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# 1995 Ohio Forage Legume Performance Trials

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# 1995

## OHIO FORAGE LEGUME PERFORMANCE TRIALS

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### SUMMARY

This report is a summary of performance data collected from ongoing forage legume variety trials in Ohio. The 1995 report includes performance data of commercial alfalfa varieties in tests planted in 1990, 1991, 1992, 1993, 1994 and 1995 across five sites (Tables 3-10); commercial red clover varieties planted in 1993 at three sites (Tables 12-14), and commercial birdsfoot trefoil varieties planted in 1991 at one site (Tables 15-16).

### Interpreting Yield Data

Yield data are reported in Tables 3 through 10 and 12 through 16. Details of establishment and management of each test are listed in footnotes below the tables. Alfalfa and red clover varieties are ranked according to their performance in 1995. In addition, yield totals for previous harvest years are reported.

Least significant differences (LSD) are listed at the bottom of each table. Differences between varieties are significant only if they are equal to or greater than the LSD value. If a given variety outyields 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. If the LSD is 0.51 or greater, then we are not as confident that variety X really is higher yielding than variety Y under the conditions of the test.

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 unmeasurable variations in soil fertility, soil drainage, and other environmental factors contribute to greater experimental error and higher CV values.

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. These factors vary with the year and location.

### ALFALFA

Alfalfa has the highest combined yield and quality potential of any adapted perennial forage grown in Ohio. It is the state's largest single hay crop, being grown on about one-half of the total hay acres. Alfalfa requires well-drained soils with near-neutral pH (6.5-7.0) for greatest production and persistence. The following data summarize the results of the Ohio State University alfalfa performance trials. 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 problem diseases. Consider these factors when selecting alfalfa varieties for Ohio:

1. **Yield.** Yield is the major factor in determining profitability of an alfalfa stand. Select varieties with high yields over several locations and years. Varieties that perform equally well across several locations and years are probably adapted to a wider range of environmental conditions. Stable yield performance across several environments is important because soils may vary on your farm and weather conditions vary from year to year. Conditions on most farms are such that several varieties may perform equally well. There is usually no need to rely on a single variety.

2. **Persistence.** Another important consideration beyond yield is how long the stand will last. Study variety performance by age of stand to get an estimate of longevity of stand productivity. Some varieties may decline with age more rapidly than others. This may influence your choice of variety depending on how long you intend to keep the stand in production. For long-term rotations, choose varieties with good performance in the fourth or fifth year of production. If you plan to harvest alfalfa for three years or less, then high performance during early years of the stand should be given major consideration.
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. Thus they begin to grow earlier in the spring and later into the fall, extending the growing season. Until recently it was generally felt that fall dormancy rating was very closely correlated with winter hardiness. This relationship with modern varieties seems less dependable. Now, for example, a variety with a "2" dormancy rating may not always have greater cold tolerance compared to one with "3" fall dormancy rating. Fall dormancy ratings provided by the seed industry are given in Table 1.
4. **Disease and pest 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. For example, *Phytophthora* root rot resistance is often very important on soils that are less than well-drained. The disease resistance characteristics of alfalfa varieties included in this report and their local seed marketers are listed in Table 1. Below is an explanation of the information found in Table 1.
  - a. **Bacterial Wilt (Bw) and Fusarium Wilt (Fw)** Nearly all alfalfa varieties currently grown in Ohio have resistance to Bacterial Wilt and Fusarium Wilt. The widespread use of these varieties has greatly diminished the significance of these diseases. However, severe losses can still be incurred in stands of susceptible varieties.
  - b. **Verticillium Wilt (Vw)** First detected in Ohio in 1984, this disease still has limited distribution within the state, having been confirmed on 17 farms in 9 Ohio counties. It has been found in Ashland, Columbiana, Franklin, Holmes, Knox, Logan, Medina, Stark, and Wayne Counties. Verticillium Wilt is usually introduced into a field on infested seed and generally does not become a problem until the third production year. Scattered plants become yellow and stunted and gradually die, leaving a thin, unproductive stand.
  - c. **Anthracnose (An)** Anthracnose occurs during hot, rainy weather. The fungus attacks individual stems and grows into the crown, causing a crown rot and eventual death of the plant. Severe losses can occur the second and third year after seeding in stands of susceptible varieties.
  - d. **Phytophthora Root Rot (PRR)** This disease typically occurs in heavy or poorly drained soils. However, when any soil becomes water saturated, the fungus may invade the taproot and destroy the plant. Even resistant varieties are fairly susceptible to *Phytophthora* in the seedling stage.
  - e. **Root Knot Nematode (RRN)** Damage from Root Knot Nematode is most likely to occur on sandy or organic (muck) soils. Small galls or 'knots' form on roots. These may be confused with nitrogen-fixing *Rhizobium* nodules.
  - f. **Aphanomyces root rot** may contribute to poor alfalfa establishment and reduced growth in wet soils. Seedlings may die (damping off) if infection occurs at an early stage of development. Older seedlings are yellowed and stunted. When aphanomyces and phytophthora occur together, they form a destructive disease complex.
5. **Compare to check variety.** For comparisons of varieties across several trials, always compare varieties to the same check planted within the trial. The variety Vernal is used as a check in all Ohio trials.
6. **Use good management.** No variety can produce well under poor management. Good management considers all aspects of alfalfa production: seedbed preparation, liming and fertilization, seeding, pest control, harvest, storage, and postharvest treatment. Many newer varieties are better adapted to intensive management.

**Table 1: Characteristics of Alfalfa Varieties Listed in This Report.**

Ratings were supplied by the seed industry and were not verified by university testing.

The abbreviations for the column headings are: **(FD)** Fall Dormancy; **(Bw)** Bacterial Wilt; **(Vw)** Verticillium Wilt; **(Fw)** Fusarium Wilt; **(An)** Anthracnose; **(PRR)** Phytophthora Root Rot; **(RKN)** Root Knot Nematode; **(APH)** Aphanomyces Root Rot Race 1

Resistance Key: 0-5% = susceptible (S); 6-14% = low resistance (LR); 15-30% = moderate resistance (MR); 31-50% = resistance (R); > 50% = high resistance (HR). If the resistance rating for a variety is not listed, then the variety is susceptible or has not been adequately tested.

Variety	Marketer	FD	BW	VW	FW	AN	PRR	RKN	APH
2833	Ciba Seeds	3	HR	R	HR	HR	HR	--	--
2980	L.L. Olds	3	HR	R	R	R	HR	--	R
3324	L. Herried Seed	3	HR	R	R	HR	HR	--	R
5246	Pioneer	3	HR	R	HR	HR	HR	--	MR
5312	Pioneer	3	HR	HR	HR	HR	HR	--	R
5373	Pioneer	4	HR	R	HR	HR	MR	--	LR
5454	Pioneer	4	R	MR	HR	HR	HR	--	LR
8920 MF	Pickseed Co.	2	HR	R	HR	HR	HR	--	--
LG 9323	Research Seeds/LG Seeds	3	HR	R	HR	R	HR	--	R
ABT 405	Scott Seed	4	HR	HR	HR	HR	HR	--	R
Achieva	Agway/Allied	3	R	R	HR	HR	HR	--	R
Affinity + Z	America's Alfalfa	4	HR	HR	HR	HR	HR	--	R
Agate	Public	2	HR	--	HR	MR	R	--	--
Aggressor	America's Alfalfa	4	HR	R	HR	HR	HR	--	MR
AlfaGraze	America's Alfalfa	2	R	--	R	MR	LR	--	R
Alpha 2001	Great Lakes Hybrids	4	HR	HR	HR	HR	HR	--	R
Apollo Supreme	America's Alfalfa	4	HR	R	HR	HR	R	--	--
Arrow	America's Alfalfa	3	HR	R	HR	MR	HR	--	--
Asset	Yoder Hybrid/Merit	4	HR	R	R	R	HR	--	MR
Avalanche + Z	America's Alfalfa	2	HR	HR	HR	HR	HR	--	R
B-54	Allied Seed								
Belmont	Great Plains	4	HR	R	HR	HR	R	--	--
BH 330	Beachley Hardy	4	HR	R	HR	HR	HR	--	R
Blazer XL	Cenex/Land O'Lakes	3	R	R	HR	HR	HR	--	R
Choice	Countrymark	4	HR	HR	R	R	HR	--	R
Ciba 2444	Ciba Seeds	3	HR	R	HR	HR	HR	--	R
Cimarron	Great Plains	4	HR	LR	HR	HR	MR	--	--
Cimarron VR	Great Plains	4	HR	R	HR	HR	R	MR	MR
Class	Union Seed	3	HR	R	R	HR	HR	--	R
Crockett	Northrup King	5	HR	--	MR	HR	R	--	--
Crown II	Cargill	3	HR	R	HR	HR	HR	--	--
Crystal	Mike Brayton Seeds	4	HR	R	HR	R	HR	--	LR
Dart	AgriPro	3	HR	R	HR	R	HR	--	--
Dawn	AgriPro	3	HR	R	HR	R	HR	--	--
Demand	AgriPro	3	HR	HR	HR	HR	HR	--	R
Depend + EV	AgriPro	4	HR	HR	HR	HR	HR	--	R
Dividend	Agway/Allied Seed	2	HR	R	HR	HR	HR	--	R
DK 122	Dekalb	2	HR	R	R	HR	HR	--	--
DK 125	Dekalb	3	HR	R	R	HR	R	--	--
DK 127	Dekalb	3	HR	R	R	HR	HR	--	HR
DK 133	Dekalb	4	HR	R	HR	HR	HR	--	R
Dominator	AgriPro	4	HR	R	HR	HR	HR	--	R

Table 1: Characteristics of Alfalfa Varieties Listed in This Report (continued).

