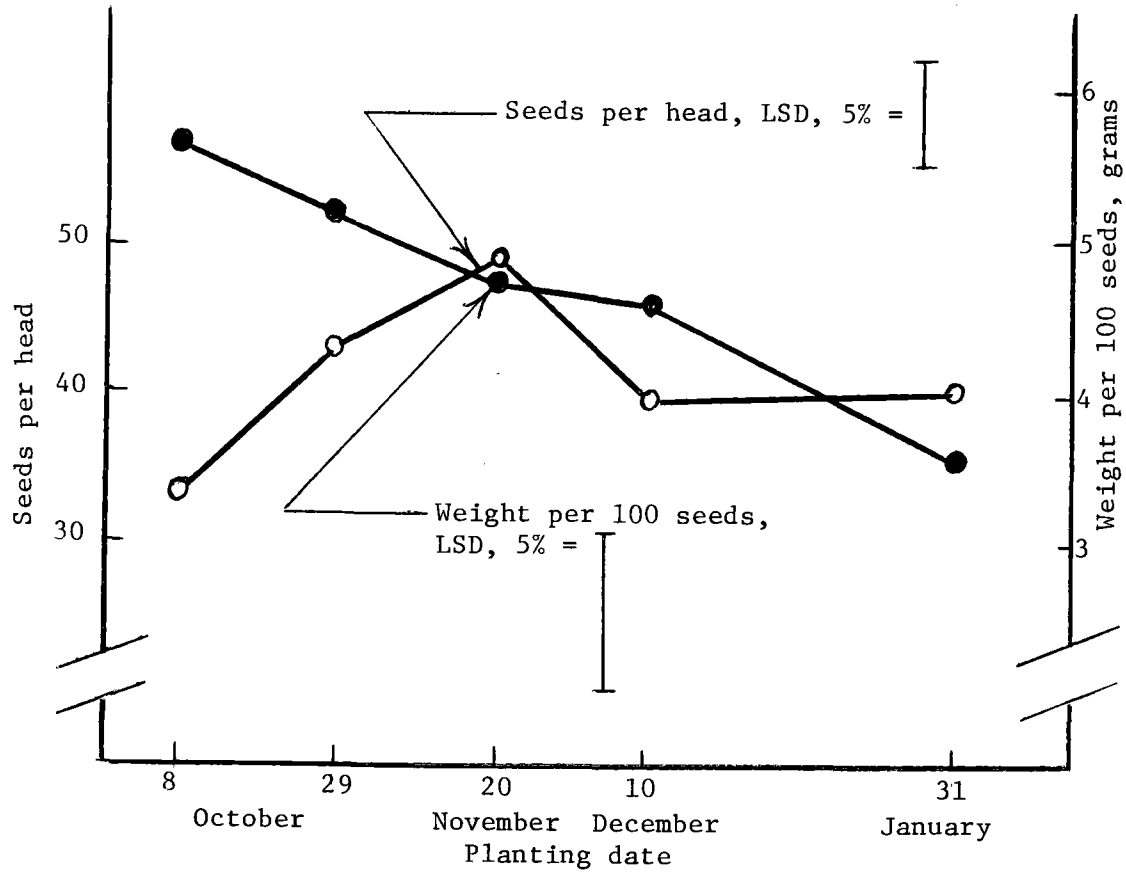

Figure 3: The effect of planting date on the number of seeds per head and seed weight of Stephens winter wheat at Medford. 1985-86.

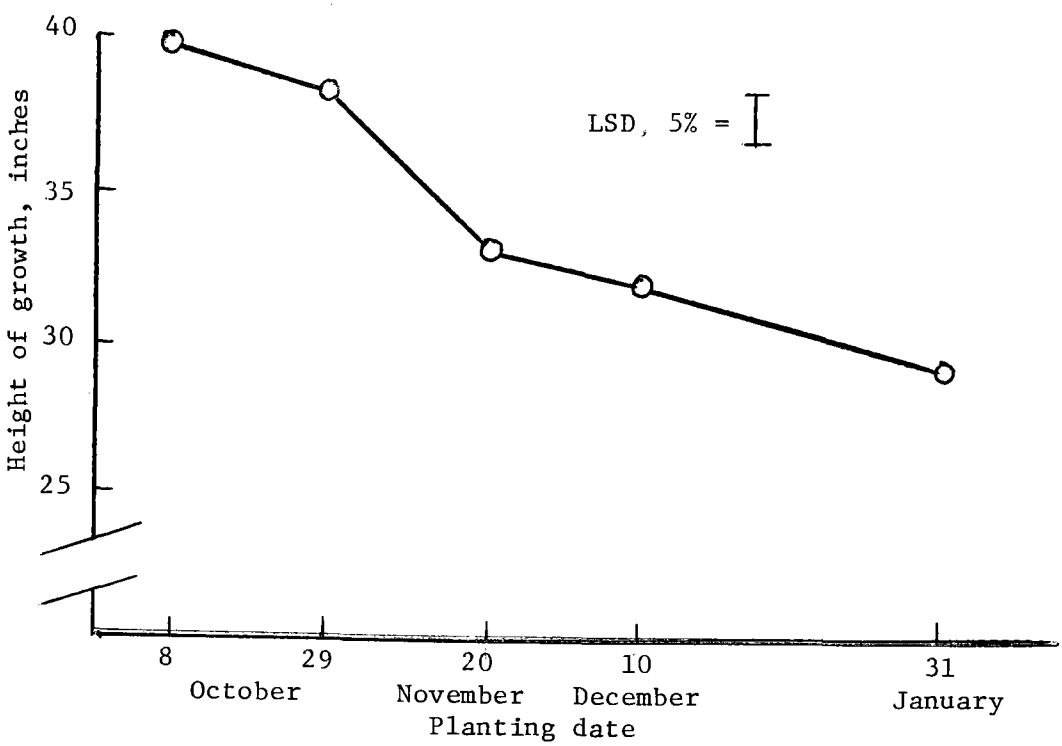

Figure 4. The effect of planting date on the height of Stephens winter wheat at Medford. 1985-86.

FIELD CORN HYBRIDS FOR SILAGE AND GRAIN, 1986 SEASON
Southern Oregon Experiment Station, Medford

Field corn harvested for silage produces more total digestible nutrients per acre than any crop grown in the area. Silage corn forms an important part of dairy and beef cattle rations in Southern Oregon. The long, warm growing season is favorable for growing corns in the 105 to 125 day maturity range. It is important for a grower to select varieties that have the potential for high tonnages of silage-stage material that also have a high concentration of grain. This report covers a test designed to identify corns that perform up to those expectations.

The soil in the experimental area was a deep, well drained, Central Point sandy loam. A barley crop was harvested from the field in 1985, and sugar beets were seeded in August. The beets were dug in February, the soil was ripped to a depth of about 16 inches, and the seedbed was prepared by disking and rototilling. The sugar beet seedbed had received an N-P-K-S application, and 85 pounds of N per acre was broadcast as ammonium nitrate April 15.

Twenty-two hybrids were seeded between April 29 and May 1. The row spacing was 30 inches and seeds were spaced 7.5 inches apart in the row for a final plant population of 27,878 plants per acre. Eighty pounds of N per acre as ammonium sulfate was broadcast-banded June 16, shortly after the corns were thinned to the final stand. Irrigation was done with overhead sprinklers.

The corns grew very well, getting off to an early start because of warm weather in May. June and July temperatures were moderate and maximum temperatures in August averaged the highest in many years. Maturity dates were advanced compared to other years. The earliest-maturing corns were sampled for grain and silage-stage yields August 25; the final sampling was done September 9, the starting harvest date for most years. Days from seeding to harvest were from 117 to 132, compared to the usual range of 130 to 145 days. Using a base minimum of 50^{o}, and considering temperatures between 50 and 86 degrees, growing degree days or heat units available totaled from 1,957 to 2,217 for the different corns.

Results

Differences were found among varieties for each parameter measured. Silage-stage yields were high for many corns. Yields of dry matter exceeded 11 tons per acre with seven of the corns, while the yield of all but six exceeded 10 tons per acre. Shelled corn yields were determined from samples taken at the medium-dent stage of maturity. Yields of 8 entries exceeded 10,000 pounds per acre at 15% moisture.

The grain-to-silage ratios were rather closely grouped about the mean of 253 pounds. This measure is an approximation of the pounds of shelled corn, at 15% moisture, contained in each ton of silage-stage material at 72% moisture. Shorter-growing grain types are usually expected to have the highest ratios but values obtained for the taller, later-maturing types were quite comparable in 1986. This shows there are tall-growing, silage-type corns capable of combining high tonnage with high yields of grain.

Test weights per bushel averaged 53.4 pounds, slightly less than that of fully matured corn. Shelling percents of air-dry corn averaged 80.4 with most variation above or below the mean being moderate. All the corns had well-developed ears and well-filled kernels.

Plant heights were moderately tall with fewer extremes than in most years. There was no lodging before sampling. Spider mites, which often contribute to premature drying and lodging, were present in only limited number in 1986.

Data are shown in the following table.

Field corn hybrids, silage-stage and grain yield data, 1986 season
Southern Oregon Experiment Station, Medford

Entry	Silage-Stage Yield, Tons per Acre at Moisture Contents			Shelled Corn, 15% Moisture			Shelling Percent	Test Wt., Lbs/Bu	Height	
	Dry	70%	72%	Bu/Acre	Lbs/Acre	*Lbs/T Silage			Ft.	In.
SS-71	12.16	40.5	43.4	187	10,493	242	82.0	54.5	11	2
PX 9540	12.00	40.0	42.9	202	11,324	264	81.8	55.7	10	7
XC 755	11.35	37.8	40.5	173	9,698	239	78.0	55.8	11	7
G-4507	11.33	37.8	40.5	196	10,982	271	82.4	51.4	10	10
PX 74	11.28	37.6	40.3	176	10,010	249	82.3	51.7	10	9
Pioneer Br. 3389	11.27	37.6	40.2	189	10,560	262	81.9	60.1	10	8
Pioneer Br. 3377	11.04	36.8	39.4	178	9,961	253	81.4	53.0	11	1
CX 05072	10.97	36.6	39.2	164	9,191	235	82.4	52.4	10	8
XC 756	10.94	36.5	39.1	174	9,735	249	79.2	56.9	11	2
NK X4815	10.88	36.3	38.8	195	10,948	282	82.8	49.6	10	5
Cenex 2115	10.68	35.6	38.1	173	9,704	254	81.3	52.1	11	1
CX 05065	10.54	35.1	37.6	180	10,092	268	84.7	55.4	10	0
Cenex 2116	10.45	34.8	37.3	155	8,676	232	79.3	54.7	11	9
XC 754	10.31	34.4	36.8	152	8,496	231	75.7	56.5	11	3
Cenex 2124	10.18	33.9	36.4	146	8,164	224	79.1	52.6	11	6
Cenex 2114	9.91	33.0	35.4	190	10,630	300	83.5	53.5	10	0
SS-607	9.73	32.4	34.7	164	9,197	265	81.6	53.3	10	9
Cenex 2109	9.72	32.4	34.7	140	7,855	226	79.1	51.6	10	0
SS-61	9.20	30.7	32.8	142	7,970	243	78.9	48.2	10	7
CX 05055	8.47	28.2	30.2	135	7,548	250	76.9	52.7	10	1
CX 05058	8.11	27.0	29.0	145	8,135	281	81.0	50.7	9	10
Cenex 2106	8.06	26.9	28.8	124	6,969	242	73.6	51.7	9	10
Mean	10.39	34.6	37.1	167	9,379	253	80.4	53.4	10	8
LSD, 5%	1.02	3.4	3.6	21	1,190	35	2.0	1.7		
1%	1.36	4.5	4.9	28	1,582	46	2.7	2.3		
Coef. Var., %	7.0	7.0	7.0	8.9	8.9	9.6	1.8	2.3		

Notes

1. *Pounds of shelled corn per ton of silage-stage material is based on shelled corn at 15% moisture and silage-stage material at 72% moisture.
2. Shelling percents and test weights per bushel are based on air-dry shelled corn.

