



The 2022
New Mexico
Alfalfa Variety
Test Report



Agricultural Experiment Station
**College of Agricultural, Consumer
and Environmental Sciences**

The 2022 New Mexico Alfalfa Variety Test Report

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Introduction

In 2022, 125,000 acres of alfalfa (*Medicago sativa*) were in production in New Mexico, which was a 10,000-acre decrease from 2021. Hay production was estimated at 663,000 tons. At a 2022 average of \$267 per ton (up from \$236 per ton in 2021), estimated gross returns from alfalfa hay produced in 2022 will total over \$177 million, which is a 14% increase from 2021. Besides its value for hay, alfalfa also is the legume of choice in irrigated perennial pastures. Whether used as pasture or hay, the value of alfalfa to New Mexico is greatly magnified by its contribution to livestock production and receipts from the sale of meat, milk, and other products generated by livestock enterprises.

Choosing a good alfalfa variety is a key step in establishing a highly productive stand of alfalfa, whether for hay or pasture. Differences between the highest- and lowest-yielding varieties in established irrigated tests included in this report ranged from 0.96 to 4.60 tons per acre in 2022. If sold as hay, this translates to a potential difference in returns of \$256 to \$1228 per acre due to variety, or an increase of at least \$32 million for the industry in 2022 alone.

This report, which is a collaborative effort of New Mexico State University scientists at agricultural science centers throughout the state, provides yield data for alfalfa varieties included in yield trials in New Mexico. While consistently high yields compared to other varieties over a number of years and locations within a region is the best indication of varietal adaptation and persistence, other factors should be considered in the variety selection process (see NMSU's Cooperative Extension Service Circular 654, Selecting alfalfa varieties for New Mexico). In addition to fall dormancy and winter hardiness, high levels of pest resistance are critical to protecting an alfalfa stand for long-term production. Alfalfa grown in New Mexico should have at least a resistant (R) rating for bacterial wilt, Fusarium wilt, anthracnose, Phytophthora root rot, spotted alfalfa aphid, blue alfalfa aphid, pea aphid, stem nematode, and southern rootknot nematode. Seed quality also should be high. Selecting an alfalfa variety based on seed cost is a gamble producers often lose. To be assured of achieving a long-lasting, highly productive stand, buy either certified or Plant Variety Protected (PVP) seed, which guarantees the genetics and performance. The best choice of seed of any variety is one that was treated with a fungicide and nitrogen-fixing bacteria before it was bagged.

Description of Tests

Replicated alfalfa variety tests included in this report were conducted under research controls at NMSU's Agricultural Science Centers at Las Cruces (2019, full and summer terminated irrigation), Artesia (2020), Los Lunas (2019), Tucumcari (2018), and Farmington (2020). Weather data for 2022 and the long-term averages from all locations are presented in table 1.

Yield data (on a dry matter basis) are presented in tables 2-7. Varieties are listed in order from highest to lowest average annual production. Yields are given by cutting for 2022 and by year for each production year. Statistical analyses were performed on all alfalfa yield data (including experimental entries) to determine if the apparent differences are truly due to variety or just to chance. The variety with the highest numerical yield in each column is marked with two asterisks (**), and those varieties not significantly different from that variety are marked with one asterisk (*). Those are the varieties from which to make an initial selection. Otherwise, to determine if two varieties are truly different, compare the difference between the two varieties to the Least Significant Difference (LSD) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different in yield when grown under the conditions at a given location. If NS is given for the LSD, there was no statistical difference between the highest and lowest yielding varieties. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability (<20 percent) is desirable, and increased variability within a study results in higher CVs and larger LSDs. There might be a difference between previously published data and the data given in this publication for the same tests because of differences in the programs used for statistical analysis.

Table 8 summarizes information about proprietors, Roundup Ready genetics, fall dormancy, winter survival (measured in the northern United States), pest resistance, and yield performance across years and locations for all varieties currently included in NMSU's alfalfa variety testing program. For information about other varietal characteristics, such as grazing, salt, or traffic tolerance or GMO traits besides Roundup Ready® genetics, check the National Alfalfa and Forage Alliance website for the Alfalfa Variety Leaflet (<https://www.alfalfa.org/varietyLeaflet.php>). In Table 8, varieties are listed alphabetically by fall dormancy category. As in the data tables, the variety with the highest numerical yield in each column is marked with two asterisks (**), and those varieties not significantly different from that variety are marked with one asterisk (*). Remember good performance across several years and locations is the best indicator of broad adaptation, pest resistance, and persistence.

Seed labeled "common," "variety not stated," or "variety unknown", particularly that from other states, is of unknown genetic background and may or may not have the necessary disease or insect resistance. New Mexico Common and African Common seed used in all tests throughout the state has come from the same supplier and seed fields in New Mexico. Seed purchased from other dealers may or may not be of the same quality and performance.

Summary

Consistent production of high alfalfa yields is the result of selecting good varieties and implementing good management techniques. Soil fertility should be maintained at recommended levels based on soil tests,

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irrigation should be properly applied, weeds and insects should be controlled using appropriate cultural and/or chemical methods, and harvest management should allow sufficient time to restock root energy prior to winter. For dormant (FD 1 to 3) and semidormant (FD 4 to 6) varieties, a 6-week rest period before a dormancy-inducing freeze (27°F) is recommended to allow plants to replenish root reserves for winter survival and initiate spring growth, after which harvesting might be done either mechanically or by grazing. Non-dormant (FD 7 to 9) varieties also might benefit from this rest period. Removing fall growth is beneficial to reducing weevil populations the following year as eggs are laid in and overwinter in stems. Harvesting established stands at early bloom would result in 3 to 5 cuttings per year before initiation of the rest period in most areas of New Mexico. More dormant varieties might not produce yields that can be baled during the rest period; however, these can still be grazed. For additional information about alfalfa management, refer to the other NMSU Agricultural Experiment Station and Cooperative Extension Service publications listed in table 9.

