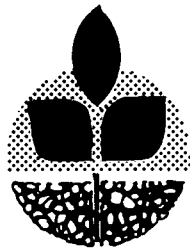


Alfalfa Production Practices and Variety Performance in Southern Oregon

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ABSTRACT

Alfalfa is an important hay crop which is grown on more than 10,000 acres in Jackson, Josephine, and Douglas counties of southern Oregon. Its estimated crop value is more than four million dollars per year. Many varieties of alfalfa are available for planting in the area. Sixty-eight varieties and experimental selections have been tested in five trials seeded since 1973 at the Southern Oregon Experiment Station at Medford. This report discusses the methods and recommended management practices under which the alfalfas were grown, and it presents yield data and observations from the trials.

KEYWORDS: alfalfa varieties, management practices

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ALFALFA PRODUCTION PRACTICES AND VARIETY PERFORMANCE IN SOUTHERN OREGON

John A. Yungen

INTRODUCTION

The production of alfalfa hay is an important enterprise on many southern Oregon farms. Alfalfa is grown on more than 10,000 acres in Jackson, Josephine, and Douglas counties with an estimated farm value of more than four million dollars per year. Much of the hay is consumed by livestock in the area, and some is sold to coastal area dairies.

Alfalfa is best suited to irrigated land or to deep, well-drained dryland soils. Yields range from three to more than nine tons per acre, depending on climatic conditions, soil type, soil moisture, fertilizer application, stand density, variety, disease intensity, and other management considerations.

Several root diseases shorten the productive life of alfalfa stands in southern Oregon. Bacterial wilt, Corynebacterium insidiosum, is widespread and may begin reducing stand densities of susceptible varieties by the second production year. Fusarium wilt, less virulent than bacterial wilt, is found in some fields. Verticillium wilt, Verticillium albo-atrum, has not been observed in the area, although it causes stand and yield reductions in some parts of Oregon. Phytophthora root rot, Phytophthora megasperma, causes stand thinning on some of the heavy-textured, less well-drained soils. Foliar diseases and the stem nematode, Ditylenchus dipsaci, occasionally cause stand damage and yield reductions. Plant breeders are making rapid progress in developing varieties with greater disease resistance, and they are placing emphasis on developing alfalfas with multiple disease and insect resistance.

Selecting the variety best adapted to conditions in a particular field is one of the most important decisions to be made in producing alfalfa hay. Many varieties developed by private seed companies and by public agencies are available, and prospective growers benefit from test plantings made under conditions similar to those found on their own farms.

Alfalfas usually can be classified as being short, medium, or long rotation types with respect to stand life. Short rotation types usually are productive only one or two years, medium rotation types may be productive three or four years, and long rotation alfalfas should remain productive at least five years.

Several alfalfas are used as standards of comparison for evaluating new alfalfas in the area. Lahontan, Saranac, Thor, and Vernal are long rotation types which have been grown for many years. Talent was released from the Southern Oregon Experiment Station in 1950 and was widely grown in southern Oregon, western Oregon, western Washington, and in Greece for about 20 years. It has moderate resistance to the stem nematode, but is moderately susceptible to bacterial wilt. It is a medium rotation type no longer widely grown but still used for comparison purposes.

Variety trials have been conducted at the Medford location to identify alfalfas best adapted to the climate, soils, and farming systems of the area. Data from five test plantings established between 1959 and 1973 were presented in Station Circular of Information 661 published at Oregon State University in 1977. Those tests included data on 82 varieties and experimental selections. This publication summarizes data on 68 alfalfas from five tests established between 1973 and 1978.

Most of the alfalfas in the tests are classed as being moderately winter-hardy, although a few hardy types were included. The alfalfas were evaluated for yield, quality, and disease resistance as indicated by length of productive stand life. Yields were expressed in tons of dry matter per acre. Alfalfa is usually baled while it still contains from 18 to 25 percent moisture; moisture is gradually lost until it reaches an air-dry moisture content of 10 to 12 percent, depending on the humidity of the surrounding air and the place and method of storage. Therefore, dry matter yields are 10 to 12 percent lower than would be expected for air-dry hay.

