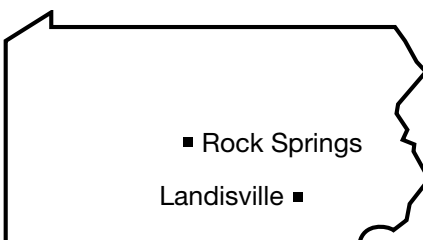


2015 FORAGE TRIALS REPORT

SUMMARY

The *2015 Forage Trials Report* summarizes performance data collected from ongoing forage trials at two sites in Pennsylvania. The report includes data from alfalfa and cool-season (forage) 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 2015

Early spring was unusually wet and cool. Then May saw three weeks of no rain and abnormally high temperatures, which was great for forage harvesting. However, if first-cut forage wasn't harvested during that window, then it was difficult to find a dry period during late May through July. While the wet weather produced large yields, it was difficult to harvest on time. Then, in August, some areas of the state saw dry weather and reduced yields, while other areas continued to receive adequate rainfall. Weather during September and October was ideal for the forages to prepare for winter.

Alfalfa weevil populations were generally low with few localized outbreaks. Potato leafhopper infestations were average 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 orchardgrass continue to be a problem.

Criteria for Reporting Varieties

Many varieties listed in this report are

eligible for certification by seed-certifying agencies and marketed in Pennsylvania (see Tables 1, 10, and 14). Some entries are experimental and may or may not be marketed in the future. 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 9, and 11 through 18. Although the trials contain up to 40 total entries, many of these are advanced experimental varieties or 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. 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, a visual estimation of the amount of groundcover, is given after harvest in the fall and 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 per 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. 2015 Precipitation at Rock Springs

