

2015

## OHIO FORAGE PERFORMANCE TRIALS

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### SUMMARY

This report is a summary of performance data collected from forage variety trials in Ohio during 2015, including commercial varieties of alfalfa, red clover, white clover, orchardgrass, tall fescue and annual ryegrass in tests planted in 2011 to 2015 across three sites in Ohio: South Charleston, Wooster, and North Baltimore. For more details on forage species and management, see the *Ohio Agronomy Guide*, Ohio State University Extension Bulletin 472, which can be purchased from Ohio State University Extension's eStore at <http://estore.osu-extension.org/>.

### Interpreting Yield Data

Yield data are reported in Tables 2 through 11. Details of establishment and management of each test are listed in footnotes below the tables. Least significant differences (LSD) are listed at the bottom of Tables 3 through 11. Differences between varieties are significant only if they are equal to or greater than the LSD value. If a given variety out yields another variety by as much or more than the LSD value, then we are 95% sure that the yield difference is real, with only a 5% probability that the difference is due to chance alone. For example, if variety X is 0.50 ton/acre higher in yield than variety Y, then this difference is statistically significant if the LSD is 0.50 or less.

The CV value or coefficient of variation, listed at the bottom of each table is used as a measure of the precision of the experiment. Lower CV values will generally relate to lower experimental error in the trial. Uncontrollable or unmeasured variations in soil fertility, soil drainage, and other environmental factors contribute to greater experimental error and higher CV values. However, higher CV values can also occur simply as a result of the mean yield being low (eg. due to weather conditions), because the CV is a function of the mean yield. So a higher CV will often occur where yields are low despite there being no increase in experimental error.

Results reported here should be representative of what might occur throughout the state but would be most applicable under environmental and management conditions similar to those of the tests. The relative yields of all forage legume varieties are affected by crop management and by environmental factors including soil type, winter conditions, soil moisture conditions, diseases, and insects.

### ALFALFA

Alfalfa has the highest combined yield and quality potential of any adapted perennial forage grown in Ohio. It is grown on about 310,000 acres. Alfalfa requires well-drained soils with near-neutral pH (6.5-7.0). Alfalfa trials are initiated each year and data is collected for at least four years unless the stand becomes so depleted that further testing is no longer worthwhile; variety performance should be evaluated over several sites and years.

## Guidelines for Selecting Alfalfa Varieties

To capitalize on alfalfa's potential, select high-yielding varieties with resistance to major diseases. Alfalfa variety rankings for a number of traits described below are reported on the University of Wisconsin forage website, at <http://www.uwex.edu/ces/forage/pubs/varinfo.htm>.

Consider these factors when selecting alfalfa varieties for Ohio:

- 1. Yield.** Yield is critical to profitability of an alfalfa stand. Select varieties with high yields over several locations and years. Table 2 shows this comparison in percent of the average test yield. Varieties that perform equally well across several locations and years are adapted to a wider range of environmental conditions, which is important because soils may vary on your farm and weather conditions vary from year to year.
- 2. Persistence.** Another important consideration is how long the alfalfa stand will last. Study variety performance by age of stand to get an estimate of longevity of productivity. Some varieties may decline with age more rapidly than others, which may influence your variety choice depending on how long you intend to keep the stand. For long-term rotations, choose varieties with good disease resistance and good performance in the fourth year. If you plan to harvest alfalfa for three years or less, then high performance during the first three years should be given priority.
- 3. Fall dormancy (FD).** Alfalfa varieties with fall dormancy ratings of 1 through 5 are considered adequately winter hardy for Ohio conditions while those of 6 or higher are not considered adapted. Varieties with higher fall dormancy ratings tend to grow at a lower temperature, so they begin growth earlier in the spring and continue growth later into the fall. The fall dormancy rating does not correlate well with winter hardiness within the range of varieties adapted to the Midwest USA.
- 4. Disease resistance.** Variety selection based on yield performance alone is less satisfactory than selections that also consider disease resistance characteristics. Resistance to specific disease-causing pathogens may be the most important attribute in an alfalfa variety. Pathogens can dramatically reduce yield and persistence of susceptible varieties. In an evaluation of older versus newer alfalfa varieties we found that newer varieties yielded more and persisted longer than older varieties, primarily because of improved resistance to diseases that affected the trial. For more information on alfalfa diseases and varietal resistance to specific diseases, go to the following websites:  
[http://oardc.osu.edu/ohiofieldcropdisease/t01\\_pageview2/Home.htm](http://oardc.osu.edu/ohiofieldcropdisease/t01_pageview2/Home.htm)  
<http://www.uwex.edu/ces/forage/pubs/varinfo.htm>
- 5. Insect resistance.** Alfalfa varieties have been developed for resistance to potato leafhopper (PLH), which is the most consistently damaging insect pest of alfalfa in Ohio. The PLH resistant varieties are not resistant to the alfalfa weevil, and they will need to be protected from that pest like all standard alfalfa varieties when weevil populations exceed the economic action threshold. For more information on insect management in alfalfa, see the following website:  
<http://entomology.osu.edu/ag/pageview.asp?id=1029>.
- 6. Compare to check variety.** For comparisons of varieties across several trials, always compare varieties to the same check variety planted within the trial. The variety Vernal is used as a check in all Ohio trials and is commonly included in trials in other states. Another good way to compare varieties across trials is to look at their yield in relation to the trial average reported in Table 2.
- 7. Use good management.** No variety can produce well under poor management. Good management considers all aspects of alfalfa production: seed bed preparation, liming and fertilization, seeding, pest control, harvest, storage, and post harvest treatment. Many newer varieties are better adapted to intensive management.

**Summary of 2015 Crop Conditions**

Rainfall was quite variable across the three locations with only June being consistently above normal for all three locations. Total rainfall for the growing season was below normal at Wooster, normal at S. Charleston, and above normal at North Baltimore. Average monthly temperatures were above normal for most of the year at Wooster and S. Charleston, except for August which was cooler than normal. N. Baltimore was cooler than normal June to August, otherwise temperatures were well above normal..