FIELD CORN SILAGE AND GRAIN PRODUCTION, 1986 SEASON
Crouse Dairy, Grants Pass

Field corn harvested for silage forms an important component of dairy and beef cattle rations in Southern Oregon. Even though the production areas of Jackson and Josephine counties are separated by as little as 30 miles, growing conditions differ between the counties. Production tests in both counties provide useful information about varietal adaptation. This report summarizes data from a trial conducted at the Crouse Dairy, seven miles west of Grants Pass.

The field had a long history of silage corn production. Annual ryegrass was seeded in the fall of 1985, and it was plowed under for green manure in the spring. Commercial fertilizer was applied during seedbed preparation and liquid from a manure lagoon was applied with the irrigation water. Twenty-two hybrids were seeded May 10 in the border-strip irrigated Newberg sandy loam soil. The row spacing was 30 inches and plants were spaced 7.5 inches apart for a population of 27,878 plants per acre.

The corns were harvested September 29, 142 days after seeding and before frost. All entries had reached the dent stage. The maturities were much more advanced than those attained in similar previous trials.

Results

Silage-stage yields were very high with dry matter yields exceeding 11 tons per acre with 11 of the varieties. The trial mean was 10.58 tons per acre. The moisture contents at harvest ranged from 60.5% for early-maturing C-2106 to more than 70% for several later-maturing corns.

Grain samples were obtained at silage-stage sampling on September 29. The ears were well-developed and tipfill was complete. The unusually high shelling percents that averaged 84.9% indicated the excellent kernel fill. Test weights per bushel averaged 59.5 pounds, well above the standard of 56 pounds. Yields of shelled corn reflected the advanced ear development. The range was from 140 to 233 bushels per acre with a mean of 197 bushels. This is much higher than grain yields in previous trials.

The grain-to-silage ratios or the pounds of shelled corn equivalent, at 15% moisture, per ton of silage-stage material, at 72% moisture, were high, ranging from 220 to 347 pounds with a mean of 292 pounds. The ratio values are sometimes considerably higher for medium short, early-maturing grain varieties than for tall, late-maturing silage types. In the 1986 trial, ratios were very high even with the tall, silage types. This indicates that adapted varieties of tall, silage types are capable of producing high tonnages of silage-stage material while still producing high grain yields.

The weather during the growing season was very favorable for corn production. May was warmer than normal which got the corn off to a rapid start. June and July were slightly cooler than normal, and temperatures in August were the highest in many years. Maturity dates were advanced compared to comparable growth stages in previous years. Data are shown in the following table.

Field corn hybrid silage and grain data, Crouse Dairy, Grants Pass, 1986 season
Southern Oregon Experiment Station and the Josephine County Extension Service, cooperating

Entry	Silage-Stage Yield, T/A at moisture content			Shelled Corn, 15% moisture			Air-Dry Data		
	Dry	70%	72%	Bu/A	Lbs/A	*Lbs/T Silage	Shelling Percent	Test Wt., Lbs/Bu	Moisture % at Harvest
XC 755	12.59	41.9	44.9	233.5	13,C75	291	83.9	60.8	70.3
Pioneer Br. 3389	11.95	39.8	42.7	218.1	12,212	286	83.3	62.6	67.0
Cenex 2116	11.80	39.3	42.1	218.8	12,253	291	84.3	60.4	69.1
XC 756	11.79	39.3	42.1	223.2	12,493	297	84.3	61.7	68.8
G-4507	11.72	39.1	41.9	219.5	12,292	294	86.1	58.8	69.8
XC 754	11.72	39.1	41.8	225.1	12,605	302	82.2	60.0	71.9
Pioneer Br. 3377	11.64	38.8	41.6	213.4	11,954	287	83.4	59.7	71.0
Cenex 2115	11.51	38.4	41.1	207.9	11,641	283	86.6	59.4	70.1
NK X-4815	11.48	38.3	41.0	205.9	11,530	281	88.0	57.2	67.9
PX 74	11.42	38.1	40.8	223.9	12,540	307	86.0	58.8	70.1
SS-71	11.37	37.9	40.6	198.2	11,099	272	86.9	61.3	70.5
PX 9540	10.96	36.5	39.1	185.2	10,371	265	83.8	60.3	70.3
CX 05055	10.57	35.2	37.7	148.1	8,295	220	82.2	59.9	60.9
Cenex 2124	10.47	34.9	37.4	208.5	11,677	312	84.1	58.0	71.7
SS-607	10.13	33.8	36.2	162.7	9,111	252	83.9	57.8	70.7
SS-61	9.78	32.6	34.9	201.1	11,262	323	84.2	56.5	67.1
Cenex 2114	9.59	32.0	34.2	192.0	10,753	314	86.3	59.1	71.0
CX 05072	9.06	30.2	32.3	140.4	7,861	243	84.3	59.4	73.2
CX 05065	8.78	29.3	31.4	194.6	10,898	347	87.3	59.1	68.0
Cenex 2109	8.76	29.2	31.3	166.7	9,335	298	84.6	60.0	65.7
Cenex 2106	8.07	26.9	28.8	187.7	10,513	365	83.5	58.5	60.5
CX 05058	7.53	25.1	26.9	163.4	9,152	340	88.5	60.5	67.1
Mean	10.58	35.3	37.8	197.2	11,042	292	84.9	59.5	68.8
LSD, 5%	1.45	4.8	5.2	34.7	1,943	N.S.	1.7	0.9	
1%	1.97	6.6	7.0	N.S.	N.S.	-	2.3	1.2	
C.V., %	9.3	9.3	9.3	12.0	12.0	11.8	1.4	1.0	

Notes

1. Seed sources: Cenex; CX and SS = Crookham Seed Co., Pioneer Brand and XC = Pioneer Hi-Bred Int., Inc., NK and PX = Northrup King Seed Co., and G = Funk Seed Company.

2. *Pounds of shelled corn per ton of silage-stage material is based on shelled corn at 15% moisture and silage-stage material at 72% moisture.

ALFALFA FORAGE PRODUCTION TEST, 1986 SEASON
Seeded in 1983, Southern Oregon Experiment Station, Medford

Alfalfa is the most important hay crop grown in Southern Oregon, and it is the choice of livestock raisers to feed to their dairy and beef cattle, horses, sheep, and goats. It is a perennial that should remain productive at least five years, if proper attention is given to site selection, and if recommended management practices are followed. There are many alfalfas available, and information on their performance characteristics can help a grower make the proper choice. This report presents data from an alfalfa test seeded in 1983 designed to obtain useful information about an array of 32 entries.

Twenty-nine alfalfas obtained from nine seed companies plus one Oregon and two USDA-developed varieties were seeded May 16, 1983, in a Central Point sandy loam soil. Excellent stands were obtained, and three harvests were made during the seedling year. The first yield data were taken in 1984 when four harvests were made.

For the 1986 season, Karmex (diuron) was applied December 4 at 2.4 pounds of active ingredient per acre for weed control. The alfalfas were fertilized January 7 with 100 P_2O_5, 80 K_2O, and 40 S. A total of 21 inches of irrigation water was applied in five irrigations between June 4 and September 11. From January 1 until the first harvest on May 28, 12.34 inches of precipitation was recorded, but only 0.13 inch was recorded between the first cutting and September 15. Except for November 1985, winter temperatures were very mild, and growth was under way by February 25.

The first cutting was made May 28 when most of the alfalfas were at the late-bud stage of maturity. Yields were high, ranging from 2.76 to 3.28 tons of dry forage with a mean of 3.07 tons or 33% of the mean seasonal total.

Second cutting yields on July 1 after a regrowth period of 34 days averaged 2.30 tons of dry forage per acre. This was 25% of the seasonal total, about the same as other second cuttings have been.

Third cutting yields were high, averaging 2.48 tons of dry forage per acre. The regrowth interval was 41 days, longer than the usual 35, and growth conditions were favorable because of moderate temperatures in July.

There was a 56-day interval between the third and fourth harvests because of an extended rainy period during the last half of September. Yields were high, averaging 1.50 tons of dry forage per acre or 16% of the mean seasonal total. Fourth cuttings usually average about 12% of the mean seasonal total.

Seasonal totals were high, averaging 9.35 tons of dry forage per acre compared to 7.83 tons in 1985. Significant differences were found, although they are expected to be greater in the fourth and fifth production years as differential stand thinning occurs. All the alfalfas had satisfactory stands in 1986.

Data are shown in Table 1.

YIELD DATA, ALFALFAS SEEDED IN 1983
Southern Oregon Experiment Station, Medford, 1986 Season

Entry	Yield of Dry Forage, Tons Per Acre						Seed Source
	1st Cut May 28	2nd Cut July 1	3rd Cut Aug. 11	4th Cut Oct. 6	Season Total	1984-86 Total	
Peak	3.07	2.57	2.72	1.61	9.97	25.93	Union
High Phy	3.10	2.36	2.74	1.56	9.76	25.21	Cenex
DS 215	3.13	2.33	2.76	1.52	9.74	25.82	DS
Lahontan	3.21	2.36	2.56	1.61	9.73	25.33	USDA
DS 222	3.17	2.25	2.75	1.49	9.66	25.44	DS
Futura	3.13	2.47	2.53	1.52	9.65	24.98	DS
DS 214	3.16	2.41	2.49	1.59	9.65	25.84	DS
360 Brand	3.15	2.36	2.61	1.52	9.64	25.61	GW
Pioneer Br. 532	3.24	2.35	2.53	1.50	9.62	25.17	Pioneer
WL 221	3.21	2.20	2.53	1.58	9.52	25.30	WL
DS 216	3.14	2.53	2.38	1.46	9.51	24.86	DS
WL 312	3.28	2.21	2.43	1.55	9.47	25.26	WL
Vernal	2.97	2.45	2.61	1.38	9.40	24.57	USDA
Magnum	3.16	2.28	2.48	1.47	9.39	24.57	DS
WL 220	3.14	2.23	2.43	1.56	9.36	24.89	WL
Pioneer Br. 526	3.23	2.40	2.30	1.41	9.35	24.65	Pioneer
WL 316	2.96	2.41	2.46	1.49	9.32	24.81	WL
Apollo II	3.04	2.29	2.49	1.50	9.32	24.93	AP
Vancor	2.97	2.48	2.42	1.41	9.28	24.35	NK
Armor	3.04	2.27	2.52	1.45	9.28	24.50	AP
Blazer	2.99	2.37	2.46	1.45	9.27	25.01	Union
N-27	3.03	2.22	2.40	1.61	9.26	24.83	AP
Pioneer Br. 545	3.10	2.29	2.37	1.48	9.24	24.94	Pioneer
Classic	3.25	2.20	2.33	1.46	9.24	24.63	Cenex
NK 80338	2.76	2.29	2.40	1.56	9.21	24.65	NK
Baron	2.80	2.28	2.49	1.59	9.16	24.67	AP
Agate	2.89	2.26	2.60	1.39	9.14	24.08	USDA
Maxim	3.02	2.24	2.39	1.43	9.09	24.09	WL
Spectrum	3.10	2.08	2.31	1.51	9.00	21.40	Cenex
Pioneer Br. 581	2.88	2.12	2.34	1.50	8.84	23.76	Pioneer
Drummor	3.05	2.04	2.19	1.42	8.70	24.10	NK
Talent	2.81	2.11	2.23	1.42	8.57	22.21	JGC
Mean	3.07	2.30	2.48	1.50	9.35	24.79	
LSD, 5%	N.S.	0.27	N.S.	0.13	0.67	1.27	
1%	-	N.S.	-	0.17	0.88	1.70	
C.V., %	8.00	8.40	8.40	6.00	5.1	3.60	

Notes

1. Irrigated five times between June 4 and September 11 with a total of 21 inches of water applied.
2. Seed Sources: AP=AgriPro, Ames, IA; Cenex=Cenex West. Commodities, Salem, OR; DS=Dairyland Seed Co., West Bend, WI; NK=Northrup King Co., Woodland, CA; Pioneer=Pioneer Hi-Bred Int'l. Inc., Modesto, CA; GW=Greenway Seed Co., Nampa, ID; JGC=Josephine Growers Co-op, Grants Pass, OR; Union=Union Seed Co., Nampa, ID; WL=WL Research, Inc., Warden, WA.