Variety	Marketer	FD	BW	VW	FW	AN	PRR	RKN	APH
Encore	Res.Seeds/Spangler	3	HR	R	HR	HR	HR	--	R
Envy	Peterson Seed	3	HR	R	HR	HR	R	--	MR
Excalibur II	Yoder Hybrid/Merit	3.5	HR	R	HR	HR	HR	--	--
Flagship ML	Peterson Seed	4	R	R	R	R	HR	--	LR
Fortress	Northrup King	4	R	R	R	R	HR	--	LR
GH 777	Golden Harvest	3	HR	R	HR	R	HR	--	R
Garst 645	ICI Seeds	3	HR	R	R	HR	HR	--	MR
GreenField	Becks Hybrids	3	HR	R	HR	HR	HR	--	R
Homestead	Research Seeds	3	HR	R	HR	HR	HR	--	--
ICI 630	ICI Seeds	4	HR	MR	R	MR	R	--	--
ICI 631	ICI Seeds	4	HR	R	HR	R	HR	--	MR
Impact	Peterson Seed	3	HR	R	HR	MR	R	--	--
Imperial	America's Alfalfa	3	HR	HR	HR	HR	HR	--	R
Innovator + Z	America's Alfalfa	3	HR	R	HR	HR	HR	--	R
Key	Great Plains	4	HR	HR	HR	HR	HR	--	MR
Legacy	Genesis	4	HR	R	HR	R	HR	--	R
Legend	Cenex/Land O'Lakes	4	HR	R	HR	HR	HR	--	--
MagnaGraze	Dairyland	3	HR	R	HR	R	HR	LR	R
Magnum III	Dairyland	4	R	MR	R	MR	R	--	LR
Magnum III-Wet	Dairyland	3	R	MR	R	MR	R	MR	MR
Magnum IV	Dairyland	4	HR	R	HR	R	HR	MR	MR
MultiKing I	Northrup King	3	HR	R	HR	R	R	--	--
Multi-Plier	Mycogen Plant Sciences	3	HR	R	HR	HR	HR	--	--
Multistar	Countrymark	3	HR	R	HR	HR	HR	--	--
Mustang	Madison Seed Co.	4	HR	R	HR	R	HR	--	--
Ovation	Callahan Seeds	4	HR	HR	HR	HR	HR	--	R
Pacesetter	Research Seeds/Brown	2	HR	R	R	HR	HR	---	
Paramount	Wyffels Hybrids	3	HR	R	HR	HR	HR	LR	HR
Persist	Doebler's Seed	4	HR	R	HR	R	HR	--	MR
Precedent	Doebler's/Wyffels	4	HR	R	R	R	HR	--	R
Premier	Wyffels/Wetsel	4	HR	R	HR	HR	HR	MR	--
Prism	Beachley-Hardy	4	HR	R	R	HR	HR	--	MR
Prism II	Beachley-Hardy	3	HR	R	HR	HR	HR	--	R
Pro-Cut 2	L. Herried	4	HR	R	R	R	HR	--	MR
Ram	Great Plains	4							
Resistar	Countrymark	4	R	HR	HR	R	HR	--	--
Rushmore	Northrup King	4	HR	R	HR	HR	HR	--	HR
Sabre	Agway/Allied	4	HR	HR	HR	HR	R	--	--
Shenandoah	Great Plains								
Spur	Madison Seed Co.	4	HR	R	R	MR	R	--	--
Sterling	Cargill	2	HR	R	HR	HR	HR	--	R
Stine 9227	Stine	4	HR	R	HR	HR	HR	--	MR
SuperCuts	Scott Seed	4	HR	HR	HR	HR	HR	--	R
TMF Generation	Mycogen Plant Sciences	4	HR	HR	HR	HR	HR	--	R
Total + Z	America's Alfalfa	3	HR	HR	HR	HR	HR	--	R
Venture	Yoder Hybrid/Merit	4	HR	R	R	HR	R	--	R

**Table 1: Characteristics of Alfalfa Varieties Listed in This Report (continued).**

Variety	Marketer	FD	BW	VW	FW	AN	PRR	RKN	APH
Vernal	Public	2	R	--	MR	--	--	MR	--
WAMPR	Countrymark	4	R	R	R	R	R	--	--
Webfoot MPR	Great Lakes	4	HR	HR	HR	HR	HR	--	R
WL 225	Ohio Seed Co.	2	HR	R	HR	MR	HR	MR	--
WL 232	Ohio Seed Co.	4	HR	R	HR	HR	HR	--	R
WL 252 HQ	Ohio Seed Co.	2	HR	R	HR	HR	HR	--	LR
WL 317	Ohio Seed Co.	3	HR	R	HR	R	HR	MR	--
WL 320	Ohio Seed Co.	4	R	MR	R	MR	R	--	--
WL 322	Ohio Seed Co.	4	HR	R	HR	HR	HR	--	R
WL 322 HQ	Ohio Seed Co.	4	HR	R	HR	MR	R	LR	--
WL 324	Ohio Seed Co.	3	HR	R	HR	HR	HR	MR	HR
WL ProGrazer	Ohio Seed Co.	4	HR	R	HR	R	R	MR	LR
Zenith	ICI Seeds	3	HR	R	R	HR	R	--	--

**1995 Growing Season**

The 1995 Ohio growing season started with below average temperatures at most testing sites and then turned warmer than average in June through August (Table 2). Rainfall for the season at Columbus was 70% above normal while other sites were closer to normal. Forage yields were generally lower in 1995 than 1994. Potato leafhopper populations were extremely high across the state throughout the summer months, but populations were controlled in the test plots through regular insecticide applications. A new trial was established in April at Columbus, and high yields were achieved in this first seeding year (Table 10).

**Table 2: Weather data summary for the 1995 growing season.**

Month	Columbus		Wooster		Western		Northwestern		Jackson	
	Total	DFA*	Total	DFA*	Total	DFA*	Total	DFA*	Total	DFA*
-----Precipitation(inches of rainfall)-----										
Apr	4.49	0.78	3.10	-0.25	3.16	-0.81	4.77	1.49	2.21	-1.64
May	7.70	3.52	4.54	0.63	7.12	2.60	4.63	1.29	7.39	3.27
June	9.72	5.34	3.05	-0.87	6.38	2.21	2.74	-0.80	3.98	0.27
July	6.56	1.99	3.57	-0.56	2.63	-1.46	2.96	-0.87	1.66	-2.75
Aug	<u>6.48</u>	<u>2.72</u>	<u>3.28</u>	<u>-0.39</u>	<u>3.64</u>	<u>0.08</u>	<u>2.18</u>	<u>-0.89</u>	<u>4.13</u>	<u>0.44</u>
Total	34.95	14.35	17.54	-1.44	22.93	2.62	17.28	0.22	19.37	-0.41
-----Average Daily Temperature (°F)-----										
Apr	49.9	-1.2	46.8	-1.3	49.4	-1.7	46.1	-3.0	52.9	0.5
May	60.6	-0.9	58.7	0.1	60.3	-1.1	59.8	-0.2	62.1	-0.7
June	72.1	1.7	70.8	3.3	72.2	2.0	71.5	2.0	72.3	2.4
July	74.7	0.5	73.9	2.3	75.3	1.5	75.2	2.3	75.8	2.3
Aug	76.7	2.5	75.1	5.2	77.3	5.3	76.2	5.6	77.8	5.6

\*DFA = departure from longterm average

Table 3:

