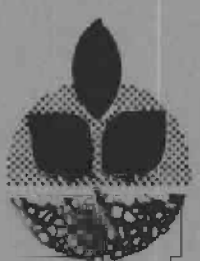
Agronomic and Vegetable Crop Research, 1986-87

Southern Oregon
Agricultural Experiment Station
Medford

Special Report 824
March 1988



Agricultural Experiment Station
Oregon State University, Corvallis

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John A. Yungen
Professor of Agronomy

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INTRODUCTION

The Southern Oregon Experiment Station is a research facility operated by the Oregon Agricultural Experiment Station, a part of the College of Agricultural Sciences at Oregon State University. Since 1958 the headquarters has been located on an 81-acre site five miles west of Medford on what is known as the Hanley Research Station. Since 1935 the station has operated another 21-acre experimental farm about three miles south of Medford which is known as the Medford Station. At both locations, land and buildings are owned by Jackson County and leased at no cost to OSU for agricultural research.

The station conducts research programs in agronomy, entomology, horticulture, and plant pathology. The experimental program serves agricultural interests ranging from home owners and gardeners and small-acreage farms to large commercial farm and fruit packing operations. The area served by the station includes Jackson and Josephine counties and the southern part of Douglas County.

This report presents data and information on the agronomic and vegetable crops research conducted during the 1986-87 season. Some of the research is done cooperatively with OSU staff members in several departments in the College of Agricultural Sciences. There is close cooperation with the OSU Extension Service in reporting and making information available to the general public.

The information in this publication is provided with the understanding that listing of commercial products, necessary to this research, implies no endorsement by the author or by Oregon State University. Similarly, no criticism or discrimination is intended or implied of products or equipment not listed.

John A. Yungen,
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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, 1986-87

Month	Inches
September	2.83
October	1.91
November	2.98
December	1.21
January	3.83
February	2.81
March	1.65
April	0.46
May	0.63
June	0.46
July	1.63
August	0.00
Total	20.40

Precipitation totals and temperature means Calendar year, 1987

Month	Inches	Max, °F	Min, °F
January	3.83	47.5	29.1
February	2.81	53.7	33.6
March	1.65	58.8	35.4
April	0.46	71.7	38.7
May	0.63	75.4	44.8
June	0.46	85.5	50.4
July	1.63	82.6	52.7
August	0.00	92.8	51.0
September	0.00	84.7	45.8
October	0.05	78.7	40.8
November	1.46	55.1	35.4
December	5.11	54.3	31.7
Total	18.09		

The 1941-1980 annual average precipitation, as recorded at the Medford Airport by the National Weather Service and its predecessor agencies, was 18.69 inches.

WEATHER NOTES

1. The 1986-87 agricultural year precipitation was 109% of the 40-year annual average recorded at the Medford airport, mainly because of heavy rainfall in September, November, and January.

2. No precipitation was recorded for the 97 days between July 25 and October 30, a 76-year record.

3. Maximum temperatures reached or exceeded 100° on June 25 and 26, July 13 and 14, August 7, 8, and 30, and September 22. The highest was 106° (July 13).

4. The lowest temperature of the year was 16°, recorded January 16.

5. The fruit-frost protection period extended from March 27 to May 20, and even though the protection period was unusually long, there were no extremely cold nights during the critical protection period.

6. Irrigation water deliveries were cut off about September 10 by the Talent and Medford irrigation districts, about 30 days earlier than usual, to conserve the remaining stored water for the 1988 irrigation season.

7. Water flows in the Rogue and Applegate rivers were maintained at a satisfactory level because of releases from Lost Creek and Applegate dams, while tributary streams were nearly dry. Record salmon and steelhead runs were possible in both rivers because the two dams were able to release enough water to benefit irrigators, municipal users, and the fish.

Small Grains

WINTER BARLEY ELITE GROUP SELECTIONS, 1986-87 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 often exceed 100 bushels per acre. Barley seeded in September, October, or early November usually outyields spring barley by effectively using winter and spring rainfall and the longer growth period. While winter wheat in the area is almost all of one variety (Stephens), barley seedings include varieties such as Wade, Scio, and Kamiak winter barleys, along with Steptoe and Wocus spring types. Each has a place, considering soil type, soil drainage, elevation, and intended harvest date. This report presents information in a planting made October 4 in which 45 experimental selections and three named reference varieties were seeded.

The experimental selections were from the cereals project in the Oregon State University Crops Science Department. The objective of the cereals project is to develop improved varieties of wheats and barleys that are adapted for production in the state and that have disease resistance, have the quality to fit their intended use, and that yield well.

Methods and Materials

The experimental area was fertilized during seedbed preparation with 200 pounds of 16-20-0-14 per acre. An additional 100 N as ammonium sulfate was broadcast February 23.

The barleys were irrigated April 16 with 2.8 inches of water using overhead sprinklers. From January 1 until maturity, 9.84 inches of precipitation was recorded.

Results and Discussion

Stands were excellent, and growth progressed well. The experimental area was nearly weed free. The barleys grew quite tall, averaging 41 inches in height. Three experimental selections and Wocus showed some lodging. Wocus was the only entry with smooth awns.

Yields of barley were high, averaging 87 bushels per acre. The range was wide, from a low of 48 to a high of 121 bushels per acre. Yields of many of the experimental selections were higher than reference varieties Steptoe, Wade, and Wocus. Several are worthy of further tests.

Test weights were somewhat low, averaging 46.5 pounds per bushel, although seven of the selections exceeded 49 pounds per bushel. Values for two two-row barleys in the trial were slightly above the trial mean.

Because of their tall growth habit, most winter barleys produce an abundance of straw, an asset if a 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 ELITE YIELD DATA, 1986-87 SEASON
Southern Oregon Experiment Station, Medford

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Kernel rows	Lodging
WBELT 15	121.0	5,808	47.8	46	6	
WBELT 32	112.0	5,375	49.0	43	6	
WBELT 5	108.9	5,225	44.9	43	6	
WBELT 30	107.3	5,152	49.5	42	6	
WBELT 25	105.2	5,050	49.9	43	6	
WBELT 17	104.5	5,016	46.2	41	6	slight
WBELT 23	103.7	4,980	46.2	41	6	
WBELT 18	101.0	4,847	49.8	40	6	slight
Steptoe	99.3	4,769	49.1	48	6	
WBELT 35	99.0	4,753	47.6	40	6	
WBELT 19	98.4	4,722	46.7	40	6	
WBELT 27	98.0	4,705	48.4	42	6	
WBELT 26	97.8	4,697	47.5	41	6	
WBELT 3	97.1	4,661	47.0	46	6	
WBELT 7	95.9	4,601	43.8	43	6	
WBELT 34	95.5	4,586	46.2	43	6	
WBELT 11	94.8	4,548	45.1	40	6	
WB18-86	94.4	4,532	47.3	41	6	
WBELT 20	94.4	4,532	45.8	39	6	
WBELT 1	94.2	4,521	46.0	40	6	
WBELT 44	93.9	4,508	48.6	41	6	
WBELT 6	93.8	4,503	46.3	42	6	
WBELT 2	93.5	4,488	43.6	43	6	
WBELT 12	92.8	4,455	45.2	39	6	
Wade	92.3	4,430	48.2	48	6	
WBELT 16	90.6	4,350	47.2	42	6	
WBELT 28	90.2	4,331	49.1	44	6	
WBELT 13	89.2	4,282	49.5	43	6	
WBELT 8	86.3	4,143	47.5	34	2	
WBELT 9	86.3	4,143	42.8	39	6	
WBELT 4	84.2	4,043	45.4	47	6	
WBELT 21	83.3	3,997	40.4	41	6	
WBELT 31	83.0	3,986	43.6	40	6	
WBELT 22	83.0	3,983	48.9	36	2	
WBELT 36	81.4	3,906	46.2	39	6	
WBELT 24	80.7	3,875	47.2	40	6	
WBELT 14	77.1	3,701	44.4	40	6	
Wocus	75.5	3,624	46.8	47	6	slight
WBELT 10	72.3	3,473	43.4	39	6	
WBELT 37	66.7	3,200	48.4	39	6	
WBELT 42	62.6	3,005	47.9	39	6	slight
WBELT 43	62.2	2,987	47.4	38	6	
WBELT 39	62.2	2,985	45.0	38	6	
WBELT 40	58.1	2,788	45.4	37	6	

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Kernel rows	Lodging
WBELT 33	57.1	2,741	47.3	38	6	
WBELT 29	50.6	2,431	44.4	38	6	
WBELT 41	50.6	2,429	44.7	36	6	
WBELT 38	48.1	2,311	45.1	36	6	
Mean	86.9	4,170	46.5	41		
LSD, 5%	19.8	952	1.9			
C.V., %	16.5	16.5	3.0			

Notes:

1. The barleys were seeded October 4 in a Central Point sandy loam soil.
2. The plot area was fertilized with 200 pounds of 16-20-0-14 per acre during seedbed preparation; 100 pounds of nitrogen was broadcast as ammonium sulfate February 23.
3. The barleys were irrigated April 17 with 2.8 inches of water.
4. Data are means of four replications.

WINTER BARLEY QUALITY TEST, 1986-87 SEASON
Southern Oregon Experiment Station, Medford

Winter barleys occupy nearly as much acreage in Southern Oregon as the winter wheats. Barley is usually grown on nonirrigated land or in a rotation with grass or sugar beet seed crops under irrigation. Yields can be high, often exceeding 100 bushels per acre. Winter barleys usually yield more grain and straw than spring-seeded ones because they make effective use of winter and spring precipitation and the longer growing season. Several varieties are popular including Wade, Scio, Kamiak, Wocus, and Steptoe, a spring barley sometimes seeded in the fall. This report presents information and data on a group of 24 experimental selections from the OSU cereals project seeded October 6 in a Central Point sandy loam soil.

Methods and Materials

The experimental area was fertilized with 200 pounds of 16-20-0-14 during seedbed preparation. An additional 100 N as ammonium sulfate was broadcast February 23. The barleys were irrigated April 16 when 2.8 inches of water was applied using overhead sprinklers.

Barley scald estimates were made for the entries April 9. Harvest was on June 15.

Results and Discussion

Grain yields were high, averaging 102 bushels per acre, although the range was quite wide, from 80 to 116 bushels per acre. Several of the entries exhibited excellent potential for commercial production.

Test weights were high, averaging 53 pounds per bushel, much higher than with the winter barley elite group growing alongside. The high values, ranging from nearly 48 to over 56 pounds per bushel, indicated excellent kernel fill under the conditions of the planting.

All were six-rowed, rough-awned types. Only two, WBQT 13 and WBQT 23, exhibited any lodging even though plants were tall, averaging 42 inches.

Barley scald, Rhynchosporium secalis, is often found in winter barleys during the moist, cool weather of late March, April, and early May. Yield reduction occurs if the disease is severe enough. Purplish-brown leaf spots develop on the leaves from the fungus, and the spots may enlarge and coalesce with other spots, effectively girdling the leaf. When that occurs, the leaf is no longer photosynthesizing food for the plant, and kernel development is reduced. If weather conditions change to warm, less humid conditions soon enough, the plant outgrows the effects of the disease, and yield reduction is minimized. The barleys in the planting

were rated for scald infections April 9. Although scald was not epidemic in 1987, differences were found among the entries for disease severity. A few had light infections, while most were moderately infected, and only four had moderately severe disease symptoms.

Yield data, test weights, plant heights, head type information, and scald ratings are shown in the following table.

WINTER BARLEY QUALITY TEST, 1986-87 SEASON
Southern Oregon Experiment Station, Medford

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Kernel rows	Lodging	Scald rating
WBQT 15	116.1	5,571	56.3	42	2		1.6
WBQT 18	115.7	5,555	56.4	41	2		1.6
WBQT 23	114.8	5,510	52.6	45	6	lodged	1.3
WBQT 7	114.6	5,503	51.1	42	6		2.0
WBQT 19	110.8	5,318	56.5	42	2		2.3
WBQT 17	110.3	5,296	56.1	41	2		2.0
WBQT 10	108.7	5,218	55.0	44	2		1.9
WBQT 1	108.6	5,213	49.4	45	6		1.8
WBQT 4	106.4	5,106	53.4	38	2		2.0
WBQT 14	104.8	5,030	55.3	40	2		1.7
WBQT 20	103.9	4,988	52.3	45	6		1.4
WBQT 16	102.9	4,940	55.1	39	2		1.9
WBQT 22	102.4	4,914	52.6	45	6		2.1
WBQT 2	101.4	4,866	48.9	46	6		2.7
WB-21-86	100.0	4,802	50.4	42	6		1.7
WBQT 12	99.2	4,761	55.5	42	2		2.1
WBQT 8	99.1	4,755	47.8	42	6		2.0
WBQT 9	98.1	4,710	54.3	42	2		1.8
WBQT 11	94.2	4,523	55.1	43	2		1.7
WBQT 13	94.0	4,412	55.2	42	2	lodged	2.1
WBQT 21	93.7	4,498	51.8	43	6		2.0
WBQT 6	86.4	4,147	49.2	39	6		2.7
WBQT 5	82.0	3,934	51.1	38	2		2.9
WBQT 3	80.5	3,862	51.3	39	2		3.0
Mean	102.0	4,897	53.0	42			
LSD, 5%	14.7	706	1.2				
1%	19.6	939	1.7				
C.V., %	10.2	10.2	1.7				

Notes:

1. The barleys were seeded October 6 in a Central Point sandy loam soil.
2. The plot area was fertilized during seedbed preparation with 200 pounds of 16-20-0-14 per acre; 100 pounds of nitrogen was applied February 23 as ammonium sulfate.
3. The barleys were irrigated April 18 with 2.8 inches of water applied through overhead sprinklers.
4. Scalding rating scale: 1 = no infection; 3 = moderately heavy infection; 5 = severe infection with plants nearly killed.
5. Data are means of four replications.

WINTER WHEAT ELITE SELECTIONS, 1986-87 SEASON
Southern Oregon Experiment Station, Medford

Winter wheat is the most important cereal crop grown in southern Oregon. Its yield can be high, from 3 to 4 tons per acre when growing conditions are favorable and proper management practices are followed. Nearly all the wheat is of the soft winter wheat class, represented by the variety Stephens along with smaller acreages of Yamhill and Hill 81. Most of the wheat is used locally for livestock and poultry feeds. In years when more than the usual acres are harvested, some grain moves through the terminal market in Portland, where it enters the export trade.

There is increasing interest in hard wheats, both hard red and hard white classes. They command higher prices to the producer, and they could fit into the export market if the quality were high enough. This report presents information and data from a winter wheat planting in which 21 soft white winter, 10 hard red winter, and one hard red spring wheats were grown in a yield trial. All but one of the wheats were from the OSU cereals project.

Methods and Materials

The experimental area was fertilized during seedbed preparation with 200 pounds of 16-20-0-14 per acre. An application of 100 N as ammoniun sulfate was broadcast February 24. The wheats were seeded October 9. The plantings were irrigated April 18 when 2.8 inches of water was applied. From January 1 until harvest, 9.84 inches of precipitation was recorded.

Results and Discussion

The wheats emerged well and excellent stands resulted with all the entries. Growth progressed well, and there were no serious diseases or insect problems to limit production.

The wheats were harvested July 6. Grain yields varied over a wide range from 59 to 114 bushels per acre. Several of the experimental soft white and hard red selections exceeded Stephens wheat in yield. Of particular interest was OSU 28, an experimental selection under test since the 1982 season. It has consistantly outyielded Stephens wheat, and it has a higher bushel weight. It has been grown in head-row plantings twice, and it is being considered for release. Another selection called OSU 21 has been tested since 1980, although it was not in the 1986-87 trial. Its yield is equal to that of OSU 28, but its bushel weight is lower. It has been through two head-row cycles also.

Test weights averaged 60.4 pounds per bushel, ranging from 56.4 to 64.5 pounds per bushel. All but two of the hard wheats had test weights above the average.

Since growth conditions were favorable over the winter and in the spring, the wheats grew tall. Even Stephens attained a height of 40 inches; it usually reaches about 36 inches in the area. There was no lodging in spite of the extra height, since most were stiff-strawed wheats.

Data are shown in the following table.

