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# Alfalfa Varieties for Central Oregon



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## SUMMARY

Between 1965 and 1975, four alfalfa variety test trials, which included 38 different varieties, were conducted at Redmond and Alfalfa by the Central Oregon Experiment Station. Two trials were completed and two are continuing. Hay yields averaged 6.79 and 5.39 tons per acre per year in the completed trials at Redmond and Alfalfa, respectively. The average annual difference between the lowest- and highest-yielding varieties in the completed trials at the two locations was 0.83 tons of hay per acre. In terms of current hay prices (\$65 per ton), this would amount to an annual income difference of \$53.63 per acre.

## INTRODUCTION

Each year, new alfalfa varieties are released for use by farmers in the United States. More than likely, some new varieties are more suitable than others for growing under the soil and climatic conditions of Central Oregon. Since it is not wise or feasible for farmers to test these varieties individually, the Central Oregon Experiment Station continually conducts variety test trials to obtain information on their relative yield performance at different locations. This is a progress report of the variety test trials.

In using this information, it should be kept in mind that variety test trials are somewhat unsatisfactory because of the following reasons:

1. The tests usually are conducted at a limited number of locations and under one system of management. At other locations or under other systems of management, the relative performance of the varieties may be different.
2. All varieties are harvested at any one location when about one-half of them reach 10 percent bloom. This average time of harvest may be too early for some varieties and they might be affected adversely. Others may have passed the 10 percent bloom stage and, although the hay quality would be lower, their dry matter yields may be higher than they would have been if they had been cut at an earlier date. Ideally, each variety should be harvested when it reaches 10 percent bloom but, because of the number of varieties involved, it is not feasible to do this.

## REDMOND LOCATION

### Completed Trial

Results of a trial of 20 varieties that was conducted from 1970 through 1974 are presented in Table 1. During the first three years of the study, average annual yields ranged from 6.62 to 8.59

Table 1. Air-dry hay yields of alfalfa test varieties grown at the Central Oregon Experiment Station, Redmond, 1970-1974.

Variety	Air-dry hay yield <sup>o</sup>					average
	1970	1971	1972	1973	1974	
	tons/acre					
Scout	7.63 a-d <sup>oo</sup>	8.16 a-c	7.81 a-c	5.86 a	5.48 ab	6.99
Washoe	6.32 e	8.04 a-d	7.63 bc	5.48 a	4.84 a-c	6.46
Mark II	8.28 ab	8.02 a-d	8.19 ab	5.64 a	5.23 ab	7.07
Ladak	7.96 a-c	8.84 a	7.05 c	5.06 a	5.01 a-c	6.78
Vernal	7.88 a-d	7.95 a-d	8.30 ab	5.72 a	5.78 ab	7.13
Cayuga	7.01 cd	7.64 b-f	8.22 ab	5.71 a	5.57 ab	6.83
Narragansett	8.00 a-c	7.42 b-g	7.82 a-c	6.00 a	5.36 ab	6.92
Dawson	7.54 a-d	7.01 d-g	8.10 ab	5.45 a	5.22 ab	6.66
Saranac	8.50 a	7.31 c-g	8.42 a	6.08 a	5.73 ab	7.21
Iroquois	8.04 ab	8.09 a-c	8.36 ab	5.92 a	5.75 ab	7.23
Titan	7.72 a-d	7.83 a-e	7.89 a-c	5.44 a	5.96 a	6.97
Apex	7.97 a-c	8.30 a-c	8.09 ab	5.48 a	5.18 ab	7.00
Alfa	8.14 ab	8.43 ab	8.12 ab	4.72 a	4.70 bc	6.82
Golden Gro	8.05 ab	7.42 b-g	8.36 ab	5.48 a	4.96 a-c	6.85
WL202	6.98 c-e	7.69 b-f	8.35 ab	5.88 a	5.50 ab	6.88
NK919	8.30 ab	7.00 d-g	7.82 a-c	5.63 a	4.97 a-c	6.74
Resistador	7.35 b-d	6.49 g	8.21 ab	5.64 a	4.02 c	6.34
Promor	7.93 a-c	6.83 e-g	8.05 ab	5.97 a	5.19 ab	6.79
Haymor	7.44 b-d	6.64 fg	7.92 a-c	5.52 a	5.11 ab	6.53
Ranger	6.91 de	6.77 fg	7.62 bc	5.71 a	5.48 ab	6.50