STAND ESTABLISHMENT

Seedbed preparation

The alfalfas were grown on a deep, well-drained, Central Point sandy loam soil. Soil tests, before seeding, determined fertilizer and liming needs. The soil test values were in the lower medium range for phosphorus and potassium, while calcium and magnesium levels were adequate. During seedbed preparation, phosphorus was applied at 35 to 44 pounds per acre (80 to 100 P₂O₅), potassium was applied at 66 to 83 pounds per acre (80 to 100 K₂O), and sulfur was applied at 30 to 40 pounds per acre, usually as part of single superphosphate. The soil pH ranged from 6.2 to 6.4, and based on the S.M.P. lime requirement test, no lime was applied.

Pre-plant incorporated herbicides were used with all the plantings. EPTC (Eptam) was applied at 2.5 pounds per acre, and benefin (Balan) was applied at 1.0 pound per acre, combined as a tank mix. The herbicides were tilled into two or three inches of surface soil immediately after they were applied. Seeding was done the same day or within one or two days.

Seeding

Fresh commercial inoculant was applied to the seeds at planting time. The seeds were slightly moistened with water to increase adhesion of the inoculant.

Seeds were drilled to a depth of approximately one-half inch with a Planet Jr. planter, and a roller or cultipacker was then used to firm the seedbed to obtain good soil-to-seed contact. The seeding rates were 10 to 12 pounds of pure live seed per acre. Rows were spaced 12 inches apart rather than 6 inches, since previous work indicated no difference in yield between the two spacings. Each plot consisted of five rows that were 25 feet long. The seedings were all made in April since spring seedings have proved more satisfactory than fall seedings when unfavorable weather and winter-annual weeds can cause poor stands.

Irrigation

Overhead sprinklers were used in all trials. In new seedings, irrigations were frequent, but light, with applications of about one inch of water each time. The Central Point sandy loam soil holds approximately 1.5 inches of available water per foot of depth. After June 1 in new seedings, greater amounts of water were applied but at less frequent intervals. With established alfalfa, about five inches of water was applied as soon as possible after each harvest. Between the second and third and between the third and fourth cuttings, an additional three inches of water was applied in most years.

Irrigation before the first harvest was used only in years when winter and spring precipitation was well below normal. Precipitation at the Experiment Station averages about 19 inches annually.

Harvesting

New seedings were cut three times in the seedling year. The pre-plant incorporated herbicide treatment generally resulted in nearly weed-free alfalfa so high quality hay could be produced even in the seedling year. Established alfalfas were harvested four times per year at the late bud to early bloom stage of development. Cutting dates were about June 1, July 6, August 12, and September 25. Fall regrowth after the fourth cutting was not harvested but was left to build up carbohydrates in the root systems to provide food reserves for growth the following spring.

Weed control

Herbicides were applied in October, November, or December to established plantings. Either diuron (Karmex) at 2.4 pounds per acre or simazine (Princep) at 1.6 pounds per acre was used. Since 1978, paraquat, a restricted use herbicide, has been used at 0.37 to 0.5 pound per acre (1.5 to 2 pints) with the simazine as a tank mix.

As stands became older, dinoseb (Premerge 3, Sinox PE), a restricted use herbicide, was sometimes applied at 3.0 pounds per acre (4 quarts) in late February as a dormant spray to control annual broadleaf weeds escaping the fall treatment. The competitive effect which a young, vigorous stand of alfalfa has against weeds diminishes as stands weaken and thin, making the application of a dormant spray a desirable practice.

Maintenance fertilizers

Maintenance fertilizers were applied in the fall or winter each year at the following rates per acre: phosphorus, 26 to 35 pounds (60 to 80 P_2O_5), potassium, 50 to 66 pounds (60 to 80 K_2O), and sulfur, 36 to 48 pounds. Boron was applied at three pounds per acre when a soil test indicated its need.

Each ton of alfalfa hay removes about 11 pounds of phosphate, P_2O_5 , 44 pounds of potash, K_2O , and 5 pounds of sulfur, S, from the soil. Although portions of these nutrients are supplied by mineralization of plant foods in the soil, it is necessary to apply adequate amounts of fertilizer to prevent the

occurrence of nutrient deficiencies. Although alfalfa contains approximately 55 pounds of nitrogen per ton of hay, nitrogen fertilizer was not applied in the tests because the roots were well-nodulated, and the Rhizobium meliloti bacteria in the nodules supplied enough nitrogen to meet the alfalfas' needs.

