

Alfalfa Variety Trial in Graham County Arizona, 1998

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Abstract

Twenty four alfalfa varieties with fall dormancy ratings of 8 or 9 were tested in a replicated small plot trial on a heavy clay loam soil on the Safford Agricultural Center. This was the third year of a new study. CUF 101 only had the heaviest yield in two out of the seven cuttings, but had the highest overall yield for the year at 10.3 tons per acre. Cuf 101 also had the highest average yield over the three years of the study. Heat units with thresholds of 77° F and 40° F are included for each cutting in the study.

Introduction

This is the third year of a new study which includes the better varieties from the previous trial along with several new varieties that seem promising. This is the 23rd year of continuous alfalfa variety testing in Graham county.

Materials and Methods

Twenty four alfalfa varieties with fall dormancy ratings ranging from 8 to 10 are included in this test. Plots were planted by hand using a Precision Garden Seeder Model 1001A from Earthway Products. Four rows on six inch spacings were planted 20 feet long with twelve inch spacings between varieties. Replicates were placed in a 2 by 2 arrangement to reduce errors due to soil variation.

Crop History:

Location: Safford Agricultural Center, Graham County
Elevation: 2950 feet above sea level
Soil type: Grabe clay loam
Planting date: 26 September, 1995 Rate: 25 lbs/acre
Herbicide: None
Fertilizer: 300 lbs/ac 16-20-0 at planting
Insecticide: Treatment to control alfalfa weevil
Irrigation: Border, 15 irrigations (ca. 75 acre inches)
Harvest strategy: Cut around 10% bloom to optimize quantity and stand longevity.
Plot size: 2.5 feet by 20 feet
Replicates: Four

Plots were cut by hand using a Troy mower and raked and weighed immediately to prevent loss of moisture. Weights were converted to dry weight at 0% moisture for reporting purposes.

Results

The results of the study are recorded in tables below. Table 1 provides the yields per cutting in the current year and Table 2 gives a summary of the two years of the study. It should be noted that this varietal evaluation was grown on a heavy clay soil and the highest yielding varieties differ when grown on lighter soils

Table 1. Third year yield summary for 24 alfalfa varieties grown at 2950 feet above sea level in Southeastern Arizona. Yields are in tons per acre corrected to 0% moisture, ranks are in parentheses. (Graham county, Safford Agricultural Center. 32° 49' S. Latitude)

Variety	Cut 1 5/4	Cut 2 6/8	Cut 3 7/6	Cut 4 8/7	Cut 5 9/14	Cut 6 10/13	Cut 12/14	Total 1998	% of Cuf 101
Cuf 101	1.85 (7)	1.95 (4)	1.89 (2)	1.52(2)	1.23(3)	1.16(1)	0.71(1)	10.29 a¹	100.0
WL91-224F	1.79 (10)	2.04 (2)	1.95 (1)	1.22(19)	1.17(7)	1.11(2)	0.71(2)	9.99 ab	97.1
WL 612	1.83 (8)	1.97 (3)	1.80 (3)	1.47(4)	1.06(16)	1.07(5)	0.65(5)	9.85abc	95.7
Maricopa	2.15 (1)	1.71 (18)	1.75 (7)	1.48(3)	1.22(4)	0.95(14)	0.55(12)	9.81abc	95.3
DK 189	1.86 (6)	1.90 (5)	1.74 (8)	1.35(9)	1.25(1)	1.06(7)	0.54(16)	9.70a-d	94.3
9390 APH	1.80 (9)	1.87(7)	1.75 (6)	1.42(5)	1.17(8)	1.07(6)	0.62(7)	9.69a-d	94.2
WL 525 HQ	1.62 (20)	1.78 (13)	1.78 (4)	1.53(1)	1.20(5)	1.08(3)	0.65(4)	9.65a-e	93.8
Mecca	1.66 (17)	2.11 (1)	1.69 (15)	1.37(8)	1.20(6)	0.98(11)	0.55(13)	9.56a-f	92.9
UC 331	1.74 (13)	1.78 (14)	1.68 (16)	1.28(13)	1.24(2)	1.08(4)	0.66(3)	9.46a-f	91.9
Prestige	1.87 (5)	1.88 (6)	1.71 (12)	1.27(15)	1.16(9)	0.95(13)	0.57(10)	9.40a-g	91.4
SW 14	1.78 (11)	1.84 (9)	1.76 (5)	1.26(17)	1.07(15)	0.99(8)	0.62(6)	9.32 a-g	90.6
SW 9301	1.61 (22)	1.79 (12)	1.72 (9)	1.34(11)	1.15(11)	0.99(9)	0.59(9)	9.19a-h	89.3
Pio 5888	1.61 (23)	1.79 (11)	1.70 (13)	1.27(16)	1.14(12)	0.98(10)	0.60(8)	9.08a-h	88.2
WL 88-137	1.73 (14)	1.86 (8)	1.71 (10)	1.27(14)	1.08(14)	0.87(15)	0.55(15)	9.08a-h	88.2
ABI 9194	1.64 (19)	1.75(15)	1.71 (11)	1.39(6)	1.06(17)	0.97(12)	0.55(11)	9.06a-h	88.0
Pio 5939	1.88 (4)	1.68 (19)	1.53 (19)	1.33(12)	1.16(10)	0.82(17)	0.55(14)	8.95a-h	87.0
Falcon	1.89 (3)	1.79 (10)	1.69(14)	1.34(10)	0.93(22)	0.72(21)	0.44(22)	8.80 b-i	85.5
9393 APH	1.59 (24)	1.73 (17)	1.56 (18)	1.23(18)	1.10(13)	0.82(16)	0.49(18)	8.52c-i	82.8
Mesa	1.91 (2)	1.64 (20)	1.39 (23)	1.16(21)	1.00(18)	0.76(20)	0.44(23)	8.29d-i	80.6
UC 340	1.68 (16)	1.74 (16)	1.58 (17)	1.17(20)	0.97(19)	0.58(24)	0.52(17)	8.23e-i	80.0
UC Cibola	1.68 (15)	1.49 (24)	1.51 (20)	1.37(7)	0.90(23)	0.78(18)	0.49(19)	8.21f-i	79.8
Mecca II	1.75 (12)	1.59 (21)	1.44 (21)	1.13(22)	0.94(21)	0.71(22)	0.46(21)	8.01ghi	77.8
Pio 5715	1.61 (21)	1.54 (23)	1.41 (22)	1.10(23)	0.94(20)	0.78(19)	0.49(20)	7.86 hi	76.4
SW 8210	1.66 (18)	1.56 (22)	1.34 (24)	1.03(24)	0.86(24)	0.67(23)	0.39(24)	7.51 i	73.0
Average	1.76	1.78	1.66	1.3	1.09	0.91	0.56	9.06	88.0
LSD(05)	0.32	0.34	0.37	0.25	0.18	0.22	0.11	1.44	13.994
CV(%)	15.24	16.28	19.07	16.12	14.31	20.08	16.88	13.45	130.71
Heat Units	1437	916	851	1087	1245	785	921	7242	--