WINTER WHEAT YIELD DATA, 1986-87 SEASON
Southern Oregon Experiment Station, Medford

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Class
OSU 28	113.8	6,828	62.5	40	SWW
OR 831482	102.0	6,122	63.2	46	HRW
OR 832306	97.7	5,860	61.0	40	HRW
OR 830282	94.8	5,685	61.4	44	HRW
OR 830801	94.5	5,667	58.4	39	SWW
NK 751	93.9	5,636	61.9	41	HRS
OR 830027	93.9	5,632	62.2	47	HRW
OR 832784	93.8	5,626	60.5	40	SWW
ORCW 8723	91.2	5,474	61.8	45	SWW
OR 833032	88.1	5,284	61.2	44	SWW
ORCR 8718	85.3	5,116	63.1	47	HRW
OR 830821	85.3	5,118	64.5	50	HRW
ORCW 8724	84.6	5,074	59.5	43	SWW
Stephens	84.3	5,060	59.4	40	SWW
OR 832038	83.1	4,985	60.8	43	HRW
ORCW 8726	81.3	4,876	60.7	48	SWW
OR 832665	81.1	4,869	57.3	40	SWW
OR 833765	80.5	4,829	59.9	43	SWW
OR 830211	78.1	4,688	63.5	42	SWW
OR 7996	76.7	4,601	60.4	42	SWW
OR 833725	76.5	4,593	58.2	41	SWW
OR 831455	75.1	4,506	56.4	36	HRW
OR 834686	73.6	4,416	58.9	41	SWW
OR 831134	73.3	4,401	62.2	42	HRW
OR 833313	70.1	4,204	60.1	47	SWW
OR 830166	69.9	4,193	57.1	40	SWW
ORCW 8725	66.7	4,003	56.5	40	SWW
OR 833053	66.5	3,993	58.7	45	SWW
OR 833103	65.0	3,901	59.0	40	SWW
OR 833646	64.4	3,862	59.7	40	SWW
ORCR 8717	61.6	3,697	57.9	44	HRW
OR 833649	58.6	3,514	58.7	41	SWW
Mean	81.4	4,885	60.4	43	
LSD, 5%	12.3	738	0.7		
1%	16.5	989	0.9		
C.V.,%	10.7	10.7	0.8		

Notes:

1. Seeded October 9, 1986, in a Central Point sandy loam soil.
2. Fertilized during seedbed preparation with 32 N, 40 P_2O_5, and 28 S per acre. Fertilized February 24 with 100 N as ammonium sulfate.
3. Irrigated April 18 with sprinklers to apply 2.8 inches of water.
4. Precipitation totals, in inches: January 3.83, February 2.81, March 1.65, April 0.46, May 0.63, and June 0.46.
5. Classes: HRW = hard red winter; SWW = soft white winter; and HRS = hard red spring.

SPRING BARLEY ELITE GROUP PRODUCTION TEST, 1987 SEASON
Southern Oregon Experiment Station, Medford

Spring barley is an important crop on southern Oregon farms, particularly on nonirrigated land. It makes up most of the cereal acreage seeded after February 15. Only small amounts of wheat and oats are seeded after that date. Steptoe, a six-row feed barley, is the leading variety, with smaller acreages of Komar, Gus, and Wocus making up most of the remaining plantings. All the barley is used locally for livestock feed since southern Oregon is a production deficit area, necessitating the bringing in of barley from other nearby areas to meet the feedstock demand. This report presents information and yield data from a trial that included 27 experimental selections from the OSU cereals project and seven named varieties.

Methods and Materials

The experimental area was fertilized with 72 N and 82 S during seedbed preparation. The soil was classed as Central Point sandy loam. The previous crop was soybeans, grown in 1986 and fertilized with 120 P_2O_5, 70 K_2O, and 54 S.

The barleys were seeded February 26. During the growing season, a total of 8 inches of irrigation water was applied.

Results

All stands were excellent and growth progressed well. The barleys grew rapidly; the plot area was weed-free, and there was no lodging with any entries except with Wocus, one of the reference varieties.

Grain yields were high, ranging from 88 to 127 bushels per acre, the highest in recent years. Several of the experimental selections had very good yields.

Test weights per bushel covered the wide range from 44.9 to 53.1 pounds, averaging 48.7 pounds. Most kernels were well-filled and plump except for those entries with test weights at or below 46 pounds per bushel. It is important for a grower's barley to test at least 46 pounds per bushel, because barley testing less than that is discounted at the elevator, or it may be rejected. The four two-row barleys in the trial had high test weights, typical of most barleys of that type grown in the area.

Most of the barleys were rough-awned types. Seven had smooth awns. Differences were noted in emergence rates, and they were rated as slow, medium, and rapid. Emergence rate did not seem to correlate with grain yields, however.

Data are shown in the following table.

SPRING BARLEY TEST DATA, ELITE GROUP, 1987
Southern Oregon Experiment Station, Medford

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Kernel rows	Awn type	Emergence rate
SBELT 36	126.8	6,085	51.3	34	6	s	slow
Columbia	124.6	5,979	47.9	33	6	s	slow
SBELT 35	124.5	5,974	51.0	30	6	s	medium
Gus	123.9	5,949	50.4	34	6	r	medium
EFAYT 6	122.6	5,886	47.5	32	6	r	rapid
SBELT 13	122.5	5,882	51.6	33	6	r	slow
SBELT 15	118.7	5,697	53.1	30	2	r	rapid
LFAYT 17	117.8	5,654	48.3	36	6	r	slow
EFAYT 11	117.5	5,638	50.3	34	6	r	slow
EFAYT 5	116.3	5,584	47.6	32	6	s	medium
WRSBN 16	114.7	5,507	50.7	34	6	r	slow
EFAYT 10	114.6	5,500	50.1	28	6	s	slow
SBELT 9	113.9	5,467	49.0	35	6	r	slow
LFAYT 12	113.7	5,458	46.1	36	6	r	slow
SBELT 23	112.9	5,420	51.1	30	6	r	rapid
SBELT 21	112.2	5,384	51.2	30	6	r	rapid
LFAYT 11	111.7	5,360	46.0	34	6	r	slow
LFAYT 15	111.6	5,357	48.7	36	6	r	medium
SBELT 33	111.2	5,338	47.6	33	6	r	slow
EFAYT 8	110.5	5,306	45.9	32	6	r	rapid
LFAYT 13	109.0	5,231	46.1	35	6	r	slow
LFAYT 14	108.8	5,221	46.1	29	6	r	slow
SBELT 19	108.7	5,219	51.5	30	2	r	rapid
SBELT 26	104.4	4,010	53.1	31	2	r	rapid
Steptoe	103.8	4,980	48.8	36	6	r	medium
SBELT 12	103.5	4,966	49.0	32	6	r	slow
Lindy	103.2	4,952	48.3	35	6	r	slow
SBELT 7	102.4	4,917	45.6	34	6	r	slow
Kombar	101.9	4,892	45.6	34	6	s	slow
SBELT 28	100.1	4,806	51.4	28	2	r	rapid
Wocus	99.7	4,785	46.1	36	6	s	slow
SBELT 34	98.5	4,726	44.9	29	6	r	slow
EFAYT 19	92.5	4,439	47.0	35	6	r	slow
Advance	87.9	4,218	48.0	31	6	r	rapid
Mean	110.8	5,317	48.7				
LSD, 5%	15.1	725	1.5				
1%	19.7	945	1.9				
C.V, %	9.7	9.7	2.1				

Notes:

1. The barleys were seeded February 26 in a Central Point sandy loam soil.
2. The experimental area was fertilized with 72 pounds of nitrogen and 82 pounds of sulfur during seedbed preparation.
3. Irrigated with overhead sprinklers; a total of 8 inches of water was applied in three irrigations.
4. Awns: r = rough awns; s = smooth awns.
5. Data are means of four replications.

SPRING MALTING BARLEY PRODUCTION TEST, 1987 SEASON
Southern Oregon Experiment Station, Medford

Spring barley makes up most of the cereal acreage seeded after February 15 in southern Oregon. Most is classed as feed barley, represented by such varieties as Steptoe, Komar, and Gus. Occasionally, some of the malting barley types are seeded, to be used either for feed or malting. They are usually of the two-row head type, although some six-row barleys have the qualities desired by the malting trade. This report presents data on a malting barley test seeded in a sprinkler-irrigated Central Point sandy loam soil in late February.

Methods and Materials

The experimental area was fertilized with 200 pounds of 16-20-0-14 per acre in October and with 60 N and 67 S per acre during seedbed preparation in February. Twenty-four barleys were seeded February 27. The entries were experimental selections and named varieties Advance, Andre, Klages, Morex, and Steptoe. Eighteen were two-row barleys; six had six rows of kernels per head. All but three were rough-awned types. The planting was irrigated three times with a total of 8 inches of water being applied.

Results

Excellent stands were obtained with all the barleys. There was no lodging, and the planting was nearly weedfree.

Grain yields were moderate, ranging from 59 to 87 bushels per acre, averaging 71 bushels. Two six-rowed feed barleys (used as standards) were high in yield. Several of the experimental selections were closely grouped near the top yielders. Andre, Klages, and Morex (three other named barleys) yielded less grain than several of the experimental selections.

Test weights per bushel were high, averaging over 52 pounds, indicating full kernel development. Nearly all the experimental selections exceeded Steptoe in test weight, even the six-row types.

Plant heights were moderate, averaging 23 inches. All 18 two-row types had rough awns, while Morex and experimental selections 8423 and 8424 had smooth awns among the six-row barleys. Differences were observed in germination and emergence, and they were rated as being either slow, medium, or rapid in emergence rate.

Data are shown in the following table.

SPRING MALTING BARLEY DATA, ELITE GROUP, 1987 SEASON
Southern Oregon Experiment Station, Medford

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Kernel rows	Emergence rate
Steptoe	87.4	4,197	50.7	28	6	slow
Advance	82.1	3,940	52.0	27	6	rapid
ORSM 8413	79.4	3,809	54.2	21	2	rapid
ORSM 8618	79.3	3,806	53.7	24	2	slow
ORSM 8423	78.8	3,780	51.7	23	6	medium
ORSM 8411	77.5	3,721	53.9	26	2	slow
ORSM 8424	76.3	3,664	53.3	23	6	slow
ORSM 8619	75.0	3,599	52.4	24	2	rapid
ORSM 8622	73.7	3,536	53.3	23	2	medium
ORSM 8625	71.6	3,436	51.9	19	2	slow
Andre	70.9	3,404	53.8	24	2	rapid
ORSM 8616	70.6	3,390	51.9	23	6	slow
ORSM 8408	70.6	3,388	52.8	25	2	medium
2 MAYT-2-6	70.2	3,372	51.7	21	2	medium
2 MAYT-1-9	69.6	3,342	53.3	17	2	medium
Klages	69.5	3,338	54.0	26	2	medium
ORSM 8623	68.1	3,271	53.4	18	2	medium
2 MAYT-1-10	67.7	3,252	51.1	19	2	medium
ORSM 8624	61.9	2,971	53.3	20	2	slow
2 MAYT-1-12	61.3	2,942	51.1	21	2	medium
2 MAYT-1-15	60.7	2,913	50.4	22	2	medium
Morex	59.8	2,873	52.4	31	6	slow
2 MAYT-1-16	59.6	3,863	51.0	21	2	slow
ORSM 8626	59.3	2,845	50.9	21	2	slow
Mean	70.9	3,402	52.4	23		
LSD, 5%	8.5	407	0.5			
1%	11.3	541	0.7			
C.V, %	8.5	8.5	0.6			

Notes:

1. The barleys were seeded February 27 in a Central Point sandy loam soil.
2. A total of 8 inches of irrigation water was applied in three irrigations during the season using overhead sprinklers.
3. Kernel rows refers to either two or six rows of kernels per head.
4. Emergence rate is the relative spped of emergence rated when the barleys were barely emerged.
5. Data are means of four replications.

SPRING WHEAT PRODUCTION TEST, 1987 SEASON
Southern Oregon Experiment Station, Medford

Most wheat grown in southern Oregon is of the soft white winter class, best represented by the varieties Stephens, Hill 81, and Yamhill. They are capable of using winter and spring rainfall effectively and are usually grown without irrigation. There is some spring wheat grown, however, especially if it can be seeded in February or no later than March 15. Grain yields are generally lower than for the winter wheats.

Hard wheats have been receiving attention lately, particularly of the hard red spring class, although there is interest in hard white wheats, too. This report summarizes data from a spring wheat planting that included nine soft white, seven hard red, and two hard white wheats. The wheats were all from the OSU cereals project except for NK 751, a hard red spring type used as a reference variety.

Methods and Materials

The experimental area was fertilized with 72 pounds of nitrogen per acre as ammonium sulfate during seedbed preparation. The soil was Central Point sandy loam, and the previous crop was soybeans. The wheats were seeded February 25. The planting was irrigated three times, with a total of 8 inches of water applied.

Results

The wheats emerged well and stands were excellent. All the wheats were bearded (awned) types. There was no lodging among any of the entries.

Grain yields ranged from 70 to 95 bushels per acre, higher than the usual for spring wheats in previous tests. Several of the hard red wheats were among the highest yielders.

Test weights averaged 59.7 pounds per bushel, ranging from 57.4 to 63.3 pounds. All but the reference variety, among the hard red entries, had test weight values of at least 60 pounds per bushel. Depending upon the class of wheat, a test weight value of 59 or 60 pounds is required for wheat to be in the number one grade.

The data indicate progress is being made in developing hard wheats that might be suitable for production in the area. Hard wheats command higher prices than the soft whites presently grown, and the export market is shifting in the direction of a greater demand for hard types.

Data are shown in the following table.

SPRING WHEAT YIELD DATA, 1987 SEASON

Southern Oregon Experiment Station, Medford

Entry	Grain yield Bu/A	Grain yield Lbs/A	Test wt, lbs/bu	Height, inches	Class	OSU number
SPHRE 11	95.2	5,712	63.3	33	hard red	8512
SPHRE 15	93.7	5,619	60.1	33	hard red	8422
SPHRE 14	93.2	5,591	60.0	35	hard red	8418
SPSWE 17	88.9	5,333	61.3	37	soft white	8763
SPHRE 16	87.5	5,249	59.6	36	hard white	8413
SPSWE 15	87.3	5,241	58.7	36	soft white	8742
SPSWE 14	85.0	5,103	59.1	35	soft white	8716
SPHRE 10	84.8	5,086	60.0	36	hard red	8511
SPSWE 9	84.0	5,038	58.8	34	soft white	8755
SPSWE 16	83.1	4,988	58.8	33	soft white	8738
SPSWE 11	80.5	4,830	57.4	39	soft white	8770
SPSWE 10	79.4	4,767	57.7	40	soft white	8703
NK 751	76.3	4,578	57.6	36	hard red	-
SPHRE 17	74.4	4,467	58.6	39	hard white	8416
SPHRE 13	73.8	4,426	61.0	36	hard red	8415
SPHRE 9	72.5	4,351	60.0	36	hard red	8510
SPSWE 12	72.3	4,341	60.5	39	soft white	8772
SPSWE 13	69.9	4,194	62.7	39	soft white	8769
Mean	82.3	4,940	59.7	36		
LSD, 5%	10.7	644	1.2			
1%	14.3	858	1.5			
C.V., %	9.2	9.2	1.4			

Notes:

1. The wheats were seeded February 25 in a Central Point sandy loam soil.
2. The experimental area was fertilized during seedbed preparation with 72 pounds of nitrogen and 82 pounds of sulfur per acre as ammonium sulfate.
3. A total of 8 inches of irrigation water was applied in three irrigations using overhead sprinklers.
4. Data are means of four replications

Field Corn

FIELD CORN HYBRIDS FOR SILAGE AND CORN, 1987 SEASON
Southern Oregon Experiment Station, Medford

Field corn harvested for silage produces more total digestable nutrients per acre than any crop grown in the area. Silage from corn forms an important part of dairy and beef cattle rations in southern Oregon. It is important for a grower to select varieties that have the potential to use the growing season efficiently and to produce 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 well in the area.

The soil in the experimental area was a deep, well-drained Central Point sandy loam. The crop grown in 1986 was cuphea, a promising new oilseed plant. For the corn trial, the field was fertilized with 48 N, 50 P_2O_5, 36 K_2O, and 75 S per acre during seedbed preparation. An additional 115 pounds of nitrogen per acre was applied June 3 as ammonium sulfate, surface-banded along one side of each row. The 16 field corn hybrids were seeded between April 25 and April 27. The row spacing was 30 inches, and seeds were placed 7.5 inches apart in the row for a final population of 27,878 plants per acre. Irrigation was done with overhead sprinklers to apply a total of 24 inches of water during the season.

The corn emerged well, and good stands were obtained. Early season growth was rapid because of the relatively warm weather in May and June. July temperatures were moderated by several cloudy and rainy days, while August and September were unusually hot and dry, which advanced maturity dates. The earliest-maturing corns were sampled for grain and silage-stage yields August 31; the final sampling was done September 11, the average starting date most years. Days from seeding to harvest ranged from 128 to 139, compared to the usal range of 132 to 145 days. Using a base minimum of 50°, and considering temperatures between 50 and 86°, growing degree days or heat units totaled from 2,044 to 2,257 for the growth periods.

Results

Differences were found among varieties for each of the parameters measured. Silage-stage yields were high with many corns. Three exceeded 11 tons of dry matter per acre, while eight others exceeded 10 tons per acre. The other five were earlier-maturing, shorter-season types that might be considered in double cropping systems or for production in areas with shorter growing seasons and fewer heat units.

Shelled corn yields were determined from the silage-stage samples taken at an early to medium dent stage of maturity. Yields of three entries exceeded 10,000 pounds per acre at 15% moisture.

The grain-to-silage ratios averaged 240 pounds. This measure is an approximation of the pounds of shelled corn equivalent, 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.

This shows that tall-growing, high-yielding silage type corns are capable of combining high tonnages with high yields of grain. Most varieties suggested for production in the southern Oregon area are of that type.

Test weights per bushel averaged 52.9 pounds, less than the standard 56 pounds for fully-mature corn, because the samples were taken at silage-stage maturity. Shelling percents of the air-dry corn averaged 78.4, close to the standard 80% for fully mature corn. All the corns had well-developed ears.