## 1990 Alfalfa Cultivar Trial - Northwestern Branch, North Baltimore, Ohio.

Cultivar	-----1995 Yield-----					1990 Total	1991 Total	1992 Total	1993 Total	1994 Total	6 year Total	% Stand	1995
	5\31	7\6	8\3	9\5	Total								Relative Yield
-----Tons Dry Matter/Acre-----												4/21/95	(% Mean)
Crown II	1.74	1.13	1.07	1.00	4.94	2.42	6.04	6.55	4.78	6.97	31.70	78	110
Multi-plier	1.74	1.16	1.07	0.92	4.89	2.59	5.90	6.10	4.90	7.39	31.77	80	109
DK 122	1.75	1.06	1.01	0.96	4.78	1.98	6.06	6.66	5.15	7.19	31.82	68	107
2833	1.73	1.15	1.00	0.90	4.77	2.64	6.10	6.36	4.30	6.83	31.00	68	106
Resistar	1.56	1.08	1.04	0.96	4.65	2.83	6.16	6.55	4.45	7.20	31.84	63	104
B-54	1.59	1.07	1.00	0.96	4.63	2.46	5.95	6.54	4.53	6.56	30.67	70	103
WL 320	1.53	1.10	1.03	0.95	4.61	2.76	5.86	6.79	4.44	6.52	30.98	72	103
WL 317	1.57	1.06	1.02	0.95	4.60	2.75	5.55	7.22	4.93	7.03	32.08	75	103
Pro-cut 2	1.52	1.03	1.00	0.99	4.54	2.86	6.19	6.25	4.66	6.88	31.38	63	101
Sabre	1.54	1.11	0.97	0.91	4.52	2.28	5.86	6.64	4.85	6.96	31.11	70	101
Premier	1.48	1.13	1.00	0.91	4.52	2.68	5.71	6.56	4.37	6.64	30.48	75	101
Zenith*	1.58	1.06	0.96	0.91	4.51	3.27	5.90	6.19	5.06	7.12	32.05	63	100
WAMPR	1.54	1.04	0.99	0.91	4.47	2.44	5.82	6.44	4.87	6.92	30.96	72	100
WL 225	1.56	1.03	0.97	0.91	4.47	3.00	5.36	6.21	5.00	7.10	31.14	72	100
Legacy*	1.48	0.99	0.93	0.96	4.36	2.75	6.02	6.15	4.40	6.73	31.41	58	97
Eliminator	1.51	1.08	0.94	0.83	4.35	2.66	5.44	5.92	4.60	6.60	29.57	63	97
Blazer XL*	1.45	1.01	0.91	0.90	4.27	3.21	5.98	6.70	4.28	6.39	30.83	55	95
Asset*	1.47	0.98	0.88	0.92	4.25	2.77	5.91	6.48	4.52	6.63	30.56	42	95
Cimarron	1.41	1.01	0.92	0.90	4.23	2.71	6.11	6.07	4.65	6.69	30.46	63	94
Precedent*	1.38	0.97	0.94	0.91	4.20	2.65	5.72	6.27	4.24	6.37	29.45	58	94
Vernal	1.57	0.92	0.82	0.77	4.08	1.91	5.07	5.22	4.78	6.59	27.65	67	91
2980	1.35	0.93	0.86	0.90	4.04	2.39	5.85	6.13	4.52	6.20	29.13	40	90
MEAN	1.55	1.05	0.97	0.92	4.48	2.64	5.84	6.36	4.65	6.80	30.82	65	--
CV %	6.26	6.28	7.61	6.81	5.52	15.90	5.90	5.10	5.90	5.30	--	15	--
LSD 0.05	0.16	0.11	0.12	0.10	0.41	0.60	0.49	0.46	0.45	0.60	--	17	--

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

Yields represent the sum of two harvests in 1990 (seeding year), four in 1991, three in 1992 and 1993, and four harvests in 1994.

Date seeded: 4\30\1990

Establishment: Band seeded with presswheels at 12 lb/a with 100 lb/a of 0-46-0. Uniform application of 3 lb EPTC incorporated prior to seeding with a uniform application of Ridomil after seeding.

Plot size: 8' x 25', RCBD with four reps, 25' alleys and borders.

Harvest area: 5.75' x 18'

Soil type and status: Hoytville silty clay, pH 6.7, P = 80 lb/a, K = 458 lb/a.

Fertilization: Annual fall application of 400 lb/a of 0-46-0 and 0-0-60 plus 400 lb/a of 0-0-60 after the first harvest.

1995 Pest control: Insecticide was applied on 26 May, 14 June, 21 July for potato leafhopper control.



Table 4:

## 1991 Alfalfa Cultivar Trial - Jackson Branch, Jackson, Ohio.

Cultivar	-----1995 Yields-----					1992 Total	1993 Total	1994 Total	4-Year Total	% Stand 4/3/95	1995
	5\31	7\17	8\16	9\25	Total						Relative Yield
	-----Tons Dry Matter-----										(% Mean)
Crown II	1.79	1.40	0.98	0.38	4.55	4.81	5.52	5.17	20.05	85	107
Legend	1.75	1.30	0.95	0.50	4.50	5.22	5.66	5.36	20.74	80	105
LG 9323*	1.73	1.36	0.95	0.46	4.49	5.29	5.92	5.32	21.02	77	105
Belmont	1.54	1.44	0.97	0.53	4.48	4.65	5.70	4.89	19.72	77	105
Resistar	1.70	1.31	0.96	0.49	4.46	5.20	5.47	4.94	20.07	85	104
2833	1.84	1.32	0.89	0.38	4.43	4.84	5.54	4.94	19.75	82	104
Class*	1.72	1.33	0.89	0.48	4.42	4.69	5.33	4.98	19.42	75	103
Fortress	1.60	1.41	0.89	0.48	4.39	4.13	5.37	4.54	18.43	77	103
Prism	1.71	1.23	0.96	0.46	4.36	5.09	5.17	4.63	19.25	80	102
WL 317	1.53	1.32	0.90	0.53	4.27	4.10	5.66	4.76	18.79	85	100
Vernal	1.57	1.39	0.89	0.41	4.26	3.65	3.39	4.38	15.68	35	100
Encore	1.59	1.32	0.92	0.41	4.24	4.80	6.13	5.16	20.33	68	99
WAMPR	1.65	1.22	0.84	0.50	4.21	4.51	5.87	4.81	19.40	82	99
Crystal	1.51	1.37	0.80	0.50	4.19	4.14	5.79	4.73	18.85	78	98
WL 322	1.53	1.24	0.84	0.53	4.14	4.43	4.82	4.52	17.91	85	97
Homestead	1.69	1.22	0.85	0.32	4.09	5.02	5.03	4.63	18.77	75	96
Achieva*	1.59	1.26	0.83	0.39	4.07	4.99	5.37	5.02	19.45	68	95
Zenith	1.56	1.21	0.87	0.36	3.99	4.60	5.20	4.68	18.47	73	93
Shenandoah	1.41	1.31	0.83	0.41	3.97	3.74	5.23	4.70	17.64	65	93
Crockett	1.43	1.25	0.79	0.40	3.87	3.55	4.72	4.41	16.55	43	91
MEAN	1.61	1.31	0.89	0.46	4.27	4.57	5.37	4.82	19.02	75	--
CV %	9.06	8.52	9.90	18.44	5.51	10.50	9.60	7.00	--	10	--
LSD 0.05	0.25	NS	NS	0.14	0.40	0.79	0.85	0.56	--	13	--

\* Variety tested using experimental seed that may not give performance identical to commercially available seed.  
Yields represent the sum of four harvests in 1992 - 1994.

Date seeded: 8\27\1991  
Establishment: Bandseed with presswheels at 12 lb/a and 100 lb/a of 0-46-0.  
A uniform application of Ronilan was applied on 15 October for Sclerotinia control.  
Plot size: 6' x 18', RCBD with three reps, 14' alleys and borders.  
Harvest area: 2' x 18'  
Soil type and status: Crosby silt loam, pH 6.8, P= 162 lb/a, K = 367 lb/a (9\92).  
Fertilization: Annual fall application of 200 lb/a of 0-46-0 and 400 lb/a of 0-0-60, plus 400 lb/a of 0-0-60 after the first harvest.  
1995 Pest Control: Insecticide was applied on 1 August for potato leafhopper control.  
Herbicide was applied after the first cutting for grass control.

