

Alfalfa Variety Trial in Cochise County, Arizona, 1998

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Abstract

Fourteen alfalfa varieties with fall dormancy ratings from 6 to 9 were tested in replicated small plot trials on the Kibler farm in Stewart District northwest of Willcox. The leading variety after four years of testing was DeKalb 189 with a dry matter yield over 5 tons per acre on 4 cuttings. This variety was also the leading variety over the four years of the trial with a four year average nearly 7.5 tons per acre. Heat units with temperature thresholds of 77 °F and 40 °F are given for each cutting

Introduction

This is the fourth year of alfalfa variety testing in the high deserts of southeastern Arizona above 4000 foot elevation. Approximately 7000 acres of alfalfa are grown in Arizona near this elevation bringing in an income over six million dollars. An increased yield of 10% over that acreage could be seen by switching to the best variety available, this would have a value of \$600,000 county wide in one year. This is the last year of this study. A new high elevation trial was planted in Greenlee County.

Materials and Methods

In September of 1994 fourteen varieties of alfalfa were planted in Cochise county with fall dormancy (FD) ratings varying from 6 to 9. It was felt that an FD rating of 8 would be the most appropriate for the area, but two 6's, one 7 and one 9 were included in the test to expand the diversity of the genetic material in the trial. The plots were planted with a single row, hand planter in lines 6 inches apart. The plots were 4 rows wide and fourteen feet long. The plant density had thinned considerably by this year and weed growth had filled in the plots. The first true cutting was sacrificed as a weed harvest. The following crop history describes the treatment of the experiment:

Crop History:

Location: Kibler Farm, northwest of Willcox, AZ
Elevation: 4300 feet above sea level
Soil type: Cogswell clay loam/McAllister loam
Planting date: 26 September, 1994 Rate: 25 lbs/acre
Herbicide: None
Fertilizer: 200 lbs/ac 11-52-0 at planting, 13 gal UN 32 (for oats) in 2nd irrigation
Insecticide: None
Irrigation: Border, 8 irrigations (ca. 40 acre inches)
Harvest strategy: Cut at very early bloom to optimize quality.
Plot size: 2.5 feet by 10 feet
Replicates: Four

Plots were cut by hand using a Jari or Troy Bilt mower, raked and weighed immediately to prevent loss of moisture. Weights were converted to 0% moisture basis for reporting

Results

Table 1. Third year yield summary for 14 alfalfa varieties grown at 4300 feet above sea level in Cochise County, Arizona. Yields are in tons per acre corrected to 0% moisture, ranks are in parentheses.

Variety	Cut 1 1 June	Cut 2 25 June	Cut 3 27 Jul	Cut 4 28 Aug	Total 1997
DK 189	1.2 (1)	1.3 (1)	2.0 (5)	1.13 (1)	5.55 a
DK 166	1.2 (2)	1.1 (6)	2.0 (8)	1.03 (3)	5.28 ab
Falcon	1.08 (3)	1.08 (7)	2.05 (3)	1.05 (2)	5.22 ab
Condor	1.08 (5)	1.13 (5)	1.95 (6)	0.98 (4)	5.19 ab
Pio 5715	1.05 (6)	1.23 (2)	2.00 (4)	0.95 (7)	5.17 ab
Mecca	0.90 (10)	1.15 (3)	2.08 (2)	0.95 (6)	5.09 ab
Pio 5888	1.03 (7)	1.13 (4)	1.95 (7)	0.90 (10)	5.01 ab
Maricopa	1.00 (8)	0.95 (10)	4.76 (10)	0.90 (8)	4.92 ab
Mesa	1.1 (4)	1.0 (9)	1.9 (12)	0.98 (5)	4.92 ab
WL 457	1.00 (9)	1.08 (8)	1.90 (9)	0.88 (11)	4.83 ab
Pierce	0.80 (13)	0.73 (14)	2.20 (1)	0.85 (12)	4.56 bc
WL516	0.90 (3)	0.90 (11)	1.88 (10)	0.90 (9)	4.55 bc
Meteor	0.68 (14)	0.78 (13)	1.70 (13)	0.73 (13)	3.83 c
Tahoe	0.91 (11)	0.88 (12)	1.50 (14)	0.55 (14)	3.80 c
Avg	0.98	1.03	1.92	0.91	4.84
LSD(05)	0.37	0.41	0.38	0.28	0.90
CV(%)	26.3	27.8	13.8	21.6	13.0
HU (77/41F)	1688	615	1032	1023	4358

Table 2. Three year yield summary for 14 alfalfa varieties grown at 4300 feet above sea level in Cochise county, Arizona. Yields are in tons per acre corrected to 0% moisture, ranks are in parentheses.

Variety	Source	Fall Dor. Rating	1995 Yield Average	1996 Yield Average	1997 Yield Average	1998 Yield Average	Four year Average	% of Pierce
DK 189	DeKalb	8	7.29 (1)	8.66 (1)	8.65 (2)	5.55 (1)	7.42 a ¹	113.3
Mesa	PGI/MBS	8	6.97 (4)	8.60 (2)	8.73 (1)	4.92 (8)	7.15 ab	109.2
Maricopa	PGI/MBS	8	7.00 (3)	8.55 (3)	7.98 (4)	4.76 (10)	7.04 abc	107.5
DK 166	DeKalb	6	6.67 (7)	8.40 (4)	8.28 (3)	5.28 (2)	7.03 abc	107.3
Condor	Novartis	8	7.10 (2)	8.26 (6)	7.20 (9)	5.19 (4)	7.02 a-d	107.2
Falcon	Lohse Mills	8	6.87 (50)	7.85 (10)	6.88 (11)	5.22 (3)	6.78 b-e	103.5
Mecca	PGI/MBS	9	6.07 (13)	8.32 (5)	7.65 (7)	5.09 (6)	6.71 b-e	102.4
Pio 5888	Pioneer	8	6.52 (8)	8.04 (8)	7.18 (10)	5.01 (7)	6.70 b-e	102.3
WL 457	W-L Research	7	6.40 (11)	7.94 (9)	7.73 (6)	4.83 (9)	6.63 cde	101.2
Pio 5715	Pioneer	8	6.12 (12)	8.18 (7)	6.68 (12)	5.17 (5)	6.62 cde	101.1
Pierce	Novartis	8	6.81 (6)	7.54 (12)	7.55 (8)	4.56 (11)	6.55 de	100.0
WL 516	W-L Research	8	6.42 (10)	7.60 (11)	7.90 (5)	4.55 (12)	6.47 e	98.8
Meteor	Novartis	5	6.45 (9)	6.97 (13)	6.18 (13)	3.83 (13)	5.95 f	90.8
Tahoe	Novartis	6	5.27 (14)	5.95 (14)	5.58 (14)	3.80 (14)	5.15 g	78.6
Average			6.57	7.92	7.44	4.84	6.66	101.68
LSD(05)			0.59	0.71	0.54	0.90	0.47	
CV(%)			6.3	6.3	5.1	13.0	4.9	

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