Alfalfa is capable of producing high yields of high quality forage for hay, haylage, and pasture. However, this performance potential can only be realized when site selection and management are appropriate. Alfalfa requires deep, well-drained soils with a pH >6.5 and high levels of phosphorus (P) and potassium (K) in order to persist and yield to its potential. Defoliation and pest management are also key to alfalfa performance.

There are several hundred alfalfa varieties on the market, and many do well in Virginia. This report is a summary of alfalfa variety trials performed at Virginia Tech Agricultural Research and Extension Centers (ARECs) from 1999 through 2003. It includes a trial seeded at the Southern Piedmont AREC (SPAREC) at Blackstone in June 2000 and harvested for 3-1/2 years (2000-2003), (Tables 7-10). It also includes a trial established at the Northern Piedmont AREC (NPAREC) at Orange in September 1998 and harvested for five years (1999-2003; Tables 2-6). Another trial was seeded at the Kentland Farm at Whitethorne in September 1999, (Table 11), but yields only are only included for 2000. Severe deer damage followed by stand winterkill resulted in this trial being discontinued. The trials are conducted at multiple locations within the state in order to provide a range of environments. The tables that follow include summary data of individual harvests within years and total season yields across years.

Varieties were submitted by or specifically requested of cooperating seed companies. Entries were planted in four replications of a randomized complete block design at each location. Individual plot size averaged 5’ X 15’. All data are reported on a 100 percent dry matter basis; actual hay yields would be 10 percent to 15 percent higher. The variety trials are managed at high fertility levels. Phosphorus and potassium were maintained at high levels, pH was maintained between 6.5 and 7.0, and boron was applied as required. Weeds and insects were controlled with appropriate pesticides.

All entries in a trial at a location were harvested on the same dates, but harvest dates varied among locations and years. The goal was to harvest five times per year beginning around May 1 and at the early bloom stage thereafter. At each harvest, plots were cut to a 3” residual height with either a sickle or flail harvester.

Statistical analyses were performed for individual harvests within years and for total season yields across years. These analyses determine whether numerical differences were just random effects or indeed a “true” difference in performance among varieties. The term “LSD (0.05)” appears at the bottom of each table with an accompanying value under each column of data. An LSD (0.05) is the amount by which two varieties’ yields in the same column must differ in order to be considered statistically, or meaningfully, different. If “NS” appears instead of a value, it means the averages within the column are not statistically, or meaningfully, different.
Alfalfa is relatively drought and heat tolerant. Nevertheless, precipitation has a profound effect on forage yield and persistence. Monthly average precipitation data are compared to long-term averages for each location during which the trials were conducted (Figure 1).

At Orange, the 1999 growing season was very dry throughout, except for above average rainfall during September. Rainfall was below average during each of 2000, 2001, and 2002 with exceptions during certain months and normal to above normal conditions October through December 2002. Rainfall was above average in 2003 (Figure 1).

At Blackstone, rainfall during the 2000 growing season was close to average with April above and October below. Rainfall was below average in 2001, with the exceptions of March and June. Severe drought continued throughout much of 2002 with normal to above normal conditions returning in the fall. Rainfall was above average in 2003 with frequent heavy rains and waterlogged soils in June and early July. Severe stand losses occurred during this period, likely due to root and crown diseases under these high-moisture conditions.

When using this publication to select an alfalfa variety, it is important to 1) prioritize the relative importance of yield, persistence, and quality for the intended use of the forage and 2) understand the context within which these trials were conducted. Forage quality and palatability were not determined in our trials. These data reflect the yield and persistence of varieties under optimum management. Varieties that persisted well over several years in these trials may not necessarily persist well under grazing, poor fertility, or a broad range of soil types. Disease resistance is related to persistence. All diseases listed in Table 1 occur in Virginia. Varieties with high resistance to all five diseases would be expected to have the broadest range of adaptation. However, for some forage growers, persistence may not be as important as short-term yield, quality, and palatability.

Consult your local Extension agent for more information about forage varieties and management. Go to the North American Alfalfa Improvement Conference website (www.naaic.org) for links to other alfalfa variety testing programs across the United States. Pennsylvania and Kentucky are the two states in proximity to Virginia that have extensive variety testing programs.