1. Values followed by the same letter are not significantly different at the 5% level of probability.

Table 2. Three year yield summary for 24 alfalfa varieties grown at 2950 feet above sea level in Southeastern Arizona. Yields are in tons per acre corrected to 0% moisture, ranks are in parentheses.

Variety	Source	Fall Dormancy Rating	1996 Yield Average	1997 Yield Average	1998 Yield Average	Three year Average	Percent of Cuf 101
Cuf 101	Public	9	9.12 (2)	7.55 (4)	10.29(1)	8.98 a¹	100.0
WL 91-224F	W-L Research		8.63 (4)	7.60 (2)	9.88(2)	8.73 ab	97.2
SW 14	S&W Seeds	9	8.83 (3)	7.60 (3)	9.32(11)	8.58 ab	95.5
DK 189	DeKalb	8	8.62 (5)	7.40 (6)	9.70(5)	8.57abc	95.4
Pioneer 5888	Pioneer Hi-Bred	8	9.19 (1)	7.25 (9)	9.08(13)	8.5 a-d	94.7
UC 331	Univ. of Calif.		8.30 (6)	7.68 (1)	9.46(9)	8.47 a-e	94.3
9390 APH	AgriPro		8.28 (7)	7.10 (12)	9.69(6)	8.39a-f	93.4
Prestige	Cargill	8	8.26 (8)	7.15 (11)	9.40(10)	8.26a-g	92.0
ABI 9194	AgriPro		8.20 (11)	7.30 (7)	9.06(15)	8.19 a-g	91.2
Mecca	PGI/MBS	9	7.54 (20)	7.43 (5)	9.56(8)	8.11a-g	90.3
SW 9301	S&W Seeds	9	7.97 (14)	7.28 (8)	9.19(12)	8.10a-g	90.2
WL 612	W-L Research	9	8.21 (10)	6.38 (23)	9.85(3)	8.09a-g	90.1
WL 525 HQ	W-L Research	8	7.85 (16)	6.68 (19)	9.65(7)	8.05a-h	89.6
WL 88-137	W-L Research		7.98 (13)	6.75 (16)	9.08(14)	7.93b-h	88.3
9393 APH	AgriPro		8.24 (9)	6.80 (15)	8.52(18)	7.85b-h	87.4
Maricopa	PGI/MBS	8	6.98 (24)	6.95 (13)	9.81(4)	7.84b-h	87.3
Pioneer 5939	Pioneer Hi-Bred	9	7.26 (21)	6.73 (18)	8.95(16)	7.60c-h	84.6
UC Cibola	Univ. of Calif.	9	8.02 (12)	6.53 (21)	8.21(21)	7.55d-h	84.1
SW 8210	S&W Seeds	8	7.95 (15)	7.15 (10)	7.51(24)	7.52e-h	83.7
Falcon	Lohse Mill	8	7.16 (23)	6.75 (17)	8.80(17)	7.51e-h	83.6
UC 340	Univ. of Calif.		7.65 (19)	6.50 (22)	8.23(20)	7.43fgh	82.7
Mecca II	PGI/MBS	9	7.68 (18)	6.80 (14)	8.01(22)	7.41gh	82.5
Pioneer 5715	Pioneer Hi-Bred	8	7.77 (17)	6.58 (20)	7.86(23)	7.33gh	81.6
Mesa	PGI/MBS	8	7.19 (22)	5.85 (24)	8.29(19)	7.08 h	78.8
Average			8.03	6.99	9.06	8	89.1
LSD(05)			1.27	1.14	1.47	0.97	--
CV(%)			11.2	11.5	13.45	10.28	--

1. Values followed by the same letter are not significantly different at the 5% level of probability.