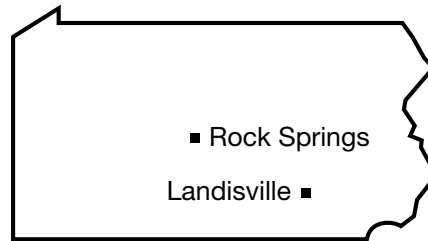


2013 FORAGE TRIALS REPORT

SUMMARY

The *2013 Forage Trials Report* summarizes performance data collected from ongoing forage trials at two sites in Pennsylvania. The report includes data from alfalfa, cool-season (forage) grass trials, and short-lived grass trials established at the Russell E. Larson Agricultural Research Center at Rock Springs and/or the Southeast Research and Extension Center at Landisville.



Summary of Forage Growing Conditions and Insect Pressure in 2013

An unusually wet spring combined with a hard frost on May 13 delayed first harvests across the state. Continued wet weather produced great second harvest yields but again made it difficult to harvest on time. Then dry conditions during August reduced forage production but were excellent for curing hay. The number and quality of samples entered in the 2013 Pennsylvania Forage and Grassland Council's Hay Show at Ag Progress Days reflects this year's generally poor hay-making conditions. The fewest entries ever in the hay show were received and the average quality of the samples was three percentage units higher in neutral detergent fiber (NDF) and ten units lower in relative feed value (RFV).

Alfalfa weevil populations were generally low with few localized outbreaks. Potato leafhopper infestations were high across most of the state. The dry weather in some areas caused leafhopper damage to be more pronounced than in a "normal" year. Cereal leaf mite damage to timothy and grubs damage to orchard-grass continue to be problems.

Growing-season precipitation amounts for the past four years at Rock Springs and Landisville are presented in Figures

1 through 8 (page 2) by monthly total. Normal amounts also are presented.

Criteria for Reporting Varieties

All varieties listed in this report are eligible for certification by seed-certifying agencies and are marketed in Pennsylvania (see Tables 1, 9, 12). Proprietary and public varieties are included; blends and "commons" are not included.

Interpreting Yield Data and Stand Scores

Yield summaries and stand scores for individual trials appear in Tables 2 through 8, 10, 11, and 13 through 16. Only varieties currently being marketed in Pennsylvania appear in the tables. Although the trials contain up to 46 total entries, many of these are advanced experimental varieties or are not currently offered for sale in Pennsylvania. After these entries are named and/or become available for purchase in Pennsylvania, they will be included in future reports.

Experimental alfalfa entries that become named varieties will be footnoted as such. They will be published in the *Forage Trials Report* only if the newly named variety is entered as a commercial variety in the next available trial.

Varieties are ranked according to their yield performance this crop year.

In addition, yield totals for the previous harvest years are reported, as well as average yields over the life of the stand. It is important to evaluate the average yields as well as the yields obtained this year because performance over a three- to four-year period is valuable in a long-term forage rotation.

The stand score is a visual estimation of the amount of ground cover, which is given following harvest in the fall. The stand score is reported on a scale from 1 to 100, with 100 considered a perfect stand. This score is valuable as an indicator of varietal persistence.

Please keep in mind when reviewing the yield and stand tables that differences between varieties are significant only if the least significant difference (LSD) between varieties is exceeded. LSD is the minimum difference between any two varieties necessary for us to be 95 percent confident that this difference is not attributable to mere chance. For example, if variety A is 0.50 ton/acre higher in yield than variety B, then this difference is statistically significant if the LSD is 0.50 or less. If the LSD is 0.51 or greater, then we cannot be confident that variety A really yields higher than B under given environmental and management conditions.

The value for coefficient of variation (CV) is a measure of relative variation useful in evaluating the precision achieved in an experiment. In grain and forage trials, for example, the CV for yield often is between 5 and 20 percent. Acceptable levels of the CV vary for each trait measured. Confidence in the reliability of the experimental results declines as the CV increases. Uncontrollable or immeasurable variations in soil fertility, soil drainage, and other environmental factors contribute to increased CV levels.