Plant heights were moderately tall with few extremes. There was no lodging before harvest. Spider mites, which cause premature drying of leaves and contribute to lodging, were present in moderate number, but were increasing as harvest was completed because of the hot, dry weather.

Data are shown in the following table.

FIELD CORN HYBRIDS, SILAGE-STAGE AND GRAIN YIELD DATA, 1987 SEASON

Southern Oregon Experiment Station, Medford

Entry	Silage-stage yield, tons per acre at moisture contents			Shelled corn, 15% moisture			Air-dry data		Height	
	Dry	70%	72%	Bu/acre	Lbs/acre	Lbs/T silage	Shelling percent	Test wt, lbs/bu	ft	in
Pioneer Br 3377	11.45	38.2	40.9	190.9	10,691	261	79.3	51.7	11	2
Cenex 2116	11.29	37.6	40.3	168.7	9,448	234	79.5	53.7	12	1
Pioneer Br 3324	11.00	36.7	39.3	156.2	8,749	223	75.6	53.2	11	4
XC-865	10.88	36.3	38.9	170.3	9,536	245	80.0	53.2	12	1
Pioneer Br 3295	10.87	36.2	38.8	159.2	8,915	230	75.2	55.1	11	4
Pioneer Br 3389	10.83	36.1	38.7	169.9	9,514	246	77.7	59.2	10	6
SS-71	10.63	35.4	37.9	160.4	8,983	237	80.3	53.5	11	0
PX 9540	10.61	35.4	37.9	181.3	10,151	268	81.4	54.9	10	3
PX 74	10.61	35.4	37.9	181.7	10,178	269	80.5	51.6	10	8
G-4507	10.61	35.4	37.9	167.7	9,392	248	79.8	49.6	10	8
XC-665	10.17	33.9	36.3	153.0	8,570	236	75.1	50.8	11	3
SS-607	9.76	32.5	34.8	133.3	7,462	214	75.9	50.0	11	0
Heidi	9.65	32.2	34.5	144.6	8,100	235	80.0	49.4	10	7
Idahybrid 550	9.58	31.9	34.2	152.5	8,541	250	79.0	55.4	9	6
SS-61	9.43	31.4	33.7	127.5	7,139	212	76.2	48.1	10	8
Kristine	9.30	31.0	33.2	136.6	7,647	230	78.8	56.8	9	1
Mean	10.42	34.7	37.2	159.6	8,939	240	78.4	52.9	10	10
LSD, 5%	0.79	2.6	2.8	17.4	975	31		2.2		
1%	1.06	3.5	3.8	23.2	1,297	41		2.9		

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 at a moisture content of approximately 12%.
3. Data are means of four replications.

FIELD CORN SILAGE AND GRAIN PRODUCTION, 1987 SEASON
Crouse Dairy, Grants Pass

Even though the field corn production areas of Jackson and Josephine counties are separated by as little as 30 miles, growing conditions differ. Production tests in both counties provide useful information about varietal adaptation. This report presents data from a trial conducted on the Crouse Dairy, 7 miles west of Grants Pass on bottom land along the Rogue River.

The field had a long history of silage corn production, A crop of annual ryegrass was plowed under for green manure in the spring. Commercial fertilizer was applied during seedbed preparation, and liquid manure from a lagoon was applied with the irrigation water. Sixteen field corn hybrids were seeded May 15 on 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 28,878 plants per acre.

The corns were all harvested September 29, 137 days after seeding and before frost. The maturities were quite advanced for silage corn. Their harvest moistures averaged 65.7%, indicating considerable drying before harvest because of the hot, dry weather.

Results

Silage-stage yields were quite high; nine corns yielded over 10 tons of dry matter per acre. The trial mean was 9.69 tons per acre. The moisture at harvest ranged from 53% for early-maturing Kristine to 72% for later-maturing XC-865 and Pioneer Brand 3295. Field corn is generally harvested for silage in the area at moisture contents ranging from 72 to 75%.

Grain samples were obtained at silage-stage sampling on September 29. The ears of most entries were at the dent stage of maturity, well-filled, but of smaller size than in previous tests at the same location. Shelling percents of the air-dry ears averaged 77.9%, slightly below the standard 80%. Test weights averaged 54.4 pounds per bushel, nearly equal to the 56 pounds of fully-matured corn. Yields of shelled corn ranged from 126 to 186 bushels per acre with a mean of 159 bushels.

The grain-to-silage ratio is an approximation of the pounds of shelled corn equivalent, at 15% moisture, contained in each ton of silage-stage material at 72% moisture. The mean ratio for the varieties in 1987 was 260, although the individual values were closely grouped. This indicates that adapted varieties of tall, full-season, silage type corns capable of producing high tonnages of silage in combination with high grain yields are available for planting in the area.

Data are shown in the following table.

FIELD CORN HYBRID SILAGE AND GRAIN DATA, CROUSE DAIRY, GRANTS PASS, 1987 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		Moisture % at harvest
	Dry	70%	72%	Bu/A	Lbs/A	Lbs/T silage	Shelling percent	Test wt, lbs/bu	
Pioneer Br 3389	11.06	36.9	39.5	177.7	9,950	252	74.6	59.1	66.0
SS-71	11.02	36.7	39.4	185.9	10,409	264	79.8	55.2	66.6
PX 74	10.94	36.5	39.1	178.9	10,019	265	76.4	48.7	68.6
XC-665	10.78	35.9	38.5	162.8	9,118	237	75.2	54.4	64.9
Cenex 2116	10.37	34.6	37.0	170.5	9,550	258	74.9	54.6	64.1
XC-865	10.31	34.4	36.8	145.1	8,126	221	73.8	52.0	72.0
G-4507	10.16	33.9	36.3	173.0	9,690	267	76.5	50.5	65.0
SS-607	10.07	33.6	36.0	149.2	8,353	232	77.1	53.2	67.3
Pioneer Br 3295	10.02	33.4	35.8	171.8	9,621	269	75.8	55.3	72.2
Pioneer Br 3377	9.75	32.5	34.8	164.7	9,225	265	75.3	53.1	66.6
PX 9540	9.68	32.3	34.6	152.9	8,563	247	82.4	57.2	64.7
Pioneer Br 3324	9.59	32.0	34.3	168.8	9,451	276	78.3	56.3	68.9
SS-61	8.38	27.9	29.9	145.0	8,118	272	79.0	52.7	67.5
Idahybrid 550	7.80	26.0	27.9	125.6	7,032	252	84.9	56.8	60.1
Kristine	7.63	25.4	27.3	135.5	7,589	278	83.6	58.1	53.2
Heidi	7.51	25.0	26.8	141.1	7,902	295	79.5	52.8	63.4
Mean	9.69	32.3	34.6	153.3	8,921	260	77.9	54.4	65.7
LSD, 5%	N.S.	N.S.	N.S.	33.4	1,870	N.S.	5.7	4.3	
C.V., %	11.9	11.9	11.9	9.8	9.8	7.5	3.5	3.7	

Notes:

1. Seed sources: Cenex; SS = Crookham Company; Pioneer Brand and XC = Pioneer Hi-Bred Int., Inc.; PX = Northrup King Seed Company; G = Funk Seed Company; and Heidi and Kristine = Beta Seed Company.
2. Pounds of shelled corn per ton of silage-stage material is calculated on shelled corn at 15% moisture and silage-stage material at 72% moisture.

Forage Production

ALFALFA FORAGE PRODUCTION TEST, 1987 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 producers for their dairy and beef cattle, horses, sheep, and goats. It is a perennial that should remain productive at least 5 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 and persistence 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 enties.

Twenty-nine alfalfas obtained from nine seed companies, one Oregon variety, 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 seeding year. The first yield data were taken in 1984, when four harvests were made.

For the 1987 season, simazine (Princep) was applied October 24, 1986 at 1.2 pounds of active ingredient per acre for weed control. The experimental area was fertilized February 6 with 80 P_2O_5, and 80 K_2O, and 36 S per acre. A total of 19 inches of water was applied in five irrigations between June 1 and August 18. From January 1 until the first harvest on May 18, 8.81 inches of precipitation was recorded, and 2.68 inches was recorded between the first and fourth harvests. Since winter temperatures were relatively mild, growth was underway by February 20.

The first cutting was made May 18 when most alfalfas were at the late-bud stage of maturity. This was the earliest first-cutting date in more than 25 years of alfalfa trials on the station. Yields were high, ranging from 2.27 to 3.27 tons of dry forage per acre, averaging 2.98 tons or 34% of the mean seasonal total.

Second-cutting yields on June 29 averaged 2.14 tons of dry forage per acre after a regrowth period of 42 days. This was 25% of the mean seasonal total, the same as other second cuttings.

Third-cutting yields on August 10 averaged 2.06 tons of dry forage per acre or 24% of the mean seasonal total after a regrowth period of 42 days. This cutting benefited from the only significant rainfall of the summer, 1.63 inches over a 5-day period in July.

There was a 43-day regrowth interval between the third and fourth harvests. Yields were high, averaging 1.49 tons of dry forage per acre or 17% of the mean seasonal total. Fourth cuttings usually average about 12% of the mean seasonal total.

Seasonal totals were high, averaging 8.67 tons of dry forage per acre, with a range of 7.91 to 9.39 tons per acre. Lahontan and Vernal, two reference varieties, performed well. Significant yield differences were found, although they are expected to be greater in the fifth production year. Stands of some alfalfas show some thinning, but they were still adequate for hay production in 1987.

Data are shown in table 1.

YIELD DATA, ALFALFAS SEEDED IN 1983
Southern Oregon Experiment Station, Medford, 1987 Season

Entry	Yield of dry forage, tons per acre: 1st cut May 18	2nd cut June 29	3rd cut Aug 10	4th cut Sept 22	Season total	Total 1984-87	Seed source
Lahontan	3.27	2.26	2.25	1.61	9.39	34.72	USDA
DS 215	3.18	2.38	2.14	1.51	9.21	35.03	DS
WL 221	3.25	2.24	2.16	1.51	9.16	34.46	WL
High Phy	3.22	2.32	2.03	1.57	9.14	34.35	Cenex
Peak	3.12	2.32	2.17	1.51	9.12	35.05	Union
Brand 360	2.93	2.31	2.29	1.58	9.11	34.72	GW
Pioneer Br 545	3.06	2.11	2.28	1.62	9.07	34.01	Pioneer
WL 316	3.05	2.25	2.01	1.59	8.90	33.71	WL
DS 214	3.15	2.15	2.04	1.53	8.87	34.71	DS
Pioneer Br 532	3.15	2.16	2.15	1.37	8.83	34.00	Pioneer
Vernal	3.18	2.18	2.08	1.38	8.82	33.39	USDA
Magnum	3.05	2.29	1.97	1.47	8.78	33.35	DS
DS 222	2.98	2.18	2.08	1.54	8.78	34.22	DS
DS 216	2.99	2.15	2.12	1.52	8.78	33.64	DS
Apollo II	3.06	2.27	2.00	1.40	8.73	33.66	AP
Agate	2.92	2.31	2.06	1.43	8.72	32.80	USDA
Maxim	2.95	2.15	2.14	1.48	8.72	32.81	WL
Futura	3.17	2.10	2.06	1.45	8.68	33.66	DS
Spectrum	3.16	2.07	1.95	1.45	8.63	30.03	Cenex
NK 80338	2.84	2.24	1.98	1.54	8.60	33.25	NK
Armor	2.90	2.07	2.09	1.50	8.56	33.06	AP
Blazer	3.00	2.13	2.03	1.39	8.55	33.56	Union
WL 220	2.93	2.11	1.99	1.50	8.53	33.42	WL
WL 312	2.97	2.01	2.09	1.44	8.51	33.77	WL
Pioneer Br 526	2.87	2.06	2.03	1.46	8.42	33.07	Pioneer
Classic	2.99	1.94	2.01	1.45	8.39	33.02	Cenex
Baron	2.60	2.11	2.06	1.58	8.35	33.02	AP
Vancor	2.97	1.99	1.91	1.35	8.22	32.57	NK
Drummor	2.95	1.92	1.93	1.28	8.08	32.18	NK
Talent	2.54	1.84	1.84	1.75	7.97	30.18	JGC
N-27	2.27	2.05	2.12	1.49	7.93	32.76	AP
Pioneer Br 581	2.64	1.89	1.84	1.54	7.91	31.67	Pioneer
Mean	2.98	2.14	2.06	1.49	8.67	33.46	
LSD, 5%	0.36	N.S.	0.25	0.16	0.69	1.63	
1%	0.48	-	N.S.	0.21	0.92	2.16	
C.V., %	8.6	11.8	8.6	7.7	5.7	3.5	

Notes:

1. Irrigated five times between June 1 and August 21 with a total of 19 inches of water applied using overhead sprinklers.
2. Seed sources: AP = AgriPro, Ames, IA; Cenex = Cenex Western Commodities, Salem, OR; DS = Dairyland Seed Co., West Bend, WI; NK = Northrup King Co., Woodland, CA; Pioneer = Pioneer Hi-Bred Int., Inc., Modesto, CA; GW = Greenway Seed Co., Nampa, ID; JGC = Josephine Growers Co-op, Grants Pass, OR; Union = Union Seed Co., Nampa, ID; and WL = WL Research, Inc., Warden, WA.

ALFALFA FORAGE TEST, 1987 SEASON, 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 them 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, the station can evaluate some of those most likely to be adaptable to the complex of growth conditions in the area. A trial to help accomplish this was established in 1986; this planting included 36 alfalfas in a forage production test that included seeds from 10 companies.

For the 1987 season, the experimental area was fertilized with 80 P_2O_5, 80 K_2O, and 36 S per acre on February 6. The young, vigorous alfalfa stands competed well with weeds so that the growth was nearly weed-free. A total of 19 inches of water was applied in five irrigations between June 1 and August 18. From January 1 until the first cutting, a total of 8.81 inches of precipitation was recorded; between the first and fourth cuttings, 2.68 inches was recorded.

Results

The first harvest was on May 20, at least a week earlier than alfalfas are usually cut on the station. Yields of dry forage ranged from 2.85 to 3.53 tons per acre, averaging 3.26 tons or 37% of the mean seasonal total. All the alfalfa had full, vigorous stands.

The second harvest was on July 1, after a regrowth period of 42 days. Yields of dry forage ranged from 1.93 to 2.50 tons per acre, with an average of 2.19 tons or 25% of the mean seasonal total. The third cutting was made August 12 after a regrowth period of 42 days. The alfalfa benefited from the only significant rainfall of the summer, 1.63 inches in July. Yields of dry forage were very similar to those of the second cutting, ranging from 1.93 to 2.51 tons per acre. The average of 2.11 tons per acre was 24% of the mean seasonal total.

The fourth and final harvest of the season was on September 24 after a regrowth period of 43 days. Yields of dry forage were closely grouped, ranging from 1.18 to 1.43 tons per acre, averaging 1.32 tons. This was 15% of the mean seasonal total. The growth was especially leafy with soft stems, typical of fourth-cutting alfalfa in the area.

Seasonal totals ranged from 8.11 to 9.42 tons of dry forage per acre. Reference variety Lahontan was at the low end of the yield scale, somewhat typical of its performance in previous tests. Because of its stand persistence, it usually moves up the yield scale in succeeding years. Vernal, the other reference variety, often displays the same performance characteristic. Greater differences in stand persistence and forage yields are expected among the entries in succeeding years.

Yields are presented by cuttings, by season totals, and by cumulative 1986-1987 totals in table 1.