Acknowledgements: The researchers express their appreciation to the participating seed companies for their financial support of these trials. They are also indebted to Dean Andy Swiger, Associate Dean Skip Jubb, Dr. Jack Hall, Dr. Steve Hodges, Dr. Dale Wolf, and the Virginia Forage and Grassland Council for provision of funds to purchase a forage harvester used for these trials. Thanks, too, to all AREC employees, and the undergraduate student workers who provided valuable assistance in conducting the trials.
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*Wt = Whitethorne

Bw = Bacterial wilt, Vw = Verticillium wilt, Fw = Fusarium wilt, An Anthracnose, and PRR = Phytophthora root rot.

Disease Resistance Ratings:

- % Resistant Plants
- Resistance class
  - 0-5%  Susceptible (S)
  - 6-14%  Low Resistance (LR)
  - 15-30%  Moderate Resistance (MR)
  - 31-50%  Resistance (R)
  - >50%  High Resistance (HR)
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9/23/98 - Planted
9/14/98 - Applied 9 – 54 – 54/acre
9/21/98 - Sprayed 1 qt of Eptam 7E and spike tooth in
3/26/99 - Overseeded Study (Thin stand so drilled 15 lb/acre over each plot late March)
6/11/99 - Applied 100 lb K2O/acre
Table 3. 2000 Alfalfa Variety Yields - Northern Piedmont AREC, Orange, Va., Sept. 1998 Seeding

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9-23-98 - Planted
3-26-99 - Replanted Study
2-25-00 - Applied 80 lb P<sub>2</sub>O<sub>5</sub> + 4 lb B/acre
2-25-00 - Applied 240 lb K<sub>2</sub>O/acre
3-02-00 - Sprayed 0.5 lb Sinbar/acre
4-05-00 - Sprayed 1 qt of Lorsban 4E/acre to control Alfalfa weevil
5-16-00 - Applied 180 lb K<sub>2</sub>O/acre
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<th>06-Jun</th>
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LSD (0.05) NS 0.12 0.14 NS NS NS

9-23-98 - Planted
3-26-99 - Replanted Study
2-28-01 - Applied 100 lbs P₂O₅ + 4 lbs B per acre
2-28-01 - Applied 240 lbs K₂O per acre
2-28-01 - Sprayed 0.75 lbs Sinbar per acre
4-10-01 - Sprayed 1 Qt of Lorsban 4E per Acre to control Alfalfa weevil
5-10-01 - Applied 180 lbs K₂O per acre

| Variety            | Company  | 16-May | 6-Jun | 19-Jul | 21-Aug | 22-Oct | Total |
|--------------------|----------|--------|-------|--------|--------|--------|-------|-------|
| AmeriGraze 401 + Z | ABI      | 1.92   | 1.69  | 1.06   | 1.21   | 0.93   | 6.80  |
| Dekalb 140         | Monsanto | 1.89   | 1.74  | 1.05   | 1.17   | 0.93   | 6.78  |
| Pawnee (ZC9650)    | ABI      | 1.85   | 1.70  | 1.02   | 1.23   | 0.96   | 6.75  |
| WL 325HQ           | W-L      | 2.08   | 1.65  | 0.93   | 1.10   | 0.95   | 6.71  |
| ABT 400SCL         | W-L      | 1.95   | 1.61  | 0.97   | 1.12   | 0.92   | 6.57  |
| Dekalb 133         | Monsanto | 1.87   | 1.63  | 0.93   | 1.11   | 1.00   | 6.54  |
| Cimarron - SR      | Great Plains | 1.79 | 1.64  | 0.96   | 1.20   | 0.94   | 6.53  |
| Dagger + EV        | ABI      | 1.75   | 1.64  | 1.00   | 1.17   | 0.90   | 6.47  |
| Stellar            | W-L      | 1.75   | 1.69  | 1.04   | 1.19   | 0.72   | 6.40  |
| WL 326GZ           | W-L      | 1.94   | 1.58  | 0.91   | 1.06   | 0.89   | 6.37  |
| ABT 350            | W-L      | 1.95   | 1.46  | 0.91   | 1.07   | 0.98   | 6.37  |
| Persist            | Doebler’s | 1.76  | 1.49  | 0.99   | 1.19   | 0.89   | 6.33  |
| Triple Crown (A9503)| FFR    | 1.96   | 1.56  | 0.88   | 0.97   | 0.93   | 6.30  |
| Spur               | Allied   | 1.81   | 1.51  | 0.95   | 1.10   | 0.88   | 6.24  |
| Dekalb 141         | Monsanto | 1.86   | 1.47  | 0.92   | 1.08   | 0.92   | 6.24  |
| Pioneer 5454       | Pioneer  | 1.84   | 1.55  | 0.91   | 1.06   | 0.87   | 6.23  |
| Pioneer 53Q60      | Pioneer  | 1.65   | 1.64  | 0.98   | 1.10   | 0.86   | 6.23  |
| Interceptor        | ABI      | 1.78   | 1.62  | 0.91   | 1.05   | 0.85   | 6.21  |
| WL 324             | W-L      | 1.82   | 1.46  | 0.92   | 1.03   | 0.91   | 6.14  |
| CleanSweep 1000    | FFR      | 1.84   | 1.53  | 0.86   | 0.94   | 0.83   | 5.99  |
| Choice             | FFR      | 1.81   | 1.45  | 0.84   | 0.99   | 0.84   | 5.92  |
| WL 323             | W-L      | 1.79   | 1.41  | 0.80   | 0.94   | 0.83   | 5.77  |
| Cimarron 3i        | Great Plains | 1.76 | 1.36  | 0.79   | 0.97   | 0.88   | 5.76  |
| Affinity + Z       | ABI      | 1.81   | 1.38  | 0.78   | 0.93   | 0.82   | 5.72  |
| Feast + EV         | Agri-pro | 1.64   | 1.38  | 0.82   | 0.98   | 0.78   | 5.60  |
| Pioneer 54H69      | Pioneer  | 1.62   | 1.16  | 0.78   | 0.88   | 0.76   | 5.20  |
| **LSD (0.05)**     | NS       | NS     | NS    | NS     | **0.12** | NS    | NS    |