Figure 1. 2013 Precipitation at Rock Springs

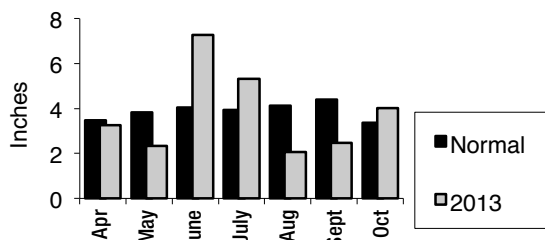


Figure 2. 2013 Precipitation at Landisville

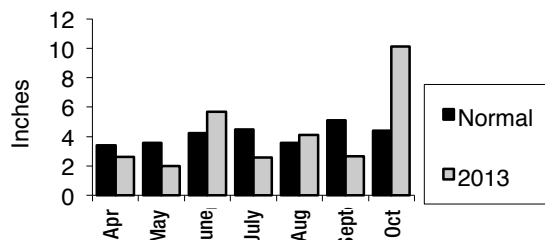


Figure 3. 2012 Precipitation at Rock Springs

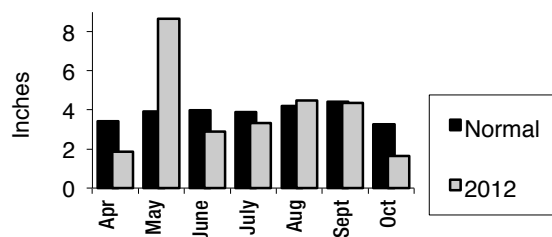


Figure 4. 2012 Precipitation at Landisville

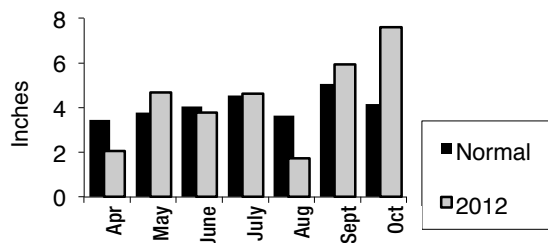


Figure 5. 2011 Precipitation at Rock Springs

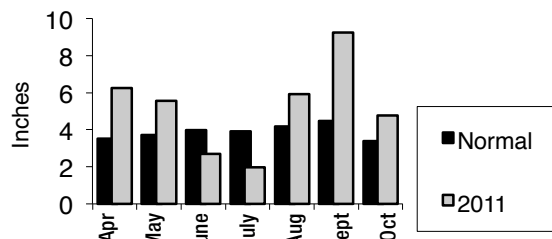


Figure 6. 2011 Precipitation at Landisville

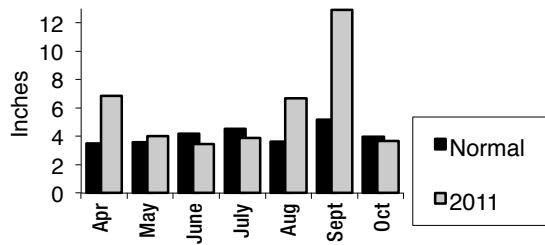


Figure 7. 2010 Precipitation at Rock Springs

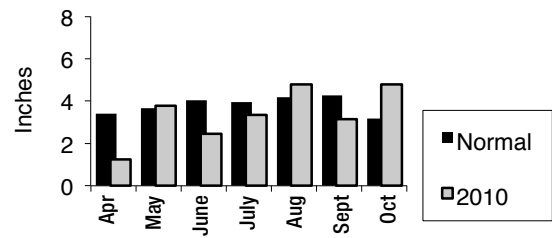
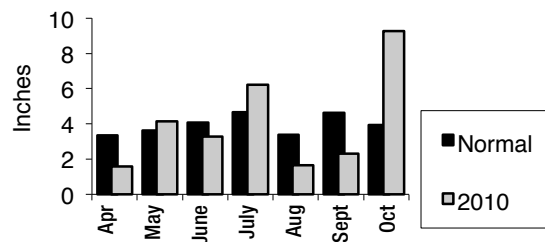


Figure 8. 2010 Precipitation at Landisville



ALFALFA

Many varieties of alfalfa exist, and selection of the appropriate variety is an important management decision. This report lists performance data for those varieties included in the Penn State Alfalfa Variety Testing Program. Evaluation trials include both commercially available and advanced experimental varieties. Trials are initiated each year at the Rock Springs and Landisville research stations. In each trial, collection of yield, stand, and other data continues for a maximum of four years or until the stand becomes so depleted that data collection is no longer worthwhile.

Trials at both locations are established on well-drained Hagerstown silt loam soils. Major site differences are likely to be reflected in the longer growing season, slightly elevated temperatures, and tendency toward late summer drought at the Landisville site.

Keep in mind a few points when evaluating alfalfa variety performance data:

- Selection of a variety on the basis of yield performance alone is generally less satisfactory than selections that also consider stand score and pest resistance.
- Conditions on most farms are such that several varieties may perform nearly equally. It usually is not necessary to rely on a single variety.
- No variety, regardless of its excellence, can thrive under poor management. Good management considers all aspects of alfalfa production, including seedbed preparation, lime and fertilizer, seeding, pest control, harvest, storage, and postharvest treatment. Many modern varieties are adapted to intensive management.

Fall Dormancy

Fall dormancy ratings of alfalfa range from one (very dormant) to nine (having no dormancy). Varieties that have less fall dormancy (higher numerical rating) regrow faster after harvest and exhibit greater growth in the fall compared to those varieties with more fall dormancy (lower numerical rating).

Pest Resistance

Disease and insect resistance may be the most important attributes of an alfalfa variety. The ratings for pest resistance given in this report can serve as a good indicator of a variety's potential performance in your area. Be aware of your pest resistance needs and choose the appropriate varieties.

Sclerotinia stem and crown rot is becoming a serious concern for growers throughout the state because there is little plant resistance to the disease. Late summer no-till seedings seem to be more susceptible to the disease. Newly established seedlings are very susceptible to infection in the fall when the fungus is active. Plants are attacked rapidly by the pathogen and die the following spring. Plants established in the spring are more resistant to the pathogen and are not as severely damaged as are the younger plants. The fungus survives as hard, black structures (sclerotia) on or near the soil surface. In the fall, the sclerotia produce spores that cause infection. Plowing buries sclerotia, thus reducing inoculum and subsequent infection.

Resistance to *Aphanomyces* can be found in some of the newest varieties. *Aphanomyces eutiches* is a soilborne fungus with behavior and requirements similar to *Phytophthora*. It is a wet-soil seedling pathogen and can be expected to thrive under cool, waterlogged conditions. Resistance may be beneficial when growing alfalfa on poorly drained soils. More specific information about many alfalfa diseases is included in the current *Penn State Agronomy Guide*.

Crown and root rot complex is still a problem. Because of the complexity of the pathogens involved, resistance to this disease is not very high in any variety. Good management slows the progress of this disease. More specific information is included in the current *Penn State Agronomy Guide*.

Plant breeders develop alfalfa varieties by selecting from genetically diverse populations. Within such populations, individual plants may vary widely in their response to a particular disease or insect. Some may be highly resistant

and others very susceptible. A particular pest resistance rating usually reflects the response of the majority of plants in the variety. In our trials, varieties with the most pest resistance ratings of "moderate" or higher usually have shown better long-term performance.

Guidelines for Selecting Alfalfa Varieties

To select alfalfa varieties on the basis of the trial results, follow these suggestions:

1. Determine which of the trial sites most resembles your farm in terms of soil and growing season. Performance data of varieties at this site are likely to provide more relevant selection information.
2. Look at the performances of the varieties at both trial sites. Varieties that do equally well at both sites probably are adapted to a wider range of environmental conditions.
3. Performance data over several years can be very useful in selecting a variety, because some varieties seem to decline with age more rapidly than others.
4. For long-term rotations, the most recent harvest-year data should receive major consideration. If you plan to harvest the alfalfa for three years or less, then high performance during early years should be given major consideration.
5. Disease- and pest-resistance ratings should be examined in relation to yield, especially if your area is known to have problems with alfalfa diseases and pests. For example, *Phytophthora* root rot resistance may be exceptionally important on farms with moderately to poorly drained soils.

Table 1 lists the marketers of alfalfa varieties included in this report, as well as the trial table numbers in which the varieties appear. Also, included are fall dormancy ratings and selected disease- and insect-resistance ratings. Tables 2 through 9 offer guidelines for assessing the production potential of various alfalfa varieties.

The tables in this report may be reproduced only in their entirety.

Table 1. Alfalfa varieties marketed in Pennsylvania and listed in this report.

Fall dormancy ratings of alfalfa range from one (very dormant) to nine (having no dormancy). Varieties that are less fall dormant (higher numerical rating) regrow faster after harvest and exhibit greater growth in the fall compared to those varieties with greater fall dormancy (lower numerical rating).

BW = Bacterial Wilt, VW = Verticillium Wilt, FW = Fusarium Wilt, AN = Anthracnose, PRR = Phytophthora Root Rot, APH1=Aphanomyces Race 1.

The Fall Dormancy and Pest Resistance Ratings in this table are from the National Alfalfa Alliance and/or the alfalfa variety breeder and have not been verified by Penn State.

Resistance Key (%): S = 0 to 5 %; LR = 6 to 14 %; MR = 15 to 30 %; R = 31 to 50 %; HR = 51 % or greater. If the resistance rating for a variety is not listed, the information is not available.

