

# ALFALFA VARIETY TRIALS IN CENTRAL OREGON

## PRELIMINARY REPORT

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## ABSTRACT

Two alfalfa variety trials were established in June, 1987; one each at the Madras and Powell Butte research sites of the Central Oregon Experiment Station. Twelve seed companies and/or originating agencies cooperated in this study of 24 cultivars. At both Madras and Powell Butte, there were no statistically significant differences in total yield among the varieties tested. However, Vernal was the poorest yielding variety at Powell Butte, and among the poorer yielding varieties at Madras.

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## INTRODUCTION

Forage crop production is a significant part of the central Oregon economy. Alfalfa hay and other types of hay are produced on about 49,500 and 34,500 acres, respectively. An additional 55,000 acres are devoted to cropland pastures. The value of production exceeds \$23 million. Alfalfa is a major cash crop produced for sale, primarily to western Oregon dairies. There is also much local use of alfalfa for hay or in mixture with grasses and other legumes for hay or pasture.

Alfalfa variety trials have been conducted for many years in central Oregon. Two test locations are currently used. The Powell Butte site (3,180 feet elevation) provides information on winter hardiness and performance under a short growing season (80 to 90 days). The Madras site (2,440 feet elevation) has a longer growing season (120 days) and milder winters than Powell Butte.

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## MATERIALS AND METHODS

Non-coated inoculated seed of each cultivar was sown in rows 8 inches apart on June 29, 1987 at 18 pounds per acre. Each plot was five feet wide by 20 feet long. Varieties were replicated four times in a randomized complete block design. The cultivar name, source (entering or originating agency), and test site for each entry are shown in Table 1. No fertilizer was incorporated into the seedbed prior to planting. The spring soil test values were pH 7.9, 42 ppm P, 390 ppm K, and 23 ppm nitrate N at Madras and pH 6.3, 20 ppm P, 179 ppm K, and 10.6 ppm nitrate N at Powell Butte. Ninety-three pounds of sulphur per acre as gypsum were top dressed on each nursery in March, 1988.

Broadleaf weeds were controlled with a tank-mix of buc-tril and 2,4 DB (.187 + .5 lb ae/A) when the alfalfa had 2-3 trifoliolate leaves on July 20 and July 31 at Madras and Powell Butte, respectively.

Both trials were sprinkler irrigated as needed throughout the growing season.

The Madras and Powell Butte plots were harvested September 22, 1987, and September 15, 1987, respectively. Although excellent stands were established, seeding year yield data is not reported because of variation due to uneven soil moisture.

During 1988, the Madras trial was harvested on May 25, July 5, August 19, and September 5. A 3.3 feet by 15 feet strip was harvested from the center of each plot. A total of three cuttings were taken from Powell Butte in 1988. Cuttings were taken on June 16, July 27, and September 14, 1988. After each plot was cut and the green weight recorded, a sample of approximately one pound was taken and oven-dried for use in dry matter yield calculations.

## RESULTS

Madras. There were no statistically significant differences in total yield among the 19 varieties grown at Madras in 1988. Total yields of Arrow, Apollo II, Garst 636, Fortress, Ultra, Max 85, USDA W12, and WL225 were all 110% greater than those of Vernal. Vernal was among the poorer yielding varieties (Table 2).

Powell Butte. The results of the alfalfa variety trial grown at Powell Butte in 1988 are shown in Table 3. There were no statistically significant differences among total yields. However, Vernal was the poorest yielding variety. Many of the new improved, proprietary varieties yielded more than 110% of Vernal.

Table 1. Variety name, source, and test site(s) of alfalfa cultivars in tests in Central Oregon.