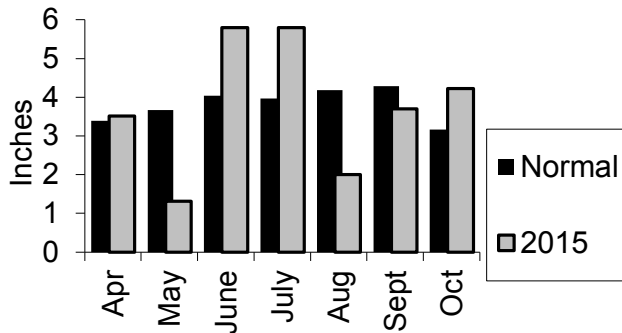


Figure 2. 2015 Precipitation at Landisville

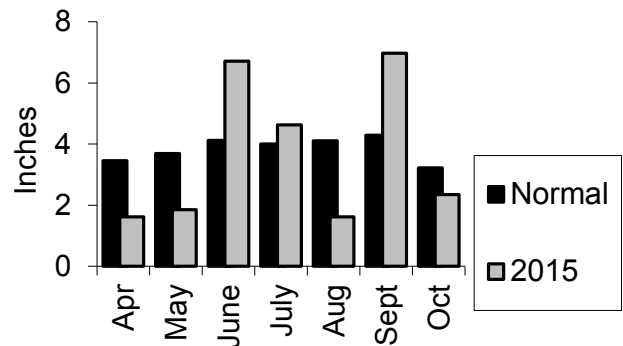


Figure 3. 2014 Precipitation at Rock Springs

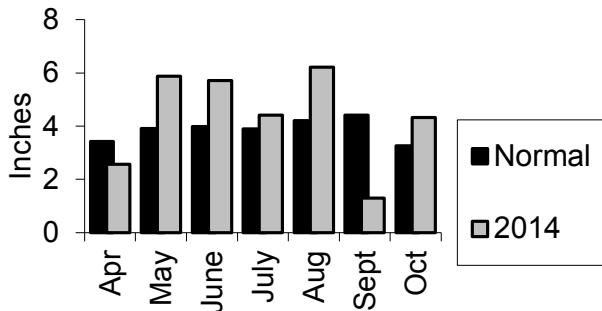


Figure 4. 2014 Precipitation at Landisville

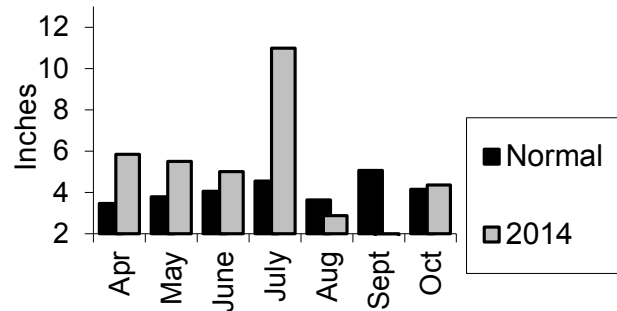


Figure 5. 2013 Precipitation at Rock Springs

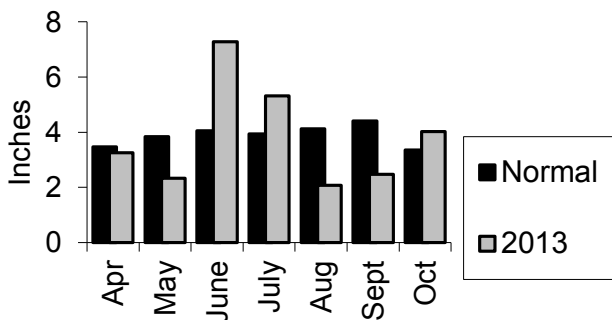


Figure 6. 2013 Precipitation at Landisville

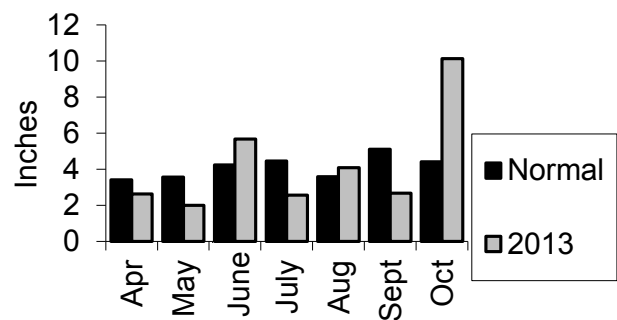


Figure 7. 2012 Precipitation at Rock Springs

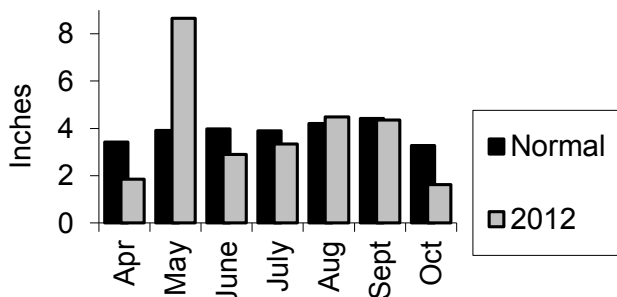
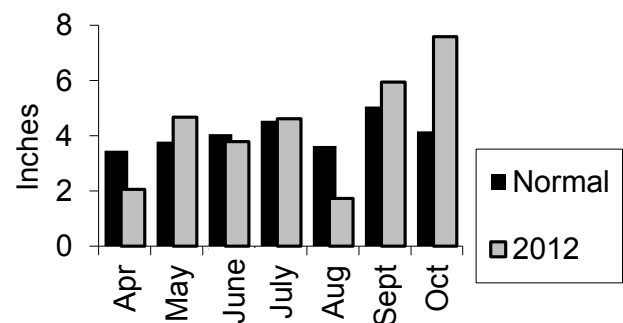