1973 seeding

Twenty-two alfalfas were seeded in a planting that included 15 new entries and 7 that were reference varieties or ones that had performed well in previous trials. Most were expected to have resistance to bacterial wilt root disease. Several were included because of their reported resistance to *Phytophthora* root rot.

The alfalfas were harvested four times per year for the five full production years 1974 through 1978, but no yield data were taken in 1979. Since the stands of many entries were still satisfactory, and many were still important commercially, yield data were taken again in 1980, the seventh production year.

Many of the alfalfas remained productive through the seven production years. Four entries, WL 307, WL 310, WL 311, and WL 309, produced more than 40 tons of dry matter in six production years. All but three of the 22 alfalfas averaged at least six tons of dry matter per year. Table 1 presents yield data and stand estimates for the trial. Irrigated alfalfas in southern Oregon generally average about 40 percent of their seasonal production in the first cutting, nearly 25 percent in each of the next cuttings, and from 10 to 12 percent in the fourth cutting.

Percentages of the original, mature stands remaining were estimated in March 1981. Stands of Washoe and Lahontan were given the highest ratings at 32 and 29 percents, respectively, followed closely by AS 49 and DK 167. It was noted in this planting and in several previous ones that stands can thin to as few as 5 to 7 plants per square foot before there are serious declines in yields. With a seeding rate of 10 to 12 pounds per acre, the equivalent of 50 to 60 seeds is dropped per square foot of area, resulting in more plants than are needed for hay production. Therefore, loss of a certain number of plants to diseases, rodents, mechanical injury, and other causes can be tolerated before the stands become too thin for satisfactory hay production.

1974 seeding

Sixteen alfalfas were seeded April 17 in a trial that included seven experimental selections along with five other new entries. Lahontan, AS-49, Saranac, and Thor were included as standards for comparative purposes. Yield data were taken in the seedling year and for the full production years 1975 through 1979. Table 2 presents yield data from the trial and stand ratings from 1981 observations.

Seedling year yields, obtained in three cuttings, were high, averaging 4.36 tons of dry matter per acre. When weeds are controlled in new seedings by the use of recommended herbicides, yields in the seedling year for irrigated alfalfas in southern Oregon are generally about one half those obtained during the first full production year.

Table 1. Yields and stand ratings of alfalfa varieties and experimental selections seeded in 1973 at the Southern Oregon Experiment Station, Medford

Entry	Yield, tons dry matter per acre						Total	Average	**Percent stand
	1974	1975	1976	1977	1978	*1980			
WL 307	7.44	7.94	6.20	6.62	6.89	6.51	41.60	6.93	22
WL 310	7.19	8.08	5.70	6.90	6.19	6.39	40.45	6.74	25
WL 311	7.66	7.82	5.88	6.68	6.05	6.26	40.35	6.72	22
WL 309	7.34	7.81	5.92	6.60	6.31	6.29	40.27	6.71	22
Vista	7.40	7.77	5.77	6.51	6.27	6.26	39.98	6.66	21
Saranac	7.32	7.50	5.82	6.48	6.34	6.34	39.80	6.63	19
Thor	7.87	7.56	5.51	6.61	5.93	6.16	39.64	6.61	16
Citation	7.67	7.30	5.71	6.45	6.34	5.97	39.44	6.57	17
Washoe	7.48	7.46	5.69	6.58	5.99	6.21	39.41	6.57	32
DK 131	7.19	7.33	5.62	6.30	6.00	6.26	38.70	6.45	19
Gladiator	7.38	7.30	5.64	6.30	5.95	6.10	38.67	6.44	20
DK 167	6.76	7.81	5.46	6.24	6.23	6.14	38.64	6.44	27
Vernal	6.88	6.80	5.41	6.75	5.86	6.59	38.29	6.38	21
Bonus	6.77	7.04	5.73	6.59	5.93	6.05	38.11	6.35	17
Resistador II	7.21	7.55	5.55	6.14	5.70	5.91	38.06	6.34	24
Talent	7.36	7.89	5.41	5.90	5.47	5.74	37.77	6.29	10
N7-5	7.03	6.92	5.47	6.26	5.75	5.94	37.37	6.23	12
AS 49	7.04	6.95	5.36	5.96	5.78	5.98	37.07	6.18	27
Nugget	7.07	6.88	5.14	6.30	5.76	5.75	36.90	6.15	19
Lahontan	6.81	6.95	5.12	5.81	5.53	5.62	35.84	5.97	29
K1-610	6.34	7.56	5.23	5.75	5.50	5.30	35.68	5.95	10
Spredor	5.66	5.42	4.29	5.16	4.81	4.65	29.99	5.00	10
Mean	7.14	7.35	5.54	6.31	5.94	6.02	38.29	6.38	20
LSD, 5%	0.49	0.60	0.38	0.52	0.58	0.52	1.74	0.29	
C.V. %	4.9	5.7	4.8	5.9	6.9	6.1	3.2	3.2	

