

**Alfalfa Variety Tests in the
Columbia Basin, Blue Mountains,
and Snake River Valley**

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Approximately 400,000 acres of alfalfa are grown annually in Oregon. Productivity of dry forage varies from eight or more tons per acre to as little as one ton per acre. Moisture available to the growing crop, length of growing season, soil fertility, and soil depth account for much of this variation in yield. Most of the acreage is located east of the Cascade Mountains, where soil conditions and dry summers favor growth and harvest-

ing. Much of the acreage in eastern Oregon is irrigated. The acres of alfalfa harvested in the Columbia Basin, Blue Mountains, and Malheur County are shown in Figure 1. Much of the alfalfa in Malheur County is grown in the irrigated part of the Snake River Valley.

Alfalfa is grown mainly for hay. Other uses are grazing, silage, green-chopping, and alfalfa meal. The ability of this legume to produce large yields of forage

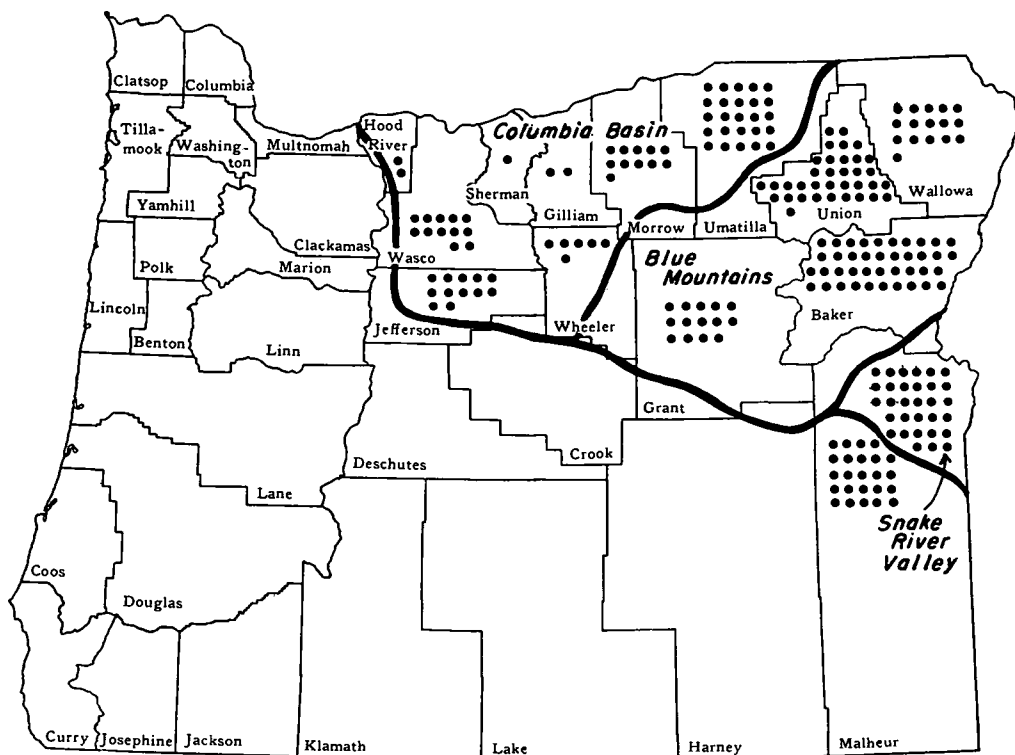


Figure 1. Acres of alfalfa harvested in 1964 (each dot represents 1,000 acres).

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high in protein, minerals, and vitamins accounts for its popularity. Besides hay production, alfalfa is valued for its beneficial effects on the soil in nitrogen fixation, addition of organic matter, minimizing of erosion, and improvement of soil structure.

New strains and varieties of alfalfa are continually becoming available for planting. The work of plant breeders at agricultural colleges or private companies provides a major source of new varieties. Usually this material has a known genetic history and has been tested in laboratories and greenhouses for disease and insect resistance. This source of new varieties will become more important when hybrid alfalfa seed becomes commercially available. Another source of varieties results from the harvesting of seed from a field which has been especially productive. Often a local name is given to such seed. Many useful varieties have originated in this manner.