ALFALFA SELECTIONS SEEDED IN 1986
Southern Oregon Experiment Station, Medford

There are many new alfalfas being developed each year, mostly by the research departments of private seed companies. Many of these have resistance to several diseases and insects that are of economic importance to the crop. While it is not practical to include all of the alfalfas in yield tests, some of those likely to be most adaptable to the complex of growth conditions in the area can be evaluated. A trial to help accomplish this was established in 1986 in a planting that included 36 different alfalfas in a forage production test that included seeds from 10 companies.

During seedbed preparation, 80 P_2O_5, 80 K_2O, and 32 S were applied per acre. Balan (benefin) was applied at 1.12 pounds of active ingredient per acre as a pre-plant incorporated treatment on April 8 for weed control. The alfalfas were drilled April 10 in rows spaced 12 inches apart. Irrigation water was applied through overhead sprinklers during the season.

Results

Good stands were obtained with all the entries. Weed control was satisfactory, so that there were few weeds when the first harvest was made June 26, 77 days after seeding. Yields of dry forage ranged from 0.59 to 0.79 tons per acre with a mean of 0.70 tons. The yields were considered to be moderately low for a first cutting of a new seeding.

The second harvest was on August 7 after a regrowth period of 42 days. The air temperatures during the period were moderate with no extreme highs. Yields of dry forage were much higher than with the first cutting, ranging from 1.33 to 1.84 tons per acre. The mean was 1.60 tons per acre, but differences were not significant.

The alfalfas were cut for the third time on October 7, after rains stretched the regrowth period to 61 days. Yields of dry forage were high, averaging 1.47 tons per acre. There were differences among varieties, with a few showing slower growth with the approach of cooler weather and fewer daylight hours.

Season total yields of dry forage averaged 3.77 tons per acre, about the same as other seedling year trials have done. Four harvests will be made in 1987, the first full production year.

Data are shown in the following table which lists yields by cuttings and by seasonal totals.

New seeding of alfalfas for forage, seeded in 1986
Southern Oregon Experiment Station, Medford, seedling year data

Entry	Yield of dry forage, tons per acre				Seed Source
	1st Cut June 26	2nd Cut Aug 7	3rd Cut Oct 7	Season Total	
Shenandoah	0.76	1.72	1.63	4.11	GP
NK 82503	0.69	1.84	1.52	4.05	NK
AP 46	0.76	1.68	1.61	4.04	AP
MPDR III	0.66	1.73	1.65	4.04	FFR
WL 832	0.73	1.69	1.59	4.02	WL
Cimarron	0.73	1.75	1.46	3.94	GP
DS 503	0.76	1.55	1.63	3.94	DS
Blazer	0.74	1.67	1.51	3.93	Union
85-5-1	0.68	1.75	1.48	3.91	FFR
3309	0,79	1.54	1.57	3.90	Union
WL 320	0.69	1.77	1.45	3.90	WL
Dynasty	0.77	1.68	1.46	3.90	DS
Magnum +	0.70	1.71	1.49	3.90	DS
Pioneer Brand 5444	0.73	1.54	1.55	3.82	Pioneer
Vernema	0.71	1.69	1.43	3.82	IAREC
NK 83632	0.72	1.58	1.50	3.80	NK
Apollo II	0.70	1.65	1.45	3.80	AP
Pioneer Brand 532	0.66	1.70	1.44	3.80	Pioneer
DS 647	0.66	1.67	1.46	3.79	DS
NK 83630	0.68	1.60	1.49	3.77	NK
Sparta	0.67	1.61	1.48	3.76	Union
Centurion	0.68	1.56	1.49	3.73	CW
AP 49	0.69	1.50	1.53	3.72	AP
AP 47	0.74	1.41	1.54	3.69	AP
NK 83631	0.70	1.56	1.43	3.69	NK
Arrow	0.59	1.58	1.50	3.66	AP
WL 316	0.68	1.54	1.41	3.62	WL
Pioneer Brand 5432	0.72	1.50	1.39	3.62	Pioneer
Pioneer Brand 545	0.61	1.60	1.39	3.60	Pioneer
Vernal	0.67	1.60	1.32	3.60	USDA
Oneida	0.67	1.52	1.41	3.60	Cornall
Wrangler	0.66	1.56	1.34	3.56	Andrews
Excalibur	0.65	1.33	1.48	3.46	CW
Pioneer Brand 581	0.71	1.42	1.30	3.42	Pioneer
Lahontan	0.63	1.51	1.21	3.36	USDA
W-45	0.63	1.38	1.31	3.33	IAREC
Mean	0.70	1.60	1.47	3.77	
LSD, 5%	0.10	N.S.	0.18	N.S.	
1%	N.S.	-	0.23	-	
C.V., %	10.3	15.4	8.5	9.1	

Notes

1. The alfalfas were seeded April 10, 1986 in a Central Point sandy loam soil.

2. The plot size was: 5 rows per plot, 25 feet long rows, and 12-inch row spacing.

3. Data are means of four replications arranged in a randomized complete block design.

4. Benefin (Balan) was applied at 1.0 pound per acre before seeding for weed control.

5. The planting was sprinkler-irrigated with a total of 21 inches of water applied during the season.

6. Seed Sources: Andrews = Andrews Seed Co., Ontario, Oregon; AP = Agripro, Ames, Iowa; Cornell = Cornell University Agricultural Experiment Station, Geneva, New York; CW = Cal-West Seeds, Woodland, California; DS = Dairyland Seeds, Clinton, Wisconsin; GP = Great Plains Research, Inc., Stillwater, Oklahoma; IAREC = Irrigated Agriculture Research and Extension Center, Prosser, Washington; NK = Northrup King Seed Co., Woodland, California; Pioneer = Pioneer Hi-Bred Int., Inc., Modesto, California; Union = Union Seed Co., Nampa, Idaho, and WL = WL Research Inc., Warden, Washington.

WESTERN REGIONAL ALFALFA TEST PLANTING
Southern Oregon Experiment Station

At the Western Alfalfa Improvement Conference meeting in 1984, it was resolved that alfalfa trials be established at several geographically separated locations in nine western states. The same eight varieties would be tested at each location to obtain data on geographic adaptation. Seeds would be from the same seed lot for each variety. Since Medford is in the approximate center of one geographic unit, it was selected as a site for one of the trials.

The alfalfas were seeded in April 1985, but the stands were not considered adequate for the trial, even though there were enough plants for a commercial planting. Another planting was made in 1986 which was very successful.

The experimental area was fertilized with 80 P_2O_5, 80 K_2O, and 32 S per acre during seedbed preparation. Balan (benefin) was applied at 1.12 pounds of active ingredient per acre on April 8. The alfalfas were drilled April 10 in rows spaced 12 inches apart with five rows per plot. The experimental design was a randomized complete block with four replications. The soil type was Central Point sandy loam, and overhead sprinklers were used for irrigation.

Results

Excellent stands were obtained with each alfalfa. There were very few weeds, and the first harvest on June 25 was nearly weedfree. First cutting yields of dry forage averaged 0.63 ton per acre or 17% of the seasonal mean total. The yields of seven of the alfalfas were closely grouped, ranging from 0.61 to 0.70 tons per acre. Lahontan's yield was lower at 0.49 tons per acre.

Second cutting yields on August 7, after a regrowth period of 43 days, averaged 1.84 tons of dry hay per acre or 49% of the seasonal mean total. There were no significant yield differences among varieties.

The third cutting was delayed by rainy weather until October 7, 61 days after the second. Yields averaged 1.27 tons of dry forage per acre. Lahontan and Spredor II had yields slightly lower than the other six alfalfas.

Seasonal totals averaged 3.74 tons of dry forage per acre, typical of seedling year performances in the area. Lahontan's yield was lower than the other alfalfas. This has been characteristic of the variety in previous trials. Because of its unusually good stand persistence, it generally moves up the yield scale by the third or fourth year as other alfalfa stands begin to thin.

Four harvests will be made in 1987, the first full season for the alfalfas. Yields should exceed eight tons per acre for most of the entries. Stand counts will be made after the first and after the last cuttings for the next three years.

Data are shown in Table 1.

Western Regional Alfalfa Test Data, Seedling Year, 1986
Southern Oregon Experiment Station, Medford

Variety	Yield of Dry Forage, Tons per Acre			
	1st Cut June 25	2nd Cut Aug. 7	3rd Cut Oct. 7	Seasonal Total
CUF 101	0.70	1.82	1.33	3.84
Moapa 69	0.65	1.85	1.23	3.73
Mesilla	0.66	2.00	1.37	4.03
Lahontan	0.49	1.60	1.07	3.16
Ranger	0.64	1.81	1.30	3.75
Saranac AR	0.66	1.83	1.43	3.93
Spredor II	0.61	1.82	1.09	3.52
Vernal	0.66	1.98	1.30	3.94
Mean	0.63	1.84	1.27	3.74
LSD, 5%	0.12	N.S.	0.12	0.37
1%	N.S.	-	0.17	0.50
C.V., %	12.6	9.8	6.6	6.7

Notes

1. The alfalfas were seeded April 10, 1986, in a Central Point sandy loam soil, with 5 rows/plot, 12" row spacing.
2. Balan was applied at 1.0 lb. a.i. per acre as a pre-plant incorporated herbicide treatment.
3. Sprinkler irrigation was used to apply about 22 inches of water between April 21 and September 10.
4. Data are means of four replications.

FORAGE GRASSES AND CLOVERS, SEEDED IN 1986
Southern Oregon Experiment Station, Medford

Forage grasses and legumes occupy sizeable acreages of irrigated land in Southern Oregon. They are harvested by grazing animals and by cutting the crops for hay, silage, or greenchop as feed for beef and dairy animals, horses, sheep, and goats. Such plantings also have uses in erosion control, on roadway banks, along streams, and as rough areas in parks and airfields, often with limited or no irrigation. There are many varieties of grasses and legumes available within each species, making the selection of superior types of great importance to anyone making such a planting. This report presents information on a new planting of grasses and clovers made at this station in 1986.

The experimental area was plowed in October 1985, and 32 N, 40 P_2O_5, and 24 S were tilled into the seedbed. The soil is classified as Central Point sandy loam. Final seedbed preparation was done in April.

Seeding of tall fescues and orchardgrasses began April 8. The eight fescues seeded were Alta, Barcell, Fawn, Forager, Kenhi, Safe, Tempo, and experimental TF85-ST-A, each broadcast at 12 pounds of seed per acre. The 10 orchardgrasses were Able, Berber, Comet, Crown, Hallmark, Hawk, Paiute, Palestine, Potomac, and Rancho, each broadcast at nine pounds of seed per acre.