Figure 8. 2012 Precipitation at Landisville



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 1 (very dormant) to 9 (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 show 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 since 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	Fall Dormancy	Pest Resistance Ratings						Appears in Table No.
			BW	VW	FW	AN	PRR	APH1	
54QR04	Pioneer Hi-Bred	4	HR	HR	HR	HR	HR	HR	5,9
55H94	Pioneer Hi-Bred	5	HR	HR	HR	HR	HR	HR	4,8
55Q27	Pioneer Hi-Bred	5	HR	HR	HR	HR	HR	HR	4,5,8,9
55V50	Pioneer Hi-Bred	5	HR	HR	R	HR	HR	HR	4,5,8,9
6417	Garst/Syngenta	4	HR	HR	HR	HR	HR	HR	2,6
6585Q	NEXGROW	5	HR	HR	HR	HR	HR	HR	5
428RR	Seedway	4	HR	HR	HR	HR	HR	HR	5,9
4030	Prefered 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	2,6
6305Q	Garst/Syngenta	3	HR	HR	HR	HR	HR	HR	2,6
AmeriStand 407TQ	P.L. Rohrer	4	HR	HR	HR	HR	HR	HR	2,6
Archer III	P.L. Rohrer	5	HR	HR	HR	HR	HR	HR	2,6
Crave	T.A Seed	4	HR	HR	HR	HR	HR	HR	3,7
DG 4210	Crop Production Services	4	HR	HR	HR	HR	HR	HR	2,4,6,8
DKA 34-17 RR	Dekalb	4	HR	HR	HR	HR	HR	HR	3,4,7,8
DKA 41-18 RR	Dekalb	4	HR	HR	HR	HR	HR	HR	2,4,5,6,7,8,9
Ezra	Seedway	3	R	R	HR	HR	HR	HR	2,6
FSG 329	Seedway	4	HR	HR	HR	HR	HR	HR	2,6
FSG 403 LR	Seedway	4	HR	HR	R	HR	HR	HR	3,8
FSG 408 DP	Seedway	4	HR	R	HR	HR	HR	HR	4,8
FSG 424	Seedway	4	HR	HR	HR	HR	HR	HR	4,8
FSG 505	Seedway	5	HR	HR	HR	HR	HR	HR	3,7
FSG 524	Seedway	5	HR	HR	HR	HR	HR	HR	4,8
GA-535	Merit Seed	5	HR	HR	HR	HR	HR	HR	4,8
Gemstone	Chemgro	4	HR	HR	HR	HR	HR	HR	3,7
Gunner	Cropland	5	HR	HR	HR	HR	HR	HR	2,6
Hybri+Jade	Channel	4	HR	HR	HR	HR	HR	HR	2,6
HybriForce-2400	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	2,6
HybriForce-2420	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	2,6
HybriForce-3400	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	6,7
Hybriforce-3400 QR	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	8
L 455HD	Legacy Seeds	4	HR	HR	HR	HR	HR	HR	4,8
Legacy 449 Aph 2	Legacy Seeds	4	HR	HR	HR	HR	HR	HR	3,7
Magnitude	FS Seed	4	HR	HR	HR	HR	HR	HR	3,8
Magnum 7	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	3
Magnum 7-Wet	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	3
Mariner IV	FS Seed	4	HR	HR	HR	HR	HR	HR	2,4,5
Milestone II	Chemgro	4	HR	HR	HR	HR	HR	HR	2,6
N-R-GEE	Seedway	4	HR	HR	HR	R	R	—	2,6

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

Variety	Marketer	Fall Dormancy	Pest Resistance Ratings						Appears in Table No.
			BW	VW	FW	AN	PRR	APH1	
Oneida VR	Public	3	R	HR	HR	MR	MR	—	2,3,4,6,7,8,9
Persist II	Doebler's	4	HR	HR	HR	HR	HR	HR	2,6
Persist III	Doebler's	4	HR	HR	HR	HR	HR	HR	2,3,5,7,9
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	2,6
Profilic II	Doebler's	4	HR	HR	HR	HR	HR	HR	2,6
Profusion-HX	King's AgriSeed	4	HR	HR	HR	HR	HR	HR	6
Red Falcon BR	Blue River Hybrids	4	HR	HR	HR	HR	HR	HR	2
ReNew	FS Seed	4	HR	HR	HR	HR	HR	HR	2
Secure-BR	King's AgriSeed	4	HR	HR	HR	HR	HR	HR	2
Seneca	R. M. Seed	4	HR	HR	HR	HR	HR	HR	2,6
Shockwave B	Brett Young Seeds	4	HR	HR	HR	HR	HR	HR	2,3
Stockpile	Dairyland Seed Co.	4	HR	HR	HR	HR	HR	HR	7
Vernal	Public	4	R	S	MR	S	S	S	2,3,4,6,7,8,9
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	2,6
WL 363 HQ	WL Alfalfas	4	HR	HR	HR	HR	HR	HR	2,6

Alfalfa Marketers Listed in this Report

DogVenture, Inc.