Table 5:

## 1991 Alfalfa Cultivar Trial - Western Branch, South Charleston, Ohio.

Cultivar	-----1995 Yield-----					1992 Total	1993 Total	1994 Total	4-Year Total	% Stand 4/1/95	1995 Relative Yield (% Mean)
	5/30	7/5	8/10	9/11	Total						
-----Tons Dry Matter/Acre-----											
Encore	1.95	1.31	1.09	0.80	5.14	2.01	5.05	4.72	16.92	77	118
Homestead	1.92	1.41	1.06	0.64	5.04	1.98	4.65	4.57	16.24	75	115
LG 9323*	1.62	1.36	1.11	0.75	4.85	2.01	4.76	4.67	16.29	77	111
Crown II	1.68	1.34	1.05	0.75	4.82	1.94	4.65	4.70	16.11	78	110
DK 133*	1.76	1.30	0.95	0.75	4.77	2.15	4.61	4.76	16.29	80	109
Multi-plier	1.67	1.23	1.07	0.78	4.76	1.95	4.80	4.90	16.41	77	109
Dawn	1.56	1.32	1.08	0.69	4.66	1.76	4.32	5.03	15.77	75	107
Prism	1.68	1.14	1.08	0.73	4.62	1.96	4.73	4.90	16.21	78	106
Resistar	1.54	1.26	1.10	0.70	4.60	1.92	4.89	5.07	16.48	73	106
Legend	1.67	1.15	1.02	0.71	4.55	2.07	4.53	4.55	15.70	75	104
Class*	1.58	1.24	0.99	0.74	4.54	1.77	4.50	4.65	15.46	77	104
Multistar	1.62	1.18	1.06	0.68	4.54	1.90	4.87	5.27	16.58	77	104
WL 317	1.51	1.30	0.97	0.71	4.49	1.65	3.96	4.63	14.73	72	103
2833	1.54	1.21	1.05	0.66	4.45	2.26	4.74	4.59	16.04	80	102
Arrow	1.60	1.21	0.99	0.65	4.45	2.05	4.49	4.63	15.62	75	102
Asset	1.64	1.12	1.03	0.66	4.44	1.93	4.27	4.53	15.17	72	102
DK 122	1.67	1.09	0.96	0.67	4.39	1.84	4.27	4.49	14.99	75	101
Dart	1.60	1.17	0.99	0.63	4.39	1.80	4.82	5.06	16.07	75	101
Achieva*	1.58	1.09	1.01	0.67	4.35	1.91	4.47	4.31	15.04	73	100
Apollo Supreme	1.46	1.18	0.99	0.69	4.32	1.85	4.38	4.89	15.44	73	99
WL 322	1.39	1.14	1.04	0.68	4.24	2.12	4.61	4.49	15.46	75	97
Zenith	1.52	1.04	1.00	0.66	4.22	1.88	4.68	4.68	15.46	70	97
Webfoot MPR*	1.36	1.15	1.06	0.61	4.18	1.80	4.56	5.39	15.93	73	96
Sabre	1.30	1.27	0.98	0.62	4.18	1.93	4.34	4.97	15.42	75	96
Shenandoah	1.63	1.07	0.91	0.57	4.17	1.67	4.58	4.47	14.89	73	96
Fortress	1.40	1.18	0.96	0.61	4.15	1.86	4.51	4.62	15.14	72	95
Envy	1.51	1.06	0.92	0.65	4.14	1.99	4.14	4.48	14.75	73	95
WAMPR	1.56	1.11	0.86	0.56	4.08	1.76	4.91	4.50	15.25	72	94
Impact	1.47	1.02	0.97	0.61	4.07	1.90	4.35	4.51	14.83	70	93
Belmont	1.50	1.14	0.96	0.46	4.06	1.84	4.47	4.49	14.86	75	93
Crystal	1.47	1.07	0.91	0.54	3.99	1.70	4.33	4.89	14.91	73	91
Flagship ML	1.42	1.04	0.90	0.49	3.86	1.89	4.37	3.95	14.07	72	88
Multiking I	1.28	1.06	0.98	0.50	3.82	1.90	4.42	4.25	14.39	72	88
Cimarron-VR	1.42	0.96	0.80	0.45	3.63	1.81	4.32	4.74	14.50	68	83
Vernal	1.22	0.77	0.72	0.39	3.09	1.83	3.47	3.94	12.33	52	71
MEAN	1.55	1.17	0.99	0.65	4.36	1.91	4.53	4.68	15.48	74	--
CV %	11.36	9.14	10.42	17.48	6.29	12.20	7.40	4.80	--	5	--
LSD 0.05	0.29	0.17	0.17	0.18	0.45	0.38	0.54	0.37	--	7	--

\* Variety tested using experimental seed that may not give performance identical to that of commercially available seed.  
Yields represent the sum of two harvest in 1992 (seeding year) and four harvests in 1993 - 1994.

Date seeded: 8/28/1991  
Establishment: Bandseeded with presswheels at 12 lb/a and 100 lb/a of 0-46-0.  
Plot size: 6' x 20', RCBD with three reps, 30' alleys and borders.  
Harvest area: 3' x 20'  
Soil type and status: Crosby silt loam, pH 6.7, P = 124 lb/a, K = 344 lb/a.  
Fertilization: Annual fall application of 400 lb/a of 0-46-0 and 0-0-60, plus 200 lb/a of 0 0-46-0 and 400 lb/a of 0-0-60 after the first harvest in 1994.  
1995 Pest control: Insecticide was applied on 13 June, 19 July, 24 August for potato leafhopper control.

Table 6:

## 1992 Alfalfa Cultivar Trial - Columbus, Ohio.

Cultivar	-----1995 Yield-----				1993 Total	1994 Total	3-Year Total	% Stand 4/3/95	1995	
	5\22	6\29	8\10	9\11					Total	Relative Yield (% Mean)
	-----Tons Dry Matter/Acre-----									
Magnum III	2.69	1.76	1.48	1.18	7.12	7.80	7.73	22.65	82	107
ICI 630	2.68	1.67	1.56	1.15	7.07	7.28	7.94	22.29	82	106
TMF Generation*	2.51	1.63	1.63	1.18	6.96	6.91	7.46	21.33	82	104
Garst 645	2.70	1.70	1.48	1.08	6.95	6.79	7.58	21.32	85	104
Dart	2.71	1.58	1.46	1.19	6.94	6.80	7.21	20.95	87	104
Belmont	2.60	1.66	1.50	1.18	6.94	7.36	7.54	21.84	90	104
5454	2.62	1.68	1.42	1.17	6.89	6.36	7.27	20.52	78	103
Dawn	2.60	1.61	1.52	1.09	6.82	7.21	7.90	21.93	87	102
Ovation*	2.68	1.54	1.51	1.02	6.76	7.82	8.02	22.60	85	101
DK 133	2.61	1.72	1.33	1.06	6.72	7.64	7.89	22.25	82	101
Arrow	2.59	1.54	1.50	1.09	6.72	7.09	7.08	20.89	92	101
Apollo Supreme	2.52	1.51	1.48	1.13	6.64	6.80	6.94	20.38	88	99
Dominator	2.45	1.48	1.45	1.22	6.60	6.89	7.77	21.26	93	99
Aggressor	2.45	1.52	1.43	1.16	6.56	6.79	7.30	20.56	90	98
DK 125	2.53	1.54	1.38	1.10	6.55	7.47	7.86	21.88	83	98
Webfoot MPR*	2.27	1.62	1.44	1.15	6.49	7.82	7.86	22.17	78	97
5373	2.49	1.56	1.40	1.02	6.46	7.27	7.51	21.24	80	97
WL 322 HQ	2.35	1.53	1.45	1.11	6.44	7.36	7.89	21.69	82	97
Vernal	2.29	1.56	1.21	0.85	5.91	6.61	7.07	19.59	65	88
Agate	2.43	1.20	1.19	0.82	5.64	6.38	6.31	18.33	90	85
MEAN	2.54	1.58	1.45	1.11	6.67	7.15	7.54	21.36	84	--
CV %	7.16	6.86	7.85	11.60	4.41	8.20	5.80	--	6	--
LSD 0.05	NS	0.18	0.19	0.21	0.49	0.97	0.72	--	8	--

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

Yields represent the sum of four harvests in 1993 - 1994.

Date seeded: 8\27\92

Establishment: Bandseeded with presswheels at 15 lb/a and 100 lb/a of 0-46-0. Ronilan was applied in October 1992 for Sclerotinia control.

Plot size: 8' x 20', RCBD with three reps, 25' alleys and borders.

Harvest area: 3' x 20'

Soil type and status: Crosby clay loam, pH = 6.5, P = 158 lb/a, K = 295 lb/a (4\93).

Fertilization: Annual fall application of 300 lb/a of 0-46-0 and 500 lb/a of 0-0-60, plus 300 lb/a of 0-0-60 applied after the first harvest in Spring.