**Table 1:  
Weather 2015**

| Month  | Wooster     |              | S. Charleston |             | N. Baltimore |              |
|--|-------------|--------------|---------------|-------------|--------------|--------------|
|  | Total       | DFA*         | Total         | DFA*        | Total        | DFA*         |
| -----Precipitation (inches of rainfall)----- |             |              |               |             |              |              |
| Apr  | 2.80        | -0.60        | 4.71          | 0.61        | 3.35         | 0.05         |
| May  | 4.33        | 0.43         | 2.38          | -2.22       | 4.18         | 0.78         |
| June   | 5.43        | 1.33         | 6.96          | 2.66        | 7.71         | 4.01         |
| July   | 3.33        | -0.77        | 5.32          | 1.22        | 6.16         | 2.36         |
| Aug  | 0.78        | -2.82        | 1.87          | -1.63       | 3.51         | 0.51         |
| Sept   | 3.57        | 0.37         | 1.90          | -1.20       | 1.44         | -1.36        |
| <u>Oct</u>                                   | <u>2.30</u> | <u>-0.10</u> | <u>2.75</u>   | <u>0.55</u> | <u>1.82</u>  | <u>-0.38</u> |
| Total  | 22.54       | -2.16        | 25.89         | -0.01       | 28.17        | 5.97         |
| -----Average Daily Temperature (°F)-----     |             |              |               |             |              |              |
| Apr  | 50.6        | 2.3          | 52.4          | 1.2         | 50.0         | 0.9          |
| May  | 63.9        | 5.4          | 66.2          | 2.8         | 64.6         | 4.8          |
| June   | 68.7        | 1.0          | 69.9          | 0.5         | 68.9         | -0.7         |
| July   | 70.5        | 1.0          | 71.6          | -2.2        | 70.6         | -4.6         |
| Aug  | 69.4        | -0.5         | 69.3          | -1.7        | 69.9         | -0.7         |
| Sept   | 66.0        | 2.8          | 67.3          | 2.3         | 67.4         | 3.5          |
| Oct  | 53.3        | 0.9          | 55.1          | 1.0         | 55.0         | 2.2          |

\*DFA = departure from long-term average

**Alfalfa**

The 2013 seeding at Wooster had the highest yields, averaging 6.98 tons/acre (Table 5) followed closely by the 2014 seeding at S. Charleston at 6.86 tons/acre (Table 6). Lower yields were harvested from the 2011 seeding at S. Charleston (4.60 tons/acre, Table 3) and from the 2012 seeding at N. Baltimore (4.28 tons/acre, Table 4). The 2012 N.Baltimore seeding was lost due to waterlogging damage soon after the second harvest in early July (Table 4). A new spring seeding at North Baltimore was seeded on 29-April but excessive rainfall in June and July resulted in stand failure. The trial was reestablished on 27 August. Insecticide applications were used at all locations for control of potato leafhopper (PLH).

Table 2:

**Summary of Alfalfa Variety Performance in Ohio**

Standard Trials - Insecticide applied (values are yield as a percent of the trial average)

| Variety                 | Marketers                 | North            |         |           |         | Total<br>site-yrs | Avg all<br>site yrs |
|-------------------------|---------------------------|------------------|---------|-----------|---------|-------------------|---------------------|
|                         |                           | South Charleston |         | Baltimore | Wooster |                   |                     |
|                         |                           | 2012-15          | 2014-15 | 2012-15   | 2013-15 |                   |                     |
| 4030                    | Preferred Seed Company    |                  |         |           | 105     | 3                 | 105                 |
| 55Q27                   | Pioneer                   |                  | 103     |           |         | 2                 | 103                 |
| 55V50                   | Pioneer                   | 106              |         |           | 104     | 7                 | 105                 |
| 55VR06                  | Pioneer                   |                  | 104     |           |         | 2                 | 104                 |
| 55H94                   | Pioneer                   | 94               |         |           | 96      | 7                 | 95                  |
| Ameristand 407TQ        | Americas Alfalfa          | 99               |         |           |         | 12                | 102                 |
| Archer III              | Americas Alfalfa          | 100              |         |           |         | 4                 | 100                 |
| BlueJay                 | Blue River Hybrids        |                  |         |           | 100     | 3                 | 100                 |
| Caliber                 | Beck's Hybrids            | 97               | 97      | 99        |         | 10                | 98                  |
| Charger                 | Beck's Hybrids            | 100              |         |           |         | 4                 | 100                 |
| Contender               | Beck's Hybrids            |                  | 100     | 97        |         | 6                 | 98                  |
| DBX 303 L               | Doebler's PA Hybrids Inc. |                  |         |           | 102     | 3                 | 102                 |
| DBX 304 HY              | Doebler's PA Hybrids Inc. |                  |         |           | 104     | 3                 | 104                 |
| DBX 305 LH              | Doebler's PA Hybrids Inc. |                  |         |           | 97      | 3                 | 97                  |
| DG 4210                 | Crop Protection Service   | 101              |         |           | 100     | 11                | 100                 |
| DKA 3417 RR             | Dekalb                    |                  |         | 101       |         | 4                 | 101                 |
| DKA 4118 RR             | Dekalb                    |                  |         | 101       |         | 8                 | 101                 |
| Enduro Elite            | The Cisco Companies       |                  | 97      |           |         | 2                 | 97                  |
| Fierce                  | Beck's Hybrids            |                  | 98      |           |         | 2                 | 98                  |
| FSG 403 LR              | Farm Science Genetics     |                  | 104     |           | 104     | 5                 | 104                 |
| FSG 424                 | Farm Science Genetics     |                  | 97      |           | 97      | 5                 | 97                  |
| FSG 524                 | Farm Science Genetics     |                  | 97      |           | 97      | 5                 | 97                  |
| Gunner                  | Croplan Genetics          | 101              |         |           |         | 4                 | 101                 |
| L-455 HD                | Legacy Seed               |                  | 99      |           | 98      | 5                 | 98                  |
| Legacy 449 Aph 2        | Legacy Seed               |                  |         | 99        |         | 4                 | 99                  |
| Magnitude               | Farm Science Genetics     |                  |         | 101       |         | 4                 | 101                 |
| Mariner IV              | Allied Seed               |                  | 106     | 103       |         | 6                 | 104                 |
| Persist II              | Doebler's PA Hybrids      |                  |         | 101       |         | 4                 | 101                 |
| Persist III             | Doebler's PA Hybrids      |                  | 101     |           | 106     | 5                 | 104                 |
| PGI 557                 | Producers Choice          | 104              |         |           |         | 8                 | 101                 |
| Pluss II                | Doebler's PA Hybrids      |                  |         | 102       |         | 4                 | 102                 |
| Prolific II             | Doebler's PA Hybrids      |                  |         |           | 106     | 3                 | 106                 |
| Rebound 6.0             | Croplan Genetics          | 103              |         |           |         | 4                 | 103                 |
| VERNAL                  | Public                    | 94               | 95      | 99        | 92      | 113               | 92                  |
| WL 354 HQ               | Crop Protection Service   | 98               |         |           |         | 4                 | 98                  |
| WL 353 LH               | Crop Protection Service   | 103              |         |           |         | 4                 | 103                 |
| Trial Mean Across Years |                           | 5.24             | 4.17    | 4.86      | 6.06    | --                | --                  |
| No. site years          |                           | 4                | 2       | 4         | 3       | --                | --                  |