Variety	Marketer ^a	Fall Dormancy	Pest-Resistance Ratings						Appears in Table No.
			BW	VW	FW	AN	PRR	APH1	
6417	Garst	4	HR	HR	HR	HR	HR	HR	2,6
6422Q	Garst	4	HR	HR	HR	HR	HR	HR	5
4020 MF	Brett Young Seeds	4	HR	HR	HR	HR	HR	HR	5
4030	Preferred Seeds	4	HR	HR	HR	HR	HR	HR	2,6
4A415	Mycogen	4	HR	HR	HR	HR	HR	HR	2,6
4S417	Mycogen	4	HR	HR	HR	HR	HR	HR	2,5,6
54Q32	Pioneer Hi-Bred Int'l	4	HR	HR	HR	HR	HR	R	5
55V48	Pioneer Hi-Bred Int'l	4	HR	R	HR	HR	HR	HR	5
6305Q	Garst	3	HR	HR	HR	HR	HR	HR	2,6
AmeriStand 407TQ	P.L. Rohrer	4	HR	HR	HR	HR	HR	HR	3,5,7
AmeriStand 403T Plus	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	5
Archer III	P.L. Rohrer	5	HR	HR	HR	HR	HR	HR	3,5,7
Cornerstone	Chemgro	4	HR	HR	HR	HR	HR	HR	5
Crave	T.A Seed	4	HR	HR	HR	HR	HR	HR	3,4,8
DG 4210	Crop Production Services	4	HR	HR	HR	HR	HR	HR	2,3,6
DKA 34-17 RR	Dekalb	4	HR	HR	HR	HR	HR	HR	3,4,7,8
Everlast II	P.L. Rohrer	4	HR	HR	HR	HR	HR	HR	5
EZRA	Seedway	3	R	R	HR	HR	HR	HR	2,6
FSG 329	Seedway	4	HR	HR	HR	HR	HR	HR	7
FSG 406	Seedway	4	R	R	HR	HR	HR		5
FSG 420LH	Seedway	4	HR	HR	HR	HR	HR	HR	5
FSG 505	Seedway	5	HR	HR	HR	HR	HR	HR	8
Gemstone	Chemgro	4	HR	HR	HR	HR	HR	HR	4,5,8
Gunner	Cropland	5	HR	HR	HR	HR	HR	HR	3,7
Hybri+Jade	Channel	4	HR	HR	HR	HR	HR	HR	3,7
HybriForce-2400	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	2,5,6
HybriForce-2420	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	2,6
HybriForce-2420/WET	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	5
HybriForce-3400	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	5,7,8
HybriForce-3400 QR	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	8

(Table 1 continued)

Variety	Marketer ^a	Fall Dormancy	Pest-Resistance Ratings						Appears in Table(s)
			BW	VW	FW	AN	PRR	APH1	
Kingfisher 243	Ampac Seed Co.	4	HR	HR	HR	HR	HR	HR	5
Magnitude	FS Seed	4	HR	HR	HR	HR	HR	HR	4
Magnum 7	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	4
Magnum 7- WET	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	2,4
Mariner IV	FS Seed	4	HR	HR	HR	HR	HR	HR	2,4
Milestone II	Chemgro	4	HR	HR	HR	HR	HR	HR	2,6
N-R-GEE	Seedway	4	HR	HR	HR	R	R		3,7
Oneida VR	Public	3	R	HR	HR	MR	MR		2,3,4,5,6,7,8
Persist II	Doebler's	4	HR	HR	HR	HR	HR	HR	2,3,4,7,8
PGI 557	Producer's Choice	4	HR	HR	HR	HR	HR	HR	5
Phirst Extra	Doebler's	4	HR	HR	HR	HR	HR	HR	2,6
Pillar	Doebler's	4	HR	HR	HR	HR	HR	HR	2,6
Pluss II	Doebler's	4	HR	HR	HR	HR	HR	HR	2,3,6,7,6
Pounce	Doebler's	4	HR	HR	HR	HR	HR		5
Profilic II	Doebler's	4	HR	HR	HR	HR	HR	HR	3,5,7
Profusion-HX	King's AgriSeed	4	HR	HR	HR	HR	HR	HR	6
Rebound 5.0	Cropland	4	HR	HR	HR	HR	HR	HR	5
Red Falcon BR	Blue River Hybrids	4	HR	HR	HR	HR	HR	HR	2
ReNew	FS Seed	4	HR	HR	HR	HR	HR	HR	3
Secure-BR	King's AgriSeed	4	HR	HR	HR	HR	HR	HR	3
Seneca	R. M. Seed	4	HR	HR	HR	HR	HR	HR	2,3,7
Shockwave BR	Brett Young Seeds	4	HR	HR	HR	HR	HR	HR	2,3,4
Stockpile	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	2
A 4535	P.L. Rohrer	4	HR	HR	HR	HR	HR	HR	5
Vernal	Public	4	R	S	MR	S	S	S	2,3,4,5,6,7,8
WL 343 HQ	WL Alfalfas	4	HR	HR	HR	HR	HR	HR	2,7
WL 354 HQ	WL Alfalfas	4	HR	HR	HR	HR	HR	HR	7
WL 363 HQ	WL Alfalfas	4	HR	HR	HR	HR	HR	HR	2,6

a. Marketers' contact information is listed on the next page.

**Alfalfa marketers listed in this report—
location, phone number, and website:**

AgVenture, Inc.

Kentland, IN 47951
Phone: 888-999-0859
Web: www.agventure.com

Allied Seed, LLC

Macon, MO 63552
Phone: 800-880-8127
Web: www.alliedseed.com

Brett-Young Seeds

Winnipeg, MB M3V 1L5, Canada
Phone: 204-261-7932
Web: www.byseeds.com

Chemgro Seeds

E. Petersburg, PA 17520
Phone: 800-346-4769
Web: www.chemgro.com

Channel Seed

St. Louis, MO 63167
Phone: 314-694-1000
Web: www.channel.com

Crop Production Services

Holtwood, PA 17532
Phone: 707-284-5350
Web: www.cropproductionservices.com

Dairyland Seed Company

West Bend, WI
Phone: 800-236-0163
Web: www.dairylandseed.com

Dekalb

St. Louis, MO 63167
Phone : 800-768-6387
Web: www.asgrowanddekalb.com

Doebler's

Jersey Shore, PA 17740
Phone: 570-753-3210
Web: www.doebler.com

Growmark FS

York, PA 17402
Phone: 800-338-4769
Web: home.gromarkfs.com

Hytest Seeds

Dover, PA 17315
Phone: 717-870-0351

King's AgriSeeds

Ronks, PA 17572
Phone: 866-687-6224
Web: Kingsagriseeds.com

Mid Atlantic Seeds

York, PA 17403
Phone: 717-852-8894

Mycogen Seeds

Export, PA 15632
Phone : 724-468-6533
Web: www.dowagro.com/mycogen

NuTech Seed

Ames, IA 50010
Phone: 5152321997
Web: www.nutechseed.com

P. L. Rohrer & Bro., Inc.

Smoketown, PA 17576
Phone: 717-299-2571
Web: www.rohrerseeds.com

Pioneer Hi-Bred Int'l, Inc.