YIELD DATA, ALFALFAS SEEDED IN 1986
Southern Oregon Experiment Station, Medford, 1987 Season

Entry	Yield of dry forage, tons per acre						Seed source
	1st cut May 20	2nd cut July 1	3rd cut Aug 12	4th cut Sept 24	Season total	Total 1986-87	
AP 46	3.53	2.34	2.21	1.34	9.42	13.46	AP
Sparta	3.22	2.30	2.51	1.39	9.42	13.18	Union
Pioneer Br 5444	3.35	2.28	2.38	1.39	9.40	13.22	Pioneer
Vernema	3.41	2.33	2.21	1.30	9.25	13.07	IAREC
Pioneer Br 5432	3.17	2.50	2.16	1.39	9.22	12.84	Pioneer
WL 832	3.46	2.26	2.19	1.30	9.21	13.23	WL
85-5-1	3.43	2.28	2.20	1.27	9.18	13.09	FFR
Magnum +	3.45	2.20	2.17	1.31	9.13	13.03	DS
Champ	3.20	2.33	2.19	1.41	9.13	13.03	Union
DS 503	3.37	2.26	2.08	1.39	9.10	13.04	DS
AP 47	3.38	2.40	2.00	1.27	9.05	12.74	AP
Shenandoah	3.24	2.28	2.10	1.42	9.04	13.15	GP
Centurion	3.43	2.17	2.12	1.32	9.04	12.77	CW
NK 83632	3.38	2.23	2.09	1.32	9.02	12.82	NK
Pioneer Br 532	3.29	2.11	2.26	1.34	9.00	12.80	Pioneer
WL 320	3.18	2.39	2.08	1.33	8.98	12.88	WL
Apollo II	3.47	2.19	1.95	1.34	8.95	12.75	AP
MPDR II	3.34	2.21	2.13	1.25	8.93	12.97	FFR
Blazer	3.31	2.16	2.15	1.30	8.92	12.85	Union
Arrow	3.24	2.20	2.16	1.29	8.89	12.55	AP
Cimarron	3.34	2.12	2.06	1.37	8.89	12.83	GP
Commander	3.22	2.40	1.97	1.27	8.86	12.91	NK
Wrangler	3.28	2.30	1.97	1.24	8.79	12.35	Andrews
Vernal	3.27	2.20	1.97	1.32	8.76	12.36	USDA
NK 83631	3.19	2.12	2.18	1.25	8.74	12.43	NK
Dynasty	3.15	2.00	2.25	1.34	8.74	12.64	DS
W-45	3.28	1.96	2.08	1.36	8.68	12.01	IAREC
DS 647	3.30	2.13	1.93	1.32	8.68	12.47	DS
NK 83630	3.21	2.13	1.94	1.30	8.58	12.35	NK
Oneida	3.20	2.08	2.09	1.18	8.55	12.15	Cornell
Excalibur	3.17	2.16	1.96	1.21	8.50	11.96	CW
WL 316	3.12	1.97	2.09	1.31	8.49	12.11	WL
Pioneer Br 545	3.05	2.07	2.06	1.30	8.48	12.08	Pioneer
AP 49	3.05	1.93	1.97	1.43	8.38	12.10	AP
Pioneer Br 581	2.87	1.95	1.96	1.34	8.12	11.54	Pioneer
Lahontan	2.85	1.94	2.02	1.30	8.11	11.47	USDA
Mean	3.26	2.19	2.11	1.32	8.88	12.65	
LSD, 5%	0.24	0.27	0.24	N.S.	0.52	0.82	
1%	0.32	0.36	0.32	-	0.69	1.09	
C.V., %	5.3	8.9	8.3	7.3	4.2	4.6	

Notes:

1. The alfalfas were seeded April 10, 1986 in a Central Point sandy loam soil.
2. Seed sources: Andrews = Andrews Seed Co., Ontario, OR; AP = Agripro, Ames, IA; Cornell = Cornell Univ. Agric. Exp. Station, Geneva, NY; CW = Cal-West Seeds, Woodland, CA; DS = Dairyland Seeds, Clinton, WI; GP = Great Plains Research, Inc., Stillwater, OK; IAREC = Irrigated Agr. Research and Extension Center, Prosser, WA; NK = Northrup King Seed Co., Woodland, CA; Pioneer = Pioneer Hi-Bred Int., Inc., Modesto, CA; Union = Union Seed Co., Nampa, ID, and WL = WL Research, Inc., Warden, WA.

WESTERN REGIONAL ALFALFA UNIFORM TEST, 1987 SEASON

At the Western Alfalfa Improvement Conference (1984), it was agreed to establish alfalfa trials at several locations in nine western states. The same eight varieties would be tested at each location to obtain information on geographic adaptation. Seeds would be from the same 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 plantings.

The alfalfas were seeded April 10, 1986. Stands were excellent, and three harvests were made in 1986. Total yields of dry forage ranged from 3.16 tons per acre for Lahontan to 4.03 tons for Mesilla, a relatively non-dormant variety.

For the 1987 season, the planting area was fertilized with 80 P_2O_5, 80 K_2O, and 36 S per acre on February 6. A total of 19 inches of water was applied in five irrigations between June 1 and August 18. From January 1 until the first cutting, a total of 8.81 inches of precipitation was recorded; between the first and fourth cuttings, 2.68 inches was recorded.

Results and Discussion

The first harvest was on May 19, at least a week earlier than alfalfas are usually cut on the station. Yields of dry forage ranged from 2.59 tons per acre for Lahontan to 3.09 tons for Saranac AR. The first cutting yields averaged 34% of the mean seasonal total.

The second harvest was on June 30 after a regrowth period of 42 days. Yields of dry forage ranged from 1.95 to 2.28 tons per acre, averaging 2.13 tons or 26% of the mean seasonal total.

The third harvest was made August 11 after a regrowth period of 42 days. Yields were slightly lower than in the second harvest for most entries, averaging 1.94 tons of dry forage per acre or 23% of the mean seasonal total.

The final harvest of the season was on September 23 after a regrowth period of 43 days. Yields of dry forage were much lower than for the other three cuttings, ranging from 1.06 tons per acre for Spredor II to 1.53 tons for Mesilla. The mean was 1.38 tons or 17% of the mean seasonal total.

Season total yields of dry forage ranged from 7.86 tons per acre for Spredor II to 8.67 tons for Ranger. The mean was 8.31 tons per acre, a near-average value for a vigorous alfalfa stand in its first full production year on an irrigated Central Point sandy loam soil. Greater differences in forage yields are expected in the next 2 years as stand persistence becomes a factor.

Data are shown in the following table for 1987 and as cumulative 1986-87 totals.

WESTERN REGIONAL ALFALFA TEST DATA, 1987 SEASON

Southern Oregon Experiment Station, Medford

Entry	Dry forage, tons per acre					
	1st cut May 19	2nd cut June 30	3rd cut Aug 11	4th cut Sept 23	Total, 1987	Total, 1986-87
Ranger	3.06	2.20	1.96	1.45	8.67	12.42
Saranac AR	3.09	2.28	1.94	1.31	8.62	12.55
Mesilla	2.80	2.28	1.94	1.53	8.55	12.58
Vernal	2.94	2.21	1.98	1.33	8.46	12.40
CUF 101	2.74	2.06	1.95	1.47	8.22	12.06
Lahontan	2.59	2.06	2.05	1.44	8.14	11.30
Moapa 69	2.61	1.95	1.96	1.47	7.99	11.72
Spredor II	3.07	2.01	1.72	1.06	7.86	11.38
Mean	2.86	2.13	1.94	1.38	8.31	12.05
LSD, 5%	0.19	0.23	N.S.	0.11	0.48	0.71
1%	0.26	N.S.	-	0.14	0.66	0.97
C.V., %	4.5	7.3	7.9	5.2	4.0	4.0

Notes:

1. The alfalfas were seeded April 10, 1986 in a Central Point sandy loam soil.
2. The experimental area was fertilized February 6, 1987 with the following pounds of materials per acre: 80 P_2O_5, 80 K_2O, and 36 S.
3. A total of 19 inches of water was applied in five irrigations between June 1 and August 18.
4. Data are means of four replications.

FORAGE GRASSES - ORCHARDGRASSES AND TALL FESUCES
Southern Oregon Experiment Station, Medford

Forage grasses harvested for hay, green chop or as pasture occupy an important place on irrigated land in southern Oregon. They are usually seeded in mixtures of two or more grasses along with a white clover or with birdsfoot trefoil. Orchardgrass and tall fescue are two of the three grasses most often seeded. The third is perennial ryegrass. This report presents information and yield data about a seeding made in April 1986 that included 10 orchardgrasses and 8 tall fescues.

Materials and Methods

The experimental area was fertilized with 500 pounds of 13-13-13-9 mixture per acre during final seedbed preparation. The grasses were broadcast-seeded April 8, 1986 at 9 pounds per acre for the orchardgrasses and 12 pounds per acre for the tall fescues.

The grasses were irrigated with overhead sprinklers. An application of 40 pounds of nitrogen per acre was made September 2 as ammonium sulfate. The grasses were mowed several times in 1986, but no yield data were taken during the seedling year. Diruon (Karmex) was applied to the grasses in November at 2.4 pounds of active ingredient per acre for weed control.

For the 1987 season, the grasses were fertilized with 80 P_2O_5, 80 K_2O, and 36 S per acre February 11, and 60 N and 67 S per acre were applied March 11. The first harvest was on April 23. A total of six harvests were made during the season at approximately 30-day intervals, with the final one on September 30. An application of 36 N per acre was made June 2, and 60 N was broadcast July 29. During the season, a total of 22 inches of water was applied in eight irrigations.

Results and Discussion

The fescues began rapid growth in early March, although they were never fully dormant during the winter. First-cutting yields on April 23 were high, ranging from 1.82 to 2.89 tons of dry forage per acre. Fawn, a reference variety, and Forager were the highest in yield.

Forage yields at the second harvest on May 22 were much less than in the first harvest, averaging 0.52 ton of dry forage per acre. While there were differences among entries, the range was only from 0.43 to 0.59 ton per acre. Third and fourth cuttings made June 24 and July 27 yielded only slightly more than the second harvest.

Fifth-cutting yields were much higher than those of the three previous cuttings, showing a positive response to the 60 N applied July 29. Differences among entries were quite small.

The sixth and final harvest of the season on September 30 was not highly productive. Yields averaged only 0.32 ton of dry forage per acre, with all entries closely grouped about the mean.

Total yields for 1987 were quite high, averaging 5.45 tons of dry forage per acre. Fawn, Forager, and experimental TF85-STA were highest in yield. Barcell and Tempo, a low-growing turf-type, were lowest in yields. Alta yielded quite well. Seeds of two fescues, TF85-STA and Safe, were reported to be free of the endophyte fungus that lowers the rate of gain of cattle eating the forage.

Data are shown in table 1.

The orchardgrasses began rapid growth near the end of March. Orchardgrass becomes almost completely dormant during the winter in southern Oregon. First cutting yields on April 23 averaged 1.67 tons of dry forage per acre, 0.64 ton less than the tall fescues.

The next three harvests, made May 22, June 24, and July 24 averaged 0.50, 0.73, and 0.67 ton of dry forage per acre, respectively. Yields were rather closely grouped except for Berber, whose yield was less than for the other entries. The higher yields at the fifth harvest on August 25 reflected responses to the 60 N applied July 29. Orchardgrass was shown to be very responsive to N in a previous test. Forage yields at the sixth and final harvest on September 30 were low, averaging only 0.26 ton per acre.

Season total yields for the 10 orchardgrasses were quite high, averaging 4.92 tons of dry forage per acre. Most entries were closely grouped in yield except for Rancho and Berber, the two that were lowest in yield.

Data for the orchardgrasses are shown in table 2.

Orchardgrasses produce well in southern Oregon during the heat of July and August if they receive nitrogen fertilizers and are irrigated. While N was applied in March, on June 2, and on July 29, additional applications around July 1 and September 1 should have been of benefit. Tall fescues usually show more heat stress and summer dormancy than the orchardgrasses, although this did not occur in 1987. July rainfall and regular irrigations benefited both grasses. Figure 1 shows the yield relationships between the two grasses for each of the six harvests. Yield patterns were quite similar except at the first harvest, when the fescues yielded more forage (they started growth earlier than the orchardgrasses).

Table 1. TALL FESCUE FORAGE YIELD DATA, 1987 SEASON, MEDORD

Entry	Yield of dry forage, tons per acre						
	1st cut 4/23	2nd cut 5/22	3rd cut 6/24	4th cut 7/27	5th cut 8/25	6th cut 9/30	Season total
Alta	2.57	0.43	0.45	0.61	1.08	0.33	5.48
Barcell	1.82	0.59	0.56	0.54	0.88	0.32	4.71
Fawn	2.77	0.53	0.55	0.58	1.12	0.30	5.85
Forager	2.89	0.48	0.55	0.76	1.15	0.34	6.18
Kenhi	2.13	0.58	0.62	0.73	1.12	0.33	5.51
Safe	1.94	0.53	0.49	0.62	1.24	0.30	5.13
Tempo	1.95	0.58	0.45	0.56	1.00	0.29	4.84
TF85-ST-A	2.41	0.48	0.79	0.78	1.09	0.35	5.89
Mean	2.31	0.52	0.56	0.65	1.08	0.32	5.45
LSD, 5%	0.10	0.10	N.S.	0.15	N.S.	N.S.	0.39
C.V., %	11.9	13.6	29.5	15.8	18.2	20.1	4.9

Table 2. ORCHARDGRASS FORAGE YIELD DATA, 1987 SEASON, MEDFORD

Entry	Yield of dry forage, tons per acre						
	1st cut 4/23	2nd cut 5/22	3rd cut 6/24	4th cut 7/27	5th cut 8/25	6th cut 9/30	Season total
Able	1.47	0.58	0.65	0.71	1.12	0.28	4.81
Berber	1.38	0.32	0.47	0.59	1.30	0.32	4.37
Comet	1.57	0.64	0.76	0.66	1.16	0.26	5.05
Crown	1.90	0.49	1.08	0.63	0.80	0.20	5.10
Hallmark	1.99	0.47	0.67	0.66	1.18	0.28	5.26
Hawk	2.01	0.39	1.10	0.66	0.84	0.19	5.19
Paiute	1.80	0.45	0.60	0.72	1.21	0.28	5.05
Palestine	1.82	0.36	0.62	0.65	1.08	0.28	4.81
Potomac	1.70	0.48	0.74	0.67	1.12	0.27	4.98
Rancho	1.07	0.78	0.62	0.72	1.08	0.29	4.56
Mean	1.67	0.50	0.73	0.67	1.09	0.26	4.92
LSD, 5%	0.36	0.10	0.18	N.S.	0.25	0.06	0.50
C.V., %	14.9	13.8	17.3	20.9	15.8	16.1	7.0

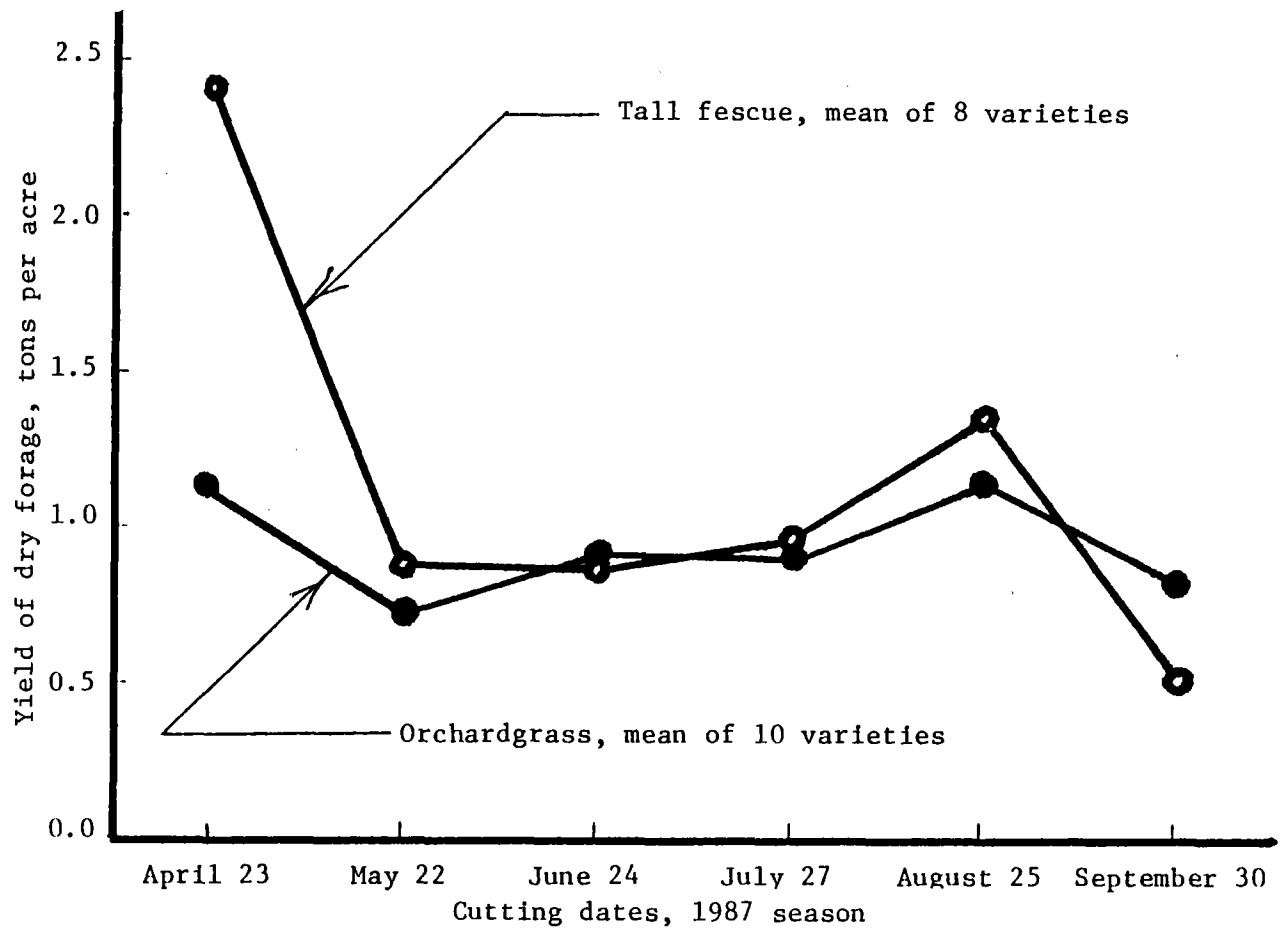

Figure 1. The mean yield of tall fescue and orchardgrass varieties as affected by cutting dates.