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Table 1. Temperature and precipitation data for 2022 and the long-term averages for the New Mexico Alfalfa Variety Test locations.

| Location Elevation Latitude | Las Cruces ¹ 3832 ft. 32° 12' N | | | | Artesia 3366 ft. 32° 45' N | | | | Los Lunas 4840 ft. 34° 46' N | | | | Tucumcari 4091 ft. 35° 12' N | | | | Farmington 5640 ft. 36° 41' N | | | |
|-----------------------------------|--|------|---------------|------|----------------------------------|------|---------------|-------|------------------------------------|------|---------------|------|------------------------------------|------|---------------|-------|-------------------------------------|------|---------------|------|
| | Temp. (°F) | | Precip. (in.) | | Temp. (°F) | | Precip. (in.) | | Temp. (°F) | | Precip. (in.) | | Temp. (°F) | | Precip. (in.) | | Temp. (°F) | | Precip. (in.) | |
| Month | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. | 2022 | Avg. |
| Nov-21 | 49 | 49 | 0.39 | 0.53 | 51 | 49 | 0.09 | 0.53 | 46 | 44 | tr. | 0.46 | 52 | 47 | 0.00 | 0.67 | 44 | 41 | 0.11 | 0.65 |
| Dec-21 | 46 | 41 | 0.73 | 0.68 | 50 | 41 | 0.00 | 0.51 | 37 | 35 | tr. | 0.52 | 49 | 39 | 0.00 | 0.63 | 34 | 31 | 0.92 | 0.47 |
| Jan-22 | 40 | 40 | 0.04 | 0.56 | 40 | 40 | 0.25 | 0.39 | 34 | 35 | 0.21 | 0.38 | 38 | 38 | 0.17 | 0.39 | 32 | 30 | 0.04 | 0.51 |
| Feb-22 | 43 | 45 | 0.11 | 0.37 | 41 | 45 | 0.27 | 0.42 | 35 | 40 | 0.37 | 0.42 | 37 | 42 | 0.18 | 0.49 | 34 | 36 | 0.37 | 0.48 |
| Mar-22 | 53 | 52 | 0.38 | 0.22 | 52 | 52 | 0.03 | 0.43 | 45 | 47 | 0.61 | 0.46 | 48 | 49 | 0.75 | 0.76 | 42 | 43 | 0.50 | 0.64 |
| Apr-22 | 65 | 60 | 0.00 | 0.21 | 58 | 60 | 1.30 | 0.62 | 57 | 55 | 0.00 | 0.48 | 60 | 58 | tr. | 1.11 | 52 | 51 | 0.15 | 0.58 |
| May-22 | 72 | 69 | 0.00 | 0.29 | 71 | 69 | 1.00 | 1.20 | 66 | 64 | 0.00 | 0.45 | 71 | 66 | 0.12 | 1.84 | 61 | 60 | 0.00 | 0.53 |
| Jun-22 | 80 | 78 | 0.97 | 0.72 | 80 | 78 | 4.31 | 1.40 | 74 | 73 | 2.95 | 0.56 | 79 | 76 | 2.13 | 1.85 | 71 | 70 | 1.10 | 0.26 |
| Jul-22 | 82 | 80 | 0.18 | 1.36 | 78 | 80 | 1.71 | 1.76 | 79 | 77 | 0.33 | 1.38 | 84 | 79 | 1.90 | 2.62 | 76 | 76 | 1.81 | 0.81 |
| Aug-22 | 77 | 78 | 2.11 | 2.29 | 78 | 78 | 1.91 | 1.67 | 75 | 75 | 1.55 | 1.62 | 79 | 77 | 3.37 | 2.68 | 74 | 74 | 1.08 | 1.05 |
| Sep-22 | 72 | 71 | 2.02 | 1.38 | 74 | 71 | 0.39 | 1.81 | 70 | 68 | 0.69 | 1.15 | 74 | 71 | 0.05 | 1.52 | 70 | 66 | 1.35 | 1.10 |
| Oct-22 | 58 | 61 | 1.36 | 0.91 | 62 | 61 | 0.92 | 1.16 | 55 | 56 | 1.63 | 1.04 | 60 | 59 | 1.98 | 1.34 | 53 | 54 | 1.47 | 0.97 |
| Annual | 61 | 60 | 8.29 | 9.52 | 61 | 60 | 12.18 | 11.90 | 56 | 56 | 8.34 | 8.92 | 61 | 58 | 10.65 | 15.92 | 54 | 53 | 8.90 | 8.05 |

¹Long-term averages for the Las Cruces test site are from the State University weather station, located approximately 5.5 miles to the north.

