

Oat Variety Grain and Forage Yield Trials At The Maricopa Agricultural Center 1990

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Abstract

Twelve oat varieties (9 hulled and 3 hull-less) were yield tested for both forage and grain production at the Maricopa Agricultural Center during the '89-90 growing season. Highest forage producing varieties were generally later maturing - Cayuse and Stampede; while lower yields were produced by early maturing varieties - Montezuma and Palestine. Highest grain yields were produced by Swan and FMC400.

Introduction

Forage and grain trials were conducted at the Maricopa Agricultural Center to compare yields of twelve oat varieties. Nine hulled and three hull-less varieties were tested for forage and grain yields during the '89-90 growing season.

Typically, the oat seed is tightly enclosed in a hull which consists of the lemma and palea flower parts. The lemma and palea of the hull-less varieties thresh away when harvested leaving a "naked" seed. Hull-less varieties usually yield less but will have a high test weight. The hull can account for a substantial amount of weight in the overall yield of the crop but is not very dense compared to actual seed weight. Tibor, 03669 and Pennuda - three hull-less varieties - were tested in this year's trials.

Materials and Methods

A 12-entry 6-rep randomized complete block design was used to compare differences in both forage (Table 1) and grain (Table 2) yield of the 12 varieties tested in this year's trials.

Previous crop in this seedbed was a green manure of Harlan barley. The seedbed was prepared with 85#N/A and 75#P₂O₅/A incorporated prior to a preplant irrigation. The crop was planted in a moist seedbed at the rate of 70#seed/A (hull) and 55#seed/A (hull-less) on Nov. 16, 1989. An additional 50#N/A was applied during the first postplant irrigation on Jan. 24. Five additional irrigations were applied on Feb. 23, Mar. 14 and 30 and Apr. 12 and 25.

Each plot was 18 feet long and 6 feet wide with 6 rows planted 12 inches apart. Forage was harvested from each of the cultivars at heading time. Three middle rows were harvested with a Jari mower set at a 2 inch cutting height. Samples from each plot were taken to determine moisture content; all forage yields presented in Table 1 are based on a 10% moisture content. Grain yields were harvested with a Massey-Ferguson (MF-8) plot

combine. The four middle rows of each plot were harvested to determine grain yield.

Results

Top forage yielding variety was Cayuse (12090 lbs/A) followed closely by Stampede (10962 lbs/A) (Table 1). Later maturing varieties need more water than early maturing varieties for optimum forage production and generally will produce more forage than the early varieties. Montezuma and Palestine were the earliest maturing and lowest yielding (5239 lbs/A and 3788 lbs/A, respectively) varieties in this trial.

Swan and FMC 400 were the highest grain yielding varieties. Later maturing varieties such as Cayuse, Stampede and Markton were among the lowest yielding. The low yield of Tibor is due, in part, to the hull-less or naked character of the seed. Test weight (42 lbs/bu) is from 8 to 13 lbs heavier than Cayuse, Stampede or Markton. Pennuda, a naked entry, had yields as great as that of another naked oat variety 03669, but produced very heavy seed (test wt = 49.0 lbs/bu) and did not suffer any lodging damage.

Table 1. Oat Variety Forage Yields (CV = 9.0)

Variety	Source	Heading Date	Plant Height Inches	% Lodging	Number of Irrig.	Forage Yield lbs/A	
Cayuse	WSU	4-19	51	50	6	12090	a
Stampede	WPB	4-21	43	0	6	10962	b
Markton		4-17	51	50	6	9356	c
Pennuda		4-04	43	0	5	9269	c
Nora	U of Ark	3-28	41	0	4	9188	c
Mesa	UA	4-02	41	10	5	8302	d
Swan		3-26	43	0	4	8220	d
FMC400	FMC	4-02	43	10	5	8141	d
03669	Canada	3-24	41	0	4	6851	e
Tibor	Canada	3-29	37	0	4	6529	e
Montezuma	UC	3-11	28	50	3	5239	f
Palestine		3-11	28	100	3	3788	g

Table 2. Oat Variety Grain Yields (CV = 13.5)

Variety	Source	Heading Date	Plant Height Inches	% Lodging	Test Weight	Grain Yield lbs/A	
Swan		3-26	55	50	38	4356	a
FMC400	FMC	4-02	43	50	39	4356	a
Montezuma	UC	3-11	51	80	33.5	4054	ab
Nora	U of Ark	3-28	59	80	40.0	3993	ab
Mesa	UA	4-02	63	80	37	3751	b
Palestine		3-11	41	30	34.5	3570	b
03669	Canada	3-24	51	30	41.5	2783	c
Pennuda		4-04	59	0	49.0	2662	cd
Cayuse	WSU	4-19	63	80	29	2420	cde
Stampede	WPB	4-21	49	0	32.0	2239	de
Tibor	Canada	3-29	61	30	42	2118	e
Markton		4-17	63	80	34.0	1997	e