FORAGE CROP MIXTURES, 1987 SEASON
Southern Oregon Experiment Station, Medford

Forage grasses and legumes occupy sizable acreages of irrigated land in southern Oregon. They are harvested by grazing animals and by cutting the crops for hay, silage, or green chop 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 on rough areas in parks and airfields, which often have limited or no irrigation.

Most forage plantings, other than alfalfas, are seeded as mixtures in southern Oregon. Such grasses as tall fescue, orchardgrass, and perennial ryegrass and Ladino and New Zealand white clovers are widely used in simple and complex combinations. This report presents information and yield data on a test established in 1986 using eight forage mixtures.

Methods and Materials

The experimental area was fertilized during seedbed preparation with a nitrogen, phosphate, potash, and sulfur mixture. The mixtures were broadcast seeded April 9, each at 18 pounds of seed per acre. The mixtures included a standard irrigated land hay and pasture mix referred to as Co-op Mix, which contained Potomac orchardgrass, perennial tetraploid ryegrass, and Ladino clover. Three other commercial mixtures were seeded, and four special mixtures were formulated. Table 1 lists the grasses and clovers and alfalfa used in the special mixtures.

Table 1. FORAGE MIXTURES SEEDED IN 1986

Mixture number	Grasses	Legume
1. Grazmor 3	orchardgrass, ryegrass	alfalfa
2. Grazmor 6	orchardgrass, ryegrass	Ladino clover
3. Grazmor 8	orchardgrass, ryegrass	Ladino clover
4. Co-op Mix	orchardgrass, tetraploid ryegrass	Ladino clover
5. Co-op Mix + fescue	orchardgrass, tetraploid ryegrass, and Fawn fescue	Ladino clover
6. Fescue, harding	Fawn fescue, hardinggrass	Ladino clover
7. Fescue, orchardgr	Fawn fescue, orchardgrass	Ladino clover
8. Fescue, orchardgr	Fawn fescue, orchardgrass	red clover

The seedling year was used to establish the plantings, and no yield data were taken. Nitrogen fertilizer was applied in the fall at 40 pounds per acre. For the 1987 season, 80 P_2O_5, 80 K_2O, and 36 S were applied per acre February 11, and 60 N and 67 S were applied March 11. Thirty-six pounds of N was applied per acre June 2, and 60 N and 67 S were applied July 29. Irrigation was done with overhead sprinklers.

The first harvest was on April 23, followed by five additional harvests at approximately 30-day intervals.

Results and Discussion

The stands were all satisfactory and were well-established by 1987. First-cutting yields ranged from 1.40 tons of dry forage per acre for Mixture 2 to 3.08 tons for Mixture 6, the Fawn fescue, hardinggrass, and Ladino clover mix. Yields of Mixtures 3 through 7 were closely grouped. Cuttings 2, 3, and 4 averaged 0.87, 0.85, and 0.96 ton of dry forage per acre, respectively. The N applied July 29 resulted in a marked yield increase in the fifth harvest on August 26. The mean yield was 1.38 tons of dry forage per acre with a range from 1.02 to 1.78 tons per acre. The final harvest on September 30 showed a wide range in forage yields from 0.29 ton per acre for Mixture 1 to 0.83 ton per acre for Mixture 6.

Season total yields approached the tonnages of alfalfas harvested four times per season. The mean of 7.07 tons per acre was considerably higher than the yields of tall fescues and orchardgrasses growing nearby in variety trials. The Fawn fescue-hardinggrass-Ladino clover mixture yielded unusually well. There was no significant yield advantage obtained by adding Fawn fescue to Co-op Mix. Mixtures 1 and 2, Grazmor 3 and Grazmor 6, yielded less forage than the other mixtures. Yield data are shown in table 2.

Table 2. YIELD DATA, FORAGE MIXTURES, 1987 SEASON, MEDFORD

Mixture	Yield of dry forage, tons per acre						
	1st cut 4/23	2nd cut 5/26	3rd cut 6/25	4th cut 7/28	5th cut 8/26	6th cut 9/30	Season total
1. Grazmor 3	1.87	0.71	0.66	0.68	1.02	0.29	5.23
2. Grazmor 6	1.40	0.80	0.85	0.95	1.21	0.35	5.74
3. Grazmor 8	2.65	0.82	0.75	0.79	1.20	0.43	6.65
4. Co-op Mix	2.70	0.89	1.02	1.04	1.45	0.80	7.90
5. Co-op Mix + Fescue	2.64	0.94	0.93	1.12	1.69	0.76	8.07
6. Fescue, harding-grass, and clover	3.08	0.98	0.83	1.09	1.78	0.83	8.60
7. Fescue, orchard-grass, and clover	2.65	1.03	0.81	1.03	1.39	0.63	7.53
8. Fescue, orchard-grass, and clover	2.42	0.80	0.93	1.00	1.30	0.46	6.90
Mean	2.43	0.87	0.85	0.96	1.38	0.57	7.07
LSD, 5%	0.45	0.19	N.S.	0.19	0.26	0.10	0.70
C.V., %	12.7	14.5	21.0	13.6	13.0	12.5	6.7

Notes:

1. The mixtures were seeded in April, 1986 in a Central Point sandy loam soil.
2. The fescue in Mixtures 5, 6, 7, and 8 is Fawn tall fescue.
3. The clover in Mixtures 6 and 7 is Ladino white clover.
4. The clover in mixture 8 is Redland red clover.
5. The hardinggrass in mixture 6 is an experimental selection from Australia.
6. Data are means of four replications.

CLOVERS FOR FORAGE PRODUCTION, 1987 SEASON
Southern Oregon Experiment Station, Medford

Clovers are often seeded for hay production in southern Oregon, although pasturing is another common method of harvest. They are usually seeded in mixture with grasses in dual-purpose hay and grazing seedings. While alfalfa will produce more total feed per acre than clover on deep, well-drained soils, clovers can often be grown on soils that are not adapted for alfalfa production. Many such soils are found in southern Oregon. This report presents information and data on eight clovers representing three species seeded in 1986 on a deep, well-drained Central Point sandy loam soil.

Methods and Materials

Five white clovers (Donna, Ladino, Menna, New Zealand, and Olwens) were seeded at 2 pounds per acre, and Florex and Redman red clovers and Alsike clover were seeded at 5 pounds per acre. The seeding date was April 14, 1986. The clovers became established in 1986, but no yield data were taken. They were irrigated with overhead sprinklers.

For the 1987 season, the clovers were fertilized with 80 P_2O_5, 80 K_2O, and 36 S per acre February 11. The clovers were harvested first on April 24 and five more times at approximately 30-day intervals.

Results and Discussion

The clovers all developed excellent stands and became well-established in 1986. Spring growth in 1987 began in late February and progressed well until about March 20. At that time, an infestation of sclerotinia crown and stem rot, Sclerotinia trifoliorum, was observed on the clovers. Growth was thinning, and stands took on a ragged appearance. Alsike clover was only slightly affected, while the others were severely injured. Cool, moist conditions provided nearly ideal conditions for the fungus disease. By the time of the first harvest on April 24, however, the clovers had made good recoveries, and most stands were filling in again.

First-cutting yields ranged from 0.61 to 1.81 tons of dry forage per acre, averaging 1.14 tons per acre. Alsike and the two red clovers were highest in yield.

Second-, third-, and fourth-cutting yields were nearly equal, averaging 0.73, 0.89, and 0.93 ton per acre, respectively. Fifth-cutting yields on August 25 were higher, veraging 1.15 tons of dry forage per acre; sixth-cutting yields averaged 0.82 ton per acre.

Seasonal total yields were highest for the two red clovers with Alsike being in third position. Most of the white clovers were closely grouped in yield except for Ladino, a giant white type, which outperformed the other white

clovers. The mean seasonal total of 5.66 tons per acre was about 65% of the expected yield of alfalfa harvested four times on the same soil.

Yield data and observations on sclerotinia infestation are presented in the following table.

CLOVER FORAGE YIELD DATA AND DISEASE RATING, 1987 SEASON

Variety	Yield of dry forage, tons per acre							Disease rating
	1st cut 4/24	2nd cut 5/26	3rd cut 6/25	4th cut 7/27	5th cut 8/25	6th cut 9/30	Season total	
Alsike	1.81	0.59	0.83	0.91	1.24	0.61	6.01	1.4
Donna white	0.92	0.71	0.75	0.77	1.07	0.88	5.10	3.2
Florex red	1.55	0.89	1.06	1.11	1.20	0.86	6.66	3.8
Manna white	0.92	0.72	0.82	0.75	0.93	0.77	4.91	3.7
Ladino white	0.90	0.81	0.81	1.05	1.37	0.83	5.77	3.6
Olwens white	0.64	0.70	0.86	0.79	1.20	0.93	5.27	3.6
New Zealand white	0.61	0.60	0.84	0.90	1.01	0.71	4.66	4.2
Redman red	1.80	0.81	1.13	1.09	1.22	0.96	7.01	3.1
Mean	1.14	0.73	0.89	0.93	1.15	0.82	5.66	
LSD, 5%	0.22	0.16	0.15	0.36	N.S.	0.17	0.53	
C.V., %	12.8	14.5	11.8	19.5	16.0	14.3	6.4	

Notes:

1. Disease rating scale for sclerotinia as rated March 25: 1 = no disease; 3 = moderately severe stem and crown infection; and 5 = very severe stem and crown infection or plant killed.
2. Data are means of four replications.

Soil Fertility

NITROGEN SOURCE AND TIMING OF APPLICATION EFFECTS ON WADE WINTER BARLEY, 1986-87

Southern Oregon Experiment Station, Medford

Winter cereals grown in southern Oregon usually 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 effects of single and multiple applications.

Methods and Materials

The experimental area was fertilized with 16-20-0-14 at 200 pounds per acre during seedbed preparation. Wade winter barley was seeded October 15 in the Central Point sandy loam soil. Diuron (Karmex) was applied as a preemergence weed control treatment October 20 at 1.4 pounds per acre, and chlorsulfuron (Glean) was applied March 2 at 0.25 ounce per acre. The planting was irrigated April 28, when 2.8 inches of water was applied through overhead sprinklers.

The first treatment variables were applied February 17 when the barley was tillered and 5 inches tall. Urea was used as the source of N for the timing variables. Rates applied in February were 120 N as a single application, 60 N with the other 60 N to be applied in March or April, and 40 N with 40 N to be applied in March and April. Nitrogen source treatments included 120 N as ammonium sulfate, as ammonium nitrate, or as a mixture of the two, and as calcium nitrate.

March 18 treatments included 60 N as urea, either to barley given 60 N in February or to barley that would receive a similar amount in April. A 40 N treatment was applied for the 3 consecutive-months variable. The other treatment was a single 120 N application.

April 16 applications included 40, 60, and 120 N rates to complete all the variables.

Results

Responses to the February treatments were apparent when the March applications were made. Top growth of barley receiving N in February was taller and greener than for plants not fertilized, depending upon the rate.

Growth differences were not readily apparent at harvest. There was no lodging even though harvest was delayed until September 3.

Grain yields were quite uniform except that nitrogen application made in April appeared to be more effective than earlier treatments. In 1986, Stephens winter wheat yields benefited more from February than from April N applications. The N sources ammonium sulfate, ammonium nitrate, a mixture of the two, and calcium nitrate did not increase yields over the urea source.

Test weights per bushel were very uniform over the timing treatment variables, but were lower with calcium nitrate and ammonium sulfate-ammonium nitrate treatments. With wheat in 1986, test weights were highest when part or all the N was applied in February and declined sharply with late application. The mean test weight for the barley was 48.6 pounds per bushel, indicating plump, well-filled kernels.

The data indicate that a single application of N was as effective as multiple treatments. A single application should reduce application costs and should result in less soil compaction and less mechanical injury to the crop that would result from extra trips over the field.

Yield data are presented in table 1 and are presented graphically in figure 1.

Table 1. THE EFFECTS OF DATES OF APPLICATIONS AND SOURCES OF NITROGEN ON THE YIELD AND TEST WEIGHT OF WINTER BARLEY, MEDFORD, 1987 SEASON

N applied, pounds per acre			Grain yield		Test wt,	Nitrogen
February	March	April	Bu/A	Lbs/A	lbs/bu	source
0	0	0	91.1	4,372	48.8	Urea
120	0	0	86.4	4,148	48.7	Urea
0	120	0	87.3	4,192	48.5	Urea
0	0	120	99.0	4,752	48.5	Urea
60	60	0	90.7	4,353	48.8	Urea
60	0	60	92.1	4,421	49.0	Urea
0	60	60	96.1	4,613	48.8	Urea
120	0	0	82.9	3,980	48.6	Ammonium sulfate
120	0	0	85.9	4,122	48.8	Ammonium nitrate
120	0	0	79.0	3,794	47.8	Calcium nitrate
60 + 60	0	0	85.2	4,089	47.9	Ammonium sulfate + Ammonium nitrate
40	40	40	89.1	4,277	49.1	Urea
	Mean		88.7	4,259	48.6	
	LSD, 5%		11.9	570	0.6	
	C.V., %		9.4	9.4	0.8	

Notes:

1. Wade winter barley was seeded October 15, 1986.
2. The experimental area was fertilized with 200 pounds of 16-20-0-14 before seeding.
3. Nitrogen treatments were applied February 17, March 18, and April 16.
4. Data are means of five replications.

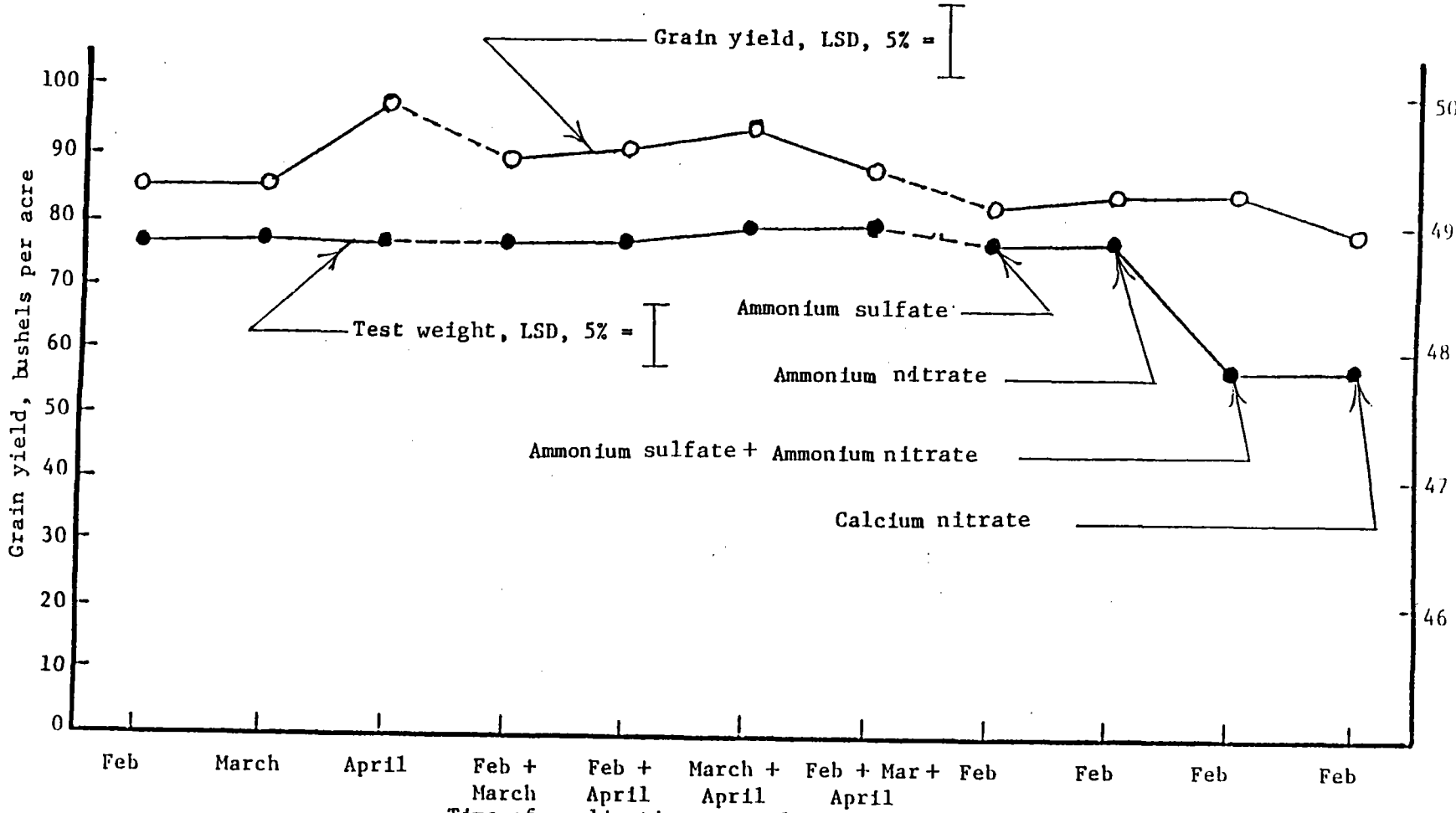

Figure 1: The effects of the timing of N applications (urea) and the source of N (120 Lb/A) on the grain yield and the test weight of Wade winter barley at Medford, 1986-87.