Description of Alfalfa Varieties

Most alfalfa is planted in the Columbia Basin and eastern Oregon with the intention of leaving the field in alfalfa for many years. Varieties such as Vernal and Ranger are high yielding, winter hardy, and resistant to bacterial wilt. Lahontan has performed satisfactorily in long rotations in the Snake River Valley. In short rotations, two- to four-year stands, DuPuits and other Flemish-type varieties may give essentially the same performance as the wilt-resistant, winter-hardy varieties.

Blending of varieties is of doubtful value to the grower.

Culver. Vigorous, upright growing habit with moderately slow rate of recovery after cutting. Winter hardy and resistant to bacterial wilt and spotted alfalfa aphid. Reasonably fine stemmed.

DuPuits. Vigorous, upright growing variety with very early spring growth and with quick recovery after cutting which gives it great eye appeal. Rather stemmy if not cut early. Moderately resistant to certain foliar diseases, but susceptible to crown rots and bacterial wilt. Short lived. Of value in short rotations.

Ladak. Yields exceptionally heavy first cutting, which may be coarse and stemmy; relatively lower yielding in succeeding cuttings. Recovers slowly after cutting. Becomes dormant during summer droughts, which is desirable in some dryland areas. Goes dormant early in the fall. Very winter hardy. Adapted to one-cutting dryland areas where moisture is limited after the first cutting.

Lahontan. Vigorous, upright growing variety which recovers quickly after cutting. Resistant to bacterial wilt, stem nematode, and alfalfa aphid. Susceptible to foliar diseases. Sufficiently winter hardy for eastern Oregon.

Choosing the right variety for a given purpose is one of many important considerations in successful alfalfa production. In an effort to learn the adaptation, growth characteristics, and forage-yielding ability of the many alfalfa varieties available, yield trials have been conducted at various locations in Oregon. As new strains, experimental selections, and varieties have become available, new trials have been established which include untested material and the better varieties from previous trials.

The purpose of this circular is to present results of past and current variety-yield tests of alfalfa, relative results obtained over an extended period of years, and descriptions of the more promising varieties. Variations in varieties and agronomic conditions even in an area as small as a community preclude that no one variety will be superior for all purposes.

Yields are relatively higher in the warmer areas such as the Snake River Valley.

Nomad. Yields relatively high under low-moisture conditions. Fine stemmed, low crowned; some plants have well-developed rhizomes, giving the variety a spreading habit under some conditions. Recovers slowly after cutting. Susceptible to bacterial wilt. Winter hardy. Recommended variety for grass-alfalfa seedings in dry areas.

Rambler. Fine stemmed, relatively higher yielding in first cutting. Recovers slowly after cutting. Some plants have creeping roots, giving the variety a spreading habit. Moderately resistant to bacterial wilt. Very winter hardy. Recommended variety for grass-alfalfa seedings in dry areas.

Ranger. Vigorous with upright to semi-upright growth habit. Moderately quick recovery after cutting. Susceptible to leaf spot diseases. Resistant to bacterial wilt. Very winter hardy.

Rhizoma. Fine stemmed, relatively high yielding in first cutting. Recovers slowly after cutting. Some plants have well-developed rhizomes, giving the variety a spreading habit under some conditions. Susceptible to bacterial wilt. Very winter hardy.

Vernal. Vigorous, high yielding, fine stemmed, with broad crowns. Moderate recovery after cutting. Resistant to bacterial wilt. Very winter hardy. Long lived.

Washoe. Vigorous, upright. Has resistance to pea aphids, spotted alfalfa aphids, stem nematodes, and bacterial wilt. Yields are relatively higher in the warmer areas.

Results of Yield Trials

Results of yield trials which have been conducted in recent years are reported in the following tables. Results in a particular cropping district are listed in consecutive tables. The annual yield of a variety is influenced by many factors, such as climatic conditions, moisture available for growth, insects, diseases, soil fertility, and stand. Average yield over a period of years is a better measure of the value of a variety than a single year's results. For this reason, trials from which

only one year's data have been obtained are not reported.