Mount Joy, PA 17552
Phone: 717-653-5605
Web: pioneer.com

Preferred Seed Company

Buffalo, NY 14227
Phone: 716-895-7333
Web: preferredseed.com

Producer's Choice

Jordan, MN 55352
Phone: 877-560-5181
Web: www.producerschoiceseed.com

Seedway

Mifflinburg, PA
Phone: 800-338-2137
Web: seedway.com

Syngenta Seeds

Minnetonka, MN 55305
Phone: 800-445-0956
Web: www.syngentaseeds.com

T.A. Seeds

Jersey Shore, PA 17740
Phone: 570-753-5503
Web: www.taseeds.com

Winfield Solutions

Dover, PA
Phone: 717-870-0351

The tables in this report may be reproduced only in their entirety.

Table 2. 2010 alfalfa trial—Rock Springs.

Variety	2013 Yield	2012 Yield	2011 Yield	Three-year Average	Stand 9/24/13
SENECA*	6.74	7.96	7.36	7.34	83
MAGNUM 7- WET	6.82	8.06	7.02	7.31	81
STOCKPILE*	7.02	7.70	7.04	7.28	84
PLUSS II	7.56	7.44	6.68	7.23	87
PERSIST III*	6.86	7.55	7.23	7.21	84
FG 47M417	7.21	7.75	6.77	7.20	90
6305Q	7.00	8.03	6.41	7.14	85
4030*	6.82	7.66	6.87	7.13	82
MILESTONE II	6.76	7.77	6.68	7.10	84
SHOCKWAVE BR	6.43	7.96	6.74	7.06	78
HYBRIFORCE-2420	6.58	7.57	6.81	7.01	79
DG 4210	7.09	7.38	6.51	7.00	87
WL 363 HQ	6.70	7.74	6.35	6.94	87
PILLAR	7.14	7.15	6.44	6.92	85
LS 504	6.38	7.54	6.56	6.83	84
HYBRIFORCE-2400	6.49	7.29	6.58	6.82	83
Mariner IV	6.65	7.29	6.46	6.81	84
WL 343 HQ	6.72	7.53	6.09	6.77	87
4S417	6.42	7.26	6.43	6.70	85
RED FALCON BR	6.18	7.23	6.52	6.65	82
6417	6.61	7.06	6.37	6.65	90
4A415	6.26	7.19	6.35	6.61	80
EZRA	6.17	7.09	6.36	6.55	80
PHIRST EXTRA	6.15	7.04	6.28	6.50	84
NY0946	5.59	6.78	6.01	6.12	80
NY0947	5.39	6.91	5.97	6.10	81
5312	5.42	6.88	5.86	6.06	77
ONEIDA VR	5.46	6.42	5.66	5.84	78
VERNAL	4.43	5.63	5.39	5.15	63
GRAND MEAN	6.48	7.34	6.48	6.79	83
CV (%)	6.53	6.34	8.50	5.99	4.2
LSD (p = 0.05)	0.59	0.65	0.77	0.57	4.9

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation

LSD = least significant difference

- Seeded April 22, 2010.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 32 total entries.
- Entries are ranked in order of decreasing yield based on the three-year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple-year totals may not be the arithmetic sum of individual cuts or years, respectively.

The tables in this report may be reproduced only in their entirety.

Table 3. 2011 alfalfa variety trial—Rock Springs.

Variety	2013 Yield	2012 Yield	Two-year Average	Stand 10/3/13
Crave*	7.06	7.28	7.16	86
Persist III*	6.76	7.28	7.03	86
Secure-BR*	6.97	7.01	6.99	84
Seneca*	6.58	7.04	6.80	85
Profilic II*	6.51	6.80	6.65	85
DG 4210	6.76	6.21	6.47	86
LS 803	6.38	6.54	6.47	86
Hybri+Jade*	6.47	6.44	6.45	85
Shockwave-BR*	6.46	6.33	6.39	87
ReNew*	6.55	6.18	6.37	81
Pluss II*	6.26	6.20	6.24	87
Archer III	6.28	6.23	6.22	83
AmeriStand 407TQ	6.16	6.11	6.14	85
Gunner	5.96	6.26	6.12	90
Persist II	6.02	6.22	6.12	79
DKA 34-17 RR	6.02	6.16	6.10	84
5312	5.69	6.34	6.00	84
DKA 41-18 RR	6.09	5.87	5.97	86
Oneida VR	5.59	5.99	5.80	84
N-R-GEE	5.35	5.63	5.49	86
Vernal	4.87	5.33	5.11	52
GRAND MEAN	6.23	6.35	6.29	83
CV (%)	18.09	15.85	13.14	5.49
LSD (p = 0.05)	1.58	1.42	1.50	6.50

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation
LSD = least significant difference

- Seeded May 7, 2011.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 36 total entries.
- Entries are ranked in order of decreasing yield based on the three-year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple-year totals may not be the arithmetic sum of individual cuts or years, respectively.

The tables in this report may be reproduced only in their entirety.

Table 4. 2012 alfalfa variety trial—Rock Springs.

Variety	2013 Yield	Stand 10/3/13
Persist III*	7.54	83
Crave*	7.16	84
Gemstone*	7.05	83
Magnum 7*	6.93	80
Magnitude*	6.90	83
Mariner IV	6.85	75
DKA 41-18 RR	6.71	80
Shockwave-BR	6.54	83
Legacy 449 Aph 2	6.35	76
Magnum 7-wet	6.26	81
DKA 34-17 RR	6.21	78
5312	5.79	71
Oneida VR	5.53	76
Vernal	5.22	51
GRAND MEAN	6.50	77
CV (%)	7.76	6.33
LSD (p = 0.05)	0.72	7.04

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation
LSD = least significant difference

- Seeded April 5, 2012.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 36 total entries.
- Entries are ranked in order of decreasing yield based on the three-year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple year totals may not be the arithmetic sum of individual cuts or years, respectively.

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Table 5. 2009 alfalfa variety trial—Landisville.