THE EFFECTS OF THE TIMING OF NITROGEN APPLICATION ON KENTUCKY BLUEGRASS, 1986-87 SEASON

Southern Oregon Experiment Station, Medford

Kentucky bluegrass grown for seed can use relatively high rates of nitrogen fertilizer along with other materials such as phosphate, potash, and sulfur. Most bluegrasses begin the seedhead initiation process in the fall or early winter. An adequate, but not excessive, amount of N is beneficial to the process. Growers usually split N treatments into fall, midwinter, and early spring applications. This report summarizes the effects of four split N treatments on Kentucky bluegrass for seed production.

Methods and Materials

The bluegrass stand was established by planting sprigs obtained from an established planting of Scenic Kentucky bluegrass in March of 1986. The row spacing was 40 inches. The seedbed was fertilized with 48 N, 60 P_2O_5, 60 K_2O, and 44 S per acre. The planting was handled uniformly during 1986 in regard to irrigation, cultivation, rust control, and weed control.

The first fertilizer variables were broadcast in a 20-inch wide band over the rows November 25 while the bluegrass was still growing and developing new tillers. The treatments included N rates of 30, 60, 120, and 150 pounds per acre, applied as ammonium sulfate.

The winter treatments were applied January 22, again as ammonium sulfate. Rates were 150, 120, 60, and 30 N per acre to the respective fall-treated plots. Each split treatment pair resulted in 180 pounds of N being applied per acre. There was also a treatment that received no nitrogen.

Irrigation was done with overhead sprinklers. The bluegrass was swathed June 11, and combining was done June 20.

Results and Discussion

Each N treatment applied in the fall resulted in an increase in leaf growth. The January treatments resulted in plant growth that was quite uniform throughout the planting.

There was considerable lodging at the at the time the bluegrass was swathed, but it did not appear to be related to the timing of N treatment. Seed yields ranged from 261 to 380 pounds per acre, with a mean of 310 pounds. Seed yields were increased more by the high rates of N applied in January than in November. The lowest seed yield was obtained when 150 N was applied in November and only 30 N was applied in January.

Yield data are presented in table 1 and are shown graphically in figure 1.

Test weights were not greatly affected by the timing of the N treatments. Each value was close to the mean of 25.5 pounds per bushel. Scenic Kentucky bluegrass has a moderately heavy seed compared to some varieties.

From the data, applying the major amount of N in January was more effective in increasing seed yield than applying it in November. Test weights per bushel were satisfactory from each of the split N treatments.

Table 1. THE EFFECTS OF N APPLICATION TIMING UPON THE YIELD AND TEST WEIGHT OF SCENIC KENTUCKY BLUEGRASS AT MEDFORD, 1986-87.

N applied, Lbs/A		Seed yield,	Test weight,
November 25	January 22	lbs/acre	lbs/bu
30	150	380	26.2
60	120	304	24.9
120	60	294	25.9
150	30	261	25.0
	Mean	310	25.5
	LSD, 5%	59	N.S.
	C.V. %	6.0	3.3

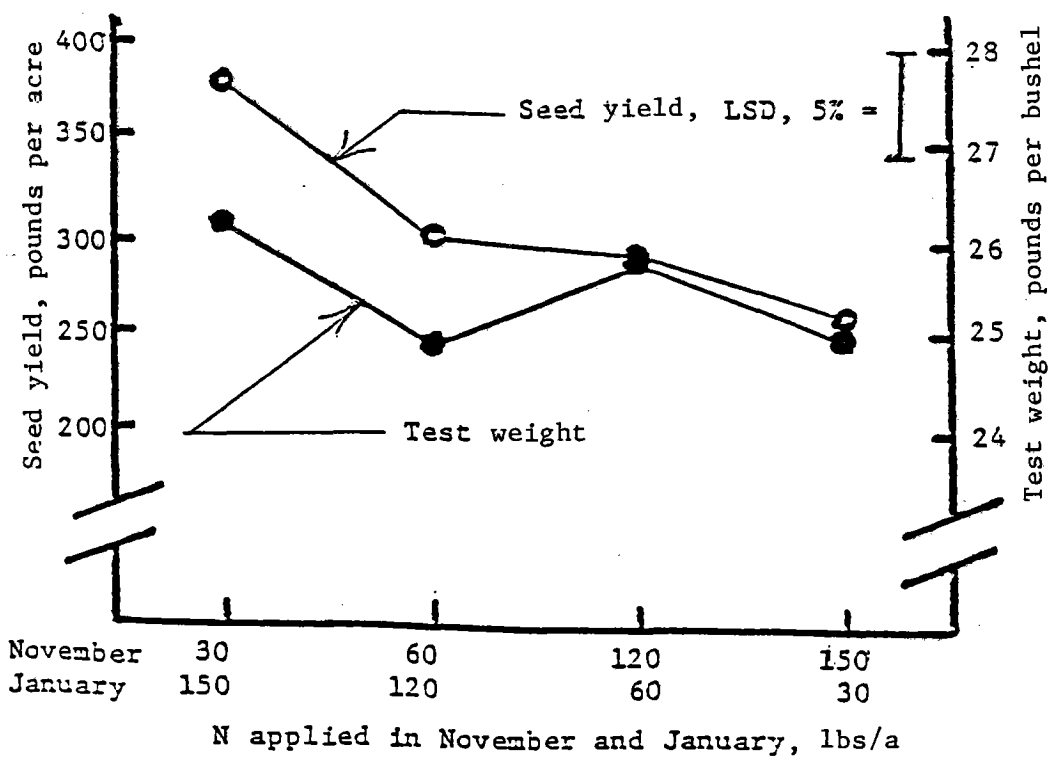

Figure 1: The effects of application dates of N on the seed yield and test weight of Scenic Kentucky bluegrass at Medford, 1986-87 season.

ONION RESPONSES TO SUPPLEMENTAL FERTILIZERS AND PLANT GROWTH REGULATORS 1987 SEASON

Southern Oregon Experiment Station, Medford

Onions harvested for dry bulbs are an important crop in southern Oregon even though the acreage is relatively small. Most growers plant yellow sweet Spanish hybrids, which are long-day, moderately long-storage onions that are marketed from October until April. The bulbs are large and mild-flavored, popular for slicing and onion rings as well as for consumer use in the kitchen.

Trials conducted at this station have shown the benefits of banding phosphate under the row at seeding in addition to nitrogen, phosphate, potash, and sulfur broadcast during seedbed preparation. Occasional responses have been obtained with copper banded or broadcast along with the other fertilizer materials. This report summarized the effects of several fertilizers and two growth regulators applied as foliar treatments and a mined product broadcast on the soil surface. All of the treatments were supplemental to a standard N-P-K-S fertilizer program that was used as a check or reference.

Methods and Materials

Final seedbed preparation was done March 26 after 48 N, 50 P_2O_5, 56 K_2O, and 75 S per acre were broadcast. The plot area was ridged into single-row beds, and Valdez sweet Spanish hybrid onions were seeded at 2.5 pounds of seed per acre on March 27. The rows were spaced 20 inches apart. A pre-emergence application of Dacthal (DCPA) at 4 pounds of active ingredient per acre and Roundup (glyphosate) at 0.37 pound per acre was made April 10 for early weed control. The onions were cultivated May 7. An application of Goal (oxyfluorfen) was made at 0.2 pound of active ingredient per acre May 11 and again on May 27 for postemergence weed control, primarily for California poppy. Minor hand-weeding was done June 2. A lay-by application of Dacthal was made June 23 at 7.5 pounds of active ingredient per acre. An application of ammonium sulfate was broadcast in an 8-inch-wide band over the rows June 3 to apply 72 N and 82 S per acre. Irrigation was done throughout the season with overhead sprinklers.

The experimental treatments were applied July 23, when the onion bulbs were beginning their period of rapid expansion and when the plants should have their greatest need for supplemental fertilizers. The materials were sprayed on the foliage at their recommended rates in 41.7 gallons of solution per acre except for the material referred to as Diamond Soil Supplement, a mined product from the Diamond Lake, Oregon, area. It was spread in an 8-inch-wide band over the base of the onions at a rate of 2,000 pounds per acre.

The fluid fertilizers used were 3-18-18 and 9-18-9, both sold under the trade name Feast, and 10-34-0, a standard fluid fertilizer. Each was applied at 10 gallons per acre. Five other foliar-applied fertilizers were used on the onions. They contained various major and micronutrients, and they were applied at rates suggested for onions by the manufacturer. The application rates and the nutrient compositions of the five other foliar-applied fertilizers are shown in table 1.

Table 1. SUPPLEMENTAL FOLIAR FERTILIZER TREATMENTS APPLIED TO ONIONS

Trade name	Lbs/acre	Percentage composition								
		N	P_2O_5	K_2O	S	B	Ca	Mg	Fe	Zn
Nutra Phos 24	10	-	24	-	6	-	20	-	-	12
Nutra Phos Mg	15	-	25	-	-	-	10	5.5	5.5	-
Nutra Phos N	5	20	12	-	-	1	5	2	1	2
Nutra Spray Zn 50	5	-	-	-	-	-	-	-	-	50
Nutra Spray 16-12-0	5	16	12	0	-	1	-	1.5	1	2

Two treatments were classed as growth regulators. One was Reward, applied at 24 ounces per acre with surfactant Activator 90. The other was CAW, catalyst altered normalizer, or Dr. Willard's Water. It was applied at 4 ounces per acre.

The onions were growing vigorously, and leaves were erect and very green when the treatments were applied.

The onions were lifted September 14, 171 days after seeding. The bulbs were crated September 28, placed in common storage October 12, and graded between October 30 and November 5.

Results and Discussion

There were no visible leaf alterations as a result of the treatments except for some very minor and temporary leaf discolorations with some treatments. The onions sized well in late July and August. The treatments had no significant effect on bulb maturity. Forty percent of the tops had fallen over (a sign of bulb maturity) 1 week before lifting.

The yields of number 1 grades of bulbs were high. The jumbo size, all bulbs over 3 inches in diameter, averaged 902 bags per acre (50 pounds per bag) or 58% of the number 1 bulbs. Differences among treatments were not significant. The medium sized bulbs, from 2-1/4 to 3 inches, averaged 573 bags per acre or 37% of the total marketable number 1 bulbs. The small sized bulbs averaged 72 bags per acre (only 5% of the total). The total yields of number 1 bulbs averaged 1,547 bags per acre; differences among treatments were not significant.

The number 2 and cull grades, made up almost entirely of slightly mishapen or immature bulbs, were only small percentages of the total yield. There was very little decay, not unexpected as the bulbs were well-cured and the storage period was short.

The stands of onions in the plots were thicker than optimum. There was an average of 7.1 plants per lineal foot of row. Four or 5 plants per foot is considered more desirable and should result in a greater percentage of large sized bulbs.

The results obtained in the trial agree with previous tests in which the effects of supplemental fertilizers were compared to a standard base fertilizer program. Onions do require relatively high levels of soil fertility to produce at or near their optimum. It does appear, however, that a standard soil fertility program, based on soil test data and the knowledge of the soil type characteristics, eliminates the need for supplemental foliar or plant growth regulator treatments on onions during the period of rapid bulb expansion in southern Oregon.

Yield and bulb size data are presented in table 2.

Table 2. THE EFFECT OF SUPPLEMENTAL FOLIAR AND BROADCAST FERTILIZERS AND PLANT GROWTH REGULATORS ON THE YIELDS OF ONION BULBS, 1987 SEASON

Southern Oregon Experiment Station, Medford

Treatment	Rate per acre	Yield of bulbs, 50-pound bags per acre					
		Number 1 grades				No. 2 grade	Cull grade
		3"+	2.25-3"	1.5-2.25"	Total		
Check	-	923	594	68	1,584	34	19
3-18-18	10 gal	901	593	67	1,561	22	22
9-18-9	10 gal	1,027	599	77	1,703	27	10
10-34-0	10 gal	847	617	82	1,547	37	27
Nutra-Phos N	5 lbs	893	522	68	1,483	26	13
CAW	4 oz	893	613	80	1,586	36	13
Reward PGR	24 oz	744	535	65	1,345	44	21
Diamond SS	1 ton	950	592	80	1,621	20	23
Nutra-Phos 24	10 lbs	879	508	61	1,447	31	11
Nutra Spray Zn 50	5 lbs	900	469	68	1,437	36	25
Nutra Phos Mg 0-25-0	15 lbs	971	666	73	1,710	21	4
Nutra Spray 16-12-0	5 lbs	898	569	76	1,544	23	17
Mean		902	573	72	1,547	30	17
LSD, 5%		N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
C.V., %		18.6	26.4	38.6	15.0	63.4	71.5

Notes:

1. The onions were seeded March 27, lifted September 14, crated September 28, placed in storage October 12, and graded October 30 to November 5.

2. All treatments, including the check, had a basic nitrogen, phosphate, potash, and sulfur fertilizer treatment.

3. The Diamond Soil Supplement was broadcast; other treatments were sprayed on the foliage July 23 when onion bulbs were sizing rapidly.

4. Data are means of 5 replications in a randomized complete block experimental design.

Seed Production

SOYBEAN UNIFORM TEST PLANTINGS, 1987 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. Most of the soybean research and development has been in the Midwestern and Southern States where much 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 always well-adapted to Oregon conditions.

Soybeans have been grown at the Southern Oregon Experiment Station seven times since 1959. The entries were named varieties and experimental selections obtained from the U.S. Regional Soybean Research Center, Urbana, Illinois. Yields ranged to highs of 41 to 46 bushels per acre, too low to make the crop profitable, considering cash and non-cash production expenses.

In 1986, 16 selections were grown as part of a uniform planting experiment in four geographically different areas within Oregon. At Medford, plantings were made May 16 and July 10. The May planting was harvested over the period from August 28 to October 14 as each of four entries in the four earliest maturity groups reached harvest maturity. The seed yield averaged 31 bushels per acre. The July seeding was very late in maturity; harvest dates ranged from October 21 to November 15. Seed yields were much lower than for the May planting, averaging only 13 bushels per acre.

For the 1987 season, the same 16 entries were grown in plantings made May 14 and June 15. The June planting would allow a crop of oats and vetch or oats and peas to be harvested before the soybeans were seeded as part of a double-cropping system.

Methods and Materials

The planting areas were fertilized with 92 P_2O_5, 92 K_2O, and 36 S during seedbed preparation. Trifluralin (Treflan) was applied at 0.75 pound per acre May 13, and it was rototilled into the seedbed as a preplant incorporated herbicide treatment. The May seeding was made with 22-inch row spacing. The seeds were inoculated in the seedbox. A preemergence application of linuron (Lorox) was made to control weeds escaping the Treflan. Hand weeding was done in July to remove nightshade, which was not controlled by the herbicides.

The June seeding, made 32 days after the first, received Lorox at 1.25 pounds of active ingredient per acre and chlorpropham (Furloe) at 2.0 pounds active ingredient per acre. The Furloe was included to provide nightshade control as part of the preemergence treatment. Both plantings were irrigated, using overhead sprinklers to apply water at 7-to 10-day intervals.

Results and Discussion

Stands of all the soybeans were good, averaging five to six plants per lineal foot or row. Growth progressed well, and there were no serious disease or insect problems. Most of the entries in the May planting reached their maximum heights by July 28, averaging 92 centimeters (36 inches). Lodging occurred with all entries so that heights were less as maturity advanced. Sprinkler-irrigation contributed to some of the lodging.

Seed shattering occurrred with some entries, mostly those in the 000 earliest maturity group. Seed yields were moderate, averaging 26.4 bushels per acre. The range was from 11.8 bushels for entry 1, which had the most seed shatter, to 34.9 bushels per acre for entry 12 of maturity group 0. Test weights per bushel averaged 57.4 pounds, slightly less than the standard of 60 pounds for soybeans. Days from seeding to harvest of the May planting ranged from 105 to 133. Data for the early planting are shown in table 1.

The June 15 planting grew nearly as tall as the May seeding, and the degrees of lodging were similar. There was less seed shatter than in the May seeding. Seed yields were higher with most entries than in the earlier planting. Night temperatures were higher over the early part of the growth period than with the May planting, and the hot, dry weather of August and September speeded up maturities. Growth days from seeding to harvest ranged from 102 to 126. While there was no rain during the harvest period in 1987, wet weather in October can make harvest difficult some years. Data for the June 15 planting are shown in table 2. Comparisons of seed yields between each entry for the two plantings are shown in figure 1.