Footnotes:

1. Yield data are totals of four cuttings per year.
2. *No yield data were taken in 1979.
3. **Percent stand is an estimate of the percentage of the original, mature plants remaining as observed February 20, 1981.
4. Data are means of four replications.

Production levels were relatively high during the five full production years. Differences among the entries increased in the fourth and fifth years as stands of some varieties thinned. Yields in the fifth year correlated quite well with stands. Lahontan, Eureka, DK 167, T3X-301, AS-49, and T3X-328 were among the highest yielding alfalfas in 1979, and they had the most plants remaining in their stands.

Observations on March 26, 1981, when the alfalfas were seven years old, showed that many stands had thinned beyond the point for adequate hay production. Lahontan, Eureka, and T3X-301 had the fullest stands even though their ratings

were only 28, 27, and 27 percents, respectively, of their original full stands. AS 49, DK 167, and experimental T3X-328 were the only others with a rating of 20 percent or more for their stands. With stand ratings below 20 percent, hay production would be less than economic, and weed control would be more difficult than with vigorous, weed-competitive stands.

Table 2. Yields and stand ratings of alfalfa varieties and experimental selections seeded in 1974 at the Southern Oregon Experimental Station, Medford

Entry	Yield, tons dry matter per acre							*Percent stand	
	1974	1975	1976	1977	1978	1979	1975-79 Total Average		
T3X-301	4.49	7.75	7.35	6.24	6.71	6.47	34.52	6.90	27
T2X-324	4.73	8.38	6.83	6.32	6.48	5.71	33.72	6.74	6
Thor	4.33	7.88	6.93	6.17	6.67	5.98	33.63	6.73	19
DK 167	4.27	7.65	6.70	5.90	6.22	6.82	33.29	6.66	21
T3X-303	4.69	7.82	7.20	6.23	6.02	5.87	33.14	6.63	12
T3X-326	4.42	7.98	6.66	6.03	6.36	6.07	33.10	6.62	11
T3X-328	4.76	8.05	6.61	5.76	6.14	6.43	32.99	6.60	20
Saranac	4.40	7.85	6.97	6.00	6.06	5.95	32.83	6.57	19
Americana	4.74	7.81	6.86	5.97	6.22	6.00	32.56	6.51	11
Klondike	4.43	7.66	6.48	5.83	6.30	6.12	32.39	6.48	13
Eureka	3.94	7.41	6.30	5.66	5.97	6.60	31.94	6.39	27
T3X-304	4.36	8.12	6.72	5.69	5.44	5.71	31.68	6.34	8
Lahontan	3.94	6.97	6.46	5.70	5.90	6.64	31.67	6.33	28
AS 49	4.15	7.08	6.23	5.35	6.06	6.52	31.24	6.25	21
Joaquin 11	4.01	7.01	6.15	5.63	5.79	6.24	30.82	6.16	18
T3X-308	4.28	7.65	6.77	5.40	5.33	5.24	30.39	6.08	7
Mean	4.36	7.69	6.70	5.85	6.11	6.15	32.50	6.50	
LSD, 5%	0.34	0.63	0.49	0.39	N.S.	0.70	2.15	0.43	
C.V. %	5.4	5.7	5.2	4.5	9.3	8.0	4.6	4.6	

Footnotes:

1. Yield data are totals of four cuttings per year except that only three were made in 1974.
2. *Percent stand is an estimate of the percentage of the original, mature plants remaining as observed March 26, 1981.
3. Data are means of four replications.

1976 seeding

Thirty alfalfas were seeded April 8, 1976, in an experiment designed to provide information on yield and quality of hay, adaptability, and stand persistence as influenced by root and foliar diseases. Twenty-five entries were new to the area and five were standard reference varieties or ones that had shown unusual promise in a previous trial. Yield data, obtained from 1977 through the 1981 season, are presented in Table 3.