Eight mixtures were seeded that included such grasses as tall fescue, orchardgrass, perennial ryegrass, and hardinggrass with New Zealand and Ladino white clovers. Four were commercial mixtures; the others were experimental blends.

The eight clovers included Florex and Redman red clovers and Alsike clover, each at five pounds per acre, and New Zealand, Ladino, Donna, Menna, and Olwins white clovers, each at two pounds per acre.

Stands were satisfactory, and the plants grew well. Overhead sprinklers were used for irrigation. The plantings were clipped several times, but no yield data were taken during the seedling year.

The grasses and mixtures will be mowed at least four times in 1987. The clovers may either be clipped for forage or harvested for seed. Data will be obtained on the yielding ability of each grass and clover, and compatabilities of each grass or clover in the mixtures will be evaluated. The planting will be continued for at least three years. Information gained should be of value to people making new plantings of forages. The data from the mixtures should help in the formulation of blends that are compatible where each contributes to total and seasonal distribution of yield. Information from the fescues will be the first yield data obtained here with several of the selections that are essentially free of the endophyte pathogen.

NITROGEN SOURCE AND TIMING OF APPLICATION EFFECTS ON STEPHENS WINTER WHEAT
Southern Oregon Experiment Station, Medford. 1985-86

Winter wheat and barley grown in Southern Oregon generally receive from 30 to 40 pounds of N per acre at seeding in the fall. The major amount of N is applied in late winter or early spring. Some growers make a single application at that time or two or more smaller applications. This report presents information on a trial designed to test the effects of different sources of N and the effect of single and multiple applications.

An application of 16-20-0-14 was made during seedbed preparation to supply 32 N, P_2O_5, and 24 S per acre. The wheat was seeded October 8, and Karmex (diuron) was applied at 1.5 pounds per acre for pre-emergence weed control. Overhead sprinklers were used to irrigate the crop on April 16 and May 24.

One hundred twenty pounds of N per acre was applied to each of 9 treatments during the season; another treatment received no N other than the fall application. The variables included applying all of the N either in February, March, or April, applying one-half in February with the other one-half applied in March or April, and one-half in March with the other one-half in April. Another variable was the application of 40 N in all three months. Ammonium sulfate was the source of N in the treatments.

Two special treatments were the application of 120 N per acre as ammonium nitrate in February, and applying 60 N as ammonium sulfate and 60 N as ammonium nitrate in February. Five replications were used with each treatment.

The first variables were applied February 10 when the wheat was five inches tall and tillered, and with the soil moisture at field capacity. The second applications were made March 10 when the wheat was from 10 to 16 inches tall. The taller plants were in plots that received N in February. The final variable treatments were applied April 11.

Results

Nitrogen responses were apparent soon after the February application. The treatments increased leaf growth, plant height, and increased the green color of leaves compared to wheat plants not fertilized. At maturity, plant heights showed differences among treatments. Wheat growing in plots that received N in February and March was taller than where no N was applied or where the full treatment was applied in April. Height measures are shown in Table 1.

Wheat yields were affected by timing of N application. Applying the N as single applications in February or March was as effective as the two-time or three time applications. The single application in April resulted in a lower grain yield than with the earlier applications. Yields from the two special treatments where ammonium nitrate was used or where a mixture of ammonium sulfate and ammonium nitrate was used equalled those of the other N treatments. Where no N was applied, the grain yield was only 54% of the mean yield of the N-treated wheat. Data are presented in Table 1 and it is shown graphically in Figure 1.

Bushel weights were affected by N application timing. Test weights per bushel were highest when part or all of the N was applied in February, although March applications resulted in nearly as high values. Applying all of the N in April, however, resulted in a substantial decrease in test weight compared to earlier applications. Values for the two special treatments were equal to the other February treatment test weights. The no-N treatment had a value lower than that of wheat fertilized in February.

Conclusions

Nitrogen applied as single applications in either February or March was as effective in increasing the yield of wheat as the same total N applied either two or three times. Applying all of the N in April resulted in a lower grain yield than the February or March treatments. There was no yield advantage in using ammonium nitrate in February in place of ammonium sulfate or in using a mixture of the two.

Test weights per bushel were highest where all or part of the N was applied in February, and lowest with the April N and check treatments. Applying all of the N to winter wheat in February or March in a single application means fewer times over a field with equipment than with multiple applications. The result should be less soil compaction, less mechanical damage to the crop, and a lower cost in applying the fertilizer either with air or ground equipment.

Protein levels of the grains were not greatly affected by timing of applications or sources of N. The average protein content of the 10 treatments was 9.8%, within the desired range for soft white wheat. Application of all the N in March or half in February and half in April did raise the protein levels to 11.1%.

Hardness ratings averaged 48. A rating of less than 50 is usually associated with soft wheats. The extremes were found where no N was applied, resulting in a value of 32, while applying all the N in February as ammonium sulfate resulted in a hardness value of 70.

Table 1.

The effects of dates of application and sources of N on the yield, bushel weight, and height of Stephens winter wheat, Medford. 1985-86

Treatment, Lbs N/A			Grain Yield		Test Wt.,	Height,
February	March	April	Bu/A	Lbs/A	Lbs/Bu	inches
0	0	0	47.6	2,856	58.5	36
120	0	0	88.2	5,289	59.8	41
0	120	0	90.5	5,430	59.5	41
0	0	120	75.0	4,500	57.6	38
60	60	0	90.5	5,428	60.3	40
60	0	60	92.0	5,521	59.6	41
0	60	60	88.4	5,304	58.6	39
40	40	40	89.9	5,391	59.3	40
*60+60	0	0	88.3	5,296	60.1	40
**120	0	0	84.8	5,090	59.7	41
	Mean		83.5	5,010	59.3	40
	LSD, 5%		6.2	371		
	1%		8.3	497		
	C.V., %		5.8	5.8		

Notes

*1. One-half the N was applied as ammonium sulfate, and the other one half was applied as ammonium nitrate.

**2. The N was applied as ammonium nitrate.

3. The experimental area was fertilized with 32 pounds of N, 40 P_2O_5, and 24 S during seedbed preparation in October.

4. The wheat was seeded October 8 in a Central Point sandy loam soil.

5. The source of N was ammonium sulfate except as noted.

6. Data are means of five replications.

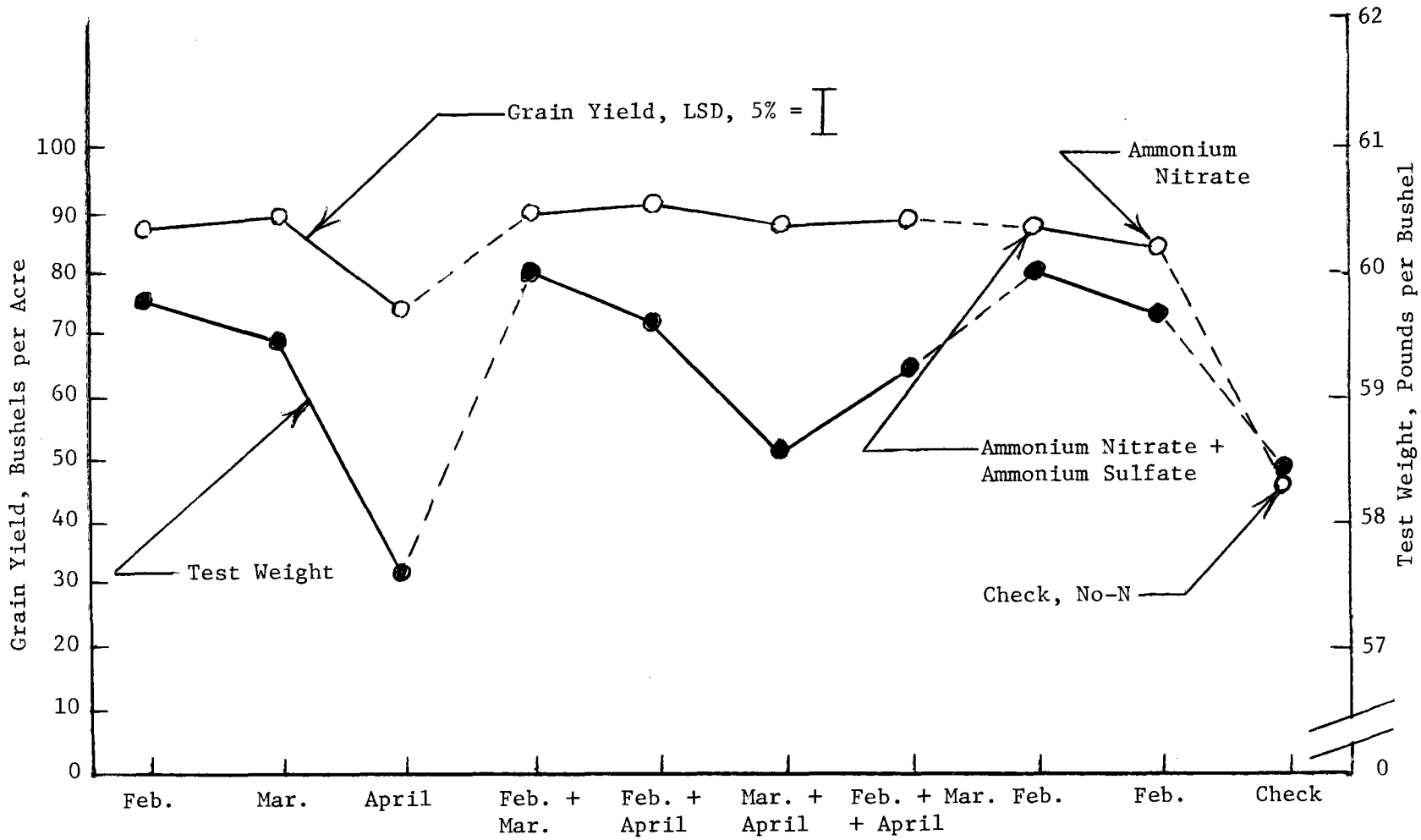

Figure 1: The effects of the timing of the application of 120 N as ammonium sulfate (except as noted) on the grain yield and test weight per bushel of Stephens winter wheat, Medford, 1985-86.

FLOWER SEED PRODUCTION ADAPTATION TRIALS
Southern Oregon Experiment Station, Medford, 1986

Flower seed production is increasing in importance in Oregon. Plantings in Jackson and Josephine counties totalled about 65 acres in 1986, while the estimated statewide acreage is 2,000. A substantial part of the plantings can be classed as being of wildflower types.

Seeds of 11 different flowers were grown by farmers in Jackson County during a four-year period from 1970 through 1973. During that period, a total of 39 flower species were grown in various seed production tests at this station. Renewed interest in seed production led to new trials in 1984, 1985, and 1986. This report summarizes work done in flower seed production in 1986. Herbicide tolerance tests are reported elsewhere.

Seven different flowers were grown in a seed production adaptability trial. Verbena was the only flower tested previously. The field had been in sugar beets which overwintered from an August seeding, and that crop was removed in March. Seedbed preparation included ripping to a depth of 18 inches, disking, springtoothing, rototilling, and harrowing. Ammonium nitrate was broadcast to supply 82 pounds of N per acre to supplement the N-P-K-S applied to the previous crop of sugar beets. The soil was a sprinkler-irrigated Central Point sandy loam.

Treflan (trifluralin) was applied at 0.75 lb. a.i./acre as a pre-plant incorporated treatment before seeding achillea, blue flax, scarlet flax, shamrock, and verbena on April 23. No herbicides were applied for aquilegia and nemesia, since they showed poor tolerance to Treflan and Eptam (EPTC) in a greenhouse test.