Table 3:  
Alfalfa Variety Trial  
Ohio, South Charleston, Sown 8/22/2011

| Variety                    | 28-May  | 2-Jul   | 30-Jul | 8-Sep   | Total                      |        |         |        |         | % Stand<br>9/18/2015 |
|----------------------------|---------|---------|--------|---------|----------------------------|--------|---------|--------|---------|----------------------|
|                            |         |         |        |         | 2015                       | 2014   | 2013    | 2012   | 2012-15 |                      |
| <b>Released Cultivars:</b> | -----   |         |        |         | Tons Dry Matter/Acre ----- |        |         |        |         |                      |
| 55V50                      | 2.31    | 1.54    | 0.63   | 0.36    | 4.85                       | 4.56   | 6.23    | 6.61   | 22.26   | 85                   |
| PGI 557                    | 2.24    | 1.51    | 0.66   | 0.37    | 4.79                       | 4.38   | 6.20    | 6.38   | 21.75   | 85                   |
| Rebound 6.0                | 2.16    | 1.62    | 0.78   | 0.40    | 4.95                       | 4.57   | 5.99    | 6.06   | 21.57   | 85                   |
| WL 353 LH                  | 2.21    | 1.55    | 0.63   | 0.35    | 4.73                       | 4.24   | 5.99    | 6.57   | 21.53   | 83                   |
| Gunner                     | 2.26    | 1.57    | 0.67   | 0.39    | 4.90                       | 4.30   | 5.95    | 6.04   | 21.19   | 82                   |
| DG 4210                    | 2.10    | 1.42    | 0.77   | 0.36    | 4.66                       | 4.42   | 6.23    | 5.82   | 21.14   | 84                   |
| Archer III                 | 2.26    | 1.36    | 0.63   | 0.41    | 4.65                       | 4.44   | 5.90    | 5.93   | 20.93   | 82                   |
| Charger                    | 2.11    | 1.46    | 0.58   | 0.30    | 4.46                       | 4.39   | 6.19    | 5.83   | 20.87   | 84                   |
| AmeriStand 407TQ           | 2.09    | 1.51    | 0.58   | 0.37    | 4.55                       | 4.28   | 5.85    | 6.13   | 20.81   | 81                   |
| WL 354 HQ                  | 2.14    | 1.39    | 0.59   | 0.35    | 4.46                       | 4.37   | 5.69    | 6.09   | 20.61   | 83                   |
| Caliber                    | 2.04    | 1.41    | 0.66   | 0.34    | 4.45                       | 4.15   | 5.74    | 6.04   | 20.38   | 79                   |
| Vernal                     | 1.99    | 1.39    | 0.43   | 0.20    | 4.01                       | 3.84   | 5.55    | 6.35   | 19.75   | 77                   |
| 55H94                      | 2.00    | 1.33    | 0.65   | 0.32    | 4.30                       | 3.87   | 5.66    | 5.85   | 19.68   | 80                   |
| Mean                       | 2.15    | 1.47    | 0.64   | 0.35    | 4.60                       | 4.30   | 5.92    | 6.15   | 20.97   | 82                   |
| LSD 0.05                   | 0.30    | 0.26    | 0.13   | 0.15    | 0.56                       | 0.57   | 0.56    | 0.92   | 1.96    | 4.14                 |
| Prob > F                   | 0.56 ns | 0.71 ns | <.01□  | 0.39 ns | 0.11 ns                    | 0.4 ns | 0.18 ns | .83 ns | 0.42 ns | <.01□                |
| CV %                       | 9.8     | 12.5    | 14.6   | 29.4    | 8.6                        | 9.3    | 6.6     | 10.4   | 6.6     | 3.5                  |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

Data subjected to Nearest Neighbor AOV, adjusted means reported.

ns = no significant differences among varieties.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 16 lb/a.

Plot size: 4' x 20', 15'alleys and borders, RCBD with four reps.

Soil type / analysis: Crosby silt loam, pH=6.8, P=60 lbs/a, K= 194 lbs/a, CEC=12, O.M.=1.4, (4/15).