Table 1. SOYBEAN GROWTH AND YIELD DATA, MAY 14 SEEDING, Southern Oregon Experiment Station, Medford

Selection	Maturity group	Plant lodging	Height, cm	Seed shatter	Seed yield Bu/A	Seed yield Mg/ha	Test wt, lbs/bu	Grams/100 seeds	Growth days
1. Fiskeby V	000	2.1	67	3.0	11.8	0.79	56.9	18.9	107
2. L4/3	000	3.2	88	2.7	22.0	1.48	56.7	18.6	115
3. MP/T (3-B-3)	000	2.2	76	2.6	21.3	1.43	57.0	19.1	116
4. MP/T (3-B-5)	000	1.9	69	1.2	26.0	1.74	57.5	18.2	105
5. McCall	00	2.8	96	1.0	28.2	1.90	57.3	16.0	124
6. ExT (ORG-83-117)	00	1.7	98	1.1	34.1	2.29	57.9	16.6	116
7. L4/3 X Hodgson 78	00	3.5	104	2.4	21.0	1.41	57.6	16.5	116
8. MP x E// Traff	00	2.4	94	1.1	31.5	2.12	55.6	15.1	116
9. Evans	0	3.8	95	1.0	32.1	2.16	58.0	14.6	133
10. M75-2 (ORG-83-149)	0	1.3	103	1.7	24.4	1.64	56.5	17.6	129
11. Cz-13-2 (K738-1-I)	0	2.6	88	1.1	32.6	2.19	57.8	17.7	124
12. ExT (ORG-83-71)	0	3.1	96	1.0	34.9	2.35	58.4	16.9	128
13. Hodgson 78	1	3.2	96	1.0	22.6	1.52	57.5	13.9	133
14. L37/6 x H-78(ORG-83-159)	1	3.2	99	1.0	25.4	1.71	57.7	15.8	131
15. ExT (ORG-83-72)	1	3.5	103	1.0	27.7	1.86	57.9	14.4	130
16. Cz 13-2 (K738-1-L)	1	4.0	96	1.0	27.1	1.82	57.7	16.8	132
Mean			92		26.4	1.77	57.4	16.7	122
LSD, 5%					4.8	0.32	0.4	0.7	
1%					6.4	0.43	0.5	0.9	
C.V., %					14.4	14.4	0.5	4.7	

Notes:

1. Lodging scale: 0 = no lodging; 3 = moderately lodged; 5 = completely lodged, flat on ground.
2. Height in cm: Maximum height attained before lodging-most were recorded July 27.
3. Shatter scale: 0 = no seeds shattered; 3 = moderate shattering; 5 = all seeds shattered.

Table 2. SOYBEAN GROWTH AND YIELD DATA, JUNE 15 SEEDING, SOUTHERN OREGON EXPERIMENT STATION, MEDFORD

Selection	Maturity group	Plant lodging	Height, cm	Seed shatter	Seed yield Bu/A	Seed yield Mg/ha	Test wt, lbs/bu	Growth days
1. Fiskeby V	000	2.3	71	2.1	20.9	1.40	58.8	97
2. L 4/3	000	3.3	80	1.9	24.7	1.66	57.5	102
3. MP/T (3-B-3)	000	2.2	71	1.2	27.4	1.84	57.4	102
4. MP/T (3-B-5)	000	2.0	64	1.0	29.5	1.98	58.0	102
5. McCall	00	3.1	94	1.0	35.7	2.40	57.4	112
6. E x T (ORG-83-117)	00	1.2	91	1.4	33.9	2.28	57.7	109
7. L 4/3 x Hodgson 78	00	3.2	93	2.0	25.4	1.71	57.5	110
8. MP x E//Traff	00	2.5	81	1.0	34.9	2.35	56.1	111
9. Evans	0	3.2	94	1.4	38.8	2.61	56.9	116
10. M 75-2 (ORG-83-149)	0	1.6	88	1.0	34.7	2.33	57.9	112
11. Cz-13-2 (K738-1-I)	0	3.3	84	1.0	35.3	2.37	57.9	110
12. E x T (ORG-83-71)	0	3.4	93	1.0	39.5	2.65	58.0	105
13. Hodgson 78	1	3.3	96	1.0	34.4	2.31	57.0	126
14. L37/6 x H-78(ORG-83-159)	1	3.9	87	1.0	31.2	2.09	57.7	120
15. E x T (ORG-83-72)	1	1.5	81	1.0	33.8	2.27	57.4	113
16. Cz 13-2 (K738-1-L)	1	4.0	91	1.0	36.6	2.46	58.0	120
Mean			85		32.3	2.17	57.5	110
LSD, 5%					4.8	0.32	0.7	
1%					6.3	0.42	0.9	
C.V., %					11.7	11.7	0.9	

Notes:

1. Lodging scale: 0 = no lodging; 3 = moderately lodged; 5 = completely lodged, plants flat on ground.
2. Height in cm: Maximum height attained before lodging began.
3. Shatter scale: 0 = no seeds shattered; 3 = moderate shattering; 5 = all seeds shattered.

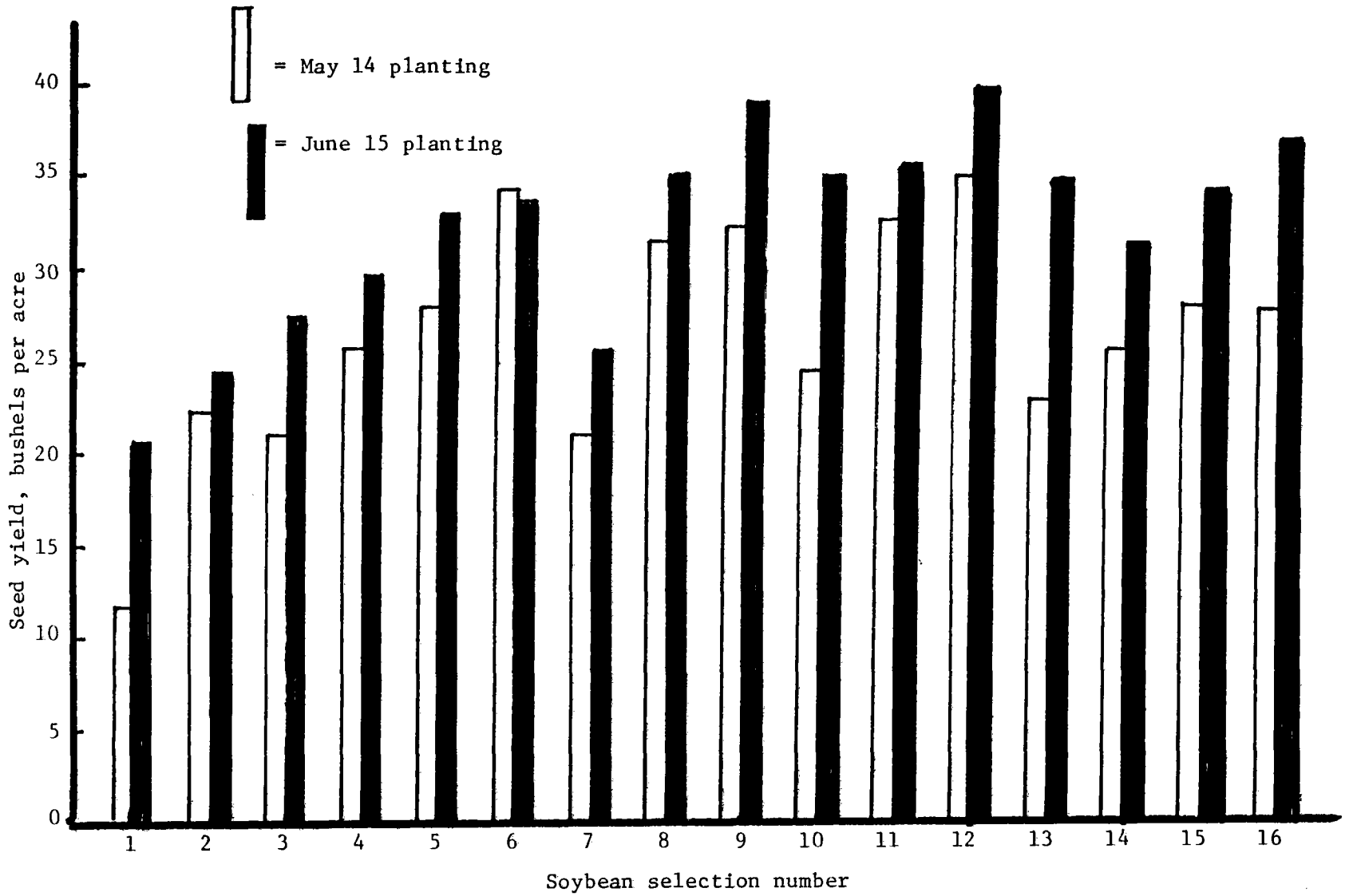

Figure 1. Soybean yield comparisons, May 14 and June 15 seedings, 1987 season, Medford.

CUPHEA SPECIES AND HARVEST METHOD STUDIES
Southern Oregon Experiment Station, Medford

Cuphea is one of the new plants being tested in Oregon as an alternative crop for farmers to grow. Its seeds contain an oil composed of medium-chain-length fatty acids--mostly lauric acid, which has 12 carbon atoms in its chain structure, although some species contain 10 carbon atoms. The crop is of interest to soap and detergent manufacturers; their source of similar fatty acids is the coconut palm, which can vary widely in availability and price from year to year.

In previous tests, cuphea has grown well in southern Oregon, where the long, dry season favors its development. The crop must be irrigated, however. Cuphea is still several years away from commercial production. A breeding program is underway at OSU in an effort to make changes that are necessary before it is ready for farmers to grow. USDA has research programs with the crop in Arizona, Georgia, and Iowa.

In previous plantings, the crop has been harvested with a vacuum machine that removed seeds from the plants before they fell to the ground. Because the crop matures seeds over a 60-to 70-day period, and the seeds fall from the plants as they mature, as many as seven harvests per season were made to maximize seed recovery. In 1987, three species were seeded May 5 for a harvest method study utilizing 2 acres of land. The species were C. laminuligera, a tall, upright type; C. lutea, a low-growing type; and C. wrightii, an intermediate type. Several harvest methods were compared. The vacuum machine was used on some of the plots. Combinations of vacuum harvest with later harvest by direct combining were also used. Some plots were direct-combined after desiccation; some were swathed. The season was warm and dry, conducive to successful harvest method trials. Results will be reported from the OSU Crop Science Department.

Several other species were grown in comparison plantings. Seed was harvested from C. lutea strips as part of a mutation breeding program initiated in the Crop Science Department.

Several changes in the plant that would improve its chances for commercial success include larger seeds, concentration of maturity, resistance to shattering, higher yield, and increased oil content. The probability of the OSU breeding program accomplishing most of the changes appears good.

Herbicide tests conducted at OSU and at this station have identified several tolerances to chemical weed control materials. Trifluralin (Treflan) is the preferred preplant incorporated treatment at Medford; benefin (Balan) is preferred at Corvallis. Effective postemergence weed control can be accomplished with bromoxynil (Buctril, Brominal), and tolerances have been shown to DCPA (Dacthal) and endothall (Herbicide 273).

Cuphea has shown little tolerance to most other herbicides with which it has been treated. Cultivation before the lay-by stage of plant growth is a practical supplement to chemical weed control.

Of the three species most widely tested at Medford, C. wrightii appears to be the most sensitive to high temperatures and soil moisture stress. During the hottest part of the summer, it needs to be irrigated on about a 10-day cycle when it is grown on Central Point sandy loam soil.

In previous trials, the test weights of Cuphea seeds were higher during the early part of the harvest season than during the late part. In 1986, the test weight of C. lutea seed vacuum-harvested August 19 was 43.5 pounds per bushel, while seeds harvested October 14 weighed only 24.0 pounds per bushel. Corresponding declines in test weights were found with C. laminuligera and C. wrightii.

In 1987, C. lutea was harvested with a vacuum machine during the first part of the season. Harvests were made by direct-combining different strips October 15 and 26, and November 10. Test weights were relatively high in the first two harvests and very low in the last harvest. Two frosts to 30° and 0.19 inch of rain between the October 26 and November 10 harvests caused some loss of seed from shattering. Test weights are shown in the following table.

TEST WEIGHTS OF C. lutea AS AFFECTED BY HARVEST DATA, 1987

Harvest date	Test weight, pounds per bushel
October 15	39.6
October 26	41.0
November 10	38.1
Mean	36.2
LSD, 5%	3.1
C. V., %	6.6

SEED PRODUCTION ACTIVITIES, 1987 SEASON
Southern Oregon Experiment Station, Medford

Talent Alfalfa

A planting of Talent alfalfa was harvested for seed. It was originally established in 1963 as a seeding rate x seeding method x irrigation variable experiment with seed production response as its objective. It has been used for growth regulator trials and for numerous herbicide tests, and a soil fertility study since the original experiment was completed about 1968. The seed yield was moderate in 1987, and the yield should amount to about 350 pounds per acre after processing and certification are completed.

The variety was released from this station in 1950. It has moderate resistance to the stem nematode and makes rapid recovery after harvest. 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 western and northwestern Washington.

Sugar Beets

A sugar beet advanced nursery, cooperating with USDA, was seeded in August 1986. The plants were dug as stecklings in February and were taken to the USDA sugar beet research station at Salinas, California, to be grown through seed maturity. USDA is emphasizing development of breeding lines that combine resistance to virus and fungus diseases with yielding ability and increased sugar content.

Rapeseed

Stock seed of Indore rapeseed was planted in October, and it was harvested as foundation seed in July. Stands were satisfactory and it overwintered well. Seed yield was high, with nearly 100 pounds of clean seed produced.

Indore was developed at OSU for industrial uses. It has the potential to fill a need in the Northwest for the industrial oilseed market.

Forage Plants

Seed blocks of two forage plants, burnet and hardinggrass, seeded in 1983, were harvested in 1986. Both have been seeded by farmers in the area.

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

Burnet is a palatable forb and is sometimes known as salad burnet. It has performed well under dryland conditions in previous tests, but it doesn't compete with grasses under irrigation. It seeds readily, and in dryland plantings, it has exerted effective competitive pressure on medusa-head rye, an annual grass of little 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 pasture and range areas of Jackson and Josephine counties. Burnet has been seeded in two dryland test plantings by the OSU Rangeland Resources department cooperating with the Jackson County Office of the OSU Extension Service. The deep-rooted burnet is suppressing the star thistle, but it is not highly productive on the clay soils, or vertisols, found on the 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 preplant seed treatments. Plants grown in 1987 were experimental lines and clonal selections from a research program formerly conducted by Mallinckrodt Chemical Company.

The plant is well-adapted to this area and to several other areas in Oregon. It has been of interest to the pharmaceutical industry as a safe, domestic source of the pain killer codeine.

Pyrethrum

Pyrethrum (Chrysanthemum cinerarefolium) is a perennial flower grown as a source of pyrethrin, a natural insecticide that is considered almost nontoxic 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 a part of an OSU Crop Science Department project, plants were first set out in 1984. Additional plantings were made in 1985 and in 1986. Variables imposed on the plantings have involved irrigation treatments, fertilizer rates, and fall and spring clipping treatments.

Growth has been satisfactory, and no winterkill has occurred. No plot harvests were made in 1987 although maintenance of the plantings was continued.

Turfgrasses

A turfgrass planting attracts many visitors to the station each year. The station maintains plantings of different species and varieties that might be of interest to homeowners, groundskeepers, nursery people, parks and recreation people, and those interested in grasses for erosion control and conservation purposes.

A planting on the station is kept for a period of 5 or 6 years before it is replaced by a new group of grasses. The latest planting was made in October, 1984. Fourteen Kentucky bluegrasses, 8 turf-type tall fescues, 10 perennial ryegrasses, and a hard fescue were seeded. All the grasses still have good stands, and most make satisfactory turfs.

The turf-type tall fescues have attracted much attention recently. Several in the planting have enough density, green color, and fine enough leaves to make desirable turfs. They are expected to complement, but not replace, the other grasses that are well-adapted for turfs in southern Oregon--Kentucky bluegrass, fine fescues, and turf-type perennial

ryegrasses. Such grasses as zoysia and bermuda are not well-adapted in the area, because they become dormant and straw-colored after the first hard freezes in the fall and remain so until April.

Claire Hanley Arboretum

The Claire Hanley Arboretum was established in 1962 as a cooperative endeavor with the Jackson County Office of the OSU 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. 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.

Close to the arboretum are a herb garden, a rhubarb bed, colored maples, cherries, blueberries, and landscaping plants (around the building).

Orchard Ground Covers

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, and to determine how often each grass requires mowing.

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 soils. Most orchardists are seeding cover crops 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.

HERBICIDE TOLERANCE TESTS WITH FLOWERS FOR SEED, 1987
Southern Oregon Experiment Station, Medford

Seed production fields for any crop should be as weed-free 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 of flower seed production, an enterprise that has been increasing in importance in Oregon. Many flower seeds are very small or are similar in size and shape to certain weed seeds, making seed cleaning a difficult operation. Cultivation and hand weeding can be used to control weeds, but those methods can be costly. An alternative method is to control weeds with herbicides. This report presents information on the herbicide tolerances of flowers as observed from test plantings in the field. Herbicides used in the tests were of known efficacy; they were registered on a wide range of vegetables and field and ornamental crops.

Methods and Materials

Preplant incorporated treatments were applied to a prepared seedbed in the Central Point sandy loam soil June 9, and they were rototilled into the seedbed. The treatments, in pounds of active ingredients per acre were: trifluralin (Treflan) 0.75, EPTC (Eptam) 3.0, and bensulide (Betasan, Prefar) 4.0. Eighteen different flowers were seeded June 10. The row spacing was 20 inches. The planted area was irrigated the same day the flowers were seeded, using overhead sprinklers.