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

Doebler's

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

P. L. Rohrer & Bro., Inc.

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

Allied Seed, LLC

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

Growmark FS

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

Pioneer Hi-Bred Int'l, Inc.

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

Brett-Young Seeds

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

Hytest Seeds

Dover, PA 17315
Phone: 717-870-0351

Preferred Seed Company

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

Chemgro Seeds

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

King's AgriSeeds

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

Producer's Choice

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

Channel Seed

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

Mid Atlantic Seeds

York, PA 17403
Phone: 717-852-8894

Seedway

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

Crop Production Services

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

Mycogen Seeds

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

Syngenta Seeds

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

Dairyland Seed Company

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

NEXGROW Alfalfa Seeds

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

T.A. Seeds

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

Dekalb

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

NuTech Seed

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

Winfield Solutions

Dover, PA
Phone: 717-870-0351

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Table 2. 2011 alfalfa variety trial—Rock Springs.

Variety	2015 Yield	2014 Yield	2013 Yield	2012 Yield	Four-year Average	Stand 9/21/2015
AlfaFour Supreme*	9.19	8.26	7.06	7.28	7.95	83
Secure-BR*	8.70	7.47	6.97	7.01	7.53	84
WL 354 HQ	9.30	7.36	6.44	6.66	7.44	85
Persist III*	8.13	7.33	6.76	7.28	7.37	84
DG 4210	8.70	7.59	6.76	6.21	7.32	85
Profilic II*	8.57	7.16	6.51	6.80	7.26	84
Archer III	9.44	6.90	6.28	6.23	7.21	83
LS 803	8.77	6.87	6.38	6.54	7.14	83
Pluss II*	8.79	7.21	6.26	6.20	7.12	86
Gunner	8.81	7.03	5.96	6.26	7.01	85
Seneca*	7.57	6.87	6.58	7.04	7.01	83
Hybri+Jade*	8.04	6.91	6.47	6.44	6.97	83
ReNew*	8.16	6.87	6.55	6.18	6.94	83
AmeriStand 407TQ	8.59	6.63	6.16	6.11	6.87	84
Shockwave-BR*	7.62	6.94	6.46	6.33	6.84	85
FSG 329	8.02	6.56	6.21	6.39	6.80	84
DKA 41-18 RR	8.14	6.61	6.09	5.87	6.68	84
TS 4013	7.73	6.69	6.04	6.19	6.66	84
DKA 34-17 RR	7.95	6.51	6.02	6.16	6.66	84
Persist II	7.65	6.52	6.02	6.22	6.60	83
5312	6.15	5.72	5.69	6.34	5.97	84
Oneida VR	6.59	5.59	5.59	5.99	5.94	83
N-R-GEE	6.46	5.32	5.35	5.63	5.69	83
Vernal	5.00	4.79	4.87	5.33	5.00	82
GRAND MEAN	8.05	7.51	6.25	6.42	6.87	84
CV (%)	18.37	17.21	18.09	15.85	16.98	2.51
LSD (p = 0.05)	2.07	1.86	1.58	1.42	1.63	2.94

*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 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 four-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. 2012 alfalfa variety trial—Rock Springs.

Variety	2015 Yield	2014 Yield	2013 Yield	Three-year Average	Stand
Gemstone*	12.21	9.75	7.05	9.67	85
Persist III*	11.32	9.50	7.54	9.46	85
Magnitude*	10.92	8.91	6.90	8.91	84
Magnum 7*	9.92	8.54	6.93	8.47	84
DKA 41-18 RR	10.09	8.31	6.71	8.37	83
Crave*	9.58	8.22	7.16	8.32	84
Magnum 7-wet	10.11	8.41	6.26	8.26	84
Mariner IV	9.40	8.17	6.85	8.14	84
Shockwave-BR	9.68	7.89	6.54	8.04	84
DKA 34-17 RR	10.17	7.69	6.21	8.02	84
FSG 505	9.56	7.66	6.27	7.83	83
Legacy 449 Aph 2	8.68	7.48	6.35	7.50	84
5312	7.20	6.87	5.79	6.62	83
Oneida VR	7.69	6.50	5.53	6.57	82
Vernal	7.88	6.62	5.22	6.57	83
GRAND MEAN	9.87	9.08	6.64	8.24	84
CV (%)	7.84	8.33	7.76	7.01	1.78
LSD (p = 0.05)	1.08	1.06	0.72	0.81	2.10

*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 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 4. 2013 alfalfa variety trial—Rock Springs.