1995 Pest control: Insecticide was applied on 5 June, 14 July, 25 August for potato leafhopper control.

Table 7:

## 1992 Alfalfa Cultivar Trial - Schaffter Farm, Wooster, Ohio.

Cultivar	1995 Yield-----					1993 Total	1994 Total	3-Year Total	% Stand 4/19/95	1995 Relative Yield (% Mean)
	5\31	7\3	8\8	9\11	Total					
	-----Tons Dry Matter/Acre-----									
5246	3.10	2.01	1.83	1.46	8.39	5.94	8.24	22.57	95	109
Garst 645	3.17	1.91	1.78	1.47	8.34	5.82	8.41	22.57	94	108
Encore	2.92	1.96	1.98	1.37	8.23	5.84	8.62	22.69	89	107
Magnum III	3.04	1.88	1.84	1.46	8.22	6.18	8.25	22.56	96	106
ICI 630	2.99	1.85	1.83	1.44	8.11	6.08	8.47	22.66	96	105
Crystal	3.04	1.88	1.77	1.41	8.09	6.06	8.10	22.25	91	105
Aggressor	2.96	1.90	1.75	1.46	8.07	5.90	8.46	22.43	91	105
5454	2.79	2.04	1.71	1.39	7.93	6.15	8.80	22.88	98	103
Homestead	2.74	1.88	1.93	1.36	7.91	6.10	8.51	22.52	94	102
Multi-plier	2.73	1.93	1.92	1.29	7.87	6.11	8.59	22.57	95	102
Legend	2.73	1.96	1.84	1.34	7.87	5.89	8.58	22.34	93	102
Precedent	2.74	1.90	1.84	1.37	7.86	6.04	8.87	22.77	91	102
Stine 9227	2.82	1.90	1.79	1.36	7.86	5.93	8.35	22.14	95	102
Prism	2.73	1.90	1.89	1.34	7.85	6.05	8.31	22.21	91	102
Arrow	2.79	1.95	1.75	1.32	7.81	5.54	8.30	21.65	90	101
DK 122	2.68	1.93	1.85	1.34	7.80	5.83	8.87	22.50	94	101
2833	2.70	1.95	1.83	1.31	7.79	6.08	8.64	22.51	90	101
Dominator	2.74	1.91	1.78	1.34	7.78	5.89	8.26	21.93	94	101
Crown II	2.63	1.93	1.87	1.34	7.76	6.22	8.58	22.56	91	101
Dart	2.73	1.84	1.80	1.37	7.73	5.66	8.33	21.72	91	100
Spur	2.67	1.84	1.81	1.41	7.72	6.08	8.08	21.88	94	100
Ovation*	2.76	1.87	1.78	1.27	7.68	5.94	8.20	21.82	94	99
Cimarron VR	2.55	1.96	1.80	1.36	7.67	5.86	8.57	22.10	89	99
DK 133	2.55	1.93	1.86	1.32	7.66	6.23	8.63	22.52	91	99
WL 322HQ	2.71	1.87	1.72	1.36	7.66	5.78	8.23	21.67	94	99
Dawn	2.71	1.81	1.81	1.32	7.65	5.87	7.98	21.50	84	99
Apollo Supreme	2.66	1.84	1.75	1.31	7.55	5.67	8.18	21.41	91	98
Achieva	2.58	1.90	1.75	1.27	7.50	5.58	8.05	21.13	88	97
Venture	2.67	1.74	1.75	1.29	7.45	5.86	7.93	21.24	86	97
Asset	2.60	1.82	1.76	1.26	7.43	5.83	8.13	21.39	85	96
Webfoot MPR*	2.60	1.70	1.78	1.32	7.40	5.81	7.85	21.06	86	96
WL 317	2.49	1.79	1.73	1.34	7.36	5.81	7.76	20.93	89	95
3324*	2.39	1.87	1.75	1.31	7.32	6.11	8.20	21.63	89	95
Dividend*	2.17	1.73	1.81	1.27	6.98	5.93	8.51	21.42	81	90
Vernal	2.48	1.65	1.61	1.22	6.96	5.74	8.12	20.82	73	90
Agate	2.51	1.67	1.59	1.13	6.89	5.64	7.68	20.21	84	89
MEAN	2.71	1.87	1.79	1.34	7.72	5.92	8.33	21.98	90	--
CV %	8.25	6.24	6.42	5.97	4.25	5.00	6.10	--	5	--
LSD 0.05	0.31	0.16	0.16	0.11	0.46	0.42	0.71	--	7	--

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

Yields represent the sum of four harvests in 1993 and 1994.

Date seeded: 8\24\1992  
Establishment: Bandseeded with presswheels at 15 lb/a and 100 lb/a of 0-46-0. Ronilan was applied 21 October, 1992 for Sclerotinia control.  
Plot size: 8' x 20', RCBD with four reps, 25' alleys and borders.  
Harvest area: 4' x 20'  
Soil type and status: Riddles silt loam, pH = 7.2, P = 106 lb/a, K = 246 lb/a (4\94).  
Fertilization: Annual fall application of 300 lb/a of 0-46-0 and 500 lb/a of 0-0-60, plus 300 lb/a of 0-0-60 after the first harvest in spring.  
1995 Pest control: Insecticide was applied on 23 May, 16 June, 24 August for leafhopper control.

Table 8:

## 1993 Alfalfa Cultivar Trial - Jackson Branch, Jackson, Ohio.

Cultivar	-----1995 Yield-----				1994 Total	2-Year Total	% Stand 4/3/95	1995
	5\31	7\18	8\27	Total				Relative Yield (% Mean)
-----Tons Dry Matter/Acre-----								
Aggressor	1.91	1.30	1.06	4.27	3.11	7.38	79	106
SuperCuts*	2.06	1.22	0.95	4.23	3.11	7.34	80	105
WL 323	1.91	1.29	1.02	4.22	2.91	7.13	78	104
Cimarron VR	1.80	1.36	1.02	4.18	2.84	7.02	86	103
DK 133	1.83	1.31	1.04	4.18	2.80	6.98	80	103
2833	2.03	1.16	0.92	4.11	2.98	7.09	86	102
Key	1.86	1.29	0.93	4.08	2.96	7.04	84	101
BH 330*	1.91	1.18	0.99	4.08	3.25	7.33	81	101
Crystal	1.79	1.26	0.99	4.04	3.22	7.26	89	100
Webfoot MPR	1.88	1.18	0.96	4.01	3.02	7.03	89	99
8920 MF	1.84	1.18	0.99	4.00	2.78	6.78	81	99
Magnum IV	1.84	1.14	1.00	3.98	3.07	7.05	84	99
Rushmore*	1.90	1.12	0.94	3.97	3.14	7.11	80	98
Vernal	1.66	1.29	1.02	3.96	3.03	6.99	85	98
Agate	1.75	1.20	1.01	3.96	2.77	6.73	81	98
5454	1.85	1.14	0.91	3.90	3.25	7.15	80	96
MEAN	1.86	1.20	0.98	4.04	2.98	7.03	83	--
CV %	8.59	10.62	10.09	6.02	6.20	--	6	--
LSD 0.05	NS	NS	NS	NS	0.26	--	7	--

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

Yields represent the sum of three harvests in 1994.

Date seeded: 8\27\1993  
Establishment: Seeded with Carter cone seeder at 15 lb/a. A uniform application of Ronilan was applied on October 26, 1993 for Sclerotinia control.  
Plot size: 3.5' x 20', RCBD with four reps, 2' alleys and borders.  
Harvest area: 2' x 18'  
Soil type and status: Gilpin loamy clay, pH = 5.3, P = 84 lb/a, K = 23 lb/a (4\93). 2 ton/a of lime was applied in June 1993, 200 lb/a of 0-46-0 and 600 lb/a of 0-0-60 was applied prior to seeding, 100 lb/a of 0-46-0 and 1 ton/a of lime was surface applied at seeding.  
Fertilization: Annual fall application of 300 lb/a of 0-46-0 and 300 lb/a of 0-0-60, plus 400 lb/a of 0-0-60 was applied after the first harvest in spring.  
1995 Pest control: Insecticide was applied on 1 August for potato leafhopper control. Herbicide was applied after the first cutting for grass control.

