

Alfalfa Variety Demonstration at the Safford Agricultural Center, 1990

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Abstract

Yields are given for 22 varieties of alfalfa grown at the Safford Agricultural Center. Yields were 2 to 3 tons lighter than those in 1989. Mecca retained its number one position with a yield of 8.86 tons per acre and a total of five varieties had yields above 8 tons per acre. It is of interest to note that three of the top five varieties were developed by the Plant Genetics group in California.

Introduction

Long staple cotton is still the most important crop in the Safford area followed by upland cotton and then alfalfa. With current yields and value the alfalfa crop in Graham county is worth around \$3 million. This amount of money translates into a fair amount of interest in the crop. This test is a continuation of an alfalfa variety testing program that began more than 15 years ago.

Methods and Materials

Twenty-one alfalfa varieties with fall dormancy rating from 6 to 8 are included in this test, with Spredor II (FD 1) used in buffer areas between the replicates.

Crop History

Location: Safford Agricultural Center
Elevation: 2950 feet above sea level
Soil type: Pima clay loam variant
Planted: 18 September 1987. Rate: 25 pounds per acre
Fertilizer: 300 pounds per acre of 16-20-0, preplant
Plot size: 2.5 feet by 20 feet
Replicates: Four

Plots were cut by hand, using a Jari mower and raked and weighed immediately to prevent loss of moisture. Weights were converted to dry weight at 12% moisture for reporting purposes.

Results and Discussion

1989 was a good year for alfalfa in the Safford valley. Now, as we look at the yields in 1990 we are disappointed with what we see. During 1989 we received 4637 heat units during the year compared with 4454 in 1990. The decline in yields for 1990 is probably also connected with the fact that the crop is now in its third year. The data from the third year's cutting and total yield are found in Table 1. Table 2 contains the

summary of yields from 1988 to 1990.

References

1. Clark, L.J. and R.E. Cluff. 1990. Alfalfa variety demonstration at the Safford Agricultural Center, 1989. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson. Series P-84, pp. 18-21.
2. Ottman, M. and S. Smith. 1989. Alfalfa Cultivars for Arizona, 1989. Cooperative Extension, The University of Arizona, Tucson, AZ.

Table 1. Third year yield summary for 22 alfalfa varieties grown at 2950 feet above sea level in Southeastern Arizona. Yields are in tons per acre corrected to 12% moisture, ranks are in parentheses.

Variety	Cut 1 27 Apr	Cut 2 6 Jun	Cut 3 2 Jul	Cut 4 31 Jul	Cut 5 4 Sep	Cut 6 10 Oct	Total	% of Cuf 101
Mecca	1.02 (3)	2.01 (1)	2.08 (1)	1.52 (1)	1.38 (3)	0.84 (1)	8.86 a ¹	117.9
Madera	1.03 (2)	1.96 (3)	1.96 (2)	1.39 (3)	1.39 (2)	0.82 (2)	8.55 ab	113.8
Condor	0.93 (7)	1.93 (4)	1.83 (7)	1.42 (2)	1.38 (4)	0.79 (5)	8.28 abc	110.2
KX 87001	1.08 (1)	1.84 (5)	1.84 (4)	1.37 (5)	1.39 (1)	0.64 (13)	8.18 abc	108.9
Yolo	0.90 (9)	1.96 (2)	1.84 (6)	1.35 (6)	1.17 (13)	0.79 (4)	8.02 abc	106.8
Maricopa	1.01 (4)	1.73 (10)	1.84 (5)	1.30 (8)	1.31 (6)	0.80 (3)	7.98 abc	106.3
Sutter	0.98 (5)	1.81 (16)	1.70 (10)	1.25 (11)	1.25 (10)	0.76 (6)	7.75 abcd	103.2
Palmer Spec	0.76 (16)	1.70 (11)	1.85 (3)	1.37 (4)	1.35 (5)	0.62 (14)	7.67 abcd	102.1
Pioneer 5929	0.96 (6)	1.70 (12)	1.74 (8)	1.32 (7)	1.31 (7)	0.60 (15)	7.62 abcd	101.5
J-82	0.83 (14)	1.80 (7)	1.70 (11)	1.26 (10)	1.28 (8)	0.66 (10)	7.53 bcd	100.3
Cuf 101	0.82 (15)	1.74 (9)	1.73 (9)	1.28 (9)	1.26 (9)	0.68 (9)	7.51 bcd	100.0
Sundor	0.90 (10)	1.76 (8)	1.65 (12)	1.22 (12)	1.21 (12)	0.66 (11)	7.40 bcd	98.5
WL 516	0.92 (8)	1.70 (13)	1.58 (14)	1.21 (13)	1.15 (14)	0.69 (8)	7.24 bcd	96.4
Valiant	0.71 (18)	1.68 (14)	1.56 (16)	1.19 (14)	1.22 (11)	0.70 (7)	7.08 cd	94.2
WL 605	0.85 (11)	1.66 (15)	1.57 (15)	1.15 (15)	1.12 (15)	0.64 (12)	6.99 cde	93.1
Ardiente	0.84 (13)	1.62 (16)	1.64 (13)	1.01 (17)	1.05 (16)	0.47 (18)	6.62 def	88.2
GT 13R+	0.73 (17)	1.53 (17)	1.49 (17)	1.10 (16)	1.04 (17)	0.55 (16)	6.44 def	85.8
Lew	0.55 (21)	1.45 (19)	1.29 (18)	0.97 (18)	1.01 (18)	0.51 (17)	5.79 efg	77.0
Pierce ²	0.85 (12)	1.49 (18)	1.27 (19)	0.84 (19)	0.84 (19)	0.46 (19)	5.74 fg	76.5
Baron	0.60 (19)	1.23 (20)	1.05 (20)	0.69 (21)	0.70 (20)	0.37 (21)	4.64 gh	61.8
Spredor II	0.55 (20)	1.04 (21)	0.98 (21)	0.73 (20)	0.68 (21)	0.38 (20)	4.37 h	58.2
Hi-Phy ³	0.38 (22)	0.84 (22)	0.56 (22)	0.57 (22)	0.47 (22)	0.19 (22)	3.01 i	40.1
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GRAND MEAN	0.82	1.64	1.58	1.16	1.14	0.62	6.97	
% CV	27.5	20.3	25.3	24.3	25.2	30.5	22.98	
LSD (05)	0.22	0.26	0.28	0.21	0.22	0.15	1.11	