2015 Pest control: Insecticide was applied on 11-June, 17-July, 18-August for potato leafhopper control.

Table 4:  
Alfalfa Variety Trial  
Ohio, North Baltimore, Sown 4-13-2012

| Variety                    | 5-Jun                            | 6-Jul  | Total  |        |      |        |         |
|----------------------------|----------------------------------|--------|--------|--------|------|--------|---------|
|                            |                                  |        | 2015** | 2014   | 2013 | 2012   | 2012-15 |
| <b>Released Cultivars:</b> | ----- Tons Dry Matter/Acre ----- |        |        |        |      |        |         |
| Mariner IV                 | 3.07                             | 1.54   | 4.65   | 7.02   | 7.00 | 1.62   | 20.06   |
| Pluss II                   | 2.72                             | 1.54   | 4.21   | 7.71   | 6.39 | 1.64   | 19.87   |
| Persist II                 | 2.81                             | 1.41   | 4.17   | 7.89   | 6.25 | 1.47   | 19.73   |
| Magnitude                  | 2.82                             | 1.50   | 4.44   | 7.10   | 6.50 | 1.50   | 19.67   |
| DKA 3417 RR                | 2.97                             | 1.43   | 4.48   | 7.14   | 6.34 | 1.49   | 19.59   |
| Caliber                    | 2.80                             | 1.53   | 4.34   | 7.20   | 6.22 | 1.60   | 19.27   |
| L 449 Aph2                 | 2.92                             | 1.37   | 4.15   | 7.00   | 6.31 | 1.52   | 19.23   |
| Vernal                     | 2.90                             | 1.29   | 4.22   | 7.01   | 6.56 | 1.58   | 19.23   |
| DKA 4118 RR                | 2.58                             | 1.44   | 3.99   | 7.42   | 5.89 | 1.47   | 18.94   |
| Contender                  | 2.69                             | 1.50   | 4.09   | 7.59   | 6.11 | 1.40   | 18.88   |
| Mean                       | 2.81                             | 1.47   | 4.28   | 7.30   | 6.32 | 1.55   | 19.44   |
| LSD 0.05                   | 0.32                             | 0.23   | 0.42   | 0.91   | 0.44 | 0.24   | 1.16    |
| Prob > F                   | 0.16 ns                          | .31 ns | .43 ns | .34 ns | 0.01 | .52 ns | .38 ns  |
| CV%                        | 8.0                              | 10.9   | 6.8    | 8.7    | 4.9  | 10.8   | 4.1     |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

\*\* **Note:** Only two harvests were collected in 2015. After the second harvest the farm received 2.4 inch of rain on July 9th and 1.26 inch on July 12th. This amount of rainfall following harvest resulted in stand failure for all varieties. The field is tilled but the soils were already saturated. The same results happened for many producers in the NW part of Ohio this year.

Data subjected to Nearest Neighbor AOV, adjusted means reported.  
ns = no significant differences among varieties.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 16 lb/a.  
Plot size: 4' x 20', 15' alleys and borders, RCBD with four reps.  
Soil type / analysis: Holtville silt loam, pH=6.0, P=37 lbs/a, K=253 lbs/a, CEC=17.1, O.M.=2.9, (10/12).  
2015 Pest control: Insecticide was applied on 17-June for potato leafhopper control.

Table 5:  
Alfalfa Variety Trial  
Ohio, Wooster, Sown 4-23-2013

| Variety                    | 28-May                          | 26-Jun | 31-Jul | 8-Sep  | Total  |        |        |         | % Stand<br>9/17/15 |
|----------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|---------|--------------------|
|                            |                                 |        |        |        | 2015   | 2014   | 2013   | 2013-15 |                    |
| <b>Released Cultivars:</b> | -----Tons Dry Matter/Acre ----- |        |        |        |        |        |        |         |                    |
| Prolific II                | 2.81                            | 1.93   | 1.73   | 0.94   | 7.37   | 7.42   | 4.52   | 19.31   | 87                 |
| Persist III                | 2.67                            | 1.83   | 1.76   | 0.84   | 7.07   | 7.77   | 4.46   | 19.30   | 91                 |
| 4030                       | 2.92                            | 1.84   | 1.66   | 0.93   | 7.41   | 7.43   | 4.23   | 19.08   | 90                 |
| 55V50                      | 2.71                            | 1.94   | 1.74   | 0.89   | 7.30   | 7.66   | 3.99   | 18.95   | 92                 |
| FSG 403 LR                 | 2.80                            | 1.86   | 1.69   | 0.97   | 7.31   | 7.45   | 4.08   | 18.85   | 91                 |
| DBX 304 HY                 | 2.67                            | 1.90   | 1.76   | 0.91   | 7.26   | 7.31   | 4.26   | 18.84   | 95                 |
| DBX 303 L                  | 2.62                            | 1.88   | 1.90   | 0.82   | 7.14   | 7.53   | 3.92   | 18.59   | 91                 |
| BlueJay                    | 2.53                            | 1.78   | 1.98   | 0.81   | 7.05   | 7.14   | 3.94   | 18.12   | 90                 |
| DG 4210                    | 2.56                            | 1.83   | 1.61   | 0.92   | 6.99   | 7.05   | 4.07   | 18.11   | 91                 |
| L 455 HD                   | 2.47                            | 1.74   | 1.66   | 0.90   | 6.85   | 6.88   | 3.99   | 17.73   | 91                 |
| DBX 305 LH                 | 2.47                            | 1.74   | 1.75   | 0.72   | 6.64   | 7.05   | 4.02   | 17.72   | 84                 |
| FSG 424                    | 2.51                            | 1.76   | 1.75   | 0.88   | 6.97   | 6.94   | 3.69   | 17.60   | 90                 |
| FSG 524                    | 2.53                            | 1.68   | 1.67   | 0.88   | 6.77   | 6.99   | 3.81   | 17.57   | 95                 |
| 55H94                      | 2.44                            | 1.87   | 1.73   | 0.63   | 6.70   | 6.89   | 3.91   | 17.50   | 86                 |
| Vernal                     | 2.42                            | 1.60   | 1.53   | 0.74   | 6.22   | 6.47   | 4.00   | 16.69   | 78                 |
| Mean                       | 2.61                            | 1.80   | 1.71   | 0.86   | 6.98   | 7.15   | 4.05   | 18.18   | 89                 |
| LSD 0.05                   | 0.17                            | 0.15   | 0.16   | 0.08   | 0.28   | 0.35   | 0.29   | 0.73    | 5.55               |
| Prob > F                   | <.0001                          | <.001  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001  | <.0001             |
| CV %                       | 4.5                             | 5.7    | 6.4    | 6.5    | 2.8    | 3.5    | 5.1    | 2.8     | 4.4                |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.  
Data subjected to Nearest Neighbor AOV, adjusted means reported.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 16 lb/a.  
Plot size: 4' x 20', 15' alleys and borders, RCBD with four reps.  
Soil type / analysis: Riddles silt loam, pH = 6.9, P =68 lb/a, K = 234 lb/a, CEC = 9.5 (10/14).  
2015 Fertility: Applied 833 lb/a 0-18-36 after first harvest.  
2015 Pest control: Insecticide was applied 11-June, 10-July and 14-August for potato leafhopper control.