Variety	2013 Yield	2012 Yield	2011 Yield	2010 Yield	Four-year Average	Stand 10/19/13
Gemstone*	6.40	6.98	9.26	10.63	8.29	83
HybriForce-3400	6.00	6.80	9.09	10.80	8.08	79
Archer III	5.89	6.78	8.97	10.61	8.04	85
KF 402 H	6.16	6.76	9.02	10.70	8.04	85
6422Q*	5.81	6.82	9.22	10.02	7.90	83
AMERSTAND 407TQ	5.80	6.47	8.83	9.91	7.71	81
PGI 557	6.35	6.95	8.12	9.64	7.68	86
LS 605	5.78	6.45	8.60	10.08	7.61	82
KINGFISHER 243	5.85	6.30	8.33	10.06	7.54	81
55V48	5.76	6.35	8.34	10.00	7.54	90
4020 MF*	6.11	6.15	8.15	9.41	7.44	88
HYBRIFORCE-2400*	5.48	5.92	8.17	10.10	7.38	77
4S417*	5.23	6.53	8.26	9.62	7.31	75
PROLIFIC II	5.77	6.20	8.14	9.18	7.30	78
54Q32	5.92	6.18	8.11	9.06	7.25	77
NY0465	5.21	6.09	8.17	9.53	7.20	84
REBOUND 5.0	5.65	5.91	8.21	9.17	7.11	81
HYBRIFORCE-2420/WET*	5.53	5.77	7.58	9.67	7.09	80
ONEIDA VR	5.38	5.90	7.89	9.38	7.03	81
EVERLAST II	5.26	5.88	7.66	9.27	6.95	76
FSG 406	5.46	6.03	7.83	8.64	6.91	76
CORNERSTONE	5.57	5.97	7.66	8.72	6.87	74
5312	5.17	5.75	7.94	8.72	6.75	85
AMERSTAND 403T PLUS	5.32	5.91	7.25	8.29	6.72	85
44H372	5.11	5.54	6.96	8.19	6.37	71
POUNCE	5.07	5.36	6.91	7.97	6.27	77
FSG 420LH	4.61	5.39	6.95	8.04	6.17	73
VERNAL	4.31	4.83	6.60	7.78	5.81	84
GRAND MEAN	5.57	6.13	8.08	9.38	7.22	81
CV (%)	15.71	20.81	13.03	13.00	15.01	5.83
LSD (p = 0.05)	1.21	1.78	1.48	1.71	1.51	6.64

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation

LSD = least significant difference

- Seeded April 24, 2009.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 44 total entries.
- Entries are ranked in order of decreasing yield based on the three year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple-year totals may not be the arithmetic sum of individual cuts or years, respectively.

The tables in this report may be reproduced only in their entirety.

Table 6. 2010 alfalfa variety trial—Landisville.

Variety	2013 Yield	2012 Yield	2011 Yield	Three-year Average	Stand 10/19/13
4030*	6.92	8.56	10.24	8.60	85
WL 363 HQ	6.75	7.89	9.96	8.25	80
DG 4210*	6.90	7.89	9.64	8.22	80
MILESTONE II	6.74	7.34	9.93	8.08	83
PILLAR	6.21	7.30	9.62	7.80	81
HYBRIFORCE-2400	6.47	7.41	9.23	7.73	84
PROFUSION-HX	6.50	7.45	8.95	7.68	85
5312	5.94	7.22	9.76	7.65	81
PHIRST EXTRA	6.00	7.54	9.37	7.64	84
PLUSS II	6.35	6.91	9.12	7.53	86
EZRA	5.81	7.23	9.32	7.48	87
WL 343 HQ	6.28	7.12	8.71	7.34	82
HYBRIFORCE-2420	6.37	6.86	8.29	7.19	84
NY0947	5.83	6.92	8.90	7.17	84
6417	6.25	6.84	8.30	7.14	79
4S417	5.91	6.75	8.78	7.14	88
6305Q	6.19	6.66	8.41	7.08	80
4A415	5.72	6.69	8.14	6.84	84
ONEIDA VR	5.22	6.13	8.38	6.49	83
VERNAL	4.55	5.38	7.99	5.92	71
GRAND MEAN	6.07	7.03	8.99	7.39	82
CV (%)	38.04	13.32	11.93	11.41	4.2
LSD (p = 0.05)	0.25	1.33	1.51	1.19	4.8

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation

LSD = least significant difference

- Seeded April 20, 2010.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 26 total entries.
- Entries are ranked in order of decreasing yield based on the three-year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple-year totals may not be the arithmetic sum of individual cuts or years, respectively.

The tables in this report may be reproduced only in their entirety.

Table 7. 2011 alfalfa trial—Landisville.

Variety	2013 Yield	2012 Yield	Two-year Average	Stand 10/19/13
HybriForce-3400*	7.77	8.39	8.08	95
Seneca*	7.58	8.49	8.04	95
FSG 329*	7.55	8.40	7.97	94
Archer III*	7.62	7.94	7.78	95
WL 354 HQ	7.70	7.33	7.50	94
Gunner*	6.66	8.11	7.38	95
AmeriStand 407TQ*	7.42	7.36	7.37	92
Profilic II*	6.68	8.15	7.35	93
Hybri+Jade*	7.05	7.58	7.30	95
Pluss II*	7.14	7.35	7.22	94
DKA 34-17 RR	6.72	7.50	7.08	93
Persist II	6.78	7.44	7.07	95
DKA 41-18 RR	6.53	7.27	6.89	91
Vernal	6.15	7.45	6.80	83
N-R-GEE	6.22	7.13	6.63	92
Oneida VR	6.08	6.79	6.38	93
GRAND MEAN	6.98	7.67	7.30	93
CV (%)	15.11	13.21	13.26	2.50
LSD (p = 0.05)	1.48	1.44	1.36	3.28

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation
LSD = least significant difference

- Seeded May 10, 2011.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 28 total entries.
- Entries are ranked in order of decreasing yield based on the three-year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple-year totals may not be the arithmetic sum of individual cuts or years, respectively.

The tables in this report may be reproduced only in their entirety.

Table 8 2012 alfalfa variety trials—Landisville.

Variety	2013 Yield	Stand 10/19/13
Hybriforce-3400*	7.02	98
Persist III*	6.91	95
Hybriforce-3400 QR*	6.88	95
Crave*	6.77	97
Gemstone*	6.51	97
Legacy 449 Aph 2	6.45	97
DKA 41-18 RR	6.01	97
5312	6.00	95
FSG 505	5.71	96
DKA 34-17 RR	5.57	96
Oneida VR	5.32	97
Vernal	5.12	96
GRAND MEAN	6.19	96
CV (%)	17.25	2.24
LSD (p = 0.05)	1.52	3.00

*Variety tested with experimental seed that may or may not give performance similar to commercially available seed.

CV = coefficient of variation
LSD = least significant difference

- Seeded April 5, 2012.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 24 total entries.
- Entries are ranked in order of decreasing yield based on the three-year average.
- Means are LSMEANS derived from statistical analysis. Therefore, season or multiple-year totals may not be the arithmetic sum of individual cuts or years, respectively.

COOL-SEASON GRASSES

Table 9 and Table 12 lists cool-season grass varieties in our testing program that are currently marketed in Pennsylvania. Tables 10, 11, and 13 through 16 offer guidelines for assessing the production potential of various grass varieties.

Perennial Cool-Season Trial

Many farmers in Pennsylvania could benefit from including some cool-season grasses as an integral part of their forage program. The following tables summarize the yield potential of many perennial grass varieties in our research trials at Penn State's Russell E. Larson Research Center at Rock Springs.

Our soil fertility program is designed around maintenance applications of phosphorus and potash to meet the soil test requirements. Seventy pounds of available nitrogen is applied in early April with an additional 50 pounds applied after each harvest except the last one.