Emergence, growth habit, flowering date, seed maturity date, seed retention and shattering, and seed yield varied widely among the flowers. Satisfactory stands were obtained with most of the flowers. Competition from weeds severely restricted growth of aquilegia and nemesia, so they were removed and reseeded June 3. Some plants emerged and flowered, but no seed harvests were made with the two. Information on the different flowers are given below.

1. Achillea millefolium or yarrow emerged well and attained a height of 31 inches. The plant is a white-flowered perennial. It was harvested by direct combining October 9 while leaves were still quite green. The shatter potential is high. Re-running the cut material through the combine October 24 resulted in an additional 22% recovery of seed. Earlier harvest should be possible if irrigation is terminated by August 25 to allow the plants to dry down. The seed yield of 216 pounds per acre was quite high for a crop with such small seeds.

2. Aquilegia mikana or columbine is a perennial that was seeded too late for seed production in 1986. Plants reached a height of 13 inches and produced some flowers.

3. Blue flax or Linum lewisii reached a height of 20 inches and had blue flowers. Its stand was somewhat irregular, so spot reseeding was done June 3. The reseeded plants grew well but did not produce seed. The crop was cut October 16 and the material was placed on tarps for drying. The shatter hazard appeared to be moderate. The seed yield of 147 pounds per acre probably is less than the potential for the crop.

4. Nemesia strumosa or pouch nemesia is an annual that was reseeded June 3. It reached a height of 14 inches and produced a few seeds, although the crop did not have enough time to produce a full crop. The shatter hazard appeared to be quite high.

5. Scarlet flax or Linum rubrum emerged quickly and had a good stand. Plants reached a height of 22 inches. It produced its red flowers relatively early in the season in a determinate manner. The crop was swathed August 21 and placed on tarps to dry. The seed yield of 117 pounds per acre is considered moderate and may be below the crop's potential.

6. Shamrock or Trifolium procumbens is a low-growing perennial that attained a height of only about four inches. It produced yellow flowers and matured some seed. A few seeds were vacuumed from the plants August 21, but no full-scale harvest was made until the plants were cut October 16. Nearly all the seeds had shattered by that date.

7. Verbena hybrida is an annual and it was the only flower that had been tested previously on the station. It was the Dannenborg variety, a dwarf type that attained a height of 12 inches. It was swathed October 13 but wasn't placed on tarps. The seed yield was 70 pounds per acre. The shatter hazard appears to be moderate to moderately low.

Data and observations for the flowers are presented in Table 1.

Weather conditions were unusual during the summer and fall as far as seed maturity and harvest were concerned. Maximum temperatures were higher than normal in August, and nearly three inches of rain was recorded during the last 12 days of September. There wasn't the usual hard, killing frost in early October to accelerate drying of cold-sensitive plants. Some seeds were lost to shattering because of the rain, and the lack of frost kept plants from drying down quickly. This accounts for some of the rather moderate yields obtained with some of the flowers.

Table 1.

Flower seed production observations and yield,
Southern Oregon Experiment Station, Medford. 1986

Flower	Planter plate hole	Harvest Date	Harvest Method	Shatter Hazard	Seed Yield, Lbs/A
Achillea	45	10/19	C	high	216
Aquilegia	4	late planting	no seed harvested		
Blue flax	7	10/16	S & C	moderate	147
Nemesia	10	late planting	no seed harvested		
Scarlet flax	10	8/21	S & C	moderate	117
Shamrock	47	8/21	small amount of seed vacuumed from the plants		
Verbena	11	10/13	S & C	moderate	70

Notes

1. Planter plate hole refers to the setting used in a Planet Jr. seeder. Hole sizes increase from numbers 1 through 39. Numbers above 39 are machine drill-sized holes for use with very small size seeds.

2. Harvest method: C = Combine; S = Swath.

3. The flowers were seeded April 23 except that aquilegia and nemesia were reseeded June 3.

4. Row spacing was 20 inches.

HERBICIDE TOLERANCE TESTS WITH FLOWERS FOR SEED
Southern Oregon Experiment Station, Medford, 1986

Production fields of any crop grown for seed should be as weedfree as practical to lessen competition to the crop, make harvest and seed processing easier, and to ensure the purity of the final product. This is especially true with flower seed production, an enterprise that is increasing in importance in Oregon. Cultivation and handweeding can be used to control weeds, but they can be very costly. An alternative method is to control weeds with herbicides. This report presents information on the herbicide tolerances of flowers as observed from tests in the greenhouse and field. Herbicides used in each test were of known efficacy, registered on a wide range of vegetable, field, and ornamental crops.

Greenhouse Trial

The trial was designed to assess the plants' tolerances to Eptam (EPTC) and Treflan (trifluralin) as pre-plant incorporated treatments. The growth medium was field soil screened through an 8-mm screen to remove rocks and other debris, and to obtain uniform particle size. Metal flats were used with a soil depth of 2.5 inches.

The Eptam was applied at 3.0 lbs. a.i./acre, and the Treflan was applied at 0.75 lbs. a.i./acre. Achillea, aquilegia, blue flax, nemesia, scarlet flax, shamrock, and verbena were seeded. Watering was done by sub-irrigation through the bottom of each flat. Final evaluations were made April 21, so that information gained could be used in establishing the field trial.

Achillea, blue flax, scarlet flax, shamrock, and verbena showed tolerance to Treflan. Achillea, scarlet flax, and shamrock showed tolerance to Eptam, while blue flax was less tolerant. Verbena was not tolerant to Eptam, while nemesia showed poor tolerance to both herbicides. Since aquilegia was very slow to germinate, its tolerances could not be determined in the 16-day period since seeding.

Field Trial

Pre-plant incorporated treatments of Eptam and Treflan were applied to the Central Point sandy loam soil at the same rates that were used in the greenhouse trial. Ten flower species were planted the same day using a Planet Jr. seeder. Pre-emergence treatments were applied six days later on April 30. They consisted of the following pounds of active ingredients per acre: Dacthal (DCPA), 7.5; Enide (diphenamid), 4.0; Furloe (CIPC), 4.0; Surflan (oryzalin), 2.0; Tenoran (chloroxuron), 3.0; Ramrod (propachlor), 4.0; and Lorox (linuron), 0.5. Irrigation was done with overhead sprinklers.

The herbicide treatment effects were evaluated July 3 and August 20. There was strong competition from grasses and broadleaf weeds because of frequent irrigation and favorable growth conditions. Table 1 presents observations taken on the flowers' tolerances to the herbicides based on the two observation dates.

Results

Achillea showed good tolerance to Dacthal and some tolerance to Tenoran, Eptam, and Ramrod, but less to Surflan and Treflan. Blue flax showed fairly good tolerance to Ramrod and Surflan, but only fair tolerance to Dacthal and Treflan. It was the only flower to show any tolerance to Lorox, even though that was only fair to marginal. The only herbicide celosia showed tolerance to was Ramrod.

Echinacea, a slow-germinating perennial, showed good tolerance to Furloe and Surflan, and some tolerance to Tenoran, Treflan, Dacthal, Enice, and Ramrod. Layia showed good tolerances to Treflan, Furloe, Dacthal, Surflan, and Ramrod. Nemesia showed moderate tolerance to Ramrod.

Phacelia showed the most tolerance to Enide, and scarlet flax showed the most tolerance to Treflan, Surflan, and Ramrod. Shamrock, a clover-like plant, showed moderate to marginal tolerance to Eptam, Treflan, Dacthal, Furloe, and Ramrod.

Verbena was most tolerant to Treflan. Zinnia showed the widest range of tolerances, with the least to Tenoran.

Dacthal, Eptam, and Treflan are registered for use on a number of flower species. Label recommendations should be consulted so that application rates and timings can be done correctly.

Table 1. Observed tolerances of flowers to herbicides, field planting of April 24 Southern Oregon Experiment Station, Medford. 1986

	Herbicide treatments, (lbs. a.i./acre)							
Flower	Eptam (3.0)	Treflan).75)	Furloe (4.0)	Dacthal (7.5)	Enide (4.0)	Surflan (2.0)	Tenoran (3.0)	Ramrod (4.0)
Achillea	fair	poor	poor	good	poor	fair	f. good	fair
Blue flax	poor	fair	poor	fair	poor	f. good	poor	fair
Celosia	poor	poor	poor	poor	poor	poor	poor	f. good
Echinacea	poor	f. good	good	f. good	fair	good	f. good	f. good
Layia	fair	good	good	good	f. good	good	poor	good
Nemesia	poor	poor	poor	poor	poor	poor	poor	f. good
Phacelia	poor	poor	poor	f. good	good	poor	poor	poor
Scarlet flax	f. good	good	poor	poor	fair	good	poor	good
Shamrock	f. good	fair	fair	fair	poor	poor	poor	fair
Verbena	poor	good	poor	poor	poor	poor	poor	fair
Zinnia	good	good	good	good	good	good	f. good	good

Notes

1. Treatment timings: Eptam and Treflan were pre-plant incorporated; the others were pre-emergence.
2. A rating of fair can be considered as being marginal for crop safety.
3. Since blue flax was the only flower to show even marginal tolerance to Lorox, the treatment is not shown in the table.
4. Ratings were based on observations made July 3 and August 20.

CUPHEA TRIALS AT THE SOUTHERN OREGON EXPERIMENT STATION
Medford, 1986 Season

Cuphea plantings in 1986 consisted of a species comparison, increase blocks of C. laminuligera, C. lutea, and C. wrightii, plus a herbicide tolerance test and harvest method block. The total area seeded amounted to 1.25 acres.

The seedbed was prepared by ripping, disking, and harrowing. The field had been fertilized with an N-P-K-S mixture in August 1985 when sugar beets were seeded. They were lifted in March. Eighty-five N was applied during final seedbed preparation. A tank mix of Balan (Benefin) at 0.56 lbs. a.i./a and Treflan (Trifluralin) at 0.37 lbs. a.i./a was applied as a pre-plant incorporated treatment.

The species comparison and the increase blocks were seeded May 7, in rows spaced 30 inches apart. The seeding rate for the increase blocks was approximately 2.5 pounds per acre. The seeds were placed about 1.5 cm deep using a Planet Jr. seeder set on plate hole number 7. Irrigation was done with overhead sprinklers. Cultivation and handweeding were done to remove weeds that escaped the pre-plant herbicide treatment.

Good stands were obtained with the increase blocks. Plant heights at the two-leaf stage, 15 days after seeding, ranged from 10 to 12 mm. Some in the species test had not fully emerged while others were as much as 16 mm in height.

Growth conditions were favorable during the season. The first seeds were harvested from some of the species July 24, 78 days after seeding. First harvest of the C. wrightii block was July 29, using a portable vacuum machine. The vacuum harvester designed and built by the OSU Agricultural Engineering Department was used for the August 19 harvest of the three increase blocks and for six subsequent harvests. Results of harvesting variables involving speed of travel, amount of vacuum, and the effect of multiple passes will be covered in another report. Quantities of seeds harvested from the increase blocks during the season amounted to the following approximate totals: C. laminuligera, 18 pounds; C. lutea, 22 pounds; C. wrightii, 40 pounds.

Test weights per bushel were highest early in the season with C. lutea registering more than 43 pounds per bushel with the August 19 harvest. Later harvests showed much lower test weights. Similar trends were seen with C. laminuligera and C. wrightii. Data are shown in Table 1.