Table 6:  
Alfalfa Variety Trial  
Ohio, South Charleston, Sown 5/20/14

| Variety                    | 28-May                          | 2-Jul  | 30-Jul | 8-Sep  | Total  |      |         |
|----------------------------|---------------------------------|--------|--------|--------|--------|------|---------|
|                            |                                 |        |        |        | 2015   | 2014 | 2014-15 |
| <b>Released Cultivars:</b> |                                 |        |        |        |        |      |         |
|                            | -----Tons Dry Matter/Acre ----- |        |        |        |        |      |         |
| 55Q27                      | 2.62                            | 2.08   | 1.48   | 0.89   | 7.08   | 1.47 | 8.56    |
| 55VR06                     | 2.56                            | 2.20   | 1.49   | 0.88   | 7.12   | 1.57 | 8.70    |
| Caliber                    | 2.60                            | 2.05   | 1.29   | 0.94   | 6.88   | 1.28 | 8.12    |
| Contender                  | 2.65                            | 2.03   | 1.24   | 0.93   | 6.83   | 1.48 | 8.34    |
| Enduro Elite               | 2.58                            | 2.01   | 1.18   | 1.00   | 6.77   | 1.38 | 8.13    |
| Fierce                     | 2.68                            | 2.10   | 1.23   | 0.92   | 6.92   | 1.26 | 8.18    |
| FSG 403 LR                 | 2.80                            | 2.14   | 1.28   | 0.85   | 7.06   | 1.63 | 8.66    |
| FSG 424                    | 2.35                            | 2.09   | 1.36   | 0.92   | 6.72   | 1.37 | 8.07    |
| FSG 524                    | 2.32                            | 2.02   | 1.38   | 0.96   | 6.67   | 1.39 | 8.12    |
| L-455 HD                   | 2.48                            | 2.02   | 1.42   | 0.88   | 6.80   | 1.49 | 8.27    |
| Mariner IV                 | 2.71                            | 2.16   | 1.35   | 1.00   | 7.22   | 1.68 | 8.87    |
| Persist III                | 2.55                            | 2.16   | 1.15   | 0.97   | 6.82   | 1.55 | 8.39    |
| Vernal                     | 2.64                            | 1.87   | 1.06   | 0.88   | 6.46   | 1.48 | 7.96    |
| Mean                       | 2.58                            | 2.06   | 1.31   | 0.92   | 6.86   | 1.48 | 8.34    |
| LSD 0.05                   | 0.25                            | 0.26   | 0.17   | 0.17   | 0.56   | 0.24 | 0.64    |
| Prob > F                   | 0.03                            | .31 ns | <.001  | .71 ns | .27 ns | 0.03 | 0.11 ns |
| CV %                       | 6.9                             | 8.8    | 9.3    | 12.6   | 5.7    | 11.4 | 5.4     |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

Data subjected to Nearest Neighbor AOV, adjusted means reported.

ns = no significant differences among varieties.

Note: Stand for all varieties at 100% on 9/17/15.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 16 lb/a.

Plot size: 4' x 20' , 15' alleys and borders, RCBD with four reps.

Soil type / analysis: Crosby silt loam, pH=7.0, P=94 lbs/a, K= 308 lbs/a, CEC=19.7, O.M.=2.5, (4/15).

2015 Pest control: Insecticide was applied on 11-June, 17-July, 18-August for potato leafhopper control.



## Clover: Red & White

Red and white clover trials were seeded in 2013 at South Charleston. Trials were sprayed after the first harvest for potato Leafhopper (PLH) control in 2013 and 2014 to aid new growth due to the high numbers of PLH.

Large differences in forage yield and % stand were observed among red clover varieties in 2015. The common red and Mammoth red clovers had lost most of their stand in 2014, averaging 15% and 30% stand respectively at the end of 2014. The remainder of the weak stand of those two varieties was lost in 2015, with only a few plants remaining at the end of the season (Table 7). The other varieties have performed better, but Gallant has persisted and yielded the best in this 3<sup>rd</sup> year of the stand (Table 7).

The white clover varieties were affected by the hard winter of 2014-2015, resulting in only the first harvest being measured for yield in 2015 (Table 8).

Red clover is better adapted than alfalfa to soils that are somewhat poorly drained and slightly acidic; however, greatest production will occur on well-drained soils with high water-holding capacity and pH above 6.0. Red clover is not as productive as alfalfa in the summer and it generally persists for a shorter time than alfalfa. New varieties are capable of persisting into a third year.

White clover is a short-lived perennial that is well suited for pastures. It spreads and persists over time by vegetative propagation of stolons and by natural reseeding. White clover tolerates periods of poor drainage, but does poorly in dry weather.

Table 7:  
Red Clover Variety Trial  
Ohio, South Charleston, Sown 4/9/2013

| Variety     | Marketers             | 28-May            | 2-Jul | 8-Sep | Total |       |       |         | % Stand<br>9/18/2015 |
|-------------|-----------------------|-------------------|-------|-------|-------|-------|-------|---------|----------------------|
|             |                       |                   |       |       | 2015  | 2014  | 2013  | 2013-14 |                      |
|             |                       | Tons Dry Matter/A |       |       |       |       |       |         |                      |
| Gallant     | The Cisco Companies   | 1.95              | 1.16  | 1.14  | 4.45  | 6.43  | 2.91  | 13.53   | 83                   |
| RC0401*     | Allied Seed           | 1.82              | 0.87  | 0.98  | 3.63  | 6.24  | 3.08  | 12.93   | 66                   |
| FSG 402     | Farm Science Genetics | 1.76              | 0.80  | 0.73  | 3.18  | 6.26  | 2.98  | 12.53   | 69                   |
| PGI 44      | Producers Choice      | 1.76              | 0.82  | 0.72  | 3.25  | 6.14  | 2.91  | 12.34   | 71                   |
| Common red  | Public                | 0.92              | 0.50  | 0.07  | 1.32  | 4.27  | 2.55  | 8.41    | 4                    |
| Mammoth red | Public                | 0.70              | 0.33  | 0.12  | 1.29  | 4.56  | 1.86  | 7.59    | 4                    |
| Mean        |                       | 1.48              | 0.74  | 0.63  | 2.85  | 5.65  | 2.72  | 11.22   | 50                   |
| LSD 0.05    |                       | 0.57              | 0.29  | 0.33  | 1.00  | 1.09  | 0.49  | 2.15    | 21.6                 |
| Prob > F    |                       | <.001             | <.001 | <.001 | <.001 | <.001 | <.001 | <.001   | <.0001               |
| CV %        |                       | 25.5              | 26.0  | 34.8  | 23.0  | 12.9  | 12.0  | 12.7    | 28.9                 |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 12 lb/a.