Production levels remained quite uniform over the five production years. Sixteen alfalfas exceeded six tons of dry matter production in 1981. Cumulative five-year totals ranged from 29.82 to 33.23 tons per acre, a relatively narrow spread for 30 entries over such an extended period. Stands remained satisfactory and still showed good vigor at the end of the test period. The data indicates there are a number of alfalfas that remain productive over at least five years in southern Oregon.

Table 3. Yields of alfalfa varieties and experimental selections seeded in 1976 at the Southern Oregon Experiment Station, Medford

Entry	Yield, tons dry matter per acre						Average
	1977	1978	1979	1980	1981	Total	
T3X-470	5.47	7.68	6.89	6.44	6.75	33.23	6.65
PX 755	6.17	7.60	6.49	6.41	6.40	33.07	6.61
PX 745	5.68	7.54	6.75	6.11	6.92	33.00	6.60
WL 219	6.61	7.50	6.28	6.01	6.42	32.82	6.56
Phytor	5.88	7.55	6.37	6.24	6.46	32.50	6.50
Klondike PH	6.62	7.59	6.16	6.08	6.05	32.50	6.50
*Voris A-77	6.46	7.42	6.29	5.94	6.13	32.24	6.45
Valor	6.12	7.37	6.09	6.21	6.32	32.11	6.42
Thor NL	6.21	7.60	6.10	6.07	6.13	32.11	6.42
T3X-329	6.20	7.02	6.65	5.90	6.12	31.89	6.38
Apollo	6.01	7.47	6.09	5.93	6.27	31.77	6.35
WL 215	6.29	7.60	6.22	5.79	5.77	31.67	6.33
Americana 7519	6.54	7.25	6.00	5.95	5.79	31.53	6.31
T3X-327	6.59	6.93	6.35	5.90	5.62	31.39	6.28
WL 318	6.35	7.34	6.12	5.81	5.76	31.38	6.28
Vernal	5.64	7.24	6.33	5.96	6.09	31.26	6.25
Atlas	6.31	7.31	5.81	5.88	5.95	31.26	6.25
Americana 7520	5.95	7.28	6.03	5.95	5.92	31.13	6.23
WL 216	5.94	7.31	6.10	5.73	6.01	31.09	6.22
Thor	5.91	7.41	6.06	5.66	5.97	31.01	6.20
Olympic	5.92	7.32	6.00	5.69	5.79	30.72	6.15
Pacer	5.94	7.08	5.82	5.80	6.06	30.70	6.14
Victor	5.74	7.16	6.05	5.89	5.84	30.68	6.14
K3-155	5.82	7.52	6.08	5.56	5.66	30.64	6.13
Talent	5.59	6.59	6.19	5.87	6.02	30.26	6.05
Lahontan	5.33	6.70	6.32	5.85	6.05	30.25	6.05
Anchor	5.85	7.03	6.13	5.61	5.48	30.10	6.02
T3X-469	5.92	7.13	5.99	5.53	5.34	29.91	5.98
K4-120	6.36	7.37	5.64	5.22	5.28	29.87	5.97
Discovery	6.08	7.08	5.60	5.52	5.54	29.82	5.96
Mean	6.08	7.29	6.17	5.88	6.00	31.42	6.28
LSD, 5%	0.61	N.S.	N.S.	0.47	0.59	1.52	0.30
C.V., %	7.1	7.2	9.4	5.7	6.9	4.5	4.5

Footnotes:

1. Yield data are totals of four cuttings per year.
2. Data are means of four replications.
3. *North American Plant Breeders is the developer and Voris Seeds is the marketer of Voris A-77.

1978 seeding

Twenty-four alfalfas were seeded April 25, 1978. Most were new entries, although Lahontan, Vernal, Talent, and Thor were included as reference varieties. Several entries were selected, among many that were available, because of their reported resistance to Phytophthora root rot, while all but Talent were expected to be quite resistant to bacterial wilt. Yield data were taken in the seedling year and from full-production years 1979 through 1982.