9-23-98 - Planted  
3-26-99 - Replanted Study  
2-26-02 - Applied 100 lb P2O5 + 3 lb B/acre  
2-26-02 - Applied 240 lb K2O/acre  
2-27-02 - Sprayed 0.75 lb Sinbar/acre  
4-16-02 - Sprayed 1 qt of Lorsban 4E/acre to control Alfalfa weevil  
5-17-02 - Applied 180 lb K2O/acre
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<th>30-Jul</th>
<th>9-Sep</th>
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**LSD (0.05)**

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9-23-98 - Planted
3-26-99 - Replanted Study
5-17-02 - Applied 180 lb K₂O/acre
3-10-03 - Applied 100 lb P₂O₅, 200 lb K₂O, + 27 lbs B/acre
3-11-03 - Sprayed 0.75 lb Sinbar/acre

4-15-03 - Sprayed 1 oz/acre Baythroid
5-20-03 - Applied 185 lb K₂O/acre
5-30-03 - Sprayed edges with Poast Plus 1%
7-11-03 - Sprayed 1.5 oz/acre Baythroid, 2 pt/acre Poast Plus
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*See Individual Years for Cultural Practices
### Table 8. 2000 Alfalfa Variety Yields - Southern Piedmont AREC, Blackstone, Va., June 2000 Seeding

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<th>Variety</th>
<th>Company</th>
<th>16-Aug</th>
<th>27-Sep</th>
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<td>1.02</td>
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<td>0.99</td>
<td>2.24</td>
</tr>
<tr>
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<td>Doebler’s</td>
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<td>0.86</td>
<td>2.12</td>
</tr>
<tr>
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<td><strong>0.11</strong></td>
<td><strong>NS</strong></td>
<td><strong>NS</strong></td>
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5-18-00 - Applied 0-210-434 + 4 lb B/acre  
5-26-00 - Sprayed 2 qt Eptam 7E/acre  
6-8-00 - Planted  
8-23-00 - Sprayed 18.4 oz Quadris 2.08/acre to control Southern Stem Blight  
9-12-00 - Sprayed 1 pt Poast + 2 pt COC/acre  
10-3-00 - Sprayed 18.4 oz Quadris 2.08/acre to control Southern Stem Blight  
Soil Type: Dothan - Norfolk  
Soil Test: Oct. 99  
P: High  
K: Medium  
Ca: Med -  
Mg: High +  
Zn: 1.4  
Mn: 3.3  
OM: 1.4
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<th>31-May</th>
<th>6-Jul</th>
<th>14-Aug</th>
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<td>1.83</td>
<td>1.90</td>
<td>0.56</td>
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<td>NS</td>
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<td><strong>0.64</strong></td>
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6-08-00 - Planted
2-21-01 - 0-200-400 + 4lb B/acre
3-26-01 - 1 qt Furadan 4F + 18.4 oz Quadris 2.08/acre
<table>
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<th>Variety</th>
<th>Company</th>
<th>8-May</th>
<th>4-May</th>
<th>2-Jul</th>
<th>4-Aug</th>
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2/13/2002 - 0-200-400 + 4lb B/acre
4/2/2002 - 1 qt Furadan 4F/acre
4/5/2002 - 0-200-400 + 4lb B/acre
6/12/2002 - 1.44 oz Pursuit + 1.5 oz Poast/acre

