

Oat Varieties Grown for Grain and Forage Production at the Safford Agricultural Center, 1988

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ABSTRACT

Eleven oat varieties were tested for grain and forage yields at the Safford Agricultural Center. Cayuse, the predominant variety grown in the area, was the top producer of total dry matter. Four other varieties had higher grain yields than Cayuse.

INTRODUCTION

Oats are grown in the Safford valley for hay for the local dairy operator and horse owners; for a green manure crop; and for seed to supply the previous two needs. Cayuse, a tall, relatively late-maturing variety, has been the most popular oats grown in the area, mainly because of its capacity to produce forage. It was decided to evaluate several varieties of grain oats, along with Cayuse, for forage and grain production, plus a grain oat variety trial grown in Cochise county (1). The questions to be answered included: 1) Could the grain oats produce as much forage as Cayuse? and 2) Could the grain oats compete with Cayuse as a seed source for the oats grown as green manure crops?

MATERIALS AND METHODS

Eleven varieties of oats were planted at the Safford Agricultural Center using a Kincaid Precision small-plot drill. The plots were ridged prior to planting with furrows on 40-inch centers. The grain drill planted seed across two beds. The drill setting was changed from variety to variety to maintain a constant planting rate even though the seed size varied.

Crop History

Soil type: Pima clay loam variant
Elevation: 2950 feet above sea level
Previous crop: Cotton
Planting date: 5 January 1988
Planting rate: 150 pounds of seed per acre
Fertilizer: 150 lbs/ac of urea and 300 lbs/ac of 16-20-0 preplant
200 lbs/ac of urea on 7 April
Herbicide: 1.25 pts/ac of 2,4-D
Insecticide: None
Harvest date: 29 June for forage; 1 July for grain

One-half of each plot was cut with a Jari mower, raked together and weighed in a sling fastened to a spring-loaded milk scale. These samples were returned to their plots to continue drying and were threshed along with the standing part of the plot to get a grain yield from the entire plot. A Massey Harris Clipper combine was used to thresh the plots. A sample forage plot was allowed to dry in the air and then reweighed after drying to obtain a factor for converting all the forage weights to air dry weights.

RESULTS

Table 1. Forage Yields in Pounds per Acre and Tons per Acre along with Plant Heights by Variety for Oats Grown at the Safford Agricultural Center, 1988.

Variety	Pounds/acre	-----Forage Yields*-----	
		Tons/acre	Plant Height (inches)
Cayuse	8295.8 a**	4.15	38.6 a
Dawn	7506.3 ab	3.75	36.3 a
Swan	6668.0 abc	3.33	40.9 a
Hazel	6604.0 abc	3.30	36.6 a
Ogle	6205.4 bc	3.10	37.2 a
Montezuma	6013.7 bc	3.01	40.0 a
Nora	5140.9 c	2.57	40.8 a
Sierra	5105.2 c	2.55	40.4 a
Starter	5015.4 c	2.51	39.8 a
Jaycee	4944.4 c	2.47	37.2 a
Bob	4806.6 c	2.40	43.8 a

* Forage yields are corrected to an air dry basis.

** Values within a column followed by the same letter are not significantly different at the 5% level using the Student-Newman-Keul's test.

Table 2. Grain Yields, Percent Moisture and Bushel Weights by Oat Varieties grown at the Safford Agricultural Center, 1988.

Variety	Grain Yld* (lbs/ac)	% Moisture	Bushel Weight (pounds)
Montezuma	2029.9 a**	9.6	32.0
Hazel	1848.6 ab	8.0	29.5
Swan	1738.8 ab	8.0	31.8
Starter	1576.6 ab	10.0	32.5
Cayuse	1566.0 ab	8.0	25.8
Nora	1461.6 ab	10.2	30.0
Dawn	1478.4 ab	8.0	31.3
Bob	1466.1 ab	8.5	29.3
Ogle	1378.1 ab	8.0	30.3
Jaycee	1325.0 b	8.0	30.8
Sierra	1208.7 b	8.0	27.3

* Grain yields are corrected to 10 percent moisture.

** Values followed by the same letter are not significantly different at the 5% level using the Student-Newman-Keul's test.

DISCUSSION

Cayuse is a good choice for forage production (Table 1). Variability between plots in the replications makes it difficult to separate the top four varieties statistically, but the yield difference between Cayuse and the Dawn was quite large. The forage harvest was taken after the seeds were dry, which is later than optimum timing for hay, but the yields noted are an indication of the varieties' hay-producing capacity. According to research in California (2), Cayuse has been the highest yielding oat in the forage trials at UC Davis.

Four grain varieties out-yielded Cayuse (Table 2). Three of those four (Montezuma, Hazel and Swan) all did well in Bonita (1), also. The low bushel weight for the Cayuse was due to the fact that its seed is much like that of a wild oat; Cayuse seed is long and gangly and will not pack tightly.

The yields were quite low, compared with the yields of more than 4,000 pounds per acre in the variety trial in Bonita. However, the low yields are probably related to the salinity of the soil at the experiment station. Maas (3) indicates that oats are moderately salt-tolerant, but less so than barley or wheat. An additional replicated oat variety trial (not reported here) was on a field that was apparently saltier than this one. The oats in that field turned yellow and refused to grow for a couple of months during the winter and early spring. Nora and Cayuse, two varieties in the middle of the rankings on less salty ground, ranked at the bottom in the salty field. Interestingly, at harvest time Cayuse was the tallest plant in the trial at 44.8 inches and Nora was the shortest plant at 35.3 inches. Because oats lack tolerance to highly saline soils, a different cover crop might be appropriate in problem fields.

REFERENCES

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3. Maas, E.V. 1986. Salt Tolerance of Plants. Applied Agricultural Research. Vol. 1, No. 1, pp. 12-26.