The first cutting in the perennial cool-season forage grass trials is made when an individual variety reaches mid- to late boot. Subsequent harvests are then made at intervals of 35 to 40 days, with the exception of the final harvest, when all plots are harvested on the same day. All plots are harvested four times throughout the growing season, weather permitting, except in the establishment year.

Although production for each cutting in a given year varies among species, most varieties produce one-third to one-half of the total annual production in the first cut. Yields are not greatly reduced if a three-cut system is used. Quality will be increased by early and frequent cutting. Choose a species that fits the farm's capabilities and the operator's management scheme.

The tables in this report may be reproduced only in their entirety.

Table 9. Cool-season grass varieties marketed in Pennsylvania and listed in this report.

Species/Variety	Ploidy/Species	Marketer^a	Appears in Table No.
Bromegrass			
Hakari	Brome, Alaska	DLF International Seeds	10
Saratoga	Brome, Smooth	Public	10
Fescue			
BarElite	Fescue, Tall	King's AgriSeeds	10
Flourish	Fescue, Tall	Seedway	11
Kentucky 31 E+	Fescue, Tall	Public	10,11
Kentucky 31 E-	Fescue, Tall	Public	10,11
Kentucky 32	Fescue, Tall	Oregro Seed, Inc.	10
Pradel	Fescue	Public	10
Festulolium			
Spring Green	Festulolium	Public	10
Sweet Tart	Festulolium	Public	10
Orchardgrass			
Dividend VL			11
Pennlate		P.L. Rohrer	11
Potomac		P.L. Rohrer	11
Tucker		Oregro	11
Ryegrass			
Boost	Tetraploid Perennial	Oregro Seed, Inc.	10
Calibra	Tetraploid Perennial	DLF	10,11
Elena DS	Tetraploid Perennial	Allied Seed	11
Linn	Diploid Perennial	Public	10,11
Polim	Tetraploid Perennial	DLF International Seeds	10
Quartermaster			11
Verseka			11
Timothy			
Tuuka		P.L. Rohrer	10

a. Forage grass marketers listed in this report—location, phone number, and website:

DLF International Seeds

Halsey, OR 97348
 Phone: 800-445-2251
 Web: www.intlseed.com

Pennington Seed

Madison, GA 30650
 Phone: 800-285-7333
 Web: www.penningtonseed.com

King's AgriSeeds

Ronks, PA 17572
 Phone: 717-687-6224
 Web: www.kingsagriseeds.com

P.L. Rohrer & Bro. Inc.

Smoketown, PA 17576
 Phone: 717-299-2571
 Web: www.rohrerseeds.com

Oregro Seeds Inc.

Albany, OR 97322
 Phone: 541-258-1001
 Web: www.oregroseeds.com

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Table 10. 2010 cool-season grass variety trial—Rock Springs.

Variety	Ploidy/Species	First Cut Date ^a	2013 Yield	2012 Yield	2011 Yield	Three-year Yield	Three-year average	Stand 10/25/13	30-hr NDFd
Orchardgrass									
	Echelon	5/24	7.14	5.77	5.42	18.33	6.11	71	69.3
	Dividend VL	5/24	6.61	6.03	5.10	17.74	5.91	78	69.9
	Barlego	5/24	6.71	5.32	5.07	17.11	5.70	81	73.9
	RAD-LGF25	5/24	6.24	5.26	5.57	17.07	5.69	63	71.3
	Pennlate	5/16	5.09	5.67	5.06	15.81	5.27	61	75.5
	Potomac	5/16	4.68	5.21	5.69	15.58	5.19	79	76.9
	Tucker	5/16	4.64	4.68	4.99	14.31	4.77	73	75.8
	GRAND MEAN		5.73	5.28	5.24	16.24	5.41	73	72.9
	CV %		13.50	8.80	8.76	9.56	9.56	21	
	LSD (p = 0.05)		1.14	0.89	0.64	1.95	0.65	10	
Ryegrass									
	Boost	5/29	3.30	3.91	3.91	11.12	3.71	86	70.7
	Calibra	6/3	2.97	3.74	3.64	10.35	3.45	84	74.0
	Polim	6/3	2.74	3.72	3.86	10.33	3.44	84	73.0
	Linn	5/24	3.43	2.77	2.71	8.91	2.97	86	74.1
	GRAND MEAN		2.93	3.36	3.56	9.84	3.28	84	72.2
	CV %		19.00	12.40	10.52	18.77	18.77	9	
	LSD (p = 0.05)		0.83	0.76	0.54	1.41	0.89	11	
Tall Fescue									
	KY 31 E+	5/10	6.16	6.86	6.51	92.8	49.6		
	KY 31 E+	5/24	8.23	6.16	6.86	21.25	7.08	91	61.4
	IS-FTF 48	5/29	6.52	6.85	7.08	20.45	6.82	86	72.1
	KY 31 E-	5/24	8.14	5.28	5.97	19.39	6.46	88	61.3
	Kentucky 32	5/29	5.44	6.13	6.27	17.84	5.95	83	66.7
	BarElite	5/29	3.98	5.51	5.88	15.37	5.12	88	63.2
	GRAND MEAN		6.52	5.67	6.10	18.29	6.10	87	63.9
	CV %		15.50	13.60	34.87	22.61	22.60	7	
	LSD (p = 0.05)		1.47	1.16	2.98	2.20	0.73	8	
Brome									
	Hakari	6/3	3.41	4.31	4.53	12.24	4.08	83	62.4
	BARPAL 16	5/29	3.19	4.16	2.55	9.90	3.30	38	66.2
	GRAND MEAN		4.69	3.69	3.69	12.53	4.18	64	64.1
	CV %		17.40	10.50	10.53	14.60	14.60	23	
	LSD (p = 0.05)		1.30	0.54	0.54	1.90	0.65	34	
Other									
	Pradel	5/17	4.32	4.15	4.24	92.8	48.3		
	Pradel	5/29	4.72	4.32	4.15	13.20	4.40	69	66.9
	Climax	5/24	5.28	3.57	3.78	12.63	4.21	85	69.7
	Spring Green	5/29	3.04	4.24	3.90	11.17	3.72	86	75.2
	Sweet Tart	5/29	3.29	2.96	2.96	9.21	3.07	63	69.4
	GRAND MEAN		4.12	3.77	3.70	11.55	3.85	76	70.3
	CV %		16.10	12.50	10.52	18.56	18.56	31	
	LSD (p = 0.05)		1.28	1.11	0.54	2.30	1.03	12	

a. Refers to the date when the first cutting was made in 2013. First cutting was made at late boot to early heading.

CV = coefficient of variation; LSD = least significant difference

- Seeded April 21, 2010.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Grand Mean, CV, and LSD values represent 34 total entries.
- Variety means are means derived from LSM means.

The tables in this report may be reproduced only in their entirety.

Table 11. 2012 cool-season grass variety trial—Rock Springs.