1. Values followed by the same letter are not significantly different at the 5% level.
2. Differences between these plots and a bulk planting of Pierce raise a question of veracity on this variety.
3. The stand of Hi-Phy was poor, probably due to old seed.

Table 2. Three year summary for 22 alfalfa varieties grown at 2950 feet above sea level in southeastern Arizona.

Variety	Fall Dormancy	1988 ¹	1989	1990	Average	% of Cuf 101
Mecca	8	7.69 (1)	12.04 (1)	8.86 (1)	9.53 a ²	111.6
Madera	7	7.27 (8)	10.88 (3)	8.55 (2)	8.90 ab	104.2
KX 87001		7.35 (5)	10.79 (6)	8.18 (4)	8.77 abc	102.7
Palmer Spec	8	7.41 (3)	11.16 (2)	7.67 (8)	8.75 abcd	102.5
Pioneer 5929	8	7.59 (2)	10.80 (5)	7.62 (9)	8.67 abcd	101.5
Condor	7	6.96 (14)	10.62 (7)	8.28 (3)	8.62 abcd	100.9
Cuf 101	8	7.29 (7)	10.82 (4)	7.51(11)	8.54 bcd	100.0
Sundor	8	7.25 (9)	10.53 (9)	7.40 (12)	8.39 bcde	98.3
Maricopa	7	7.20 (10)	9.67 (11)	7.99 (6)	8.29 bcde	97.0
Valiant	8	7.17 (11)	10.53 (8)	7.08 (14)	8.26 bcde	96.7
WL 516	7	7.33 (6)	9.53 (13)	7.24 (13)	8.03 bcdef	94.1
WL 605	8	7.06 (13)	9.50 (14)	6.99 (15)	7.85 cdef	91.9
Yolo	6	7.35 (4)	9.75 (10)	8.02 (9)	7.83 cdef	91.7
J-82		6.33 (19)	9.54 (12)	7.53 (10)	7.80 cdef	91.4
Sutter	6	6.60 (17)	8.86 (16)	7.75 (7)	7.74 def	90.6
Ardiente	7	6.82 (15)	8.89 (15)	6.62 (16)	7.45 ef	87.2
GT-13R+	7	6.38 (18)	8.86 (17)	6.45 (17)	7.23 fg	84.6
Lew	8	6.62 (16)	8.84 (18)	5.79 (18)	7.08 fgh	82.9
Pierce ³	7	6.32 (20)	7.02 (19)	5.74 (19)	6.36 ghi	74.5
Baron	6	7.15 (12)	7.00 (20)	4.64 (20)	6.27 hi	73.3
Spredor II	1	5.72 (22)	5.84 (21)	4.37 (21)	5.85 i	68.6
Hi-Phy ⁴		6.03 (21)	4.14 (22)	3.01 (22)	4.39 j	51.5
Grand mean		6.95	9.35	6.97	7.75	
% CV		7.40	4.95	22.9	16.7	
LSD (05)		0.49	1.29	1.11	0.86	

1. The 1988 yields are from cuttings 2 through 6, the first cutting was sacrificed to alfalfa weevil and a seventh cutting was not taken.
2. Values followed by the same letter are not significantly different at the 5% level using the Student-Newman-Keul's test.
3. See note on Pierce in Table 1.
4. See note on Hi-Phy in Table 1.

The fall dormancy classes were taken from a publication by Ottman and Smith. The fall dormancy classes were taken from a publication by Ottman and Smith (2) and it is noted that with few exceptions, the more non-dormant varieties yielded more than the other varieties.