Table 2. Dry matter yields (tons/acre) of alfalfa varieties sown September 27, 2019, at NMSU's Leyendecker Plant Science Research Center at Las Cruces and flood-irrigated twice per cutting (normal irrigation)†.

| Variety Name | 2020 Total | 2021 Total | 2022 Harvests | | | | | | 2022 Total | 3-Yr Average |
|-------------------|---------------|---------------|---------------|--------|--------|--------|--------|--------|---------------|-----------------|
| | | | 28-Apr | 1-Jun | 30-Jun | 27-Jul | 2-Sep | 21-Oct | | |
| SW9812 | 6.05** | 6.83* | 1.22** | 1.01** | 0.78** | 0.77* | 0.94** | 0.97** | 5.67** | 6.29** |
| NM 1705PAR | 5.56* | 7.11** | 1.11* | 1.00* | 0.76* | 0.77* | 0.92* | 0.97* | 5.53* | 6.08* |
| SW9813 | 5.86* | 6.79* | 1.11* | 0.95* | 0.69* | 0.69* | 0.90* | 0.93* | 5.26* | 6.05* |
| SW8888 | 5.73* | 6.61* | 1.06* | 0.94* | 0.70* | 0.72* | 0.90* | 0.96* | 5.27* | 5.95* |
| TMA 990 | 5.81* | 6.52* | 1.06* | 0.94* | 0.69* | 0.78* | 0.91* | 0.95* | 5.33* | 5.90* |
| NM 1703PAR | 5.95* | 6.76* | 1.11* | 0.85* | 0.67* | 0.72* | 0.88* | 0.92* | 5.15* | 5.88* |
| Mesquite | 5.78* | 6.51* | 1.01* | 0.91* | 0.69* | 0.71* | 0.87* | 0.90* | 5.09* | 5.87* |
| NM 1701PAR | 5.81* | 6.52* | 1.03* | 0.88* | 0.62 | 0.64 | 0.84* | 0.88* | 4.88* | 5.86* |
| SW1011 | 5.64* | 6.78* | 1.12* | 0.96* | 0.70* | 0.71* | 0.91* | 0.89* | 5.30* | 5.84* |
| AmeriStand 803T | 5.91* | 6.45* | 1.05* | 0.87* | 0.66 | 0.73* | 0.90* | 0.94* | 5.17* | 5.81* |
| Dona Ana | 5.26* | 6.91* | 1.16* | 1.00* | 0.76* | 0.80** | 0.94** | 0.96* | 5.62* | 5.81* |
| SW9720 | 5.74* | 6.65* | 1.08* | 0.93* | 0.65 | 0.69* | 0.83 | 0.85 | 5.03* | 5.75* |
| NM 1704PAR | 6.01* | 6.40* | 0.96 | 0.79 | 0.60 | 0.64 | 0.80 | 0.88* | 4.67 | 5.71* |
| SW8421S | 5.47* | 6.38* | 1.00* | 0.86* | 0.67* | 0.68 | 0.88* | 0.88* | 4.98* | 5.59 |
| NM 170506PAR | 5.53* | 6.40* | 1.00* | 0.82 | 0.67* | 0.69* | 0.87* | 0.89* | 4.94* | 5.54 |
| NuMex Bill Melton | 5.19* | 6.41* | 1.07* | 0.87* | 0.61 | 0.64 | 0.84* | 0.87 | 4.91* | 5.51 |
| AFX 779 | 5.58* | 6.18 | 1.00* | 0.82 | 0.62 | 0.64 | 0.83 | 0.90* | 4.81 | 5.48 |
| AFX 917 | 5.11* | 6.25 | 1.07* | 0.90* | 0.71* | 0.73* | 0.91* | 0.94* | 5.28* | 5.44 |
| NM 1702PAR | 5.43* | 5.70 | 0.83 | 0.68 | 0.52 | 0.57 | 0.77 | 0.82 | 4.19 | 5.17 |
| NM 1712PAR | 5.60* | 5.50 | 0.73 | 0.63 | 0.49 | 0.48 | 0.66 | 0.71 | 3.69 | 4.98 |
| NM 1713PAR | 4.93* | 5.01 | 0.77 | 0.60 | 0.46 | 0.48 | 0.62 | 0.72 | 3.65 | 4.58 |
| NM 1715PAR | 4.89* | 5.10 | 0.61 | 0.54 | 0.45 | 0.43 | 0.68 | 0.70 | 3.39 | 4.38 |
| Mean | 5.58 | 6.35 | 1.01 | 0.85 | 0.64 | 0.67 | 0.85 | 0.88 | 4.90 | 5.61 |
| LSD (0.05) | NS | 0.85 | 0.25 | 0.19 | 0.12 | 0.12 | 0.11 | 0.10 | 0.84 | 0.64 |
| CV% | 9.80 | 9.51 | 17.64 | 15.90 | 13.51 | 13.05 | 8.92 | 8.26 | 12.21 | 13.99 |

†Data were analyzed using analysis of covariance where check plots of NuMex Bill Melton were used as the covariate.

2020 Harvest dates: 19-Jun, 22-Jul, 21-Aug, 15-Sep, 19-Oct, and 17-Nov.

2021 Harvest dates: 1-May, 27-May, 24-Jun, 22-Jul, 27-Aug, 29-Sep, and 12-Nov.

**Highest numerical value in the column.

*Not significantly different from the second highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 3. Dry matter yields (tons/acre) of alfalfa varieties sown September 28, 2019, at NMSU's Leyendecker Plant Science Research Center at Las Cruces and flood-irrigated twice per cutting through July and resuming in mid-September through October (summer irrigation termination)†.