Table 9:

## 1994 Alfalfa Cultivar Trial - Schaffter Farm, Wooster, Ohio.

Cultivar	-----1995 Yield-----					% Stand 4\19\95	1995 Relative Yield (% Mean)
	6\1	7\5	8\9	9\12	TOTAL		
	-----Tons Dry Matter/Acre-----						
Excalibur II	2.51	2.02	1.87	1.35	7.74	100	104
Rushmore	2.51	2.00	1.94	1.25	7.70	100	103
DK 133	2.56	2.02	1.84	1.27	7.68	100	103
Resistar	2.61	1.95	1.85	1.27	7.68	99	103
Mustang	2.36	1.94	1.98	1.39	7.66	100	103
Magnum III-Wet	2.52	1.82	1.98	1.32	7.64	100	103
Magnum IV	2.42	1.98	1.90	1.32	7.61	100	102
Dividend	2.42	2.07	1.83	1.29	7.60	98	102
Ovation	2.42	1.95	1.90	1.34	7.60	100	102
WL 323	2.46	1.98	1.83	1.34	7.60	98	102
DK 127*	2.50	1.98	1.91	1.22	7.60	95	102
Total + Z	2.45	2.00	1.88	1.27	7.59	100	102
Demand	2.47	1.95	1.83	1.30	7.54	100	101
Innovator + Z	2.27	1.98	1.91	1.34	7.49	100	101
Asset	2.40	1.86	1.92	1.30	7.48	100	100
Avalanche + Z	2.37	1.91	1.96	1.24	7.48	100	100
MagnaGraze	2.38	1.89	1.81	1.34	7.42	100	100
5312	2.37	1.98	1.81	1.25	7.41	99	99
5454	2.24	1.95	1.88	1.32	7.39	100	99
Sterling*	2.41	1.96	1.83	1.19	7.38	100	99
Dominator	2.40	1.89	1.87	1.17	7.32	100	98
Choice*	2.37	1.93	1.80	1.22	7.31	98	98
WL 252HQ	2.26	1.93	1.77	1.32	7.27	99	98
Ram	2.38	1.93	1.74	1.20	7.25	100	97
Webfoot MPR	2.36	1.86	1.76	1.27	7.24	100	97
WL ProGrazer	2.29	1.91	1.67	1.27	7.14	100	96
Vernal	2.42	1.75	1.83	1.05	7.05	100	95
Alfagraze	2.17	1.84	1.63	1.10	6.74	98	90
MEAN	2.41	1.93	1.85	1.26	7.45	99	--
CV %	9.84	5.35	8.26	10.55	3.99	2	--
LSD 0.05	NS	0.15	NS	NS	0.42	2	--

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

Date seeded: 8\26\1994  
Establishment: Bandseeded with presswheels at 16 lb/a with 100 lb/a of 0-46-0. Ronilan was applied on 10\26\94 for Sclerotinia control. All seed treated with Apron.  
Plot size: 8' x 20', RCBD with four reps, 25' alleys and borders.  
Harvest area: 4' x 20'  
Soil type and status: Riddles silt loam, pH 6.8, P = 92 lb/a, K = 227lb/a (8\94).  
Fertilization: Annual fall application of 300 lb/a of 0-46-0 and 500 lb/a of 0-0-60, plus 300 lb/a of 0-0-60 after the first harvest.  
1995 Pest control: Insecticide was applied on 23 May, 16 June, 24 August, for potato leafhopper control.

Table 10:

## 1995 Alfalfa Cultivar Trial - Columbus, Ohio.

VARIETY	-----1995 Yield-----			1995 Relative Yield (% Mean)
	7\12	8\25	Total	
	-----Tons dry Matter/Acre-----			
Choice	2.45	2.06	4.50	113
DK 133	2.29	2.18	4.46	112
Sterling	2.11	2.28	4.39	110
Ciba 2444*	2.25	2.13	4.38	110
Affinity + Z*	2.27	2.07	4.34	109
DK 127	2.11	2.21	4.32	108
WL 323	1.92	2.35	4.27	107
Imperial	2.30	1.97	4.27	107
ALPHA 2001	2.08	2.19	4.26	107
Depend + EV*	2.16	2.05	4.21	106
Prism II	2.29	1.92	4.21	106
BANQUET*	2.14	1.97	4.11	103
5454	1.94	2.14	4.08	102
Innovator + Z	2.25	1.82	4.07	102
BH 330	1.96	2.08	4.04	101
Greenfield	2.14	1.89	4.03	101
WL 324*	2.10	1.93	4.02	101
Dominator	2.06	1.95	4.02	101
Rushmore	1.95	2.06	4.01	101
5312	1.93	2.08	4.01	101
Total + Z	2.13	1.84	3.97	100
Ovation	2.00	1.95	3.95	99
ABT 405*	2.02	1.90	3.92	98
Magnum III-Wet	1.89	1.99	3.88	98
Garst 645	2.04	1.83	3.87	97
Paramount	1.94	1.83	3.77	95
Magnum IV	1.71	1.99	3.70	93
SuperCuts	1.91	1.70	3.61	91
631	1.67	1.80	3.48	87
WL 252 HQ	1.60	1.76	3.37	85
Persist	1.43	1.79	3.23	81
Vernal	1.56	1.66	3.22	81
MEAN	2.00	1.98	3.98	--
CV %	10.25	13.46	8.70	--
LSD 0.05	0.29	0.37	0.49	--

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

Date seeded: 4/6/95  
Establishment: Seeded with a Carter cone seeder at 16 lb/a, with a fall application of 400 lb/a of 0-0-60. All seed treated with Apron.  
Plot size: 3' x 20', RCBD with four reps, 7' alleys and borders.  
Harvest area: 3' x 20'  
Soil type and status: Celina silt loam, pH = 7.2, P= 124 lb/a, K = 306 lb/a (8\95).  
Fertilization: Fall application of 150 lb/a of 0-0-60.  
1995 Pest control: Insecticide was applied on 26 July and 8 September for potato leafhopper control.

## RED CLOVER

The following data summarize the results of the Ohio State University red clover performance trials seeded in 1993 at three sites. Red clover is an excellent short-lived perennial legume that is better adapted than alfalfa to soils that are somewhat poorly drained and slightly acidic; however, greatest production occurs on well-drained soils with high water-holding capacity and pH above 6.0. This crop has the ability to produce profitable levels of highly palatable, nutritious forage. It is a vigorous establisher and is one of the easiest legumes to establish using no-till interseeding or frost-seeding techniques; therefore, it is an excellent choice when renovating pastures with legumes. Red clover is well suited for use as a forage legume in short rotations with corn. It can withstand more shading than most other forage legumes, making it very compatible with grass sods in pastures and as a green-legume crop interseeded in wheat. The longevity of red clover may be enhanced by the following management practices:

1. When direct seeding red clover, cut before it blooms in the seeding year. If allowed to reach full-bloom stage, red clover often has reduced stands and yields the following year.
2. After the seeding year, harvest red clover in early bloom stage. This means a three-cut system for most of Ohio.
3. Choose varieties that have high yields and improved persistence under Ohio conditions.

### 1995 Growing Season

The 1995 growing season began with below average to near average temperatures at the three testing sites and then turned warmer than average in June through August (Table 2). Rainfall for the season was 70% above average at Columbus and below average at Wooster and Jackson. Forage yields were generally lower in 1995 than in 1994, except at Wooster where some varieties achieved higher yields in 1995 than in 1994. Large differences in yield were found among cultivars in 1995. Stand loss was evident in many varieties as the season progressed, reflected by extremely low yields at the last harvest. Anthracnose, Sclerotinia crown and stem rot, Fusarium root and crown rot, and virus diseases were observed in the plots where stand loss occurred. Common Red clover had very low yield in 1995, demonstrating its poor persistence relative to improved varieties adapted to this region.

**Table 11: Red Clover Cultivars in 1995 Ohio Tests**

<u>Cultivar</u>	<u>Seed Developer/Marketer</u>
Acclaim	Allied Seed
Arlington	Public (Wisconsin)
Cherokee	Public (Florida)
Cinnamon	FFR - Countrymark Co-op
Concorde	ABI
FUS	International Seeds, Inc./Central Indiana Supply Co. & Hill of Indiana
Kenland	Public (Kentucky)
Kenstar	Public (Kentucky)
Marathon	Public (Wisconsin)
Ram	Pickseed Canada, Inc.
Reddy	FFR - Countrymark Co-op
Renegade	International Seeds, Inc./Ohio Seed Company
Ruby	Dairyland Seed
Scarlett	Dairyland Seed
Walter	Pickseed Canada, Inc.
Common Red	Public



Table 12:

## 1993 Red Clover Cultivar Trial - Columbus, Ohio.

Cultivar	-----1995 Yield-----			1994 Total	2-Year Total	% Stand 4/3/95	
	6\7	7\10	8\22 *				
-----Tons Dry Matter/Acre-----							
Kenstar	2.37	1.17	1.05	4.60	4.81	9.41	77
Acclaim	2.36	1.03	1.02	4.41	5.45	9.86	80
Cinnamon	2.43	1.01	0.91	4.34	5.14	9.48	77
FUS	2.47	1.02	0.85	4.34	4.72	9.06	75
Reddy	2.30	1.01	0.93	4.24	5.08	9.32	82
Scarlett	2.45	1.01	0.78	4.24	5.47	9.71	78
Marathon	2.31	0.98	0.78	4.06	4.71	8.77	73
Concorde	2.10	1.06	0.70	3.85	5.06	8.91	78
Ruby	2.10	0.81	0.78	3.69	5.15	8.84	78
Ram	2.18	0.86	0.61	3.65	4.73	8.38	80
Walter	2.18	0.85	0.61	3.64	5.19	8.83	72
Arlington	2.28	0.71	0.61	3.59	4.97	8.56	73
Renegade	2.19	0.67	0.47	3.34	4.68	8.02	63
Kenland	2.11	0.69	0.37	3.17	4.62	7.79	63
Cherokee	2.11	0.61	0.13	2.86	4.76	7.62	50
Common	1.79	0.48	0.13	2.39	4.87	7.26	53
MEAN	2.21	0.89	0.68	3.77	4.97	8.74	70
CV %	9.08	18.67	23.79	7.73	9.40	--	13
LSD 0.05	0.33	0.27	0.27	0.48	0.78	--	15

Yields represent the sum of three harvests in 1994.

