

Alfalfa Variety Trial in Southeastern Arizona, 1994

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Abstract

Twenty alfalfa varieties with Fall Dormancy ratings of 8 or 9 were tested in a replicated small plot trial on the Safford Agricultural Center to aid alfalfa growers in southeastern Arizona with their planting decisions. This multi-year study gives yield data by cutting in the current year and yearly averages throughout the study. The leading variety after three years of cuttings is Mesa (formerly known as 84D92, an experimental from MBS, Inc). Two other varieties with FD ratings of 6 and 10 were included in the study for comparison. Heat units with thresholds of 77° F and 40° F are included for each cutting in the study.

Introduction

Alfalfa plays an important part in the economy of Graham county producing more than \$1.2M of revenue. With the value of alfalfa hay staying around \$100 per ton, more farmers are planting alfalfa in their cotton rotation. This is the third year of this study which will continue for one more year to evaluate the decline of the varieties after the crop has past its prime production.

Materials and Methods

Twenty one alfalfa varieties with fall dormancy ratings ranging from 8 to 10 are included in this test. Meteor variety, with a fall dormancy rating of 6 was 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: 24 September 1991
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% for reporting purposes.

Results and Discussion

Yield results by cutting from the first harvest year in 1994 are shown in Table 1. An experimental variety from AgriPro, ABI 9194, worked its way to the top after two years with yields well below the leaders. It's yield has declined slightly over the years of the trial whereas the average variety fell approximately 0.6 tons per acre per year. This strength over time gave ABI 9194 an advantage over the other varieties in this third year of the study but it's lack of outstanding performance during the first two years have left it behind five other varieties for over all yield (Table 2). Mesa, which has lead the trial since its inception (1), dropped to number eight this year. The top eight varieties are only separated by 0.2 tons per acre average over the three years of the study and must all be considered as strong varieties for the area.

The fall dormancy ratings were taken from the listing published by the Certified Alfalfa Seed Council(2).

References

1. Clark, L.J., E.W. Carpenter and R.E. Cluff. 1994. Alfalfa Variety Demonstration at the Safford Agricultural Center, 1992-93. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson. Series P-98, pp. 13-16.
2. *Alfalfa Varieties 1993/94 Edition*. Certified Alfalfa Seed Council, P.O. Box 1017, Davis, CA 95617-1017.

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. (Graham county, Safford Agricultural Center. 32° 49' S. Latitude)

| Variety | Cut 1 3 May | Cut 2 10 Jun | Cut 3 11 Jul | Cut 4 15 Aug | Cut 5 27 Sep | Cut 6 9 Nov | Total | % of Cuf 101 |
|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|----------------|-----------|-----------------|
| ABI 9194 | 1.66 (4) | 1.92 (1) | 1.77 (2) | 1.64 (6) | 1.17 (7) | 0.34 (13) | 8.50 a | 113.9 |
| UC 329 | 1.47 (12) | 1.76 (4) | 1.68 (6) | 1.51 (12) | 1.40 (1) | 0.48 (2) | 8.28 ab | 111.0 |
| Yolo | 1.53 (7) | 1.61 (11) | 1.71 (4) | 1.55 (9) | 1.24 (2) | 0.48 (1) | 8.13 ab | 110.6 |
| Mecca | 1.64 (5) | 1.66 (8) | 1.75 (3) | 1.65 (5) | 1.04 (17) | 0.39 (9) | 8.12 ab | 108.8 |
| Falcon | 1.70 (1) | 1.91 (2) | 1.59 (10) | 1.74 (3) | 0.87 (20) | 0.30 (16) | 8.09 ab | 108.4 |
| UC 340 | 1.47 (11) | 1.55 (15) | 1.65 (7) | 1.75 (1) | 1.23 (3) | 0.40 (8) | 8.05 ab | 107.8 |
| Pierce | 1.49 (10) | 1.63 (10) | 1.56 (12) | 1.75 (2) | 1.15 (8) | 0.40 (7) | 7.99 ab | 107.0 |
| Mesa | 1.70 (2) | 1.74 (5) | 1.60 (9) | 1.27 (21) | 1.14 (10) | 0.44 (3) | 7.89 abc | 105.7 |
| Pioneer 5929 | 1.53 (8) | 1.64 (9) | 1.65 (8) | 1.45 (16) | 1.14 (9) | 0.43 (18) | 7.83 abcd | 104.9 |
| Madera | 1.67 (3) | 1.78 (3) | 1.79 (1) | 1.50 (13) | 0.71 (22) | 0.37 (10) | 7.82 abcd | 104.8 |
| Maricopa | 1.46 (13) | 1.70 (6) | 1.68 (5) | 1.36 (20) | 1.12 (14) | 0.44 (4) | 7.75 abcd | 103.9 |
| Pioneer 5888 | 1.45 (14) | 1.55 (16) | 1.47 (16) | 1.61 (8) | 1.21 (5) | 0.35 (12) | 7.62 abcd | 102.1 |
| Mecca II(8633C) | 1.51 (9) | 1.67 (7) | 1.58 (11) | 1.47 (15) | 1.03 (18) | 0.35 (11) | 7.60 abcd | 101.9 |
| Sundor | 1.55 (6) | 1.58 (13) | 1.55 (13) | 1.49 (14) | 1.13 (12) | 0.27 (20) | 7.56 abcd | 101.3 |
| Cibola | 1.44 (15) | 1.56 (14) | 1.54 (14) | 1.43 (17) | 1.20 (6) | 0.32 (15) | 7.47 abcd | 100.1 |
| Cuf 101 | 1.29 (19) | 1.51 (17) | 1.47 (15) | 1.65 (4) | 1.13 (13) | 0.41 (6) | 7.46 abcd | 100.0 |
| Pioneer 5715 | 1.37 (16) | 1.50 (18) | 1.43 (19) | 1.63 (7) | 1.14 (11) | 0.23 (22) | 7.29 abcd | 97.7 |
| GT 13R Supreme | 1.36 (17) | 1.60 (12) | 1.40 (21) | 1.37 (19) | 1.23 (4) | 0.29 (17) | 7.24 abcd | 97.1 |
| UC 342 | 1.20 (21) | 1.40 (20) | 1.45 (18) | 1.52 (11) | 1.08 (15) | 0.29 (18) | 6.93 bcd | 92.9 |
| Arabian | 1.18 (22) | 1.38 (21) | 1.46 (17) | 1.54 (10) | 0.97 (19) | 0.33 (14) | 6.90 bcd | 92.4 |
| Condor | 1.30 (18) | 1.47 (19) | 1.41 (20) | 1.22 (22) | 0.82 (21) | 0.28 (19) | 6.51 cd | 87.2 |
| Meteor | 1.23 (20) | 1.32 (22) | 1.12 (22) | 1.42 (18) | 1.06 (16) | 0.25 (21) | 6.41 d | 85.9 |
| HU(77/40) | 1805 | 1026 | 1043 | 1188 | 1387 | 910 | 7359 | |
| Average | 1.46 | 1.61 | 1.56 | 1.52 | 1.10 | 0.36 | 7.62 | |
| LSD (05) | 0.30 | 0.320 | 0.33 | 0.44 | 0.23 | 0.11 | 1.21 | |
| % CV | 14.4 | 13.9 | 14.9 | 20.5 | 15.6 | 23.8 | 11.3 | |