| Variety Name | 2020 | 2021 | 2022 Harvests | | | | | 2022 | 3-yr |
|-------------------|--------|--------|---------------|--------|--------|--------|--------|--------|---------|
| | Total | Total | 27-Apr | 1-Jun | 30-Jun | 27-Jul | 20-Oct | Total | Average |
| SW8421S | 4.03* | 5.33* | 1.15* | 0.96* | 0.91* | 0.21* | 0.95* | 4.18* | 4.52** |
| NM 1703PAR | 3.80* | 5.39* | 1.17* | 0.96* | 0.85 | 0.20* | 0.94* | 4.12* | 4.46* |
| Dona Ana | 4.07** | 5.08* | 1.17* | 0.90* | 0.89* | 0.21* | 1.00** | 4.16* | 4.46* |
| TMA 990 | 3.60* | 5.31* | 1.25** | 0.98* | 0.88* | 0.25** | 0.94* | 4.30* | 4.45* |
| SW9812 | 3.71* | 5.42** | 1.22* | 1.00** | 0.91* | 0.21* | 0.91 | 4.24* | 4.45* |
| SW9813 | 3.89* | 5.28* | 1.18* | 0.94* | 0.87* | 0.19 | 0.94* | 4.10* | 4.43* |
| NM 170506PAR | 3.60* | 5.31* | 1.23* | 0.99* | 0.95** | 0.22* | 0.96* | 4.36** | 4.43* |
| AFX 779 | 4.04* | 5.23* | 1.15* | 0.88* | 0.86 | 0.15 | 0.94* | 3.98* | 4.42* |
| NM 1704PAR | 3.97* | 5.29* | 1.15* | 0.92* | 0.81 | 0.19 | 0.93* | 4.01* | 4.38* |
| SW9720 | 3.86* | 5.14* | 1.13* | 0.96* | 0.84 | 0.23* | 0.87 | 4.04* | 4.36* |
| AmeriStand 803T | 3.69* | 5.12* | 1.19* | 0.95* | 0.90* | 0.20* | 0.89 | 4.12* | 4.32* |
| NM 1701PAR | 3.47* | 5.41* | 1.19* | 0.98* | 0.86 | 0.22* | 0.92 | 4.17* | 4.30* |
| SW1011 | 3.49* | 5.14* | 1.17* | 0.99* | 0.87* | 0.20* | 0.92 | 4.13* | 4.28* |
| NM 1705PAR | 3.58* | 5.22* | 1.15* | 0.94* | 0.88* | 0.19 | 0.87 | 4.03* | 4.27* |
| NM 1702PAR | 3.62* | 5.19* | 1.17* | 0.92* | 0.86 | 0.17 | 0.87 | 3.99* | 4.26* |
| AFX 917 | 3.69* | 5.05* | 1.10 | 0.90* | 0.86 | 0.18 | 0.94* | 3.99* | 4.24* |
| Mesquite | 3.45* | 5.11* | 1.13 | 0.94* | 0.85 | 0.20* | 0.90 | 4.01* | 4.17 |
| NuMex Bill Melton | 3.66* | 4.94 | 1.15* | 0.93* | 0.76 | 0.15 | 0.85 | 3.85 | 4.12 |
| SW8888 | 3.85* | 4.84 | 0.99 | 0.80 | 0.77 | 0.13 | 0.78 | 3.47 | 4.07 |
| NM 1712PAR | 3.76* | 4.68 | 1.05 | 0.79 | 0.74 | 0.11 | 0.76 | 3.45 | 3.95 |
| NM 1715PAR | 3.27* | 4.47 | 0.96 | 0.75 | 0.71 | 0.10 | 0.78 | 3.30 | 3.66 |
| NM 1713PAR | 3.42* | 4.30 | 0.98 | 0.73 | 0.70 | 0.11 | 0.68 | 3.21 | 3.62 |
| Mean | 3.71 | 5.10 | 1.14 | 0.91 | 0.84 | 0.18 | 0.89 | 3.96 | 4.26 |
| LSD (0.05) | NS | 0.42 | 0.12 | 0.13 | 0.09 | 0.06 | 0.08 | 0.40 | 0.34 |
| CV% | 8.71 | 5.83 | 7.37 | 9.93 | 7.28 | 24.84 | 6.02 | 7.21 | 9.77 |

†Data were analyzed using analysis of covariance where check plots of NuMex Bill Melton were used as the covariate. 2020 Harvest dates, 18-Jun, 21-Jul, and 17-Oct.

2021 Harvest dates, 30-Apr, 27-May, 30-Jun, 22-Jul, 26-Aug, and 11-Nov, with insufficient growth for Sep harvest.

**Highest numerical value in the column.

*Not significantly different from the second highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 4. Dry matter yields (tons/acre) of sprinkler-irrigated alfalfa varieties sown October 15, 2020, at NMSU's Agricultural Science Center at Artesia†.

| Variety Name | 2022 Harvests | | | | | 2022 Total |
|-------------------|---------------|---------|--------|--------|--------|------------|
| | 8-Jun | 20-Jul‡ | 26-Aug | 29-Sep | 3-Nov | |
| NM 1703PAR | 2.66** | 7.51* | 1.43* | 3.24** | 1.72* | 16.54** |
| NuMex Bill Melton | 2.55* | 7.58** | 1.39* | 2.20 | 1.61* | 15.32* |
| NM 1702PAR | 2.46* | 5.52* | 1.63* | 2.34 | 1.79** | 13.74* |
| NM 1712PAR | 1.88* | 6.83* | 1.50* | 2.03 | 1.41* | 13.65* |
| NM 1701PAR | 2.24* | 6.05* | 1.47* | 2.33 | 1.41* | 13.51* |
| NM 170506PAR | 2.16* | 5.07* | 1.64** | 2.16 | 1.79** | 12.80* |
| Mean | 2.32 | 6.42 | 1.51 | 2.38 | 1.62 | 14.26 |
| LSD (0.05) | NS | NS | NS | 0.71 | NS | NS |
| CV% | 29.99 | 22.99 | 30.44 | 19.64 | 25.66 | 14.00 |

†Data were analyzed using analysis of variance.

‡20-Jul yields are high due to rain delays for harvest that allowed seed production.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties at the 5% level.