Plot size: 4' x 20' , 7' alleys and borders, RCBD with four reps.

Soil type/

analysis: Crosby silt loam, pH=7.0, P=48 lbs/a, K=216 lbs/a, CEC=12.7, O.M.=1.8,(10/13).

Table 8:  
White Clover Variety Trial  
Ohio, South Charleston, Sown 4/9/2013

| Variety         | Marketers       | 28-May | Total                         |       |       |         |
|-----------------|-----------------|--------|-------------------------------|-------|-------|---------|
|                 |                 |        | 2015                          | 2014  | 2013  | 2013-14 |
|                 |                 |        | ----- Tons Dry Matter/A ----- |       |       |         |
| Cashmere        | Saddle Butte Ag | 0.81   | 0.81                          | 2.32  | 1.89  | 5.02    |
| Patriot         | Pennington Seed | 0.90   | 0.90                          | 2.50  | 1.47  | 4.86    |
| Ladino VNS      | Public          | 0.52   | 0.52                          | 1.97  | 2.12  | 4.61    |
| Kentucky Select | Saddle Butte Ag | 0.54   | 0.54                          | 1.95  | 1.81  | 4.29    |
| Durana          | Pennington Seed | 0.53   | 0.53                          | 1.76  | 1.60  | 3.88    |
| Crusade II      | Allied Seed     | 0.66   | 0.66                          | 0.71  | 1.94  | 3.32    |
| Mean            |                 | 0.67   | 0.67                          | 1.86  | 1.79  | 4.32    |
| LSD             |                 | 0.32   | 0.32                          | 0.83  | 0.36  | 1.11    |
| Prob > F        |                 | .14 ns | .14 ns                        | 0.02  | 0.01  | 0.08    |
| CV              |                 | 26.92  | 26.92                         | 24.69 | 11.18 | 14.38   |

**Note:** Stand for all varieties is 100% on 9/18/15 but there was only enough growth for the first harvest. The 2014-15 winter was very hard on the trial and looked dead most of spring. After the first harvest there was no measureable yield for any variety.

ns = no significant differences among varieties.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 4 lb/a.  
Plot size: 4' x 20', 7' alleys and borders, RCBD with four reps.

Soil type/ analysis: Crosby silt loam, pH=7.0, P=48 lbs/a, K=216 lbs/a, CEC=12.7, O.M.=1.8,(10/13).

## Orchardgrass

The orchardgrass trial seeded at South Charleston had an average yield of 6.13 tons/acre. Low rainfall from August to early October reduced yields in the fourth cutting. Orchardgrass varieties can have significant maturity differences.

Table 9:  
Orchardgrass Variety Trial  
Ohio, South Charleston, Sown 5/20/2014

| Variety     | Marketers         | 20-May                            | 2-Jul | 17-Aug | 1-Oct | Total  |      |         |
|-------------|-------------------|-----------------------------------|-------|--------|-------|--------|------|---------|
|             |                   |                                   |       |        |       | 2015   | 2014 | 2014-15 |
|             |                   | ----- Tons Dry Matter/ Acre ----- |       |        |       |        |      |         |
| OG0506*     | Allied Seed       | 2.69                              | 1.73  | 1.24   | 0.81  | 6.51   | 1.71 | 8.22    |
| OG0604WH*   | Allied Seed       | 2.64                              | 1.67  | 1.34   | 0.65  | 6.42   | 1.73 | 8.15    |
| Profit      | DLF International | 2.27                              | 1.84  | 1.46   | 0.75  | 6.40   | 1.55 | 7.95    |
| SS-0708OGDT | Allied Seed       | 2.39                              | 1.59  | 1.37   | 0.67  | 6.09   | 1.51 | 7.60    |
| Pennlate    | Public            | 2.26                              | 1.73  | 1.55   | 0.57  | 5.92   | 1.50 | 7.41    |
| Potomac     | Public            | 2.20                              | 1.49  | 1.47   | 0.59  | 5.72   | 1.60 | 7.32    |
| Barlegro    | Barenbrug USA     | 1.95                              | 1.98  | 1.59   | 0.44  | 5.84   | 1.19 | 7.03    |
| Mean        |                   | 2.34                              | 1.72  | 1.43   | 0.64  | 6.13   | 1.54 | 7.67    |
| LSD 0.05    |                   | 0.30                              | 0.20  | 0.15   | 0.19  | 0.54   | 0.19 | 0.55    |
| Prob > F    |                   | <0.001                            | <0.01 | <0.001 | 0.05  | .16 ns | 0.02 | 0.03    |
| CV %        |                   | 8.54                              | 7.71  | 6.96   | 19.44 | 5.86   | 8.21 | 4.82    |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

Data subjected to Nearest Neighbor AOV, adjusted means reported.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 20 lb/a.

Plot size: 4' x 15', 15' alleys and borders, RCBD with four reps.

Soil type / analysis: Kokomo silt loam, pH=6.8, P=134 lbs/a, K= 366 lbs/a, CEC=20.4, O.M.=2.8, (4/15).

2015 Fertility Applied 100 lb/a of 46-0-0 on 15-April, 30-May, 8-July, 18-August.

## Tall Fescue

The tall fescue trial established at South Charleston in 2014 had an average yield of 7.74 tons/acre. Low rainfall from August to early October reduced yields in the fourth cutting. New varieties that are endophyte-free or that contain a non-toxic endophyte have potential to provide improved animal performance compared with the old endophyte-infected varieties, especially during the summer grazing season, and to provide forage for beef cattle and sheep during autumn and early winter.

