

# **Alfalfa Variety Demonstration at the Safford Agricultural Center 1984-87**

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## **ABSTRACT**

*Twenty non- and very non-dormant alfalfa varieties were compared over three seasons. The top-yielding variety, Pioneer 5929, has maintained this position for the last three years. The yields decreased considerably from the previous year, however. Part of the loss can be attributed to the sacrifice of the first cutting because of damage by the Egyptian alfalfa weevil. Pioneer 5929 was the top-yielding variety during the entire trial, producing more than 30 tons per acre. Four other varieties produced more than 28 tons per acre: Ardiente by Agripro; Pierce by Northrup King; Palmer Special by the Palmer brothers of Graham county; and Safford 80 LH.*

## **INTRODUCTION**

This is the fourth and last year for this alfalfa variety trial. As was anticipated, the yields decreased drastically compared with the two previous years (1). However, collecting this years data gave credibility to the recommendation that alfalfa stands not be maintained beyond their productive years.

## **MATERIALS AND METHODS**

Twenty-one non-dormant and very non-dormant varieties were grown at the Safford Agricultural Center in small plots in a randomized complete block design.

Location: Safford, Graham county, Arizona  
Elevation: 2950 feet above sea level  
Soil type: Grabe clay loam  
Planted: 7 September 1983  
Plot size: 2.5 feet by 20 feet  
Replications: 4

Plots were cut using a Jari hand mower and weighed immediately to avoid moisture loss. The weights were then converted to dry weight at 12% moisture. In 1987 the first cutting was sacrificed due to heavy damage caused by the Egyptian alfalfa weevil.

## RESULTS

**Table 1. Yields in Pounds per Acre, by Cutting in 1987, Totals for 1986 and 1985 and Cumulative Yield over the Last Three Years in Tons per Acre.**

| VARIETY       | -----1987----- |         |        |        |        |        |            | --1986--   |    | --1985--   |    | 3 YEAR           |    |
|---------------|----------------|---------|--------|--------|--------|--------|------------|------------|----|------------|----|------------------|----|
|               | 27 MAY         | 29 JUNE | 21 JUL | 17 AUG | 29 SEP | 11 NOV | TOTAL ‡    | YIELD RANK |    | YIELD RANK |    | YIELD RANK (T/A) |    |
| PIONEER 5929  | 4157           | 2832    | 2330   | 1601   | 2403   | 1724   | 15047 a    | 21363      | 1  | 23781      | 1  | 30.1             | 1  |
| MESA SIRSA    | 4398           | 2930    | 2325   | 1719   | 2073   | 1546   | 14991 a    | 19355      | 8  | 20296      | 16 | 27.3             | 11 |
| GT 13R+       | 4511           | 3054    | 2280   | 1443   | 2123   | 1542   | 14953 a    | 18415      | 11 | 21375      | 12 | 27.4             | 9  |
| ARDIENTE      | 4467           | 3019    | 2162   | 1512   | 2113   | 1512   | 14785 ab   | 19884      | 3  | 23411      | 2  | 29.0             | 2  |
| SAFFORD 80 LH | 4556           | 2852    | 2039   | 1684   | 2216   | 1369   | 14716 abc  | 19617      | 7  | 22361      | 7  | 28.3             | 5  |
| AS-13R+       | 4245           | 3044    | 2064   | 1596   | 2226   | 1369   | 14544 abc  | 17747      | 15 | 22521      | 6  | 27.4             | 9  |
| NK PIERCE     | 4280           | 2689    | 2177   | 1620   | 2201   | 1576   | 14543 abc  | 20008      | 2  | 23207      | 3  | 28.9             | 3  |
| LEW PM        | 4167           | 2778    | 2069   | 1482   | 2182   | 1665   | 14343 abc  | 19676      | 4  | 21637      | 10 | 27.8             | 6  |
| MOAPA         | 4201           | 2714    | 2177   | 1556   | 2275   | 1369   | 14292 abc  | 17321      | 17 | 18439      | 21 | 25.0             | 17 |
| PALMER SPEC   | 4034           | 2487    | 2320   | 1729   | 2251   | 1453   | 14274 abc  | 19632      | 5  | 23155      | 4  | 28.5             | 4  |
| MESA SIRSA LH | 4570           | 2625    | 1783   | 1418   | 2128   | 1542   | 14066 abc  | 19622      | 6  | 21394      | 11 | 27.5             | 7  |
| AZ HAYDEN     | 4482           | 2664    | 1788   | 1615   | 2177   | 1281   | 14007 abc  | 18128      | 12 | 19504      | 19 | 25.8             | 15 |
| WL-514        | 3787           | 2699    | 2182   | 1537   | 2103   | 1438   | 13746 abcd | 18919      | 9  | 22310      | 8  | 27.5             | 7  |
| LEW           | 4167           | 2448    | 1837   | 1551   | 2197   | 1261   | 13461 abcd | 18489      | 10 | 21969      | 9  | 27.0             | 12 |
| WL-515        | 4009           | 2610    | 2029   | 1359   | 2078   | 1359   | 13444 abcd | 17870      | 14 | 20797      | 14 | 26.1             | 14 |
| NK MAXIDOR    | 4137           | 2266    | 1876   | 1423   | 2024   | 1315   | 13041 abcd | 18024      | 13 | 22558      | 5  | 26.8             | 13 |
| PIONEER 572   | 4009           | 2369    | 1980   | 1240   | 1832   | 1290   | 12720 abcd | 16896      | 20 | 19869      | 18 | 24.7             | 19 |
| NK MATADOR    | 3940           | 2300    | 1783   | 1591   | 1940   | 901    | 12455 bcd  | 17183      | 18 | 18767      | 20 | 24.2             | 20 |
| WASHOE        | 3950           | 2581    | 1955   | 1389   | 1704   | 783    | 12362 bcd  | 17158      | 19 | 20135      | 17 | 24.8             | 18 |
| CUF 101       | 3576           | 2142    | 1606   | 1473   | 2192   | 1276   | 12265 cd   | 17346      | 16 | 20885      | 13 | 25.2             | 16 |
| GRANADA       | 3871           | 1827    | 1576   | 1581   | 1817   | 975    | 11647 d    | 15783      | 21 | 20379      | 15 | 23.9             | 21 |
| -----         |                |         |        |        |        |        |            |            |    |            |    |                  |    |
| LSD (05)      | 480            | 412     | 410    | 304    | 318    | 341    | 1377       |            |    |            |    |                  |    |