Table 5. Dry matter yields (tons/acre) of flood-irrigated alfalfa varieties sown September 27, 2019, at NMSU's Agricultural Science Center at Los Lunas†.

| Variety Name | 2020 Total | 2021 Total | 2022 Harvests | | | | | 2022 Total | 3-Yr Average |
|--------------------|---------------|---------------|---------------|--------|--------|--------|--------|---------------|-----------------|
| | | | 17-May | 14-Jun | 21-Jul | 6-Sep | 26-Oct | | |
| AFX 779 | 11.71* | 8.61 | 2.44* | 1.81** | 2.12* | 1.89* | 0.84 | 9.09* | 9.80** |
| NM 1712PAR | 11.47* | 8.91* | 2.27 | 1.60 | 2.16* | 2.00** | 0.86 | 8.87* | 9.75* |
| Roadrunner | 10.56 | 9.27** | 2.52** | 1.73* | 2.10* | 1.93* | 0.98** | 9.27** | 9.70* |
| NuMex Bill Melton | 11.12* | 8.98* | 2.35 | 1.71* | 2.04* | 1.90** | 0.82 | 8.82* | 9.64* |
| NM 1704PAR | 11.97** | 8.61 | 2.27 | 1.54 | 1.94* | 1.81* | 0.78 | 8.33 | 9.64* |
| SW7473 | 11.06* | 8.90* | 2.40* | 1.70* | 2.00* | 1.90* | 0.87 | 8.87* | 9.61* |
| NM 1713PAR | 11.42* | 9.06* | 2.26 | 1.60 | 1.87* | 1.73* | 0.86 | 8.31 | 9.60* |
| NM 1715PAR | 10.88 | 8.67 | 2.40* | 1.61 | 2.23* | 1.87* | 0.86 | 8.96* | 9.50* |
| AmeriStand 715NTRR | 11.32* | 8.51 | 2.19 | 1.58 | 2.01* | 1.67* | 0.88* | 8.33 | 9.39* |
| Artesian Sunrise | 10.53 | 8.77 | 2.25 | 1.75* | 1.96* | 1.94* | 0.89* | 8.79* | 9.36 |
| WL 454HQ.RR | 10.49 | 8.57 | 2.28 | 1.63 | 2.11* | 1.81* | 0.88* | 8.70 | 9.25 |
| NM Common | 10.48 | 8.22 | 2.28 | 1.80* | 2.26** | 1.83* | 0.75 | 8.92* | 9.20 |
| Zia | 10.91 | 8.20 | 2.26 | 1.66* | 1.83* | 1.82* | 0.72 | 8.28 | 9.13 |
| WL 440HQ | 10.16 | 8.28 | 2.32 | 1.68* | 2.09* | 1.76* | 0.91* | 8.76* | 9.07 |
| Artesian Sun 6.3 | 9.91 | 8.55 | 2.29 | 1.66* | 2.09* | 1.79* | 0.86 | 8.68 | 9.05 |
| SW3407 | 10.03 | 8.14 | 2.17 | 1.57 | 2.00* | 1.76* | 0.90* | 8.40 | 8.86 |
| Dona Ana | 10.08 | 8.31 | 2.15 | 1.59 | 1.95* | 1.64* | 0.78 | 8.10 | 8.83 |
| AFX 469 | 9.85 | 8.16 | 1.97 | 1.58 | 2.01* | 1.80* | 0.81 | 8.16 | 8.72 |
| AFX 579 | 10.06 | 8.17 | 2.03 | 1.49 | 1.79* | 1.75* | 0.85 | 7.90 | 8.71 |
| SW4107 | 9.06 | 8.49 | 2.22 | 1.61 | 1.82* | 1.82* | 0.89* | 8.36 | 8.63 |
| Hi-Gest 660 | 9.76 | 8.00 | 2.19 | 1.44 | 2.10* | 1.62* | 0.79 | 8.14 | 8.63 |
| SW5511 | 9.16 | 8.01 | 2.13 | 1.60 | 1.89* | 1.77* | 0.89* | 8.28 | 8.48 |
| Mean | 10.54 | 8.52 | 2.26 | 1.63 | 2.02 | 1.81 | 0.85 | 8.56 | 9.21 |
| LSD (0.05) | 1.06 | 0.43 | 0.16 | 0.18 | NS | NS | 0.11 | 0.56 | 0.44 |
| CV% | 7.09 | 3.56 | 4.92 | 7.68 | 11.11 | 9.32 | 9.43 | 4.66 | 5.88 |

†Data were detrended using nearest neighbor analysis and analyzed using analysis of variance.

2020 Harvest dates: 9-Jun, 16-Jul, 8-Sep, and 2-Nov.

2021 Harvest dates: 26-May, 12-Jul, 26-Aug, and 21-Oct.

**Highest numerical value in the column.

*Not significantly different from the second highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties at the 5% level.

Table 6. Dry matter yields (tons/acre) of alfalfa varieties sown September 14, 2018, at NMSU's Rex E. Kirksey Agricultural Science Center at Tucumcari and irrigated with treated municipal wastewater†.