Table 4. Yields of alfalfa varieties and experimental selections seeded in 1978 at the Southern Oregon Experiment Station, Medford

Entry	Yield, tons of dry matter per acre						1978-82 Total	Average
	1978	1979	1980	1981	1982			
D3X-302	3.73	7.56	7.29	7.23	6.43	32.24	6.45	
WL 310	3.80	7.58	7.26	6.79	6.48	31.91	6.38	
D2X-324	3.82	7.45	7.57	7.05	5.58	31.47	6.29	
D3X-353	3.69	7.49	7.25	6.92	5.98	31.33	6.27	
D3X-206	3.59	7.25	7.29	7.10	6.08	31.31	6.26	
WL 312	3.40	7.58	7.32	6.76	6.18	31.24	6.25	
WL 219	3.38	7.66	7.02	6.66	6.25	30.97	6.19	
PLC 77-133	3.46	6.82	6.93	6.90	6.75	30.86	6.17	
D3X-313	3.71	7.27	7.31	6.78	5.76	30.83	6.16	
Thor	3.79	7.38	7.02	6.57	5.95	30.71	6.14	
WL 318	3.76	7.18	6.86	6.57	6.14	30.51	6.10	
Lahontan	3.39	6.98	6.80	6.62	6.67	30.46	6.09	
Resistador II	3.22	6.73	6.94	6.84	6.69	30.42	6.08	
Phytor	3.36	7.01	6.98	6.72	6.29	30.36	6.07	
Talent	3.20	6.95	7.07	6.48	6.54	30.24	6.05	
Vanguard	3.36	7.07	6.89	6.79	5.95	30.06	6.01	
Apollo	3.51	7.15	6.77	6.52	6.06	30.01	6.00	
Olympic	3.60	6.93	6.94	6.59	5.94	30.00	6.00	
WL 220	3.44	7.11	6.64	6.37	6.16	29.72	5.94	
AS 49	3.24	6.96	6.52	6.52	6.46	29.70	5.94	
NAPB 62	3.34	6.83	6.80	6.43	5.97	29.37	5.87	
Vernal	3.43	6.90	6.56	6.40	5.70	28.99	5.80	
Anchor	3.32	6.98	6.69	6.52	5.47	28.98	5.80	
Agate	3.18	6.66	6.16	5.98	5.22	27.20	5.44	
Mean	3.49	7.15	6.94	6.68	6.11	30.37	6.07	
LSD, 5%	0.37	0.39	0.53	N.S.	0.70	1.79	0.36	
C.V., %	7.6	3.9	5.4	6.5	8.1	4.2	4.2	

Footnotes:

1. Yield data are totals of four cuttings per year except that only three cuttings were made in 1978, the seedling year.
2. Data are means of four replications.

Seedling year yields ranged from 3.18 to 3.82 tons of dry matter per acre with an average of 3.49. This was lower than is usually obtained the seedling year, with the third harvest averaging only 0.53 tons. There was no irrigation water applied between the second and third harvests, although 1.69 inches of precipitation was recorded. Data are shown in Table 4.

The alfalfas have been vigorous growers during the course of the trial. Fourteen yielded at a rate exceeding seven tons of dry matter per acre in 1979, ten in 1980, three in 1981, but none in 1982. Cumulative yields range from 27.20 to 32.24 tons per acre. The trial will be continued through the 1983 season.

Northwest uniform seeding

Eleven alfalfas comprising a group of varieties to be tested at several northwest locations were seeded April 17, 1974. The objective of the trial was to make varietal comparisons with respect to root and foliar diseases, insect damage, hardiness, and yield of hay at several locations under widely differing soil and climatic conditions. Yield data were taken from three harvests in 1974 and from four harvests in each of the six succeeding years. Data are shown in Table 5.

Table 5. Yields and stand ratings of alfalfa varieties seeded in 1974 at the Southern Oregon Experiment Station, Medford, Northwest Uniform Group