June 12 Seeding

A relatively late seeding of C. wrightii was made June 12, to evaluate herbicide tolerance and to study harvest methods. On July 29, several herbicide treatments were applied. Pound-per-acre rates of active ingredients of the following herbicides were applied over the top of the 8-inch tall plants: Brominal/Buctril (bromoxynil) 0.25 and 0.5, Herbicide 273 (endothal) 0.75 and 1.25, and Dual (metolochlor) 1.5. Each herbicide had given indication of being low in phytotoxicity to cuphea in previous tests.

The air temperature at herbicide application was 97°, and the maximum the next day was 103°. There were no indications of phytotoxicity with any of the treatments.

A harvest method study was set up to compare vacuum harvest with swathing before combining and with the use of an adhesive to prevent seed shattering before harvest. Rain delayed some of the experimental harvests, but indications based on limited data are that the application of the adhesive Spodnam, a 69.5% terpene polymer, at one pint per acre, may help prevent seed loss. The use of Spodnam and other materials with adhesive characteristics need further testing.

Tables 2, 3, and 4 present measurements and observations of numbered selections of Cuphea at three growth stages. Seeds were harvested by shaking seeds into a pan placed under the plants. The most promising selections will be selected for crossing and more advanced testing.

Table 1.

Test weight of Cuphea seed as affected by Harvest Date.
Southern Oregon Experiment Station, Medford, 1986 Season.

Harvest Date	Test weight, lbs./bu. C. laminuligera	C. lutea	C. wrightii
August 8	38.4		
August 19		43.5	40.0
September 11-12		38.3	35.9
September 19		39.8	
September 24	39.6		
September 30-October 1	29.6	35.2	35.2
October 7-8	27.2	31.9	31.0
October 14		24.0	26.7
October 21			27.5
Mean	33.7	35.4	32.7
LSD, 5%	0.4	0.4	0.3
1%	0.6	0.6	0.4
C.V., %	0.62	0.68	0.57

Table 2: Height of growth, in mm, Cuphea, Medford, May 22, 1986
Southern Oregon Experiment Station, Medford. Seeded May 7

Plot	Height	Plot	Height	Plot	Height
501	10	526	14 fair	551	0
502	0	527	6	552	0
503	16	528	6	553	8
504	10	529	11	554	7
505	8	530	0	555	7
506	0	531	7 fair		
507	10	532	7		
508	14	533	0		
509	9	534	6	East border 14-15	
510	0	535	10 poor	West border 14-16	
511	15	536	14	South ends 15	
512	9	537	5		
513	13	538	0		
514	0	539	9	C. lutea	8-10
515	3	540	8	C. laminuligera	10-12
516	11	541	8	C. wrightii	10-12
517	8	542	11		
518	7	543	0		
519	12	544	0		
520	0	545	14		
521	7	546	0		
522	6 poor stand	547	4		
523	8	548	0		
524	0	549	0		
525	0	550	0		

Table 3: Height in cm, and stand observations, Cuphea plots, June 30, 1986
Southern Oregon Experiment Station, Medford. Seeded May 7

Plot	Height	Stand	Notes	Plot	Height	Stand	Notes
501	20	g		528	18	g	
502	18	f		529	30	g	stemmy
503	33	g		530	18	f	T bloom
504	20	g		531	18	fg	
505	18	f		532	20	fg	buds
506	13	16 plants		533	10	7 plants	
507	15	fg		534	15	fg	
508	30	g	lge leaves	535	15	31 plants	
509	20	fg		536	30	g	buds
510	18	8 plants		537	13	fg	
511	33	g		538	17	thin	blooms
512	28	g	T bloom	539	18	fg	
513	33	g	buds	540	15	fg	
514	18	16 plants		541	15	fg	
515	19	f		542	30	g	T bloom
516	18	g		543	10	12 plants	
517	15	g		544	13	20 plants	
518	19	g		545	30	fg	
519	33	g	buds	546	15	20 plants	
520	13	6 plants		547	19	g	
521	18	fg		548	15	fg	
522	18	g		549	13	fg	
523	18	fg		550	15	fg	
524	15	22 plants		551	11	27 plants	
525	18	16 plants	T bloom	552	8	3 plants	
526	33	g	T bloom	553	20	g	
527	36	g	T bloom	554	19	fg	some bloom
				555	13	fg	

Table 4: Plant height, in cm, and notes, Cuphea plots, July 24, 1986
Southern Oregon Experiment Station, Medford. Seeded May 7

Plot	Height	Notes	Plot	Height	Notes
501	33	wide	529	51	seed, bushy
502	23		530	23	seed
503	66		531	28	seed
504	41	seed	532	38	seed
505	23		533	13	few plants
506	18	few plants	534	33	bloom
507	23		535	20	bloom
508	41		536	74	seed, sticky
509	36		537	31	bloom
510	25	seed	538	23	bloom
511	53	seed	539	38	seed
512	44	seed	540	23	seed
513	71	seed, stemmy	541	31	bloom, wide
514	18	bloom	542	48	seed, sticky
515	18	seed	543	18	bloom
516	36	seed	544	20	bloom
517	36	bloom	545	72	bud, sticky
518	31	seed	546	23	bloom
519	69	seed, stemmy	547	31	bloom, sticky
520	18	pre bloom	548	23	bloom, wide
521	39	bloom	549	20	bloom, wide
522	41	seed	550	23	bloom, wide
523	23		551	20	bloom
524	18	seed	552	18	3 plants
525	25	seed	553	41	large stems, sticky
526	56	seed	554	28	seed
527	33	bloom	555	23	bloom
528	18	bloom	Borders	48	seed, sticky

SOYBEAN UNIFORM TEST PLANTINGS, 1986 SEASON
Southern Oregon Experiment Station, Medford

The soybean is the leading oilseed crop grown in the United States, but it has never been an important crop in Oregon. Acreage is usually about 60 million, closely matching that of field corn. Most of the soybean research and development have been in the midwestern and southern states where most of the acreage is found. Night temperatures in the production areas are higher than in most of Oregon. Varieties developed for other areas are not necessarily well-adapted to Oregon conditions.

Soybeans have been grown at the Southern Oregon Experiment Station six times since 1959. The entries were named varieties and experimental selections obtained from the U.S. Regional Soybean Research Center, Urbana, Illinois. Most were developed for midwestern and southern Canada conditions. Yields ranged to highs of 41 to 46 bushels per acre, too low to make the crop economic, considering irrigation costs and other production inputs. Yields in the Midwest, without irrigation, equalled those of Southern Oregon where maturities were often late in the season.

A planting of 64 entries in 1985 all matured before the first frost of October 8, although the planting was not made until June 12. Most of the breeding lines were selected for areas with lower night temperatures than those of the Midwest. Soybeans that mature by early October allow an overwintering crop to be planted, probably a forage, that can be harvested in May or early June before soybeans are seeded, resulting in an effective double cropping program.

For the 1986 season, two trials were conducted. The first was a uniform planting of 16 entries seeded May 16 at Medford and at Corvallis, Hermiston, and Ontario. The second was a planting of 8 entries seeded July 10, to simulate a doublecropping program where winter barley could be harvested as the first crop. Both were conducted on a Central Point sandy loam soil that was irrigated with overhead sprinklers.

The experimental area was plowed in the fall, and it was fertilized with 32 pounds of N per acre, 40 P_2O_5, and 24 S. On May 9, 36 N, 100 P_2O_5, 70 K_2O, and 54 S was broadcast and rototilled into the seedbed. Trifluralin (Treflan) was applied at 0.75 pound per acre and tilled into the soil. The soil was sampled April 29 before the application of seedbed fertilizer. Soil test values for the 0-12 inch depth were:

pH	P, ppm	K, ppm	Ca, me/100g	Mg, me/100g	B, ppm
5.8	39	211	6.7	1.2	0.59

Seed weights were determined so that approximately equal numbers of seeds could be weighed out for each entry. A V-belt planter was used to seed each entry at 6 seeds per foot + 10%. Soil Implant "SG" inoculant was placed on the seeder's V-belt with the seeds so that seeds and inoculant were applied together. The inoculant was applied at the rate of 8 pounds per acre, diluted 1 part inoculant to 4 parts screened soil from the same field.

The soil surface was dry at seeding, and the planting operation progressed well. The row spacing was 22 inches, plots had four rows and were 20 feet in length, and there were five replications in a randomized complete block design. Irrigation water was applied after seeding was completed.

Linuron (Lorox) was applied pre-emergence at 1.25 pounds per acre three days after seeding. There was no cultivation or handweeding during the season.

Emergence began May 23. Pheasants dug up seeds and shoots before emergence. Considerable stand damage was indicated in replications 1 and 5, and in the two border rows on each side of the planting.

On June 6, plant heights ranged from 10 to 14 cm. Most plants were flowering by June 30 when plant heights ranged from 12 to 21 inches. By July 16, reproductive stages ranged from R_2 to R_4. Growth progressed well during the summer. There was essentially 100% weed control. Irrigation water was applied at near-weekly intervals, depending upon temperature and evapotranspiration conditions.

First harvest was on August 28 among three of the Group 000 entries; the fourth was harvested September 2, 104 to 109 days after seeding. Final harvest of some of the Group 0 and 1 entries was October 14, 151 days after seeding.

Lodging was seen with several entries, particularly with the Group 1 soybeans, although at least one entry lodged within each maturity group. The greatest degree of lodging occurred with the tallest plants. Lodging ratings and plant heights are shown in Table 1 along with other data gathered at harvest.

Seed shattering was limited to only two of the 16 entries, numbers 4 and 7. Earlier harvest probably would have prevented the seed losses. Seed yields were moderate, ranging from 23.4 bushels per acre for entry 10 in Group 0 to 41.7 bushels for entry 15, Evans x Traff, in Group 1. Seed weights varied, but differences were among individual entries rather than among maturity groups.

Plants harvested per plot were varied, because of original stand emergence and from stand damage caused by pheasants. The number of plants harvested per plot are listed in Table 1 based on 32 linear feet of the two center rows of each plot.

Reproductive stages of maturity, plant heights, and number of nodes are presented in Table 2.

July 10 seeding

Eight entries were selected for the late planting representing two soybeans from each of the four earliest maturity groups. The seedbed was prepared, fertilized, and treated with Treflan herbicide in May when preparations were made for the May 16 seeding. Inoculant was again applied in the seeder's V-belt along with the seeds. Lorox was applied at 1.25 pounds of active ingredient per acre after a pre-emergence irrigation.

Emergence occurred in 6 days. Good stands were obtained, and there was no serious damage from pheasants as occurred in the May planting. Growth progressed well, although plant heights were less than in the early planting, and the stems were of smaller diameter. Rain in the last half of September contributed to the lodging seen with some entries.

Harvest of the two Group 000 entries was on October 21, 103 days after seeding. Final harvest of Group 1 entries was November 15, 128 days after seeding. Tables 3 and 4 present data and observations on reproductive maturity stages, lodging, plant heights, number of nodes, seed shattering, and leaf retention at harvest. Table 5 presents yield data and plants per plot.

Yields were low, ranging from 1.7 bushels per acre for Group 1 entry ORG-83-159 to 21.7 bushels per acre for ORG-83-117. The mean of the 8 entries was 12.8 bushels per acre, only 41% of the mean yield of the May 16 seeding.

It appears that soybeans will mature their seeds from a seeding made as late as July 10, but the low yields would be uneconomic. Rather than following a crop of wheat or barley harvested for grain, a fall-seeded forage could be harvested in May or early June, allowing an earlier planting date for the soybeans. That type of doublecropping should allow greater development and higher yield of the soybeans than a July planting, and harvest would be early enough to avoid adverse weather conditions common to October.