Variety	Sources*	Madras	Powell Butte
Arrow	Agri Pro	X	X
Apollo II	Agri Pro	X	X
Vernema	Andrew Seed Co.	X	X
Wrangler	Andrew Seed Co.	X	X
629	Garst Seed Co.	X	X
636	Garst Seed Co.	X	X
KS 101	Keller Seed	X	X
Commander	Northrup King	X	
Fortress	Northrup King	X	X
Meteor	Northrup King	X	
Trumpeter	Northrup King		X
5432	Pioneer	X	X
XAR53	Pioneer	X	X
Ultra	Seed Tec	X	X
Max 85	Seed Tec	X	X
W 12	WA-USDA	X	X
W 45	WA-USDA	X	X
Vernal	Andrew Seed Co.	X	X
WL 225	W-L Research	X	X
WL 320	W-L Research	X	X
120	DeKalb		X
135	DeKalb		X
Eagle	Asgrow		X
Endure	Cargill		X

\* Source: entering or originating agency

Table 2. Alfalfa Variety Trial, Madras, Oregon, 1988

Variety	Yield					% Vernal
	1st Cut	2nd Cut	3rd Cut	4th Cut	Total	
	-----tons/acre-----					
Arrow	3.36	2.43	2.26	3.01	11.05	117
Apollo II	3.61	2.10	1.95	2.86	10.52	111
Vernema	3.49	2.22	1.52	2.01	9.23	97
Wrangler	3.49	2.08	1.93	2.34	9.84	104
629	3.50	2.14	1.89	2.40	9.92	105
636	3.31	2.30	2.20	2.73	10.54	111
KS 101	3.55	2.22	1.75	2.21	9.75	103
Commander	3.30	2.25	2.05	2.65	10.24	108
Fortress	3.32	2.31	1.94	2.91	10.49	111
Meteor	3.20	1.97	1.94	2.57	9.69	102
5432	3.20	2.15	1.96	2.81	10.13	107
XAR53	3.36	2.22	2.19	2.19	10.37	109
Ultra	3.49	2.41	1.95	2.69	10.54	111
Max 85	3.60	2.19	1.94	2.82	10.55	111
W12	3.50	2.40	2.05	2.68	10.63	112
W45	3.20	2.10	1.79	2.20	9.30	98
Vernal	3.17	2.18	1.84	2.28	9.47	100
WL225	3.37	2.32	2.06	2.79	10.54	111
WL320	2.83	1.81	2.11	2.73	9.48	100
MEAN	3.36	2.20	1.96	2.59	10.12	106
PLSD, 5%	NS	0.29	NS	0.56	NS	---
CV%	8.78	9.30	13.82	15.13	7.86	---

Table 3. Alfalfa Trial, Powell Butte, Oregon, 1988

Variety	Yield			Total	% Vernal
	1st Cut	2nd Cut	3rd Cut		
	-----tons/acre-----				
Arrow	2.66	2.04	2.17	6.87	109
Apollo II	2.80	2.06	2.16	7.02	111
Vernema	2.39	2.45	2.11	6.95	110
Wrangler	2.47	2.49	2.35	7.31	115
Eagle	2.53	2.39	2.40	7.31	116
Endure	2.64	2.08	2.20	6.92	109
120	2.26	2.45	2.09	6.80	107
135	2.52	2.56	2.15	7.23	114
629	2.76	1.88	2.03	6.67	105
636	2.57	2.08	2.24	6.89	109
KS 101	2.67	2.40	1.98	7.05	111
Trumpeter	1.95	2.37	2.16	7.48	118
Fortress	2.62	2.18	2.11	6.91	109
5432	2.21	2.42	2.36	6.99	110
XAR53	2.72	2.49	2.30	7.50	118
Ultra	3.13	2.52	2.20	7.84	124
Max 85	2.43	2.30	2.22	6.94	110
W 12	2.70	2.28	2.10	7.08	112
W 45	2.22	2.12	2.38	6.71	106
Vernal	1.88	2.46	2.00	6.33	100
WL 225	2.76	2.48	2.17	7.40	117
WL 320	2.15	2.52	2.39	7.05	111
MEAN	2.55	2.32	2.19	7.06	111
PLSD, 5%	0.47	NS	NS	NS	---
CV%	12.98	15.66	12.57	8.29	---