<sup>o</sup> Yields are totals of three harvests per year for all years except 1971, in which two harvests were made. <sup>oo</sup> Values within a year column followed by different letters are significantly different at the 5 percent level of probability by Duncan's New Multiple Range Test, which is a statistical test to compare treatment averages and determine if they are different.

tons of hay per acre. During the last two years, annual yields were uniformly lower, ranging from 4.37 to 6.02 tons per acre. The marked decrease in yields was due to an application of the herbicide Simizine during the winter of 1972. The stands were injured by this application and did not recover from it. (Late applications of Simizine also have injured alfalfa stands in weed control studies at Hermiston (1).)

Average annual yields over the five years ranged from 6.34 to 7.23 tons per acre. This amounted to a difference of 0.89 tons per acre between lowest- and highest-yielding varieties. In terms of current hay prices (\$65 per ton), this would amount to an annual income difference of \$57.85 per acre.

### Continuing Trial

Results of the first two harvest years in a trial of 15 varieties that was begun in 1973 are presented in Table 2. During the first year, dry matter yields ranged from 3.62 to 4.64 tons per acre. Yields during the second year were considerably higher, ranging from 5.48 to 8.84 tons per acre. The low yields of the first year were probably due to normal development of stands in their first harvest year.

Average annual yields over the two years ranged from 4.55 to 6.57 tons per acre. This amounted to a difference of 2.02 tons per acre between the lowest- and highest-yielding varieties.

Table 2. Dry matter yields of alfalfa test varieties grown at the Central Oregon Experiment Station, Redmond, 1974-1975.

Variety	Dry matter yield*		
	1974	1975	average
	tons/acre		
Vernal	4.05 a-c**	7.12 bc	5.59
Agate	3.75 bc	6.91 c	5.33
Washoe	3.98 a-c	6.59 cd	5.29
Team	4.50 ab	6.72 c	5.61
DuPuits	4.31 a-c	7.34 bc	5.83
Saranac	4.57 ab	8.38 ab	6.48
Appalachee	4.14 a-c	7.20 bc	5.67
Narragansett	4.50 ab	6.94 c	5.72
Lahonton	3.62 c	5.48 d	4.55
Apex	4.40 a-c	7.27 bc	5.84
Anchor	4.30 a-c	8.84 a	6.57
Bonus	4.49 ab	7.23 bc	5.86
Weevl Chek	4.63 ab	7.52 a-c	6.08
Ladak	3.92 a-c	7.14 bc	5.53
Thor	4.64 a	7.82 a-c	6.23

\* Totals of three harvests per season. \*\* Values within a year column followed by different letters are significantly different at the 5 percent level of probability by Duncan's New Multiple Range Test.

This would amount to an annual income difference of \$131.30 per acre in terms of current hay prices (\$65 per ton).

### ALFALFA LOCATION

#### Completed Trial

Results of a trial of 17 varieties that was conducted from 1965 through 1971 are presented in

Table 3. Air-dry hay yields of alfalfa test varieties grown by the Central Oregon Experiment Station at Alfalfa, 1965-1971.