The trials were conducted using field plot designs, soil fertility levels, insect control, and experimental techniques that have been found suited to comparing the productivity of alfalfa selections, strains, and varieties. Production data in the tables are expressed as tons of forage per acre, either air dry or containing 12% moisture.

Table 1. Forage Yields of Alfalfa Varieties—Pendleton Experiment Station (Dryland)

Variety	Yield ¹			1964-65 average	Relative yield in percent of Vernal
	1964	1965			
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Vernal	2.33	3.56		2.95	100
Cayuga	2.30	3.26		2.78	94
Cherokee	2.16	3.28		2.72	92
Uinta	1.89	3.49		2.69	91
Ranger	1.98	2.96		2.47	84
Zia	1.76	2.44		2.10	71
Lahontan	1.68	2.29		1.99	67

¹ At 12% moisture.

Table 2. Forage Yields of Alfalfa Varieties—Pendleton Experiment Station (Dryland)

Variety	Yield ¹					1959-62 average	Relative yield in percent of Ladak
	1959	1960	1961	1962			
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Rambler	1.43	1.44	2.06	2.16	1.77	1.77	101
Ladak	1.52	1.44	1.80	2.26	1.76	1.76	100
Vernal	1.45	1.39	1.77	2.36	1.74	1.74	99
Rhizoma	1.22	1.47	1.75	2.31	1.69	1.69	96
DuPuits	1.58	1.38	1.43	2.06	1.61	1.61	92
Nomad	1.28	1.01	1.69	1.77	1.44	1.44	82
Cody	1.39	1.07	1.06	1.60	1.28	1.28	73
Teton	0.60	1.07	1.34	1.77	1.20	1.20	68
Lahontan	1.18	0.96	1.16	1.31	1.15	1.15	66
Moapa	1.52	0.87	0.96	1.00	1.09	1.09	62

¹ At 12% moisture.

Table 3. Forage Yields of Alfalfa Varieties—Umatilla Experiment Station (Irrigated)

Variety	Yield ¹				1963-65 average	Relative yield in percent of Vernal
	1963	1964	1965			
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Vernal	5.00	7.82	6.04		6.27	100
Culver	5.31	7.30	5.75		6.12	97
Cayuga	5.10	7.37	5.73		6.07	97
Willow Creek	4.78	7.55	5.94		6.09	97
Zia	5.10	7.19	5.46		5.92	94
Ranger	4.96	7.24	5.48		5.89	94
Lahontan	4.63	7.14	5.47		5.75	91
Beaver	5.44	6.51	4.94		5.63	90
Uinta	5.03	6.68	4.98		5.56	88
A 1	5.03	6.47	5.05		5.52	88

¹ At 12% moisture.

Table 4. Forage Yields of Alfalfa Varieties—Umatilla Experiment Station (Irrigated)

Variety	Yield ¹					Relative yield in percent of Vernal
	1959	1960	1961	1962	1959-62 average	
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Vernal	3.21	11.87	8.93	9.68	8.42	100
DuPuits	3.50	12.12	8.09	8.43	8.16	97
Zia	3.02	10.39	8.47	8.48	7.59	90
Cody	3.17	11.01	8.05	8.06	7.57	90
Moapa	3.52	10.81	7.62	8.05	7.50	89
Lahontan	2.80	10.22	8.07	8.50	7.40	88
Teton	0.75	8.05	6.11	5.53	5.06	60

¹ At 12% moisture.**Table 5. Forage Yields of Alfalfa Varieties—Stanfield, Oregon (Irrigated)**

Variety	Yield ¹				Relative yield in percent of Vernal
	1963	1964	1965	1963-65 average	
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Washoe	2.81	8.09	8.09	6.33	104
Vernal	3.21	7.87	7.23	6.10	100
Cayuga	2.85	7.89	6.89	5.88	96
Culver	2.92	7.32	6.71	5.65	93
Uinta	3.00	7.29	6.28	5.52	90
Beaver	2.94	6.81	6.75	5.50	90
Ranger	2.79	7.23	6.44	5.49	90
Zia	2.68	7.17	6.46	5.44	89
Lahontan	2.09	7.32	6.70	5.37	88
A 1	3.09	5.89	5.84	4.94	81