Entry	Yield, tons dry matter per acre							1975-80 T/A		Percent stand
	1974	1975	1976	1977	1978	1979	1980	Total	Average	
Vernal	4.01	7.00	6.26	6.30	6.68	7.09	6.34	39.67	6.61	20
Saranac	4.02	7.60	6.54	6.12	6.26	6.43	5.98	38.93	6.49	21
Beltsville 72	4.20	7.65	6.69	6.48	5.98	6.19	5.74	38.73	6.46	20
Narragansett	3.76	7.02	6.07	6.42	6.04	6.92	6.13	38.60	6.43	21
Agate	3.72	7.37	5.95	6.25	6.10	6.70	6.14	38.51	6.42	23
Washoe	3.43	6.99	5.69	5.65	5.85	6.96	5.98	37.12	6.19	31
Team	4.04	7.67	6.55	6.04	5.66	5.32	5.03	36.27	6.05	7
Lahontan	3.40	6.66	5.69	5.35	5.47	6.49	5.86	35.52	5.92	28
Moapa 69	3.48	7.24	5.88	5.60	5.21	5.57	5.20	34.70	5.78	8
Apalachee	4.14	8.02	6.52	5.27	4.93	4.51	4.61	33.86	5.64	3
DuPuits	4.26	7.76	6.35	5.70	4.79	4.07	3.87	32.54	5.42	2
Mean	3.85	7.36	6.20	5.93	5.73	6.02	5.53	36.77	6.13	
LSD, 5%	0.33	0.49	0.37	0.51	0.50	0.51	0.49	1.88	0.31	
C.V., %	8.1	6.5	4.7	6.8	6.8	6.7	7.0	3.8	3.8	

Footnotes:

1. Yield data are totals of four cuttings per year except that only three cuttings were made in 1974, the seedling year.
2. Percent stand is the percentage of the original mature stand remaining as observed February 20, 1981.
3. Data are means of five replications.

Yields of Apalachee and DuPuits were high compared to the other varieties from 1974 through 1976. Their stands began thinning rapidly by 1977 because of bacterial wilt, and yields declined sharply. The material harvested from plots of those two alfalfas in the last three harvest years contained a considerable amount of weedy material. By February 1981, they had only a few scattered alfalfa plants remaining.

The stand of Team alfalfa thinned rapidly after the 1977 season, and its yield declined in the following three seasons. The stand of Beltsville 72 showed some thinning, but its yield remained relatively high.

Moapa 69, the only non-hardy alfalfa in the trial, was the first to begin spring growth, was the quickest to recover after each cutting, made the most fall growth, but was always below average in yield. It lost some plants because of winterkill, and had only a few plants remaining in 1981.

Lahontan and Washoe yielded above the trial means beginning in 1979 and 1978, respectively. Both are characteristically in the lower half of the yield scale in most trials in southern Oregon for the first three or four years, but progress up the scale by the fourth or fifth years because of excellent stand persistence. They had the highest stand ratings in the 1981 observations. They combine high degrees of bacterial wilt resistance with resistance to Phytophthora root rot and the stem nematode.

Agate yielded well each year. It has the most Phytophthora root rot resistance of the alfalfas in the trial, and it is commonly seeded on some of the heavier-textured, less well-drained soils in the area. Narragansett was also very productive and maintained a reasonably good stand. Saranac performed well, yielding above the yearly mean throughout the test. It has been a recommended variety in the area for nearly ten years.

Vernal had the highest cumulative yield of the alfalfas in the Northwest Uniform Group. It maintained a high level of production throughout the test, although it showed considerable stand loss as observed in 1981. Vernal is widely grown in southern Oregon where it is often seeded on non-irrigated land.

SUMMARY

Five plantings of alfalfa made at the Southern Oregon Experiment Station since 1973 have been used to evaluate 68 varieties and experimental selections that might be used for hay production in Jackson, Josephine, and Douglas counties of southern Oregon. Hay yield, along with disease resistance, as indicated by growth, vigor, and persistence of stands, was used as the main criteria for measuring adaptability.

Management practices recommended to growers were followed in the alfalfa variety tests. This included inoculating the seed, firming the seedbed with a roller or cultipacker after seeding, applying herbicides registered for the crop, irrigating as needed, applying fertilizer according to soil test recommendations, harvesting the alfalfa at the late bud to early bloom stage of development, and allowing fall regrowth to replenish food reserves in the root systems. All trials were conducted on a Central Point sandy loam soil, which is a deep, well-drained soil adapted for alfalfa production.

Found in each trial were alfalfas that had sufficient root disease resistance to maintain satisfactory stands and a high level of production over a period of five years. Many of the alfalfas were similar in their production over the lengths of the trials. Cumulative yields, however, over periods ranging from four to six years, show differences within the trials. Thus, variety

selection continues to be important in alfalfa hay production. Although no single variety stands out which can be recommended over all others for hay production, these data do provide a basis on which to make variety selection decisions for southern Oregon.