| Variety Name | 2020 Total | 2021 Total | 2022 Harvests | | | 2022 Total | 3-Yr Average |
|-----------------|---------------|---------------|---------------|--------|--------|---------------|-----------------|
| | | | 7-Jul | 18-Aug | 13-Sep | | |
| SW7408 | 2.21** | 2.26* | 2.21* | 1.99* | 0.94* | 5.14** | 3.20** |
| Dona Ana | 2.00* | 2.33* | 1.91* | 2.15* | 0.96** | 5.02* | 3.11* |
| Zia | 2.11* | 2.24* | 1.83* | 2.16** | 0.96** | 4.94* | 3.10* |
| SW8476 | 2.06* | 2.13* | 2.01* | 2.00* | 0.94* | 4.95* | 3.04* |
| SW8412 | 1.96* | 1.90 | 1.77* | 2.12* | 0.95* | 4.84* | 2.90* |
| African Common | 2.15* | 2.34** | 1.74* | 1.82* | 0.64* | 4.20* | 2.89* |
| NM Common | 1.74 | 1.99 | 1.94* | 1.97* | 0.92* | 4.83* | 2.85* |
| SW8421S | 1.78 | 1.80 | 2.23** | 1.74* | 0.91* | 4.88* | 2.82* |
| SW8409 | 1.91* | 1.99 | 1.82* | 1.77* | 0.87* | 4.46* | 2.79* |
| Hi-Gest 660 | 1.69 | 1.91 | 1.84* | 1.85* | 0.96** | 4.64* | 2.75* |
| HybriForce-3600 | 1.66 | 1.97 | 1.87* | 1.73* | 0.80* | 4.40* | 2.68* |
| SW7473 | 1.79 | 1.92 | 1.69* | 1.70* | 0.85* | 4.24* | 2.65* |
| SW1509 | 1.68 | 1.71 | 1.84* | 1.83* | 0.84* | 4.50* | 2.63* |
| SW1517 | 1.64 | 1.87 | 1.48* | 1.97* | 0.88* | 4.32* | 2.61* |
| SW5210 | 1.86* | 1.79 | 1.60* | 1.88* | 0.71* | 4.18* | 2.61* |
| Mean | 1.88 | 2.01 | 1.85 | 1.91 | 0.87 | 4.63 | 2.84 |
| LSD (0.05) | 0.38 | 0.34 | NS | NS | NS | NS | NS |
| CV% | 14.01 | 11.99 | 22.18 | 19.57 | 25.76 | 15.61 | 19.49 |

†Data were detrended using nearest neighbor analysis and analyzed using analysis of variance.

No harvests were taken in 2019 due to harvesting equipment and irrigation system failures.

2020 Harvest dates: 13-Jul and 21-Oct (Irrigation system failures continued in 2020 that were exacerbated by parts availability issues due to COVID).

2021 Harvest dates: 28-Jul and 21-Sep (completely rainfed).

2022 Growth from spring green-up through early June was grazed off by mule deer; no measurable growth occurred after 13-Sep.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

Table 7. Dry matter yields (tons/acre) of sprinkler-irrigated alfalfa varieties sown August 20, 2020, at NMSU's Agricultural Science Center at Farmington†.

| Variety Name | 2021 | 2022 Harvests | | | | 2022 | 2-Yr |
|----------------|--------|---------------|--------|--------|--------|---------|---------|
| | Total | 9-Jun | 21-Jul | 30-Aug | 12-Oct | Total | Average |
| SW4506 | 6.22 | 5.88** | 3.85** | 2.53* | 1.63* | 13.88** | 10.05** |
| NM 1715PAR | 7.39** | 4.98* | 3.33* | 2.53* | 1.68* | 12.50* | 9.94* |
| SW4107 | 6.14 | 5.48* | 3.78* | 2.70* | 1.60* | 13.55* | 9.84* |
| Magnum 8 | 6.78* | 5.13* | 3.35* | 2.65* | 1.65* | 12.78* | 9.78* |
| SW3407 | 6.81* | 4.85* | 3.33* | 2.78** | 1.65* | 12.60* | 9.70* |
| SW4412Y | 6.85* | 4.83* | 3.20* | 2.58* | 1.68* | 12.28* | 9.56* |
| Bar MSI | 6.92* | 4.58 | 3.33* | 2.33 | 1.60* | 11.83 | 9.37* |
| AFX 469 | 6.06 | 4.90* | 3.58* | 2.50* | 1.68* | 12.65* | 9.36* |
| NM 1713PAR | 6.68* | 4.40 | 3.05* | 2.60* | 1.70* | 11.75 | 9.22* |
| NM 1712PAR | 6.33 | 4.50 | 3.63* | 2.13 | 1.55* | 11.80 | 9.06* |
| NM Common | 6.29 | 4.43 | 3.08* | 2.48* | 1.80** | 11.78 | 9.03* |
| African Common | 6.68* | 3.98 | 3.50* | 1.85 | 1.80** | 11.13 | 8.90 |
| Dona Ana | 6.12 | 3.50 | 2.93* | 2.20 | 1.68* | 10.30 | 8.21 |
| Zia | 5.62 | 3.35 | 2.63* | 2.00 | 1.30* | 9.28 | 7.45 |
| Mean | 6.49 | 4.63 | 3.32 | 2.42 | 1.64 | 12.01 | 9.25 |
| LSD (0.05) | 0.92 | 1.06 | NS | 0.32 | NS | 1.91 | 1.08 |
| CV% | 9.88 | 16.00 | 17.33 | 9.20 | 16.51 | 11.12 | 11.59 |

†Data were analyzed using analysis of variance.

2021 Harvest dates: 19-Jun, 10-Aug, and 22-Sep.

Rain delays in 2022 increased yields compared to long-term averages.

**Highest numerical value in the column.

*Not significantly different from the highest numerical value in the column based on the 5% LSD.