Variety	Air-dry hay yield*							
	1965	1966	1967	1968	1969	1970	1971	avg.)
	tons/acre							
Narragansett	4.27 ab**	5.16 a-d	8.68 ab	5.36 a	7.05 ab	5.90 ab	3.65 a	5.72
Ladak	4.49 a	4.81 a-e	7.56 cd	5.28 a	6.73 a-c	5.65 ab	3.25 a-c	5.40
Ranger	4.18 ab	5.48 a	7.87 a-d	5.56 a	6.61 a-d	6.31 ab	3.40 a-c	5.63
Teton	4.22 ab	4.64 c-e	8.13 a-d	5.16 a	6.22 c-e	5.96 ab	3.15 a-c	5.35
Rambler	4.25 ab	4.67 b-e	7.51 cd	4.84 a	6.41 a-e	5.23 b	2.85 b-d	5.11
Cayuga	4.03 ab	4.95 a-e	8.54 a-c	5.54 a	6.83 a-c	6.14 ab	3.78 a	5.69
Alfa	4.02 ab	4.57 de	8.58 a-c	6.03 a	6.65 a-d	6.24 ab	2.30 de	5.48
Atlantic	4.24 ab	5.17 a-d	8.34 a-d	5.53 a	6.68 a-c	6.44 ab	3.53 ab	5.71
Lahonton	3.26 c	4.43 e	7.39 d	5.32 a	5.74 e	6.10 ab	2.83 b-d	5.01
Vernal	4.50 a	5.12 a-d	8.19 a-d	5.39 a	7.10 a	6.46 a	3.65 a	5.77
Sevelra	3.80 bc	4.82 a-e	7.72 b-d	5.07 a	6.31 b-e	6.45 ab	2.69 cd	5.27
Cody	4.29 ab	5.12 a-d	8.42 a-d	5.30 a	6.69 a-c	6.66 a	3.52 ab	5.71
DuPuits	3.78 bc	4.86 a-e	7.86 a-d	5.27 a	5.93 de	5.80 ab	2.00 e	5.07
Nomad	4.33 ab	5.30 a-c	8.29 a-d	5.28 a	6.63 a-d	6.34 ab	2.81 b-d	5.57
Rhizoma	4.27 ab	5.34 ab	8.26 a-d	5.59 a	6.54 a-d	5.80 ab	3.37 a-c	5.60
NK919	3.96 ab	5.23 a-d	8.85 a	5.29 a	6.25 c-e	6.62 a	3.64 a	5.69
Uinta	4.28 ab	5.17 a-d	8.06 a-d	5.29 a	6.45 a-e	5.91 ab	2.75 cd	5.42

\* Totals of two harvests per season. \*\* Values within a year column followed by different letters are significantly different at the 5 percent level of probability by Duncan's New Multiple Range Test.

Table 3. Yields during 1967 were considerably higher than those of the other six years. Differences in yields among the years of the study probably reflect differences in growing conditions, mainly temperature. The low yields in 1971 were probably due to a combination of poor growing conditions (low temperatures) and deterioration of the stands.

Average annual yields over the seven years of the study ranged from 5.01 to 5.77 tons of hay per acre. This amounted to a difference of 0.76 tons per acre between the lowest- and highest-yielding varieties. In terms of current hay prices (\$65 per ton), this would amount to an annual income difference of \$49.40 per acre.

#### Continuing Trial

Results of the first harvest year in a trial of nine varieties that was begun in 1974 are presented in Table 4. Dry matter yields ranged from 4.89 to 6.02 tons per acre. This amounted to a difference of 1.13 tons per acre between the lowest- and the highest-yielding varieties. In terms of current hay prices (\$65 per ton), this would amount to an income difference of \$73.45 per acre.

Table 4. Dry matter yields of alfalfa test varieties grown by the Central Oregon Experiment Station at Alfalfa, 1975.

Variety	Dry matter yield*
	tons/acre
Saranac	5.87 a**
Washoe	4.89 b
Team	4.97 b
Appalachee	5.57 a
Agate	5.71 a
Thor	5.85 a
Narragansett	5.96 a
Vernal	5.46 a
Anchor	6.02 a

\* Totals of three harvests. \*\* Values followed by different letters are significantly different at the 5 percent level of probability by Duncan's New Multiple Range Test.

#### CONCLUSIONS

Use of the best adapted varieties for this area may increase annual hay yields by one to two tons per acre. High-yielding varieties usually are winter hardy and are resistant to bacterial wilt disease. Only varieties having these characteristics should be used in Central Oregon.

#### LITERATURE CITED

1. Swan, D. G. 1964. Annual report, weed control research for year 1964, Pendleton and Sherman branch experiment stations. Agric. Exp. Stn., Oregon State University, Corvallis, Oregon.

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