Variety	1st Cut Date ^a	2013 Total	Stand 10/25/13	30-hr NDFd
Orchardgrass				
Excellate SA	5/24	6.70	93	66.5
Potomac	5/16	5.60	94	74.1
GRAND MEAN		6.15	93	70.3
CV %		12.60	2	
LSD (p = 0.05)		0.74	ns	
Ryegrass				
Linn	5/24	4.22	95	71.4
Calibra	6/3	3.08	84	67.7
Elena DS	5/29	3.05	95	72.1
Quartmaster	5/29	3.03	90	64.3
Verseka	6/3	2.48	97	63.0
GRAND MEAN		3.17	92	67.7
CV %		16.60	4	
LSD (p = 0.05)		0.81	6	
Tall Fescue				
Kentucky 31 E+	5/24	8.35	91	63.7
Kentucky 31 E-	5/24	8.22	95	65.4
Flourish	5/24	7.65	93	65.4
GRAND MEAN		8.07	93	64.8
CV %		6.38	2	
LSD (p = 0.05)		0.39	3	

a. Refers to the date when the first cutting was made in 2012. First cutting was made at late boot to early heading.

CV = coefficient of variation; LSD = least significant difference

- Seeded April 13, 2012.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of four cuttings.
- Grand Mean, CV, and LSD values represent 10 total entries.
- Variety means are means derived from LSM means.

2012–2013 Short-Lived Cool-Season Grass Trial

In the fall 2012, a Short-Lived Cool-Season Grass Trial was seeded at Rock Springs. The trial was planted on September 24, 2012. There were two different management treatments: a single-cut system and a multi-cut system. The cereal grasses were cut using the single-cut system and the annual ryegrasses were cut multiple times. With the multi-cut system, grasses were cut about every three weeks and the plots were cut three different times based on maturity. Cuttings of individual varieties took place when a variety reached late boot stage. First

cutting started on May 2 and concluded on May 16, second cutting concluded on May 22, and third cutting concluded on June 6.

Our soil fertility program is designed around maintenance applications of phosphorus and potash to meet the soil test requirements. Plots will receive 30 units in the fall, 100 units of nitrogen at green-up in the spring, and for the multi-cut system, 50 units after each cutting.

See the current *Penn State Agronomy Guide* for specific recommendations about establishment, fertilization, and other management considerations.

The tables in this report may be reproduced only in their entirety.

Table 12. Short-Lived grass varieties marketed in Pennsylvania and listed in this report.

Species/Variety	Ploidy/Species	Marketer ^a	Appears in Table
Annual Ryegrass			
Bardelta	Italian Ryegrass	Barenbrug	13,14
Barelli	Italian Ryegrass	Barenbrug	13,14
Barherta	Italian Ryegrass	Barenbrug	13,14
Barprisma	Italian Ryegrass	Barenbrug	13,14
Barmultra II	Italian Ryegrass	Barenbrug	13
DH-3	Annual Ryegrass	Allied Seeds	13
Fox	Italian Ryegrass	DLF	13
Fria	Annual Ryegrass	Allied Seeds	13
Hercules	Annual Ryegrass	Barenbrug	13,14
Jackson	Annual Ryegrass	Wax Seed Company	13
KB Royal	Annual Ryegrass	King's Agriseed	13
Marshall	Annual Ryegrass	King's Agriseed	13,14
ME-94	Annual Ryegrass	Wax Seed Company	13
Mo-1	Annual Ryegrass	King's Agriseed	13
Nelsin	Annual ryegrass	Wax Seed Company	13
KB Supreme	Annual Ryegrass	KB Seed Solutions	13
Tillage RootMax	Annual Ryegrass	Cover Crop Solutions	13
Cereals			
Aroostook	Rye	Check	15
Huron (type)	Rye	King's Agriseed	15
Fridge	Triticale	Cover Crop Solutions	15
Malabar	Wheat	King's Agriseed	15
ThunderCal	Triticale	Seedway	15
Trical 141	Triticale	Syngenta	15
Tical 336	Triticale	Syngenta	15
Trical 815	Triticale	Syngenta	15
Valor	Barley	King's Agriseed	15
Mixes			
Bristol	Rootmax	Cover Crop Solutions	16
Broadcaster	Ryegrass/Clover	King's Agriseed	16
Charlotte	Fridge/Rad/Crim	Cover Crop Solutions	16
Holtwood	Ryegrass/Clover	Cover Crop Solutions	16
Indy Blend	Rmax/Crim C/Radish	Cover Crop Solutions	16
Pocono	Fridge/Rmax/Rad/Crim	Cover Crop Solutions	16
Production Builder	Italian Ryegrass/Clovers	King's Agriseed	16
Telledega	Fridge/Radish	Cover Crop Solutions	16
Triticale plus	Triticale (815@66%+33% ARG)	King's Agriseed	16
Wheat Plus	Wheat/Ryegrass	King's Agriseed	16

^aForage grass marketers listed in this report— location, phone number, and website:

Allied Seed, LLC

Macon, MO 63552
Phone: 800-880-8127
Web: www.alliedseed.com

Barenbrug USA

36030 Tennessee Road
Albany, OR 97321
Web: www.barenbrug.com

Cover Crop Solutions

509 West Penn Ave., Suite 10
Robesonia, PA 19551
1-800-767-9441
Web: www.covercropsolutions.com

DLF International Seeds

Halsey, OR 97348
Phone: 800-445-2251
Web: www.intlseed.com

KB Seed Solutions

25432 Rowland Road
Harrisburg, OR 97446
Phone: 866-716-7333
Web: www.kbseedsolutions.com

King's AgriSeeds

Ronks, PA 17572
Phone: 717-687-6224
Web: www.kingsagriseeds.com

Seedway

275 North Eighth Street
Mifflinburg, PA 17844
Phone: 800-338-2137
Fax: 570-966-9413
Web: www.seedway.com

Syngenta

PO Box 18300
Greensboro, NC 27419.
Phone: 1-866-796-4368
Web: www.Syngenta.com

Wax Seed Company

212 Front St. N.
Amory, MS 38821

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Table 13. Annual ryegrass—multiple cut.