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

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Table 2. Three 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.

| Variety | Fall Dormancy Rating | 1992 Yield Average | 1993 Yield Average | 1994 Yield Average | Three Year Yield Average | Percent of Cuf 101 |
|--------------------|----------------------|--------------------|--------------------|--------------------|--------------------------|--------------------|
| Mesa (84D92) | 8 | 9.64 (1) | 8.99 (4) | 7.89 (8) | 8.94 a ¹ | 106.0 |
| UC 340 | | 9.16 (7) | 9.31 (2) | 8.05 (6) | 8.82 ab | 104.4 |
| Falcon | 8 | 9.36 (3) | 8.59 (8) | 8.09 (5) | 8.81 ab | 104.3 |
| Mecca | 9 | 8.79 (6) | 9.21 (5) | 8.12 (4) | 8.78 ab | 103.9 |
| Maricopa | 8 | 9.49 (2) | 8.56 (9) | 7.75 (11) | 8.75 abc | 103.7 |
| ABI 9194 | | 8.98 (15) | 8.56 (10) | 8.50 (1) | 8.75 abc | 103.6 |
| Pioneer 5929 | 9 | 9.15 (8) | 9.33 (1) | 7.83 (9) | 8.74 abc | 103.5 |
| Madera | 8 | 9.08 (13) | 8.78 (6) | 7.82 (10) | 8.61 abc | 102.0 |
| Pioneer 5888 | 8 | 9.27 (5) | 8.30 (15) | 7.62 (12) | 8.56 abc | 101.3 |
| Sundor | 9 | 8.80 (19) | 9.24 (3) | 7.56 (14) | 8.46 abc | 100.2 |
| Cuf 101 | 9 | 9.10 (11) | 8.41 (13) | 7.46 (16) | 8.44 abc | 100.0 |
| Yolo | 8 | 8.87 (17) | 7.64 (19) | 8.13 (3) | 8.42 abc | 99.7 |
| Pioneer 5715 | 8 | 9.07 (14) | 8.43 (12) | 7.29 (17) | 8.37 abc | 99.2 |
| Mecca II (8633C) | 9 | 8.88 (16) | 8.23 (16) | 7.60 (13) | 8.35 abc | 98.9 |
| Pierce | 8 | 8.52 (20) | 8.44 (11) | 8.00 (7) | 8.33 abc | 98.6 |
| GT13R Supreme | 8 | 9.12 (10) | 8.09 (17) | 7.24 (18) | 8.32 abc | 98.6 |
| Cibola | 9 | 8.81 (18) | 8.40 (14) | 7.47 (15) | 8.29 abc | 98.3 |
| UC 329 | | 8.28 (4) | 8.69 (7) | 8.29 (2) | 8.27 abc | 97.9 |
| UC 342 | | 9.12 (9) | 7.30 (21) | 6.93 (19) | 8.09 abc | 95.8 |
| Condor | 8 | 9.10 (12) | 7.39 (20) | 6.51 (21) | 7.95 abc | 94.2 |
| Meteor | 6 | 8.28 (21) | 5.14 (22) | 6.41 (22) | 7.72 bc | 91.5 |
| Arabian | 10 | 7.88 (22) | 7.92 (18) | 6.90 (20) | 7.60 c | 90.0 |
| Heat units (77/40) | | 7533 | 6585 | 7359 | 7159 | |
| Average | | 9.01 | 8.30 | 7.62 | 8.44 | |
| LSD(05) | | 1.03 | 1.67 | 1.21 | 0.95 | |
| CV(%) | | 8.06 | 14.2 | 11.3 | 7.97 | |

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