NS means that there were no significant differences between the varieties within that column at the 5% level.

| Table 8. Characteristics and performance of alfalfa varieties across years and tests in New Mexico. | | Varietal Characteristics ¹ | | | | | | | | | | | | | Las Cruces | | | | | | Artesia | | Los Lunas | | | Tucumcari | | | Farmington | | |
|---|-------------------------------|---------------------------------------|------------|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----|----------------|---|----|---|-------------------|----|-----------|------|----|-----------|----|----|------------|----|----|
| | | | | | | | | | | | | | | | Pest resistance | | | | | | 2019 ² | | | 2020 | | 2019 | | | 2018 | | |
| | | Variety Name | Proprietor | RR | FD | WS | Or | BW | FW | AN | PRR | SAA | PA | BAA | SN | RKN | F ³ | | | T | | | 21 | 22 | 20 | 21 | 22 | 19 | 20 | 21 | 22 |
| SW 3407 | S & W Seeds | | | | | | | | | | | | | | | | | 3 | <2 | | HR | HR | | | | | | | | | |
| AFX469 | Alforex Seeds | | 4 | 1.5 | | HR | HR | HR | HR | R | MR | R | HR | n/r | | | | | | | | | | | | | | | | * | * |
| BAR MS1 | Barenbrug USA | | 4 | 1.8 | | HR | HR | HR | HR | n/r | R | n/r | R | n/r | | | | | | | | | | | | | | | * | * | |
| Magnum 8 | Dairyland Seed | | 4 | 2.0 | | HR | HR | HR | HR | R | MR | R | R | n/r | | | | | | | | | | | | | | | * | * | |
| Roadrunner | Blue River Hybrids | | 4 | 2.0 | Y | HR | HR | HR | HR | HR | LR | n/r | R | n/r | | | | | | | | | | | | ** | ** | | | | |
| SW 1517 | S & W Seeds | | 4 | n/r | | HR | HR | HR | HR | R | R | n/r | MR | n/r | | | | | | | | | | | | | | * | | | |
| SW 4107 | S & W Seeds | | 4 | <2 | | HR | HR | HR | HR | MR | R | n/r | R | n/r | | | | | | | | | | | | | | | * | * | |
| SW 4412Y | S & W Seeds | | 4 | 2.0 | | HR | HR | HR | HR | R | HR | n/r | HR | n/r | | | | | | | | | | | | | | * | * | | |
| SW 4506 | S & W Seeds | | 4 | n/r | | HR | HR | HR | HR | R | HR | n/r | R | n/r | | | | | | | | | | | | | | | * | * | |
| SW 5210 | S & W Seeds | | 4 | n/r | | HR | HR | HR | HR | R | HR | n/r | HR | n/r | | | | | | | | | | | | | * | * | | | |
| AFX579 | Alforex Seeds | | 5 | 2.5 | | HR | HR | HR | HR | R | R | R | HR | n/r | | | | | | | | | | | | | | | | | |
| NM1712PAR | New Mexico State University | | 5 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1713PAR | New Mexico State University | | 5 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1715PAR | New Mexico State University | | 5 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 1509 | S & W Seeds | | 5 | n/r | | HR | HR | HR | HR | R | R | n/r | R | n/r | | | | | | | | | | | | | | * | * | | |
| SW 5511 | S & W Seeds | | 5 | n/r | | HR | HR | HR | HR | n/r | n/r | n/r | HR | n/r | | | | | | | | | | | | | | | | | |
| Zia | Roswell Seed | | 5 | n/r | | MR | MR | S | S | MR | S | S | n/r | n/r | | | | | | | | | | | | | * | * | * | * | |
| Artesian Sun 6.3 | Croplan Genetics | | 6 | 3.0 | | R | HR | HR | HR | n/r | HR | n/r | HR | n/r | | | | | | | | | | | | | | | | | |
| Hi-Gest 660 | Alforex Seeds | | 6 | n/r | | R | HR | HR | HR | HR | n/r | R | HR | n/r | | | | | | | | | | | | | | * | * | | |
| HybriForce-3600 | Alforex Seeds | | 6 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | HR | n/r | | | | | | | | | | | | | | * | * | | |
| WL 440HQ | W-L Research | | 6 | n/r | | HR | HR | HR | HR | HR | HR | n/r | HR | HR | | | | | | | | | | | | | | * | * | | |
| AFX 779 | Alforex Seeds | | 7 | n/r | | R | R | R | R | HR | HR | HR | HR | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Ameristand 715NTRR | America's Alfalfa | Y | 7 | n/r | | R | HR | HR | HR | HR | HR | n/r | HR | n/r | | | | | | | | | | | | | * | * | | | |
| Artesian Sunrise | Croplan Genetics | | 7 | n/r | | MR | HR | R | HR | HR | HR | R | R | n/r | | | | | | | | | | | | | | * | * | | |
| Dona Ana | Roswell Seed | | 7 | n/r | | MR | MR | LR | R | MR | R | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1701PAR | New Mexico State University | | 7 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1702PAR | New Mexico State University | | 7 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1703PAR | New Mexico State University | | 7 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1704PAR | New Mexico State University | | 7 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM170506PAR | New Mexico State University | | 7 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NM1705PAR | New Mexico State University | | 7 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| NuMex Bill Melton | New Mexico State University | | 7 | n/r | | MR | R | R | R | R | MR | MR | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 7408 | S & W Seeds | | 7 | n/r | | R | HR | HR | HR | HR | LR | R | MR | n/r | | | | | | | | | | | | | ** | * | ** | * | * |
| SW 7473 | S & W Seeds | | 7 | n/r | | HR | HR | HR | HR | HR | HR | n/r | HR | n/r | | | | | | | | | | | | | * | * | * | * | * |
| WL 454HQ.RR | W-L Research | Y | 7 | n/r | | R | HR | HR | HR | HR | HR | n/r | HR | n/r | | | | | | | | | | | | | | * | * | * | * |
| Ameristand 803T | America's Alfalfa | | 8 | n/r | | MR | HR | MR | HR | R | R | n/r | HR | HR | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mesquite Brand | Helena Chemical, Mesquite, NM | | 8 | nr | | MR | HR | MR | HR | n/r | n/r | n/r | HR | HR | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 8409 | S & W Seeds | | 8 | n/r | | HR | HR | HR | HR | HR | HR | n/r | R | n/r | | | | | | | | | | | | | * | * | * | * | * |
| SW 8412 | S & W Seeds | | 8 | n/r | | HR | R | HR | HR | HR | HR | n/r | HR | n/r | | | | | | | | | | | | | * | * | * | * | * |
| SW 8421S | S & W Seeds | | 8 | n/r | | n/r | HR | LR | R | R | n/r | n/r | R | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 8476 | S & W Seeds | | 8 | n/r | | R | R | HR | HR | HR | HR | n/r | R | n/r | | | | | | | | | | | | | * | * | * | * | * |
| SW 8888 | S & W Seeds | | 8 | n/r | | R | HR | HR | HR | HR | R | MR | R | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| AFX 917 | Alforex Seeds | | 9 | n/r | | R | HR | HR | HR | HR | HR | HR | R | HR | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 9720 | S & W Seeds | | 9 | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | R | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 9812 | S & W Seeds | | 9 | n/r | | R | R | LR | MR | R | R | R | HR | MR | ** | * | ** | * | ** | * | ** | * | ** | * | ** | * | ** | * | ** | * | ** |
| SW 9813 | S & W Seeds | | 9 | n/r | | R | R | MR | R | R | R | HR | MR | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| TMA 990 Brand | DynaGro Seed | | 9 | n/r | | HR | HR | R | HR | n/r | n/r | n/r | n/r | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| SW 1011 | S & W Seeds | | 10 | n/r | | MR | HR | LR | R | R | R | R | R | n/r | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| African Common | Roswell Seed | | n/r | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | | | | | | | | | | | | * | ** | * | * | * | |
| NM Common | Roswell Seed | | n/r | n/r | | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | n/r | | | | | | | | | | | | * | ** | * | * | * | |