\* Yields at the third harvest in 1995 are reported as weed-free yield (weed content was visually rated).

Seeding date: 8\25\93  
Establishment: Seeded with a Carter cone seeder at 12 lb/a. A uniform application of Ronilan was applied on October 1993 for Sclerotinia control.  
Plot size: 6' x 20', RCBD with three reps, 10' alleys and borders.  
Harvest area: 3' x 20'  
Soil type and status: Crosby clay loam, pH = 7.1, P = 144 lb/a, K = 304 lb/a (4\94).  
Fertilization: Annual fall application of 300 lb/a of 0-46-0, and 500 lb/a of 0-0-60.  
1995 Pest control: Insecticide was applied on 25 August for potato leafhopper control.

Table 13:

## 1993 Red Clover Cultivar Trial - Jackson Branch, Jackson, Ohio.

Cultivar	-----1995 Yield-----			1994 Total	2-Year Total
	6\26	8\11	Total		
-----Tons Dry Matter/Acre-----					
Reddy	1.71	0.46	2.17	2.87	5.04
Walter	1.68	0.48	2.17	2.91	5.08
Kenstar	1.56	0.60	2.16	2.48	4.64
FUS	1.60	0.53	2.13	2.60	4.73
Ram	1.64	0.49	2.13	2.54	4.67
Acclaim	1.66	0.46	2.12	2.61	4.73
Concorde	1.54	0.57	2.10	2.82	4.92
Cinnamon	1.46	0.63	2.08	3.11	5.19
Marathon	1.41	0.54	1.95	2.54	4.49
Arlington	1.50	0.37	1.87	2.83	4.70
Kenland	1.61	0.25	1.86	2.37	4.23
Renegade	1.36	0.42	1.78	2.96	4.74
Common	1.38	0.33	1.71	2.73	4.44
Cherokee	1.33	0.28	1.60	2.41	4.01
MEAN	1.53	0.45	1.98	2.67	4.65
CV %	18.12	30.90	14.70	13	--
LSD 0.05	NS	0.20	NS	0.58	--

Yields represent the sum of three harvests in 1994.

Seeding date: 8\27\1993  
Establishment: Seeded with a Carter cone seeder at 12 lb/a. Uniform application of  
was applied on October 26, 1993 for Sclerotinia control.  
Plot size: 3.5' x 20', RCBD with four reps, 2' alleys and borders.  
Harvest area: 2' x 20'  
Soil type and status: Gilpin loamy clay, pH 5.3, P = 46 lb/a, K = 190 lb/a (4\93). 2 ton/a of lime,  
200 lb/a of 0-46-0, and 600 lb/a of 0-0-60 was incorporated prior to seeding.  
One ton/a of lime and 100 lb/a of 0-46-0 was surface applied at seeding.  
Fertilization: Annual fall application of 250 lb/a of 0-46-0 and 250 lb/a of 0-0-60, plus  
400 lb/a of 0-0-60 was applied after the first harvest.  
1995 Pest control: Insecticide was applied for leafhopper control on 1 August.

Table 14:

## 1993 Red Clover Cultivar Trial - Schaffter Farm, Wooster, Ohio.

Cultivar	-----1995 Yield-----				1994 Total	2-Year Total	% Stand 4\19\95
	6\7	7\14	8\25 *	Total			
-----Tons Dry Matter/Acre-----							
Ruby	2.69	1.48	1.99	6.16	5.26	11.42	65
Cinnamon	2.71	1.82	1.53	6.06	5.76	11.82	79
Acclaim	2.72	1.77	1.14	5.63	5.43	11.06	74
Marathon	2.73	1.72	0.94	5.39	4.75	10.14	71
Concorde	2.84	1.75	0.75	5.33	5.65	10.98	74
Kenstar	2.71	1.81	0.58	5.09	4.38	9.47	60
Scarlett	2.54	1.69	0.74	4.97	5.13	10.10	66
FUS	2.64	1.68	0.50	4.82	4.44	9.26	63
Ram	2.62	1.54	0.66	4.82	5.03	9.85	63
Arlington	2.45	1.60	0.73	4.78	5.66	10.44	73
Reddy	2.53	1.61	0.54	4.68	5.00	9.68	65
Walter	2.75	1.50	0.32	4.56	4.59	9.15	64
Kenland	2.22	1.44	0.31	3.97	4.20	8.17	44
Renegade	2.12	1.54	0.28	3.94	4.72	8.66	53
Common	2.17	1.14	0.10	3.41	4.29	7.70	44
Cherokee	1.99	1.21	0.12	3.33	4.89	8.22	39
MEAN	2.52	1.60	0.75	4.87	4.97	9.84	63
CV %	6.86	9.92	76.71	13.93	12.00	--	15
LSD 0.05	0.24	0.23	0.82	0.96	0.86	--	14

Yields represent the sum of three harvests in 1994.

\* Yields at the third harvest in 1995 are reported as weed-free yield (weed content was visually rated).

Seeding date: 8\23\1993  
Establishment: Bandseed at 12 lb/a with 100 lb/a of 0-46-0. Uniform application of Ronilan was applied on 25 October 1993 for Sclerotinia control.  
Plot size: 6' x 20', RCBD with four reps, 25' alleys and borders.  
Harvest area: 4' x 20'  
Soil type and status: Riddles silt loam, pH = 6.8, P = 110 lb/a, K = 252 lb/a (4\93).  
Fertilization: Annual application of 300 lb/a of 0-0-60  
Pest control: None applied in 1995.

## BIRDSFOOT TREFOIL

The following data summarize the results of the Ohio State University birdsfoot trefoil performance trial seeded in 1992 at Northwest Branch. Forage yields in 1995 were excellent and similar to 1994 yields at this site. Birdsfoot trefoil is more tolerant than other forage legumes of soils which have low pH (tolerates as low as pH 5.0), moderate to somewhat poor soil drainage, marginal fertility, and fragipans. It is not as productive as alfalfa on well-drained, fertile soils with high pH, but it will outyield alfalfa on marginal soils. It can withstand several weeks of flooding. It also tolerates periods of moderate drought and heat. It is resistant to insects and produces forage of excellent quality. Birdsfoot trefoil normally outlives red clover by several years. Stands can last for many years if managed to allow natural reseeding. Natural reseeding is especially important in southern Ohio where birdsfoot trefoil stands are generally short-lived. Birdsfoot trefoil is an ideal pasture legume. It has excellent grazing tolerance, high forage quality, good palatability, and does not cause bloat in grazing animals.

### Variety Selection

Birdsfoot trefoil varieties have traditionally been classified by growth habit. Empire-type varieties have prostrate growth and fine stems, and are thought to be better adapted to grazing. The variety Empire is a prostrate-type variety. European-type varieties are more erect, establish faster, and regrow faster after harvest. Thus, they are well suited to hay production, but are also very suitable for rotational grazing. Viking is an erect European-type variety. Most of the newer varieties are intermediate with semi-erect to erect growth habit.

### Varieties

**AU Dewey** A semierect variety with low to moderate winter hardiness. AU Dewey is also useful in permanent pastures but more adapted to the southern states because of the winter hardiness. AU Dewey was developed by Auburn University.

**Carroll** A semierect variety with high winter hardiness. Carroll has excellent seedling vigor and good yields. Carroll was developed by Iowa State University.

**Dawn** A semierect variety, with moderate to high winter hardiness. Dawn has good yields and grazing tolerance. Dawn was developed by USDA\ARS and the University of Missouri.

**Empire** A semierect leafy variety with high winter hardiness. Empire has good grazing tolerance and is more adapted to wetter soils than most varieties. Empire was developed by Cornell University.

**Fergus** A semierect variety with moderate winter hardiness. Fergus has good grazing tolerance. Fergus was developed by the University of Kentucky.

**Georgia 1** A semierect variety with moderate winter hardiness. Georgia 1 was developed by University of Georgia.

**Norcen** A semierect variety with high winter hardiness. Norcen has good yields and ranks high in crude protein. Norcen was developed by North Central States.

**Viking** An erect variety with moderate winter hardiness. Viking has excellent seedling vigor and good yields and regrowth. Viking was developed by Cornell University.