¹ At 12% moisture.**Table 6. Forage Yields of Alfalfa Varieties—Eastern Oregon Experiment Station (Irrigated)**

Variety	Yield ¹					Relative yield in percent of Vernal
	1961	1962	1963	1964	1965	
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Vernal	7.54	7.07	6.66	5.25	4.81	100
Ranger	6.94	6.55	6.15	4.94	4.68	93
Lahontan	6.87	6.04	6.31	5.10	4.95	93
Orestan	6.24	6.56	6.22	4.52	4.31	90
Rhizoma	6.82	6.63	6.15	4.12	2.67	84
Nomad	5.59	5.34	5.24	3.69	3.95	76
DuPuits	6.85	6.20	5.26	3.27	1.27	73

¹ At 12% moisture.

Table 7. Forage Yields of Alfalfa Varieties—Baker, Oregon (Irrigated once annually)

Variety	Yield ¹				Relative yield in percent of Vernal
	1964	1965	1966	1964-66 average	
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Culver	2.74	4.04	4.60	3.79	102
Vernal	2.75	4.16	4.26	3.72	100
Cayuga	2.61	3.96	4.56	3.71	100
Uinta	2.66	4.02	4.40	3.69	99
Teton	2.61	4.02	4.37	3.67	99
Ladak	2.71	3.74	4.53	3.66	98
Rambler	2.86	3.75	4.20	3.60	97
Ranger	2.69	3.88	4.16	3.58	96
Rhizoma	2.63	3.87	3.96	3.49	94
Cody	2.54	3.80	4.12	3.49	94
Nomad	2.49	3.44	4.04	3.32	89
Washoe	2.43	3.20	4.09	3.24	87
Lahontan	2.23	2.92	3.71	2.95	79

¹ At 12% moisture.**Table 8. Forage Yields of Alfalfa Varieties—Eastern Oregon Experiment Station (Irrigated)**

Variety	Yield ¹			Relative yield in percent of Vernal
	1965	1966	1965-66 average	
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Uinta	4.98	7.19	6.09	103
Culver	4.96	7.18	6.07	103
Cayuga	4.79	7.28	6.04	102
Saranac	4.92	7.10	6.01	102
Progress	4.83	7.12	5.98	101
Vernal	4.94	6.90	5.92	100
525	4.82	6.84	5.83	98
Teton	5.20	6.44	5.82	98
Ranger	4.60	6.99	5.80	98
WL-202	4.40	6.87	5.64	95
Cody	4.20	6.82	5.51	93
DuPuits	4.19	6.44	5.32	90
Washoe	3.70	6.22	4.96	84
Lahontan	3.44	5.76	4.60	78

¹ At 12% moisture.**Table 9. Forage Yields of Alfalfa Varieties—Malheur Experiment Station (Irrigated)**

Variety	Yield ¹						Relative yield in percent of Orestan
	1960	1961	1962	1963	1964	1960-64 average	
	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	<i>T/A</i>	%
Nevada Syn P	4.21	7.87	13.87	12.94	11.84	10.15	114
Nevada Syn K	4.61	7.77	13.06	12.67	11.21	9.86	111
Zia	4.24	7.50	12.76	12.10	12.29	9.78	110
Lahontan	4.52	7.69	12.57	11.87	11.75	9.68	109
Nevada Syn E	5.24	7.15	12.79	11.42	11.25	9.57	108
Alfa	5.58	7.54	11.96	11.58	10.71	9.47	106
Cody	4.46	6.96	11.98	10.70	10.99	9.02	101
Ranger	4.85	7.13	11.19	10.32	11.05	8.91	100
Orestan	4.31	6.83	11.64	10.75	10.98	8.90	100
Culver	4.64	7.18	12.41	9.02	10.34	8.72	98
Uinta	5.04	6.99	10.32	8.73	10.88	8.39	94
Vernal	4.52	6.53	9.95	9.19	9.72	7.98	90
Nevada Syn H-5	5.18	6.71	10.44	7.76	9.08	7.83	88
Moapa	3.42	6.83	9.01	6.75	8.01	6.80	76

¹ Air dried.