Variety	Species	Harvest Dates	DM Yield (tons/acre)				Spring Stand	First Cut Analysis	
			Cut 1	Cut 2	Cut 3	Total		CP (%)	30-hr NDFd
Rootmax	Ryegrass	5/2, 5/22, 6/12	0.97	3.13	0.65	4.75	95	28.5	84.9
KB Supreme	Ryegrass	5/2, 5/22, 6/12	0.94	2.89	0.77	4.60	95	28.2	81.3
Fox	Italian	5/2, 5/22, 6/12	0.88	2.76	0.94	4.58	95	28.6	79.3
MO-1	Ryegrass	5/2, 5/22, 6/12	1.12	2.73	0.73	4.58	96	26.1	83.1
Barelli	Italian	5/2, 5/22, 6/12	0.85	2.91	0.76	4.52	97	27.9	79.8
Barherta	Italian	5/2, 5/22, 6/12	0.86	2.71	0.94	4.51	97	27.8	81.4
Fria	Ryegrass	5/2, 5/22, 6/12	1.06	2.66	0.75	4.47	96	27.2	82.9
Barmultra II	Italian	5/2, 5/22, 6/12	0.91	2.56	0.95	4.42	90	28.2	80.1
Bardelta	Italian	5/2, 5/22, 6/12	0.81	2.50	1.02	4.33	93	28.7	76.5
ME-94	Ryegrass	5/2, 5/22, 6/12	1.01	2.48	0.83	4.32	90	28.8	79.9
Nelsin	Ryegrass	5/2, 5/22, 6/12	0.67	2.73	0.74	4.14	76	29.2	79.7
Barprisma	Italian	5/2, 5/22, 6/12	0.78	2.48	0.86	4.12	93	28.0	79.4
Hercules	Ryegrass	5/2, 5/22, 6/12	0.64	2.40	0.91	3.95	83	29.7	77.8
DH-3	Ryegrass	5/2, 5/22, 6/12	0.81	2.35	0.69	3.85	86	27.2	80.0
Marshall	Ryegrass	5/2, 5/22, 6/12	1.04	1.97	0.68	3.69	94	26.1	80.2
KB Royal	Ryegrass	5/2, 5/22, 6/12	0.77	2.13	0.70	3.61	90	27.6	79.1
Jackson	Ryegrass	5/2, 5/22, 6/12	0.71	2.03	0.78	3.52	87	28.7	77.7
MEAN			0.91	2.61	0.81	4.33	92	28.0	80.2
LSD (0.05)			0.21	0.41	0.25	0.52	5.6		
CV (%)			15.8	11.3	21.2	8.7	5.8		

CV = coefficient of variation

LSD = least significant difference

- Planted September 24, 2012.
- Yields (tons per acre DM Basis).
- Total yields indicated represent the sum of three cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 17 total entries.
- Means are LSMEANS derived from statistical analysis.
- Rankings are based on the total yields.

The tables in this report may be reproduced only in their entirety.

Table 14. Annual ryegrass—single cut.

Variety	Species	DM Yield (tons/acre)		First Cut Analysis	
		Total	Spring Stand	CP (%)	30-hr NDFd
Barprisma	Italian	1.77	95	18.9	75.5
Barelli	Italian	1.73	96	18.5	76.2
Marshall	Ryegrass	1.73	95	17.5	73.8
Barherta	Italian	1.59	95	19.8	77.1
Bardelta	Italian	1.50	92	16.9	74.5
Hercules	Ryegrass	1.50	81	21.5	75.9
MEAN		1.66	93	18.9	75.5
LSD (0.05)		0.18	7.5		
CV (%)		7.3	5.4		

CV = coefficient of variation

LSD = least significant difference

- Planted September 24, 2012.
- Yields (tons per acre DM Basis).
- Stand score based on a scale from 1 to 100.
A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 6 total entries.
- Means are LSMEANS derived from statistical analysis.
- Rankings are based on the total yields.

The tables in this report may be reproduced only in their entirety.

Table 15. Short-lived cereals forage trial.

Variety	Species	Harvest Dates	DM Yield (tons/acre)		First Cut Analysis	
			Total	Spring Stand	CP (%)	30-hr NDFd
Huron (type)	Rye	5/16	3.07	95	21.3	80.6
Trical 141	Triticale	5/16	2.98	97	14.1	75.9
Trical 815	Triticale	5/16	2.90	97	18.0	79.8
Trical 336	Triticale	5/16	2.82	96	16.4	75.4
Fridge	Triticale	5/16	2.64	94	16.6	78.8
Thunder Cal	Triticale	5/16	2.56	98	15.0	71.3
Valor	Barley	5/13	2.50	94	17.1	70.0
Aroostock	Rye	5/2	2.42	97	22.0	76.5
Malabar	Wheat	5/13	2.00	97	14.1	70.8
MEAN			2.69	96	16.8	74.6
LSD (0.05)			0.28	5.8		
CV (%)			7.20	4.3		

CV = coefficient of variation

LSD = least significant difference

- Planted September 24, 2012.
- Yields (tons per acre DM Basis).
- Stand score based on a scale from 1 to 100.
A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 10 total entries.
- Means are LSMEANS derived from statistical analysis.
- Rankings are based on the total yields.

The tables in this report may be reproduced only in their entirety.

Table 16. Short-season forage mixes trial.

Variety	Species	Harvest Dates	DM Yield (tons/acre)				Spring Stand	First Cut Analysis	
			Cut 1	Cut 2	Cut 3	Total		CP (%)	30-hr NDFd
Mixes									
Pocono	Fridge/Rmax/ Rad/Crim C	5/2, 5/22, 6/12	0.78	3.11	0.61	4.50	85	28.8	84.5
Indy	Rmax/Crim C/Radish	5/2, 5/22, 6/12	0.75	3.08	0.67	4.50	94	28.5	82.2
Bristol	Rmax/Radish	5/2, 5/22, 6/12	0.83	2.90	0.76	4.49	97	29.1	81.1
Tritical/ Green Sprit	Triticale/Ryegrass	5/2, 5/22, 6/12	1.31	2.06	0.92	4.30	98	27.0	81.8
Tritical Plus	Triticale (815@66%+33% ARG)	5/2, 5/22, 6/12	1.58	1.66	0.93	4.18	98	24.0	79.4
Broadcaster	Ryegrass/clover	5/2, 5/22, 6/12	0.85	2.35	0.70	3.90	93	28.8	78.3
Wheat plus	Wheat/Ryegrass	5/2, 5/22, 6/12	1.13	1.73	0.76	3.61	98	26.5	80.3
Holtwood	Ryegrass/Clover	5/2, 5/22, 6/12	0.93	2.07	0.45	3.44	84	30.1	86.1
Production									
Builder	Ryegrass/Clover	5/2, 5/22, 6/12	0.80	1.35	0.85	3.00	91	29.9	83.5
Telledega	Fridge/Radish	5/16	2.68			2.68	89	17.4	76.8
Charlotte	Fridge/Rad/Crim	5/16	2.08			2.08	90	16.4	81.7
MEAN			1.25	2.26	0.74	3.70	92	26.0	81.4
LSD (0.05)			0.38	0.31	0.15	0.29	4.5		
CV (%)			27.50	30.10	25.20	17.4	4.6		

CV = coefficient of variation

LSD = least significant difference

- Planted September 24, 2012.
- Yields (tons per acre DM Basis).
- Yields indicated represent the sum of three cuttings.
- Stand score based on a scale from 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 10 total entries.
- Means are LSMEANS derived from statistical analysis.
- Rankings are based on the total yields.



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Extension

2013 FORAGE TRIALS REPORT

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An **OUTREACH** program of the College of Agricultural Sciences

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

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Produced by Ag Communications and Marketing

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Code UC068 7.5C12/13