In this trial we included KY 31 as a check variety, both endophyte-free (KY 31-) and endophyte-infected (KY 31+).

Table 10:  
Tall Fescue Variety Trial  
Ohio, South Charleston, Sown 5/20/2014

| Variety    | Marketers       | 20-May  | 2-Jul | 17-Aug | 1-Oct  | Total                             |       |         |
|------------|-----------------|---------|-------|--------|--------|-----------------------------------|-------|---------|
|            |                 |         |       |        |        | 2015                              | 2014  | 2014-15 |
|            |                 |         |       |        |        | ----- Tons Dry Matter/ Acre ----- |       |         |
| Brava      | Allied Seed     | 2.69    | 1.60  | 2.39   | 1.07   | 7.80                              | 2.10  | 9.91    |
| KY 31-     | Public          | 2.55    | 1.59  | 2.68   | 1.03   | 7.98                              | 1.86  | 9.85    |
| TF 0705SL* | Allied Seed     | 2.61    | 1.77  | 2.07   | 0.92   | 7.55                              | 2.21  | 9.76    |
| Brutus     | Saddle Butte Ag | 2.92    | 1.59  | 2.58   | 1.05   | 7.97                              | 1.63  | 9.60    |
| TF 0402*   | Allied Seed     | 2.38    | 1.54  | 2.46   | 1.22   | 7.59                              | 1.94  | 9.53    |
| KY 31+     | Public          | 2.68    | 1.59  | 2.62   | 1.04   | 7.84                              | 1.61  | 9.45    |
| Barelite   | Barenbrug USA   | 2.59    | 1.56  | 2.29   | 1.07   | 7.43                              | 1.48  | 8.91    |
| Mean       |                 | 2.63    | 1.61  | 2.44   | 1.06   | 7.74                              | 1.83  | 9.57    |
| LSD 0.05   |                 | 0.51    | 0.17  | 0.41   | 0.37   | 0.77                              | 0.48  | 0.94    |
| Prob > F   |                 | 0.64 ns | 0.05  | .07 ns | .68 ns | .65 ns                            | 0.04  | .38 ns  |
| CV %       |                 | 13.06   | 6.98  | 11.30  | 23.19  | 6.67                              | 17.73 | 6.62    |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

Data subjected to Nearest Neighbor AOV, adjusted means reported.

Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 20 lb/a.

Plot size: 4' x 15' , 15' alleys and borders, RCBD with four reps.

Soil type / analysis: Kokomo silt loam, pH=6.8, P=134 lbs/a, K= 366 lbs/a, CEC=20.4, O.M.=2.8, (4/15).

2015 Fertility Applied 100 lb/a of 46-0-0 on 15-April, 30-May, 8-July, 18-August.

## Annual Ryegrass

An annual ryegrass trial was planted in September 2014 but was not harvested in late 2014 due to dry weather and cold autumn temperatures. Winter injury ratings varied among varieties after the cold 2014-2015 winter. Forage yields in 2015 were lower than long-term average at this location. Annual ryegrass is a cool-season annual bunchgrass that is highly palatable and digestible. It has high seedling vigor.

Table 11:  
Annual Ryegrass Variety Trial  
Ohio, South Charleston, Sown 9-8-2014

| Variety     | Marketer              | 8-May                           | 3-Jun  | 2-Jul  | Total  | Winter Injury* |
|-------------|-----------------------|---------------------------------|--------|--------|--------|----------------|
|             |                       | -----Tons Dry Matter/Acre ----- |        |        | 2015   |                |
| Fria        | Farm Science Genetics | 1.72                            | 1.18   | 0.57   | 3.46   | 0.6            |
| Centurion   | Mountain View Seeds   | 1.78                            | 1.22   | 0.43   | 3.42   | 1.0            |
| Marshall    | Wax Seed              | 1.56                            | 1.09   | 0.59   | 3.24   | 1.2            |
| Winterhawk  | Oregon Seeds          | 1.76                            | 1.07   | 0.34   | 3.17   | 1.2            |
| SBA 112*    | Saddle Butte Ag       | 1.40                            | 1.03   | 0.59   | 3.01   | 1.1            |
| Meroa       | Smith Seed Service    | 1.14                            | 0.93   | 0.88   | 2.96   | 1.3            |
| KB Supreme  | KB Seed Solutions     | 1.26                            | 1.20   | 0.48   | 2.94   | 1.0            |
| AMP         | Hood River Seed       | 1.28                            | 1.08   | 0.51   | 2.87   | 1.2            |
| FIPE*       | Univ. Florida         | 1.44                            | 0.97   | 0.36   | 2.77   | 1.0            |
| B-14-1191*  | Blue Moon Farms       | 1.32                            | 0.95   | 0.47   | 2.73   | 1.3            |
| B-14.1192*  | Blue Moon Farms       | 1.51                            | 0.86   | 0.34   | 2.71   | 0.7            |
| Ko Winearly | Smith Seed Service    | 1.60                            | 0.83   | 0.19   | 2.62   | 0.9            |
| ED          | Smith Seed Service    | 1.25                            | 1.01   | 0.31   | 2.57   | 2.2            |
| GO-FLN2     | Merrit Seed           | 1.27                            | 0.85   | 0.43   | 2.55   | 1.8            |
| RAD*MAR12*  | Radix Research        | 1.02                            | 0.90   | 0.51   | 2.44   | 2.8            |
| Lonestar    | Merrit Seed           | 1.16                            | 0.81   | 0.41   | 2.39   | 2.0            |
| Mach 1      | PPG Wrightson Seeds   | 0.49                            | 1.02   | 0.84   | 2.34   | 3.4            |
| Kospeed     | Smith Seed Service    | 1.33                            | 0.85   | 0.15   | 2.33   | 1.0            |
| Dyna-Gain   | Hood River Seed       | 1.00                            | 0.94   | 0.36   | 2.30   | 2.5            |
| FI Red 4X*  | Univ. Florida         | 0.98                            | 0.90   | 0.36   | 2.23   | 2.3            |
| Knight      | PPG Wrightson Seeds   | 0.18                            | 0.98   | 1.02   | 2.18   | 4.2            |
| Green Farm  | Smith Seed Service    | 1.20                            | 0.62   | 0.33   | 2.16   | 1.7            |
| SWIPAR C2*  | Univ. Auburn          | 1.00                            | 0.77   | 0.17   | 1.94   | 2.2            |
| AU 14.1194* | Univ. Auburn          | 0.72                            | 0.78   | 0.40   | 1.90   | 3.6            |
| FI4XER*     | Univ. Florida         | 0.93                            | 0.68   | 0.27   | 1.88   | 2.9            |
| KB Royal    | KB Seed Solutions     | 0.69                            | 0.78   | 0.39   | 1.86   | 3.1            |
| SWIPAR C7*  | Univ. Auburn          | 0.43                            | 0.60   | 0.26   | 1.30   | 3.7            |
| FIER*       | Univ. Florida         | 0.29                            | 0.44   | 0.21   | 0.93   | 3.6            |
| Mean        |                       | 1.13                            | 0.90   | 0.43   | 2.47   | 2.0            |
| LSD 0.05    |                       | 0.22                            | 0.22   | 0.19   | 0.38   | 0.60           |
| Prob > F    |                       | <.0001                          | <.0001 | <.0001 | <.0001 | <.0001         |
| CV %        |                       | 13.9                            | 17.1   | 30.3   | 11.0   | 21.4           |