Table 1. Soybean growth and yield data, seeded May 16, 1986, Southern Oregon Experiment Station, Medford

Entry number and selection	Group	Lodging 0-10	Height cm	Shatter %	Seed Yield Bu/A	Seed Yield Mg/ha	Seed Weight g/1000	Plants/ plot	Harvest date
1. Fiskeby V	000	0	61	0	31.4	2.11	216	155	Aug. 28
2. L4/3	000	4	66	0	31.1	2.09	198	125	Aug. 28
3. MP/T (2004, 753-3-B-3)	000	0	71	0	27.8	1.87	217	136	Sept. 2
4. MP/T (2004, 753-3-B-5)	000	0	61	10	26.4	1.77	207	117	Aug. 28
5. McCall	00	4	91	0	28.7	1.93	194	159	Sept. 23
6. E x T (Org-83-117)	00	0	86	0	30.2	2.03	180	156	Sept. 11-23
7. L 4/3 x Hodgson 78 (ORG-83-156)	00	5	76	30	27.0	1.82	217	162	Sept. 11
8. MP x E (K357-1-5-4-2)// Traff (213, x 1133-11-B-4)	00	0	81	0	37.3	2.51	191	131	Sept. 11
9. Evans	0	0	94	0	35.8	2.40	204	135	Oct. 6
10. M75-2 x (L6/3 x Hodgson 78), (ORG-83-149)	0	0	81	0	23.4	1.57	206	151	Oct. 6-14
11. Cz-13-2/4*McCall (K452-1)//BC-14-1-13 (K738-1-I)	0	6	71	0	37.9	2.55	213	171	Oct. 6
12. Evans x Traff (Org-83-71)	0	4	89	0	28.4	1.91	207	127	Oct. 6-14
13. Hodgson 78	1	6	91	0	27.3	1.84	183	142	Oct. 6
14. L37/6 x Hodgson 78 (Org-83-159)	1	3	81	0	29.3	1.97	205	116	Oct. 6-14
15. Evans x Traff (ORG-83-72)	1	4	89	0	41.7	2.81	187	94	Sept. 23
16. Cz-13-2/4*McCall (K452-2)//BC-14-1-13) (K738-1-L)	1	5	76	0	32.1	2.16	215	121	Oct. 6
Mean					31.0	2.08	202	137	
LSD, 5%					6.1	0.41	15	33	
1%					8.1	0.54	19	44	
C.V., %					15.6	15.6	5.7	19.1	

Lodging scale: 0 = no lodging; 5 = moderately lodged; 10 = completely lodged, flat on ground.

Table 2. Soybean uniform trial, reproductive stage (R), height (cm), and nodes/plant, by dates. Seeded May 16, 1986 at the Southern Oregon Experiment Station, Medford

Entry	7/11	7/16	7/24	7/31			8/8			8/14			8/21		9/2			9/11	
	R	R	R	R	Ht	Nodes	R	Ht	Nodes	R	Ht	Nodes	R	Ht	R	Ht	Nodes	R	Ht
1. Fiskeby V	4	4	5	6	58	9	6	56	10	7	56	10	7.5	61					
2.	3.5	4	4	4.8	71	13	5.8	61	14	6.6	46	15	6.6	66					
3.	4	4	4.6	5	69	12	5	69	12	6.8	61	13	7	71	8	66	13		
4.	4	5	5	5.8	56	10	6	58	10	7	56	11	7.2	61					
5. McCall	3	3	4	4	89	13	4.6	89	14	5.2	81	15	5.5	91	6.4	71	16	7	76
6.	3	3.4	4	4	91	13	4.8	97	16	5.8	94	16	6.5	89	7	86	16	7.4	86
7.	3	4	4.2	4.6	66	12	5	63	14	6	56	15	6	91	7	43	16	7.6	56
8.	4	4	4.4	5	79	12	5.8	81	13	6.4	79	13	7	81	8	76	14	8	81
9. Evans	2	3	3	4	94	13	4	99	13	5	91	17	5.5	94	6	74	17	7	94
10.	3	3	4	4	89	13	4.6	94	14	5.4	91	15	6	94	6	79	17	7	81
11.	3	3.6	4.4	4.4	81	13	5	66	14	5.4	61	16	6	74	7	43	16	7	71
12.	3	3	4	4	91	12	4.6	91	14	5	91	14	6	89	6.2	76	17	6.6	74
13. Hodgson 78	2	2	3	3.2	94	12	4	94	14	4	91	15	5	89	5.4	69	16	6.4	56
14.	3	3.6	4	4	74	9	4.8	76	10	5.8	71	10	6	81	6.4	66	11	7	63
15.	2.5	3	3.4	4	76	12	4.8	89	13	5	89	15	5	69	6	69	15	7	63
16.	2	2	3	4	91	14	4	84	14	4.6	63	16	5	76	6	46	17	7	48

Reproductive stages:
R2 = Flower at node immediately below the uppermost node.
R3 = Pod 0.5 cm long at one of the four uppermost nodes with a completely unrolled leaf.
R4 = Pod 2 cm long at one of the four uppermost nodes with a completely unrolled leaf.
R5 = Beans beginning to develop at one of the four uppermost nodes.
R6 = Pod containing full size green beans at one of the four upper most nodes.
R7 = Pods yellowing; 50% of leaves yellow. Physiologically mature.
R8 = 95% of pods brown. Harvest maturity.

Table 3. Plant height (cm), reproductive stage (R), and nodes/plant, soybeans seeded July 10, 1986 at Medford

Selection	8/21	9/2			10/10		10/23		
	Ht	Ht	R	Nodes	Ht	R	Ht	R	Nodes
L 4/3	51	56	4	10	25	7	28	8	12
M P/T	41	51	4	8	43	7	43	8	9
Maple Ridge	51	63	4	10	46	6	48	6.6	13
ORG 83-117	51	71	4	10	56	6	66	7	13
ORG 149	46	66	3.4	9	69	6	66	7	13
ORG 71	48	71	3.6	9	36	6	28	6.2	12
ORG 83-159	56	71	3.4	11	41	6	33	6	13
ORG 83-138	51	69	2	11	48	5	36	6	12

Table 4. Soybean groups, harvest dates, lodging, and leaf retention at harvest, seeded July 10, 1986 at the Southern Oregon Experiment Station, Medford

Selection	Group	Harvest Date	Lodging	Leaves at Harvest
1. L 4/3	000	Oct. 21	4	many
2. MP/T	000	Oct. 21	1	few
3. Maple Ridge	00	Nov. 3	2	oderate
4. ORG 83-117	00	Nov. 3	1	few
5. ORG 149	0	Nov. 10	0	few
6. ORG 71	0	Nov. 10	6	many
7. ORG 83-159	1	Nov. 15	6	many
8. ORG 83-138	1	Nov. 15	6	many

Notes

1. Lodging: 0 = none; 1 = leaning slightly; 5 = moderate amount of lodging; 10 = completely lodged, flat on ground.
2. There was no seed shattering with any of the entries.
3. Data are means of five replications.
4. There were no hard, killing frosts prior to harvest.

Table 5. Soybean Harvest Data, seeded July 10, 1986 at Medford

Selection	Group	Yield Bu/a	Yield Mg/ha	Plants Harvested/Plot	Harvest Date
1. L 4/3	000	8.3	0.56	180	Oct. 21
2. MP/T	000	14.7	0.99	130	Oct. 21
3. ORG-83-117	00	17.0	1.14	176	Nov. 3
4. Maple Ridge	00	21.7	1.46	180	Nov. 3
5. ORG 83-71	0	15.2	1.02	168	Nov. 10
6. ORG 83-149	0	16.9	1.14	185	Nov. 10
7. ORG 83-138	1	1.7	0.12	214	Nov. 15
8. ORG 83-159	1	7.0	0.47	179	Nov. 15
Mean		12.8	0.86	177	
LSD, 5%		3.2	0.21	15	
1%		4.3	0.29	20	
C.V., %		19.1	19.1	6.8	

Notes
1. Plots were 20 feet in length by 4 rows with 22-inch row spacing.
2. Harvest area = 16 feet from each of two center rows of each plot.
3. Data are means of five replications.

Table 6. Soybean Reproductive Stages

Stage No.	Description
R1	One flower at any node.
R2	Flower at node immediately below the uppermost node with a completely unrolled leaf.
R3	Pod 0.5 cm (1/4 inch) long at one of the four uppermost nodes with a completely unrolled leaf.
R4	Pod 2 cm (3/4 inch) long at one of the four uppermost nodes with a completely unrolled leaf.
R5	Beans beginning to develop (can be felt when the pod is squeezed) at one of the four uppermost nodes with a completely unrolled leaf.
R6	Pod containing full size green beans at one of the four uppermost nodes with a completely unrolled leaf.
R7	Pods yellowing; 50% of leaves yellow. Physiological maturity.
R8	95% of pods brown. Harvest maturity.

SEED PRODUCTION ACTIVITIES, 1986 SEASON
Southern Oregon Experiment Station, Medford

Talent Alfalfa

A planting of Talent alfalfa, originally established as a seeding rate X seeding method X irrigation variable experiment with seed production response as its objective, was harvested for seed. It has been used for growth regulator trials and for numerous herbicide tests and for a soil fertility study since the original experiment was completed about 1966. The seed yield was high in 1986, because of warm, dry weather during the period of seedset and filling. Seed production should amount to about 550 pounds per acre after processing and certification are completed.

The variety was released from this station about 1950. It has moderate resistance to the stem nematode and makes rapid recovery after cutting. Most of the certified seed grown in the area was exported to Greece for 15 years. The area of greatest use of Talent is now northwestern Washington.

Sugar Beets

A sugar beet advanced nursery, cooperative with the USDA, was seeded in August 1985. The plants were dug as stecklings in March and were taken to the USDA sugar beet research station at Salinas, California, to be grown through seed maturity. The USDA is placing research emphasis upon the development of breeding lines that combine high yields with high sugar content, with resistance to virus and fungus diseases.

Tall Fescue Endophyte Study

Plants of tall fescue and a fescue-ryegrass hybrid were set out in the fall of 1983. Some of the plants were known to carry the endophyte fungus. Seeds have been harvested each year. This is a cooperative study involving OSU and the USDA. The objectives are to investigate transmissability of the endophyte pathogen and to develop measures that will assure production of endophyte-free seed of tall fescue by Oregon's seed growers.

Wheat Selections

Two selections of soft white winter wheats from the OSU cereals project were grown in headrow plantings for the second time. Carrying the experimental designations OSU 21 and OSU 28, they have performed well over a 5-year period, and they are being considered for seed increase and release.

Forage Plants

Seed blocks of two forage plants, burnet and hardinggrass, seeded in 1983, were harvested in 1986. A third plant, rescuegrass, produced seed in 1984 and 1985, but failed to regrow for the 1986 season.

The hardinggrass is of Australian origin, a perennial that seems tolerant of moderately dry soils of clay texture. It is related to reed canarygrass and has possibilities for production on non-irrigated soils.

Burnet is a palatable forb and is sometimes known as salad burnet. It has performed well under dryland conditions in previous tests. It seeds readily, and in dryland plantings, has exerted effective competitive pressure on medusa-head rye, an annual grass of low forage value. It is being investigated for its effect upon stands of yellow star thistle, a widespread and pervasive weed on much of the dryland and range areas of Jackson County. Seed of burnet has been seeded in two dryland test plantings by the OSU Range Science Department cooperating with the Jackson County Extension Service. Preliminary results showing suppression of star thistle at one location are encouraging, but burnet does not seem to size properly on the heavy clay soils, or vertisols, found on hillside areas in the Cascade foothills.