\* Values followed by the same letter are not different at the 5% level using the Student-Newman-Keul's test.

Yields are in pounds per acre corrected to 12% moisture.

Table 2. Percent Reduction in Yields from 1986 to 1987 Percent Stand as Determined in January of 1988 and Dormancy Ratings.

| Variety        | Percent Reduction | Percent Stand | Dormancy** Rating |
|----------------|-------------------|---------------|-------------------|
| Pioneer 5929   | 29.6              | 50.0 a*       | 8                 |
| CUF 101        | 29.3              | 30.0 ab       | 8                 |
| Mesa Sirsa LH  | 28.3              | 37.5 ab       |                   |
| Washoe         | 28.0              | 6.3 b         | 5                 |
| NK Maxidor     | 27.6              | 36.3 ab       | 8                 |
| NK Matador     | 27.5              | 16.3 ab       |                   |
| WL-514         | 27.3              | 37.5 ab       | 7                 |
| Palmer Special | 27.3              | 26.3 ab       |                   |
| NK Pierce      | 27.3              | 42.5 ab       | 7                 |
| Lew            | 27.2              | 38.8 ab       | 8                 |
| Lew PM         | 27.1              | 55.0 a        | 8                 |
| Granada        | 26.2              | 27.5 ab       | 8                 |
| Ardiente       | 25.6              | 22.5 ab       |                   |
| Safford 80 LH  | 25.0              | 36.5 ab       |                   |
| WL-515         | 24.8              | 23.8 ab       | 7                 |
| Pioneer 572    | 24.7              | 36.3 ab       |                   |
| AZ Hayden      | 22.7              | 28.8 ab       | 7                 |
| Mesa Sirsa     | 22.5              | 38.8 ab       |                   |
| GT 13R+        | 18.8              | 36.3 ab       | 7                 |
| AS-13R         | 18                | 47.5 ab       | 6                 |
| Moapa          | 17.5              | 41.3 ab       | 7                 |

\* Values followed by the same letter are not different at the 5% level using the Student-Newman-Keul's test.

\*\* Dormancy ratings came from sources 2, 3 and 4.

## DISCUSSION

Table 1 shows that only Pioneer 5929 and Ardiente -- from the top-yielding six varieties of 1986 -- stayed in the top six. Considering the broadness of the least significant difference value, however, this fact is not significant. Generally, the varieties that were in the bottom of list last year remained toward the bottom this year. Notable exceptions were GT 13R+, AS-13R and Moapa which moved up; WL-514, Mesa Sirsa LH, and Palmer Special which moved down.

The three varieties that moved up are at the bottom of the list of the varieties that suffered yield reductions from 1986 to 1987 (Table 2). In other words, they lost less yield than the other varieties; they climbed toward the top yields because other varieties declined more rapidly. This is probably due to their dormancy class and the fact that the first cutting was sacrificed this year. For example, the least dormant varieties in the trial, Pioneer 5929 and CUF 101 -- both in dormancy class 8 -- suffered a greater decline in yield from 1986 to 1987 than GT 13R+, AS-13R and Moapa which are in dormancy classes 7 and 6. The least dormant varieties would be expected to have a higher yield in the first cutting than the more dormant varieties.

In spite of the loss of the potentially heavy first cut, Pioneer 5929 remained the top variety for 1987 and the top overall producer for the three years in which yields were recorded, with a total of 30.1 tons per acre. Ardiente, Pierce, Palmer Special and Safford

80 came in with yields greater than 28 tons per acre.

Stands at the beginning of 1988 were quite low (Table 2, "Percent Stands"). Lew PM had the greatest percent stand; perhaps the stem nematode could be a factor in stand decline (as previously discussed in reference 1).

## REFERENCES

1. Clark, Lee and Ronald Cluff. 1987. Alfalfa Variety Demonstration at the Safford Agricultural Center 1984-1986. Forage and Grain, A College of Agriculture Report, Series P-71, University of Arizona, Tucson, AZ.
2. Alfalfa Variety Trials in New Mexico. Agricultural Experiment Station Bulletin 700. New Mexico State University, Las Cruces, NM.
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