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.

**\*Winter Injury:** 1 = no injury to 5= severe injury (dead)

**Note:** Maturity on May 8, 2015 was vegetative for all varieties.  
Maturity on June 3, 2015 was complete emergence from boot for all varieties.  
Maturity on July 2, 2015 was pollen shed in all varieties.

Soil info: Crosby silt loam, pH=7.5, P=29 lbs/a, K=207 lbs/a, CEC=13.8, O.M.=1.7 (10/13).

2014 Fertilization: Applied 100 lb/a of 46-0-0 on 9-October.

2015 Fertilization: 46-0-0 applied 100 lb/a on 16-April, and 80 lb/a on 9-May and 3-June.

## ADDRESS OF MARKETERS

Allied Seed  
1108 Hilldale Drive  
Macon, MO 63552  
[www.alliedseed.com](http://www.alliedseed.com)

America's Alfalfa  
P.O. Box 8246  
Madison, WI 53708  
[www.americasalfalfa.com](http://www.americasalfalfa.com)

Barenbrug USA  
P.O. Box 239  
Tangent, OR  
[www.barusa.com](http://www.barusa.com)

Beck's Hybrids  
6767 East 276<sup>th</sup> St.  
Atlanta, IN 46031  
[www.beckshybrids.com](http://www.beckshybrids.com)

Blue Moon Farms  
P.O. Box 2390  
Lebanon, OR 97355  
541-936-1210

Blue River Hybrids  
27087 Tiber Rd.  
Kelly, IA 50134  
[www.blueriverorgseed.com](http://www.blueriverorgseed.com)

Croplan Genetics  
See Local Retailer  
[www.croplangenetics.com](http://www.croplangenetics.com)

Crop Protection Services  
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[www.cpsagu.com](http://www.cpsagu.com)

Dekalb  
See Local Retailer  
[www.asgrowanddekalb.com](http://www.asgrowanddekalb.com)

DLF International Seeds  
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Halsey, OR 97348  
[www.dlfis.com](http://www.dlfis.com)

Doebler PA Hybrids  
202 Tiadaghton Ave.  
Jersey Shore, PA 17740  
[www.doebler.com](http://www.doebler.com)

Farm Science Genetics  
9311 Highway 45  
Nampa, ID83686  
[www.farmsciencegenetics.com](http://www.farmsciencegenetics.com)

Hood River Seed  
5444 E. Indiana St. #337  
Evansville, IN 47715  
[www.hoodriverseed.com](http://www.hoodriverseed.com)

KB Seed Solutions  
24532 Rowland Rd.  
Harrisburg, OR 97446  
[www.kbseed.com](http://www.kbseed.com)

Legacy Seeds, Inc.  
290 Depot St  
Scandinavia, WI 54977  
[www.Legacyseeds.com](http://www.Legacyseeds.com)

Mountain View Seeds  
8955 Sunny View Rd.  
Salem, OR 97305  
[www.mtviewseeds.com](http://www.mtviewseeds.com)

Merrit Seeds  
P.O. box 205  
Berlin, Ohio 44610  
[www.meritseed.com](http://www.meritseed.com)

Oregon Seed Inc.  
33080 Red Bridge Rd.  
Albany, OR 97322  
[www.oregroseeds.com](http://www.oregroseeds.com)

Pennington Seed  
P.O. Box 290  
Madison, GA 30650  
[www.penningtonusa.com](http://www.penningtonusa.com)

Pioneer Hi-Bred Int'l  
See Local Retailer  
[www.pioneer.com](http://www.pioneer.com)

PPG Wrightson Seed  
57 Waterloo Rd  
Christ Church 7671,  
New Zealand  
+64 3 372 0834

Preferred Seed Company  
575 Kennedy Rd.  
Buffalo, NY 14227  
[www.preferredseed.com](http://www.preferredseed.com)

Producers Choice  
16690 Greystone Lane  
Jordan, MN 55352  
[www.producerschoiceseed.com](http://www.producerschoiceseed.com)

Radix Seed  
93593 Pitney Lane  
Junction City, OR 97448  
503-307-1442

Saddle Butte Ag., Inc.  
P.O. Box 50  
Shedd, OR 97377  
[www.saddlebutte.com](http://www.saddlebutte.com)  
Smith Seed Service  
P.O. Box 288  
Halsey, OR 97348  
[www.smithseed.com](http://www.smithseed.com)

The Cisco Companies  
602 N. Shortridge Rd.  
Indianapolis, IN 46219  
[www.ciscoseeds.com](http://www.ciscoseeds.com)

Wax Seed Company  
212 Front St N.  
Armory, MS 38821  
662-256-3511

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