Variety	2015 Yield	2014 Yield	Two-year Average	Stand 9/19/2015
55Q27	11.32	9.11	10.21	87
55V50	10.62	9.33	9.97	87
FSG 524	10.72	9.15	9.94	88
428RR	10.39	8.90	9.65	91
6585Q	10.32	8.86	9.59	90
DG 4210	10.52	8.58	9.55	91
FSG 408DP	9.68	8.73	9.20	84
GA-535	10.18	8.22	9.20	91
54QR04 RR	10.02	8.17	9.10	87
FSG 403LR	9.68	8.38	9.03	84
L 455 HD	9.99	7.95	8.97	87
DKA 41-18 RR	9.75	8.09	8.92	86
FSG 424	9.57	7.72	8.64	86
5454	8.71	7.74	8.22	83
55H94	8.12	8.10	8.11	82
5312	8.06	7.54	7.80	82
Vernal	7.73	7.20	7.47	76
Oneida VR	6.90	6.29	6.59	74
GRAND MEAN	9.57	8.24	8.91	85
CV (%)	10.81	13.04	11.40	5.34
LSD (p = 0.05)	1.45	1.62	1.43	6.33

CV = coefficient of variation
LSD = least significant difference

- Seeded April 11, 2013.
- Yields (tons per acre DM Basis).
- Yields indicated represent 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 four-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.

Table 5. 2014 alfalfa variety trial—Rock Springs.

Variety	2015 Yield	Stand 9/19/2015
55Q27	9.41	95
AFX065033	9.21	97
AFX095026	9.02	97
55V50	8.92	95
Persist III	8.73	96
DKA 41-18	8.68	95
AFX094017	8.65	95
AFX085029	8.30	96
Vernal	7.99	95
GRAND MEAN	8.77	96
CV (%)	9.07	0.85
LSD (p = 0.05)	1.11	1.14

CV = coefficient of variation
LSD = least significant difference

- Seeded August 27, 2014.
- Yields (tons per acre DM Basis).
- Yields indicated represent 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 9 total entries.
- Entries are ranked in order of decreasing yield based on the total yield for 2014.
- 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. 2011 alfalfa variety trial—Landisville.

Variety	2015 Yield	2014 Yield	2013 Yield	2012 Yield	Four-year Average	Stand 10/23/2014
Seneca	9.77	9.19	7.58	8.49	8.70	63
Hybriforce-3400	8.90	9.38	7.77	8.39	8.61	67
Archer III	9.93	9.00	7.62	7.94	8.60	68
DG 4210	7.92	9.65	7.65	7.73	8.31	68
FSG 329	8.44	8.66	7.55	8.40	8.29	65
Pluss II	8.64	9.54	7.14	7.35	8.23	70
WL 354 HQ	8.14	9.54	7.70	7.33	8.15	69
Gunner	8.98	8.47	6.66	8.11	7.98	65
DKA 34-17 RR	8.28	8.72	6.72	7.50	7.97	63
AmeriStand 407TQ	8.85	8.71	7.42	7.36	7.97	68
Persist II	8.58	8.51	6.78	7.44	7.90	65
Hybri+Jade	8.33	8.74	7.05	7.58	7.85	69
DKA 41-18 RR	8.97	8.28	6.53	7.27	7.76	66
Vernal	8.50	8.13	6.15	7.45	7.64	63
Profilic II	7.15	8.54	6.68	8.15	7.49	61
N-R-GEE	8.13	7.40	6.22	7.13	7.23	59
Oneida VR	8.47	7.23	6.08	6.79	7.20	60
GRAND MEAN	8.48	8.70	6.97	7.76	7.99	78
CV (%)	13.59	13.79	15.11	13.21	10.69	6.63
LSD (p = 0.05)	1.61	1.68	1.48	1.44	1.20	7.24

*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 five 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 four-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. 2012 alfalfa variety trial—Landisville.