Other Crops and Tests

Papaver bracteatum

The agronomic requirements and adaptation of the crop known as Iranian poppy have been studied with emphasis upon row spacings, herbicide tolerances, nitrogen rates, and pre-plant seed treatments. Plants were grown in a row spacing variable and as clonal selections in 1986. The plant is well-adapted to this area and to several other areas of Oregon. It is of interest to the pharmaceutical industry as a possible safe, domestic source of codeine.

Pyrethrum

Pyrethrum (Chrysanthemum cinerarefolium) is a perennial flower grown as a source of pyrethrin, a natural insecticide that is considered almost totally non-toxic to warm-blooded animals. It is used in many household and garden aerosols because of its safety.

There has been commercial interest in pyrethrum production in Oregon. As part of an OSU Crop Science project, plants were first set out in 1984, an additional block of plants was set out in 1985, and a new planting was made in 1986. Growth has been satisfactory, and no winterkill has occurred. Flowers were harvested from the fertilizer block established in 1985.

Turfgrasses

Turfgrasses attract many visitors to the station each year. The station maintains a planting of different species and varieties that might be of interest to homeowners, groundskeepers, nurserymen, parks and recreation people, and those interested in grasses for erosion control, conservation, and covercrop purposes.

A planting on the station is maintained for a period of five or six years before it is replaced by a new group of grasses. The latest planting was made in October 1984. Fourteen Kentucky bluegrasses, eight turf-type tall fescues, 10 perennial ryegrasses, and a hard fescue were seeded. All of the grasses have good stands, and most make satisfactory turfs.

There is considerable interest in the turf-type tall fescues. They are expected to complement, but not replace, the other grasses that are well-adapted for turfs in Southern Oregon, Kentucky bluegrasses, fine fescues, and turf-type perennial ryegrasses.

Claire Hanley Arboretum

The Claire Hanley Arboretum was established in 1962 as a cooperative endeavor with the Jackson County Extension Service and the Garden Clubs of southwestern Oregon. Additional plantings of trees, shrubs, bulbs, and flowers are made as desired types become available. A Japanese rock garden was established in one section in 1982, and Boy Scouts built a bench near the center of the arboretum, and hauled in rocks for landscaping.

The planting is of interest to landscapers, homeowners, school classes, garden and flower clubs, and casual visitors, and it is used as a meeting and assembly area for field days and summer meetings. Many visitors to the nearby turfgrass planting take time to view the arboretum.

In close proximity to the arboretum are a herb garden, a rhubarb bed, colored maples, cherries, blueberries, and landscaping plants around the office building.

Orchard Covercrops

Five species and several varieties of grasses are being evaluated in a pear orchard as no-till strips on a Carney clay soil at the Medford Experiment Station location off Kings Highway southwest of Medford. The objectives are to compare the grasses as habitat for predatory mites and insects that are of benefit in an integrated pest management program, and to evaluate the grasses for their abilities to provide mechanical support for orchard equipment.

Satisfactory stands of tall fescues, perennial ryegrasses, and most of the chewings and red fescues have been maintained. Stands of hard fescues have been less than optimum, indicating that species may not be suitable for permanent ground cover on heavy-textured clay soils. Most orchardists are seeding covercrops in interrow strips in their newer high-density pear plantings. Advantages besides mechanical support for equipment include reduction of erosion, and less soil puddling during periods of heavy rainfall or when overtree sprinklers are being used for frost protection.

ONION HYBRID PLANTING, 1986 SEASON
Southern Oregon Experiment Station, Medford

Onion production is an important enterprise for a few growers in Southern Oregon. Growers store, grade, and market their own crops over the period from harvest in September until April 15. This requires a type of onion that has suitable storage characteristics to maintain bulb quality over an extended marketing season.

There are many varieties of onions available for growers to plant. Having information on growth habit, bulb size, storage capability, and yield potential in advance of planting can be of value to a grower. The test reported here presents data on 22 onion selections that were grown on a Central Point sandy loam soil in 1986 that was irrigated with overhead sprinklers.

Final seedbed preparation in March included the broadcasting of 60 pounds of N per acre, 60 K_2O, and 67 S, and the banding of 60 P_2O_5 under the row. The onions were seeded March 28 in single-row plots with 20-inch row spacing with four replications and a randomized complete block design. Glyphosate (Roundup) was applied at 0.5 pound per acre as a delayed pre-emergence herbicide treatment, and DCPA (Dacthal) was applied at 7.5 pounds per acre at the three-leaf stage. Cultivation and hoeing were used to remove late-season weeds.

Stands of the onions were only fair, but growth progressed well during the season. The onions were lifted September 30, crated October 9, placed in common storage October 16, and graded December 8 after 53 days in storage.

Experimental selection XPH83N128 had many more bulbs of the 4-inch or greater size than any of the other entries. Valdez, Dai Maru, Ringmaker, Celebrity, and Avalanche had moderate amounts of 4-inch bulbs.

Two onions with the largest numbers of 3 to 4-inch bulbs were XPH83N128 and Avalanche. The mean yield of bulbs in this size group was 200 bags (50 pounds) per acre. Medium sized bulbs, 2¼ to 3-inches, had a mean yield of 239 bags per acre, while small bulbs, 1½ to 2¼-inches, averaged 80 bags per acre. Medium sized bulbs are more marketable than the small bulbs grown in this area.

Total yields of number 1 bulbs were much lower than in 1985, with a mean of 568 bags per acre. The range was from 185 for Yula, a relatively short-storage type, to 976 bags per acre for XPH83N128. Avalanche and Blanco Dura are white onions, Ruby is red; the others are yellow.

The numbers of culls ranged from a low of seven bags per acre for Valiant to 249 bags per acre for XPH77N76. Most in the cull grade were doubles, large necked, undeveloped bulbs, and neck or root sprouted. Yula had considerable neck sprouts which resulted in a high percentage of culls. No sprout inhibitor was used in the trial. A few to many bulbs were soft, indicating potential decay or advanced sprouting. None was found, however, in Brahma, Dai Maru, and Valiant.

Data are shown in the following table.

Onion Variety Yield Data, 1986 Season
Southern Oregon Experiment Station, Medford

Entry	Tops Down, %	Yield of bulbs, 50-pound bags per acre 4"+	3-4"	2¼-3"	1½-2¼"	Total #1	Culls Total	Culls % Soft
Armada	52	24	132	255	97	508	92	20.8
Autumn Beauty	45		102	318	112	532	122	27.9
Avalanche	15	99	466	237	57	859	165	1.3
Blanco Dura	21	9	183	193	64	449	61	6.4
Big Mac	25	21	174	216	29	440	152	9.8
Brahma	59		46	328	159	533	8	0
Bullring	32		102	161	40	303	33	26.7
Celebrity	20	115	295	249	24	683	102	3.0
Dai Maru	26	124	275	260	48	707	57	0
Golden Cascade	41		130	165	48	343	26	27.1
Golden Treasure	49	7	59	189	170	425	59	7.4
Magnum	46		193	309	63	565	67	15.6
Maya	54	31	127	364	68	590	100	8.3
Ringmaker	39	122	374	273	29	798	88	19.9
Ruby	69		5	121	192	318	51	25.4
Valdez	12	128	417	210	44	799	91	6.7
Valiant	34		124	290	64	478	7	0
Vega	29		143	310	296	749	108	52.0
Winner	19	29	269	297	47	642	89	10.7
XPH77N76	46	51	293	222	67	633	249	33.6
XPH83N128	11	301	479	169	27	976	133	30.2
Yula	69	8	20	131	26	185	230	10.6
Mean		49	200	239	80	568	95	
LSD, 5%		95	178	N.S.	119	284	72	
1%		127	238	-	159	380	96	
C.V., %		118.6	54.0	36.8	90.8	30.1	45.8	

Notes

1. The plot area was fertilized with 60 N, 60 P_2O_5, 60 K_2O, and 67 S during seedbed preparation and 100 N July 22.
2. The onions were seeded in four replications March 28 with 20-inch row spacing.
3. The onions were lifted September 30, crated October 9, placed in common storage October 16, and graded December 8.

CANTALOUPE TEST PLANTING, 1986 SEASON
Southern Oregon Experiment Station, Medford

Cantaloupes, tomatoes, and sweet corn are the three vegetable crops most commonly grown in Southern Oregon for fresh market purposes. They are marketed through retail and wholesale grocers, at fruit and vegetable stands, and as U-pick crops. Yields and quality are usually high because of favorable soil and climatic conditions. This report presents information on a cantaloupe test planting involving nine different selections.

The experimental area was fertilized in the fall with 200 pounds of 16-2--0-14 per acre. Final seedbed preparation was done in late May, and the melons were planted June 4, relatively late for the crop. Emergence was satisfactory and stands were thinned to three plants per hill with rows spaced seven feet apart and hills spaced 36 inches apart. On July 22, 70 pounds of N was applied per acre broadcast as ammonium sulfate. Irrigation was done with overhead sprinklers.

The vines made vigorous growth on the Central Point sandy loam soil. The first harvest was on September 4, 92 days after seeding. Only a few fruits were mature at that date. Summet had the most ripe fruits at the first harvest, followed by Star Trek. By September 6, 26% of Summet's seasonal total crop had been harvested.

Most of the entries were maturing significant numbers of fruits in the September 10 to 13 harvest period. Exceptions were Hiline and Mission, two late maturing shipping types, and Malheur 82, the only non-hybrid entry. The peak production period was from September 16 to 21, and overall quality was excellent.

A total of 2.83 inches of rain fell during the last 12 days of September. While melons harvested September 27 were still of good quality, those of the final harvest on October 4 were of much lower quality.

Summet and Star Trek compared favorably, qualitywise, with Classic, the standard of comparison. Summet matures early and could be used to produce a volume of medium-sized, round fruits until some of the later-maturing varieties matured. Ambrosia was productive of large, good quality fruits, but they were quite soft and would only ship a limited distance. Chieftain produced well and matured most of its oblong fruits before the final harvest. It is very similar to Saticoy Hybrid, a melon that has performed well in previous trials in Southern Oregon. Chieftain's fruits are relatively for their volume, and they were the only ones that did not float in water in a specific gravity test.

Magnum 45 matured most of its fruits between September 10 and 27. It is a medium-sized shipping type widely grown in the Southwest. The two other shipping types, Hiline and Mission, were not as well adapted as most of the others. They matured quite late and had significant amounts of fruits on their vines after the final harvest.

Malheur 82 was late in maturity and its quality was only fair. Malheur has performed well in previous tests, and it is recognized for its pointed stem end and excellent flavor. It has been grown commercially in the area.

Data are presented in Table 1.

Table 1. Cantaloupe Test Planting, yield, ripening, and fruit size data. Southern Oregon Experiment Station, Medford, 1986

Entry	Fruits maturing during time periods, %					Fruit Yield, Tons/Acre	Fruit Size, Pounds	Comments
	9/4-9/6	9/10-9/13	9/16-9/21	9/27	10/4			
Ambrosia	5	25	30	22	18	21.4	3.8	Good quality, sweet
Star Trek	6	59	22	6	7	18.9	3.1	Excellent quality
Hiline			14	30	56	16.8	2.7	Late shipper
Chieftain	2	39	35	13	11	16.1	2.9	Good quality
Classic	6	38	27	12	17	15.4	3.2	Excellent quality
Summet	26	49	23	2		15.0	2.5	Excellent quality
Mission		13	47	23	17	11.4	2.6	Late shipper
Magnum 45	5	24	38	27	6	12.1	2.6	Good quality
Malheur 82		2	19	30	49	7.7	3.9	Late,fair quality
					Mean	15.0	3.0	
					LSD, 5%	N.S.		
					C.V.	25.7 %		