Preemergence herbicide treatments were applied June 15. They included the following herbicides, in terms of active ingredients per acre: DCPA (Dacthal) 7.5, metolachlor (Dual) 2.0, diphenamid (Enide) 4.0, chlorpropham (Furloe) 4.0, propachlor (Ramrod) 4.0, and oryzalin (Surflan) 1.0. The preemergence treatments were applied across the rows of each strip where the preplant incorporated treatments were used as well as across the rows of check strips.

The plantings were irrigated frequently to encourage emergence of the flowers and weeds. Herbicide tolerances were evaluated July 24 and November 17 using fullness of stands, plant heights, and plant vigors as criteria.

Results and Discussion

The emergence times varied among the flowers, and a few failed to develop satisfactory stands because of the high temperatures encountered in June. Flowers with long emergence times present problems to the grower, because many weeds emerge quickly and cultivation is difficult or impossible until the crop is visible in rows. Table 1 lists relative emergence times for several flowers grown in field trials.

Several flowers showed good tolerance to Treflan. They were achillea or white yarrow, calendula, blue flax, clarkia, helichrysum, oenothera,

rudbeckia, scarlet flax, shamrock, and zinnia. Those with less tolerance were bells of Ireland, California poppy, and lupine. One with even less or marginal tolerance was echinacea. Table 2 presents information about several flowers' tolerances to preplant herbicides.

Calendula showed very good tolerance to Eptam. Three with slightly less tolerance were zinnia, clarkia, and bells of Ireland. Celosia showed a near-marginal tolerance to Eptam. It has been one of the least herbicide-tolerant flowers in previous trials.

Several flowers showed good tolerance to Betasan or Prefar. They were achillea, bells of Ireland, calendula, echinacea, lupine, rudbeckia, scarlet flax, and zinnia.

Where no preplant incorporated or preemergence herbicides were used an extremely weedy condition existed, crowding out many of the flower stands. Redroot pigweed, knotweed, and common mallow were the primary broadleaf weeds. There were some grassy weeds, mostly barnyard millet and crabgrass. Even where preemergence treatments were used, there were some weeds. Where Dual was used, there was much pigweed. Where Enide was used, there was considerable purslane; there was much crabgrass where Ramrod was used. Common mallow was found where each herbicide was used except in Surflan-treated strips. Although it prevented stand establishment of several flowers, Surflan plots were almost weed-free all season.

Considering the effects of preemergence treatments upon the flowers, zinnia, echinacea, rudbeckia, and caledula showed good tolerance to Dacthal. Bells of Ireland and zinnia showed good tolerance to Enide, while scarlet flax and lupine showed moderate tolerance. Echinacea and zinnia showed good tolerance to Furloe. Furloe has been effective in the control of wild mustard and nightshade, two weeds that can be very competitive in row crops.

Zinnia showed good tolerance to Ramrod. Surflan provided the most weed control of any of the preemergence treatments, but few flowers tolerated it. Zinnia, calendula, lupine, and scarlet flax were quite tolerant.

Information about the tolerances of several flowers to preemergence herbicide treatmnts is presented in table 3.

Table 1. RELATIVE EMERGENCE TIMES OF FLOWERS GROWN AT THE SOUTHERN OREGON EXPERIMENT STATION, MEDFORD. 1986-87

Rapid	Intermediate	Slow	Very slow
Helianthus	Achillea	Echinacea	Aquilegia
Layia	Bells of Ireland	Shammrock	Lobelia
Marigold	Blue Flax	Verbena	Nemesia
Nasturtium	Celosia		
Silene	Clarkia		
Zinnia	Linaria		
	Lupin		
	Mirabilis		
	Oenothera		
	Phacelia		
	Rudbeckia		
	Scarlet Flax		
	Shirley Poppy		

Notes:

1. Relative emergence times from seeding in the field: Rapid = 5 to 7 days; Intermediate = 8 to 14 days; Slow = 15 to 21 days; Very slow = more than 21 days.
2. Soil and air temperatures, soil moisture supply, seeding depth, soil type, and in some cases, exposure time to light or dark can influence emergence times.

Table 2. DIRECT SEEDED FLOWER TOLERANCES TO PRE-PLANT INCORPORATED HERBICIDES
SOUTHERN OREGON EXPERIMENT STATION, MEDFORD, 1987 SEASON

Flower		Ratings, and growth height (cm)		
		Treflan 0.75	Eptam 3.0	Prefar 4.0
Achillea	A. millefolium	good 3	poor 2	good 4
Bells of Ireland	Molucella laevis	fairly good 7	fairly good 3	good 18
Blue Flax	Linum perenne lewisii	good 5		
Calendula	C. officinalis	good 24	good 18	good 30
California poppy	Eschscholtzia california	fairly good 10	poor 0	poor 0
Celosia	C. plumosa	poor 0	fair 7	fairly good 30
Clarkia	C. unquiculata	good 25	fairly good 18	
Echinacea	E. purpureum	fairly good 8	poor 0	good 9
Lupin	L. polphyllus	fairly good 21	fair 12	good 48
Oenothera	O. hookeri	good 14		
Rudbeckia	R. hirta	good 11	fair 8	good 20
Scarlet flax	Linum grandiflorum rubrum	good 22	fair 8	good 18
Shamrock	Trifolium procumbens	good 3		
Silene	S. armeria	poor 0	poor 0	poor 0
Strawflower	Helichrysum bracteatum	good 9	poor 0	fairly good 6
Zinnia	Z. elegans	good 41	fairly good 21	good 32

1. The preplant incorporated treatments were applied June 9.
2. The flowers were seeded June 10 in a Central Point sandy loam soil.
3. Ratings were made July 24 and were based on stand density, plant vigor, and overall crop growth response to the treatments.
4. A tolerance rating of fair should be considered to indicate only a marginal degree of herbicide tolerance.
5. Herbicide rates are in terms of active ingredients per acre.

Table 3. DIRECT SEEDED FLOWER TOLERANCES TO PREEMERGENCE HERBICIDE TREATMENTS
Southern Oregon Experiment Station, Medford, 1987 Season

Flower	Herbicide treatments, pounds per acre, a.i., ratings and height (cm)					
	Dacthal 7.5	Dual 2.0	Enide 4.0	Furloe 4.0	Ramrod 4.0	Surflan 1.0
Bells of Ireland	poor 0	fairly good 22	good 16	fairly good 12	poor 0	poor 0
Calendula	good 18	fair 18	fair 18	fairly good 13	fair 13	good 17
California poppy	poor 0	poor 0	fair 10	poor 0	poor 0	poor 8
Celosia	poor 0	fair 16	poor 2	fairly good 9	good 20	poor 0
Echinacea	good 7	poor 0	poor 7	good 7	poor 4	poor 9
Lupin	fairly good 22	poor 12	fairly good 15	poor 17	fair 17	fairly good 18
Rudbeckia	good 5	poor 0	poor 0	fair 5	poor 5	poor 0
Scarlet flax	poor 0	fair 17	fair 16	poor 0	fair 12	fairly good 12
Silene	poor 0	poor 0	poor 0	poor 0	poor 0	poor 0
Strawflower	poor 0	fair 9	poor 0	poor 5	poor 0	poor 0
Zinnia	good 22	good 30	good 20	good 20	good 16	fairly good 17

Notes:

1. The flowers were seeded June 10 in a Central Point sandy loam soil.
2. Preemergence treatments were applied June 15.
3. Ratings and height measurements were made July 24.
4. Ratings are based on stand density and overall stand vigor.
5. Irrigation water was applied with overhead sprinklers.
6. Ratings are not shown for untreated check plots; severe competition from weeds caused thin stands and growth reductions.
7. A rating of fair should be considered to indicate only a marginal degree of herbicide tolerance.

Vegetable Crops

ONION HYBRID PLANTING, 1987 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 bulbs from October until April. This requires an onion variety with suitable storage characteristics to maintain bulb quality over the extended marketing period.

Nearly all the onions grown in the area are sweet Spanish hybrids that are seeded in March and early April and harvested in September. There are many varieties available for growers to plant. Having information on growth habit, bulb size and shape, storage characteristics, and yield potential in advance of planting can be of benefit to a grower. The test reported here presents data on 24 onions selections that were grown on a Central Point sandy loam soil in 1987.

Methods and Materials

The experimental area was fertilized during final seedbed preparation with 48 N, 50 P_2O_5, 26 K_2O, and 75 S per acre. The seedbed was ridged into single-row beds spaced 20 inches apart. The onions were seeded March 27 at 2.75 pounds of seed per acre.

A preemergence application of Dacthal (DCPA) at 4.0 pounds of active ingredient per acre and of Roundup (glyphosate) at 0.37 pound per acre were made. The onions were cultivated May 7. An application of Goal (oxyfluorfen) at 0.2 pound of active ingredient was made May 11 and again May 27 for postemergence weed control, primarily for California poppy. Minor hand weeding was done June 2. A lay-by application of Dacthal was made June 23 at 7.5 pounds of active ingredient per acre. Ammonium sulfate was broadcast in an 8-inch wide band over the rows June 3 to supply 72 N and 82 S per acre. Irrigation was done with overhead sprinklers.

The onions were lifted September 28, placed in common storage on October 12, and they were graded November 4 into size and quality groups. Tops were removed from the bulbs when they were being graded.

Results and Discussion

Stands of the onions were satisfactory, but they varied among entries. The average number of plants per foot of row was 6.5, ranging from 4.5 to 8.6. No thinning was done during the season. The optimum number of plants per foot of row in southern Oregon is from four to six.

Maturities at harvest, as indicated by the amounts of tops that had fallen over, ranged from 9% for experimental selection XPH83N128 to 79% for Magnum. The average top fall was 43%. Even though less than one half of the tops had fallen by 1 week before harvest, the necks dried down very well because of the hot, dry weather following lifting of the bulbs.

The yields of jumbo-sized bulbs (3 inches or more in diameter) were high for some entries and relatively low for others. Nine yielded at a rate of over 600 50-pound bags per acre, important to a grower because large bulbs usually bring a higher return than the smaller sizes.

While there were significant differences among entries for medium-sized bulbs (2-1/4 to 3 inches in diameter), yields were rather closely grouped about the mean of 453 bags per acre. Yields of small-sized (1-1/2 to 2-1/4-inch) bulbs or boilers were low, averaging 78 bags per acre.

Total yields of number 1 bulbs were high, exceeding 1,000 bags per acre for 16 of the entries. Bulbs graded as number 2 and culls were slightly mishapen, doubles, or undeveloped, sometimes with large necks. There were almost no soft or decayed bulbs, because the length of time in storage was short compared to length of the marketing season.

Of the 24 different entries, 21 had yellow bulbs. Ruby had red bulbs, and Avalanche and Blanco Duro had white bulbs.

Data are shown in the following table.

ONION HYBRID YIELD DATA, 1987 SEASON
Southern Oregon Experiment Station, Medford

Entry	Yield of bulbs, 50-pound bags per acre						Tops down	Plants
	3"+	2¼-3"	1½-2¼	Total #1	2nd's	Culls	Sept 8, %	per ft
Sunex	993	448	52	1,493	6	39	32	6.3
Vega	800	458	74	1,332	28	41	51	6.8
Valdez	643	562	107	1,312	11	25	29	8.0
Durango	784	443	54	1,281	49	56	36	7.0
Winner	577	559	115	1,251	27	46	35	7.9
Celebrity	840	371	27	1,238	30	57	21	5.5
Maya	481	643	114	1,238	44	72	70	8.6
Yula	497	642	75	1,214	115	104	75	8.7
Ringmaker	701	456	41	1,198	25	26	49	6.1
Magnum	497	575	77	1,149	47	25	79	6.7
XPH77N76	682	390	46	1,118	31	62	24	6.2
Golden Cascade	332	601	172	1,105	53	37	67	7.4
Armada	592	466	37	1,095	27	52	31	6.3
XPH85N128	825	225	22	1,072	14	78	9	4.7
Valiant	568	410	81	1,059	11	3	50	6.1
Bullring	550	413	42	1,005	12	39	49	5.4
Big Mac	722	254	16	992	56	94	27	4.5
Dai Maru	581	376	34	991	64	51	29	5.4
Avalanche	452	405	91	948	8	41	19	6.0
Brahma	179	584	178	941	2	3	74	8.2
Autumn Beauty	264	550	93	907	56	25	47	6.4
Golden Treasure	311	336	75	722	40	56	45	6.2
Blanco Duro	243	350	90	683	17	19	15	5.3
Ruby	42	342	148	532	17	7	67	6.7
Mean	547	453	78	1,078	33	44	43	6.5
LSD, 5%	275	189	73	317	36	53.7	16	36.5
1%	365	252	96	421	49	N.S.	21	48.5
C.V, %	35.6	29.7	66.3	21.6	78.7	86.2	26.0	19.8

Notes:

1. The plot area was fertilized with 48 N, 50 P_2O_5, 36 K_2O, and 75 S per acre during seedbed preparation; 72 N and 82 S per acre were broadcast June 3.

2. The onions were seeded March 27 with 20-inch row spacing on single-row ridged beds.

3. The bulbs were lifted September 14, crated September 28, placed in common storage October 12, and graded November 4.

4. Data are means of four replications.

CANTALOUPE TEST PLANTING, 1987 SEASON
Southern Oregon Experiment Station, Medford

Cantaloupes are grown by a few farmers in southern Oregon for market and by many home gardeners. They are sold locally at supermarkets and at roadside stands. The first melons reach the market about August 1, and sales continue until frost in October or until hard rains cause a decline in quality.

Most of the melons grown commercially are hybrids, generally Supermarket, Harper, or one of the variants of the Hales Best type. The fruits preferred by local markets are of medium size, weighing from 2 to 3 pounds. There are many varieties available to the grower, and this report presents information on a number of cantaloupe varieties and an experimental selection planted in a test on May 8.

Methods and Materials

The experimental area was fertilized during seedbed preparation with 80 N, 40 P_2O_5, 40 K_2O, and 44 S. The seeds were planted in hills spaced 36 inches apart, and rows were spaced 96 inches apart. Three plants were left per hill.

The first melons were harvested August 18, and a total of 16 harvests were made during the season. Irrigation was done with overhead sprinklers, although water was applied only two times after the fruits began to ripen.

Results and Discussion

The melons emerged well, but there was cutworm damage that made some replanting necessary. The plants grew well because temperatures in May and June were above normal; however, a cool, rainy period in July moderated an otherwise hot summer.

Maturities were advanced because of the warm dry weather. The first mature fruits were picked August 18 from Early Dawn and Supermarket. Fruits were picked at full slip from three additional varieties August 20 (Chieftain, Star Trek, and Summet). By August 29, some fruits had been harvested from 12 of the 14 entries in the main trial.

Peak harvests varied among entries. Early Dawn, Star Trek, Summet, Supermarket and Harper matured over 50% of their fruits before the end of August. Chieftain, Eastern Star, Experimental 86-M166, Gold Star, and Superstar passed the 50% maturity point early in September. Among the latest-maturing were Aurora, Easy Rider, Malheur, and Planters Jumbo.

Among the highest in yield were Chieftain, Summet, Early Dawn, Star Trek, and Malheur, a local nonhybrid.

The quality of the melons was exceptionally high until the last harvest. The hot, dry summer and careful use of irrigation water contributed to the high quality. Generally, the melons that matured at least half of their crop before the end of August appear to be well-adapted for the area. Most of the shipping types developed for Southwestern production areas mature too late for commercial production. Some of the eastern melons perform well in the area, but some of their fruits are larger than the supermarkets desire. Fruit stands or U-pick operations can use the larger sizes.

Information is shown in the following table.

Table 1. YIELD DISTRIBUTION, TOTAL YIELD, AND FRUIT SIZE, CANTALOUPE PLANTING, MEDFORD, 1987 SEASON

Entry	Percent of the seasonal total yield per harvest date															Total tons/acre	Lbs per melon
	8/18	8/20	8/24	8/27	8/29	8/31	9/2	9/5	9/11	9/15	9/19	9/26	10/1	10/9	10/13		
Aurora					4	2		9	1	16	10	32	12	10	3	14.4	2.20
Chieftain		8	9	8	13	9	11	4	8	3	5	9	6	4	2	22.9	2.64
Early Dawn	2	4	27	18	11	5		4	3	5	2	2	6	6	5	17.3	3.01
Eastern Star					9	27			11	13	7	5	15	5	7	16.6	3.58
Easy Rider					4	9		2	3	12	14	20	30	4	2	10.2	1.66
Exp 86-M166			8	13	6	3	3	16	11	14	2	12	5	3	2	15.2	2.80
Gold Star				9	18	9	4		11	14	7	14	10		3	14.0	2.72
Harper			12	18	22	24	4	4	2	3	2	4	2	2		16.9	2.19
Malheur						7	6	4	13	15	12	7	9	16	11	17.3	3.17
Planters Jumbo							2	10	5	2	14	18	14	17	17	14.3	2.58
Star Trek		4	17	12	30	6	3	3	3	5	2	6	7		2	17.4	2.54
Summet		4	9	11	23	15	7	6	12	1	3	5		3	1	20.0	2.46
Supermarket	4	5	3	7	21	13	3	5	5	9	6	8	3	7		16.1	2.13
Superstar			4	8	4	17	7	3	19	9	5	5	8	4	6	12.6	4.30