Table 15:

## Birdsfoot Trefoil Cultivar Trial - Northwestern Branch, North Baltimore, Ohio.

Cultivar	-----1995 Yield-----				1992 Total	1993 Total	1994 Total	4-year Total
	6\13	7\18	8\30	Total				
-----Tons Dry Matter/Acre-----								
Carroll	2.41	0.94	1.81	5.16	3.13	3.97	5.05	17.31
Dawn	2.48	1.21	2.31	5.99	3.46	4.29	5.94	19.68
Empire	2.05	0.83	1.67	4.54	2.83	3.94	4.56	15.87
Fergus	2.40	1.15	2.10	5.65	3.40	4.20	5.36	18.61
Norcen	2.39	1.20	1.97	5.56	3.69	4.30	5.62	19.17
Georgia I	1.81	0.82	1.49	4.12	2.05	3.26	4.40	13.83
Viking	2.58	1.10	2.19	5.87	3.23	3.91	5.78	18.79
AU Dewey	1.94	0.88	1.65	4.46	3.13	3.97	5.05	16.61
MEAN	2.27	0.96	1.79	5.02	3.15	3.96	5.23	17.48
CV %	12.50	16.32	8.90	8.96	20.00	9.00	11.00	--
LSD 0.05	0.41	0.23	0.23	0.65	0.94	0.52	0.88	--

Yields represent the sum of two harvests in 1992 and 1993, and three harvests in 1994.

Seeding date: 5\16\91  
Establishment: Uniform application of 3 lb/a of EPTC incorporated prior to bandseeding of cultivars at 5 lb/a with 100lb/a of 0-46-0.  
Plot size: 8' x 30', RCBD with 4 reps, 20' alleys and borders.  
Harvested area: 5.75' x 20'  
Fertilization: Annual fall application of 50 lb/a of 0-46-0 and 150 lb/a of 0-0-60.

Table 16:

## Birdsfoot Trefoil with Grass Mixture - Northwestern Branch, North Baltimore, Ohio.

Cultivar	-----1995 Yield-----				1992 Total	1993 Total	1994 Total	4 Year Total
	6\13	7\18	8\30	Total				
-----Tons Dry Matter/Acre-----								
Viking + bromegrass	3.02	1.32	1.46	5.80	4.81	3.98	5.92	20.51
Viking + tall fescue	2.98	1.22	1.52	5.73	4.44	4.63	5.45	20.25
Viking + bluegrass	2.67	1.35	1.65	5.67	4.46	3.76	4.92	18.80
Viking + ryegrass	2.79	1.25	1.43	5.48	4.06	3.98	5.60	19.11
Viking + oats	2.77	1.02	1.49	5.29	4.05	4.13	5.37	18.84
Viking	2.61	1.09	1.43	5.13	3.63	4.38	5.42	18.56
Viking + orchardgrass	2.49	0.96	1.40	4.85	4.05	3.70	5.09	17.68
MEAN	2.76	1.17	1.48	5.42	4.21	4.08	5.30	19.11
CV %	6.65	10.57	4.77	6.00	0.70	0.46	0.65	--
LSD 0.05	0.33	0.22	0.13	0.58	9.00	6.00	6.78	--

Date seeded: 5\16\92

Establishment: Seeded with a Brillion seeder at the following rates:  
 Birdsfoot trefoil 4 lb/a for all treatments.  
 BFT + oats at 30 lb/a  
 BFT + orchardgrass at 8 lb/a  
 BFT + ryegrass at 6 lb/a  
 BFT + bromegrass at 8 lb/a  
 BFT + tall fescue at 6 lb/a  
 BFT + bluegrass at 2 lb/a

Plot size: 8' x 25', RCBD with 3 reps, 16' alleys and borders.

Harvest area: 5.75' x 20'

Soil type and status: Hoytville clay, pH = 6.8, P = 96, K = 449, OM 4 %.

Fertilization: Annual fall application of 100 lb/a of 0-46-0 and 300 lb/a of 0-0-60.

1995 Pest control: No pest control needed.

## ADDRESSES OF MARKETERS

ABI Alfalfa  
P.O. Box 2955  
Shawnee Mission, KS 66201  
(315) 292-2432

AgriBio Tech  
4793 Newhope South  
Liverpool, NY 13090  
(315) 461-8252

AgriPro Seeds  
Rt 1. box 129  
Princeton, IL. 61356  
800-334-4730

Agway, Inc.  
P.O. Box 4741  
Syracuse, NY 13221-4741  
(315) 449-6682

Allied Seed Co-op  
1917 E. Fargo Ave.  
Nampa, ID 83687  
800-236-0163

America's Alfalfa  
Rt. 1 Box 129  
Princeton, IL. 61356  
800-873-2532

Beachley-Hardy Seed Company  
P.O. Box 3147  
Shiremanstown, PA 17011  
800-442-7391

Becks Hybrids  
6767 East 276th Street  
Atlanta, IN 46031  
317-984-3508

Callahan Seeds  
1122 E. 169 th St.  
Westfield, IN 46074  
(317) 896-5551

Cargill Hybrid Seeds  
P.O. Box 5645  
Minneapolis, MN 55440  
(612) 742-6743

Cenex/Land O'Lakes Inc.  
2827 8th Ave. S.  
Fort Dodge, IA 50501  
800-369-3060

Central Ind. Supply Co.  
Hill of Indiana  
9331 Castlegate Drive  
Indianapolis, IN 46456

CIBA Seeds (Reg. office)  
4435 S. TR.165  
Tiffin, Ohio 43119  
419-983-6102

ConAgra  
P.O. Box 978  
Pekin, IL. 61554  
(309) 382-3111

Countrymark  
950 M Meridian St.  
Indianapolis, IN 46204  
(317) 685-3244

Dairyland Seed Co. Inc.  
P.O. Box 958  
West Bend, WI 53095  
800-236-0163

DeKalb Plant Genetics  
3100 Sycamore Road  
DeKalb, IL 60115  
(815) 758-9323

Doebblers Seed  
Box 424  
Jersey Shore, PA 17740  
(717) 753-3210

FFR Cooperative  
4112 E. State Road 225  
W. Lafayette, IN 47906  
(317) 567-2115

Genesis Turf and Forages  
P.O. Box 10  
Huntsville, UT 84137  
(801) 745-4609

Golden Harvest Seeds, Inc.  
513 E. Locust  
Bloomington, IL 61701  
(309) 346-2127

Great Lakes Hybrids Inc.  
P. O. Box 637  
Ovid, MI 48866  
(517) 834-2251

Great Plains Research Co., Inc.  
3624 Kildaire Farm Rd.  
Apex, NC 27502  
800-641-4206

ICI Seeds  
6945 Vista Drive  
West Des Moines, IA 50266  
800-348-2742

Internatinoal Seeds, Inc.  
PO Box 168  
820 West First Street  
Halsey, OR 97348  
(503)369-2251

LG Seeds  
P.O Box 457  
Windfall, IN 46076  
800-428-7333

L. Herried Seed  
P.O. Box 216  
Prescott, WI 54021-0216  
800-637-2887

L.L. Olds Seed Co.  
P.O. Box 7790  
Madison, WI 53707

Madison Seed Co.  
13455 St. Rt. 38 SE.  
London, OH. 43140  
800-874-9410

Mike Brayton Seeds  
P.O. Box 308  
Ames, IA 50010  
800-247-3967

**ADDRESS OF MARKETERS**  
(continued)

Mycogen Plant Sciences  
720 St. Croix Street  
Prescot, WI 54021  
800-321-2867

Northrup King Co.  
7500 Olson Memorial Hwy.  
Golden Valley, MN 55427  
(612) 593-7261

The Ohio Seed Company  
PO Box 87  
West Jefferson, OH 43162  
(614) 879-8366

Peterson Seed Co.  
P.O. Box 346  
Savage, MN 55378  
800-328-5898

Pickseed  
P.O. Box 304  
Lindsay, Ontario  
Canada, K9V453  
(705) 878-9240

Pioneer Hi-Bred Int'l, Inc.  
P.O. Box 772  
Johnston, IA 50131  
(402) 467-5458

Research Seeds(Agri.)  
P.O. Box 1393  
St. Joseph, MO 64502  
800-821-7666

Scott Seed Co.  
709 E. 4th St.  
New Albany, IN 47150  
(812) 945-0229

Spangler Seeds  
803 W. Racine St.  
Jefferson, WI 53549  
(414) 674-4606

Stine Seeds, Inc.  
2225 Laredo Trail  
Adel, IA 50003  
800-362-2510

Union Seed Company  
P.O. Box 339  
Nampa, ID 83653-0339  
800-635-5701

Wetsel Seed Company, Inc.  
P.O. Box 956  
Kittanning, PA 16201

W-L Research, Inc.  
2000 Oak Street  
Bakersfield, CA 93301  
(805)327-5931

Wyffels Hybrids  
P.O. Box 246  
Atkinson, IL 61235-0246  
(309) 936-7833

Yoder Hybrid / Merrit Seeds  
Twp. Rd. 366  
P.O. Box 205  
Berlin, OH 44610  
800-553-4713



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