Soil Test:
- pH 6.9
- P High
- K Medium
## Table 11. 2003 Alfalfa Variety Yields - Southern Piedmont AREC, Blackstone, Va., June 2000 Seeding

<table>
<thead>
<tr>
<th>Variety</th>
<th>Company</th>
<th>DM Yield (tons/acre) 8-May</th>
<th>Plants/90 square ft. 22-Oct</th>
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Table 12. Alfalfa Variety Yield Summary - Southern Piedmont AREC, Blackstone, Va., June 2000 Seeding

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*See Individual Years for Cultural Practices
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<tr>
<th>Variety</th>
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<th>15-May DM Yield</th>
<th>20-Jun DM Yield</th>
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Soil test results taken 10/11/00
P = 15 (Medium range = 6-18)
K = 67 (Medium range = 38-88)
pH = 6.7
Table 14. Alfalfa forage seed companies with varieties in Virginia Tech trials

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<thead>
<tr>
<th>Variety</th>
<th>Seed Source</th>
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<tbody>
<tr>
<td>53H81</td>
<td>1. Southern States Cooperative</td>
</tr>
<tr>
<td>53Q60</td>
<td>PO Box 26234</td>
</tr>
<tr>
<td>5454</td>
<td>Richmond, VA 23260</td>
</tr>
<tr>
<td>54H69</td>
<td>(804) 281-1253</td>
</tr>
<tr>
<td>54V54</td>
<td><a href="http://www.southernstates-coop.com">www.southernstates-coop.com</a></td>
</tr>
<tr>
<td>Abilene + Z</td>
<td>2. Seedway Inc.</td>
</tr>
<tr>
<td>ABT 350</td>
<td>1734 Railroad Place</td>
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<tr>
<td>ABT 400 SCL</td>
<td>PO Box 250</td>
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<tr>
<td>Affinity + Z</td>
<td>Hall, NY 14463</td>
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<tr>
<td>Alfagraze</td>
<td>(716) 526-6391</td>
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<tr>
<td>Amerigraze 401 + Z</td>
<td>3. ChemGro Seeds</td>
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<tr>
<td>Choice</td>
<td>East Petersburg, PA 17520</td>
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<tr>
<td>Cimarron 3I</td>
<td>(717) 569-3296</td>
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<tr>
<td>Cinarron SR</td>
<td>4. Wetsel, Inc.</td>
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<tr>
<td>Clean Sweep 1000</td>
<td>961 N. Liberty</td>
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<tr>
<td>Dagger + EV</td>
<td>Harrisonburg, VA 22801</td>
</tr>
<tr>
<td>DK133</td>
<td>(540) 434-6753</td>
</tr>
<tr>
<td>DK140</td>
<td>5. Pioneer Hi-Bred International, Inc.</td>
</tr>
<tr>
<td>DK141</td>
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<tr>
<td>Feast + EV</td>
<td>#200 Rocky Mount, NC 27804-1826</td>
</tr>
<tr>
<td>Haygrazer</td>
<td>(212) 972-3320</td>
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<tr>
<td>Interceptor</td>
<td>6. Monsanto</td>
</tr>
<tr>
<td>Pawnee</td>
<td>3100 Sycamore Rd</td>
</tr>
<tr>
<td>Persit</td>
<td>DeKalb, IL 60115</td>
</tr>
<tr>
<td>Precedent</td>
<td>1 (800) 8DEKALB</td>
</tr>
<tr>
<td>Prolific</td>
<td>7. Doebler’s PA Hybrids</td>
</tr>
<tr>
<td>Seedway 512</td>
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<tr>
<td>Spur</td>
<td>Jersey Shore, PA 17740</td>
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<tr>
<td>Stellar</td>
<td>(800) 853-CORN</td>
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<tr>
<td>Triple Crown</td>
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<tr>
<td>WL 323</td>
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<td>WL 324</td>
<td>(800) 873-2532</td>
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<td>WL 326 GZ</td>
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<td>WL 327</td>
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<td>11. AgriBioTech, Inc.</td>
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<td>(702) 566-2440</td>
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<td>(712) 792-6691</td>
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