No data reported

No data collected due to irrigation system and equipment breakdowns complicated by COVID

¹RR=Roundup Ready if "Y"; FD=Fall Dormancy (1 & 2 Very dormant; 3 & 4 Dormant; 5 Moderately dormant; 6 & 7 Semi-dormant; 8 & 9 Non-dormant; 10 & 11 Very non-dormant), WS=Winter Survival (1=No injury, 6=Dead plants), Or=Organically certified seed, BW=Bacterial wilt, FW=Fusarium wilt, AN=Anthracnose, PRR=Phytophthora root rot, SAA=Spotted alfalfa aphid, PA=Pea aphid, BAA=Blue alfalfa aphid, SN=Stem nematode, RKN=Rootknot nematode (southern); (S=Susceptible, LR=Low resistance, MR=Moderate resistance, R=Resistant, HR=High resistance, n/r indicates either that the variety was not rated for that characteristic or no rating was available).

²Establishment year.

³F=Fully irrigated; T=Summer irrigation terminated.

⁴Harvest year.

Shaded boxes indicate that the variety was not in the test.

**Highest yielding variety in the test for that year.

*Not significantly different from the highest yielding variety in the test for that year.

L.M. Lauriault, I.M. Ray, C.A. Pierce, K. Djaman, R.P. Flynn, M.A. Marsalis, C. Havlik, G.K. Martinez, and M. West
 New Mexico St. Univ. College of Agricultural, Consumer and Environmental Sciences. Agric. Exp. Stn and Coop. Ext. Ser.

Table 9. New Mexico State University Cooperative Extension Service publications related to alfalfa management.

| Number | Title |
|--------|---|
| A-123 | Sampling for plant tissue analysis |
| A-129 | Nitrogen fixation by legumes |
| A-130 | Inoculation of legumes |
| A-131 | Certified seed |
| A-137 | Soil analysis: A key to soil nutrient management |
| A-145 | Certified noxious weed free program |
| A-146 | Appropriate analysis for New Mexico soils |
| A-229 | Phymatotrichum root rot |
| A-325 | Managing weeds in alfalfa |
| A-326 | Downy mildew on alfalfa |
| A-333 | User manual of the alfalfa yield predictor |
| A-334 | Beet armyworm in New Mexico Hay |
| A-335 | Variegated cutworm in New Mexico Hay |
| A-336 | Managing Roundup Ready alfalfa and conventional or organic alfalfa hay in nearby fields in New Mexico |
| A-337 | Recommendations for Roundup Ready alfalfa weed management and stand removal in New Mexico |
| A-338 | Alfalfa weevil control options in New Mexico |
| A-339 | Alfalfa integrated pest management: Aphids |
| A-615 | Dodder (<i>Cuscuta ssp.</i>) biology and management |
| H-158 | How to collect and send plant specimens for disease diagnosis |
| CR-536 | Blister beetles in alfalfa |
| CR-586 | Irrigated pasture management in New Mexico |
| CR-633 | Using a computer application to predict irrigated alfalfa yield |
| CR-641 | Hay quality, sampling and testing |
| CR-644 | Assessing alfalfa stands after winter injury, freeze damage, or any time renovation is considered in New Mexico |
| CR-646 | Managing alfalfa during drought |
| CR-654 | Selecting alfalfa varieties for New Mexico |
| CR-659 | Whitefringed beetle in New Mexico alfalfa |
| CR-668 | Reducing harvest and post-harvest losses of alfalfa and other hay |
| CR 682 | GMO Crops in New Mexico agriculture |
| CR-696 | Perennial forage species for irrigated pastures and hay in New Mexico |

These publications, and alfalfa variety test reports from previous years, are available from your county office of the NMSU Cooperative Extension Service or online at <http://forages.nmsu.edu/resources.html> and aces.nmsu.edu/pubs/



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