Variety	2015 Yield	2014 Yield	2013 Yield	Three-year Average	Stand 10/23
Stockpile*	9.40	8.68	7.14	8.41	87
Persist III*	9.06	9.17	6.91	8.38	87
Hybriforce 3400QR	8.55	8.75	6.88	8.06	85
Gemstone*	9.18	8.47	6.51	8.05	87
Crave*	8.85	8.39	6.77	8.00	85
Hybriforce-3400*	8.33	8.31	7.02	7.89	85
DKA 34-17 RR	9.25	8.14	5.57	7.65	87
5312	8.74	8.15	6.00	7.63	86
Legacy 449 Aph 2	8.38	8.02	6.45	7.62	85
DKA 41-18 RR	8.84	7.86	6.01	7.57	82
FSG 505	8.85	7.60	5.71	7.39	86
Vernal	8.50	7.84	5.12	7.15	85
Oneida VR	7.77	7.17	5.32	6.75	84
GRAND MEAN	8.70	8.20	6.30	7.75	73
CV (%)	8.84	9.01	17.25	8.75	18.10
LSD (p = 0.05)	1.08	1.04	1.52	0.95	18.39

*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 five 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.

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Table 8. 2013 alfalfa variety trial—Landisville.

Variety	2015 Yield	2014 Yield	Two-year Average	Stand 10/23/2014
Profusion-HX*	9.48	9.73	9.60	88
GA-535	10.33	8.57	9.45	89
FSG 403LR	9.58	8.84	9.21	87
55Q27	9.39	8.83	9.11	88
Mariner IV	9.68	8.18	8.93	87
FSG 424	9.43	8.36	8.89	85
55V50	9.36	8.36	8.86	87
FSG 408DP	9.60	8.05	8.83	86
Magnitude	10.26	7.32	8.79	87
FSG 524	9.06	8.37	8.72	89
DKA 41-18	9.65	7.74	8.69	86
LS 905	9.62	7.74	8.68	86
L 455 HD	9.33	7.97	8.65	86
5312	9.27	7.78	8.52	88
5454	9.14	7.72	8.43	86
55H94	9.48	7.36	8.42	84
Oneida VR	9.68	7.10	8.39	88
54QR04	9.04	7.65	8.35	87
Vernal	9.80	6.72	8.26	85
DG 4210	8.94	7.49	8.21	88
428RR	8.40	7.78	8.09	86
GRAND MEAN	9.35	8.05	8.70	87
CV (%)	13.44	9.68	7.82	2.75
LSD (p = 0.05)	1.76	1.09	1.02	3.34

*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, 2013.
- Yields (tons per acre DM Basis).
- Yields indicated represent five 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 two-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.

Table 9. 2014 alfalfa variety trial—Landisville.

Variety	2015 Yield	Stand 10/23/2015
55Q27	12.87	98
55V12	11.98	97
AFX103009	11.88	96
NY 13-30	11.74	95
AFX134089	11.60	97
55V50	11.55	97
AFXA113010	11.45	97
DKA 41-18	11.19	97
Oneida VR	11.14	96
Persist III	10.87	96
Vernal	10.63	96
NY 1233/38	10.10	95
GRAND MEAN	11.42	96
CV (%)	6.59	1.40
LSD (p = 0.05)	1.05	1.88

CV = coefficient of variation
LSD = least significant difference

- Seeded April 5, 2014.
- Yields (tons per acre DM Basis).
- Yields indicated represent five 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 12 total entries.
- Entries are ranked in order of decreasing yield based on the 2015 total.
- 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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COOL-SEASON GRASSES

Tables 10 and 14 list cool-season perennial grass varieties in our testing program that are currently marketed in Pennsylvania or may be available in the near future (check with marketers for availability). Tables 11 through 13 and 15 through 18 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 programs. 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. See the current *Penn State Agronomy Guide* for specific recommendations about establishment, fertilization, and other management considerations.

Table 10. Cool-season grass varieties marketed in Pennsylvania and listed in this report.

Species/Variety	Ploidy/Species	Marketer	Appears in Table No.
Bromegrass			
AC Success	Hybrid Brome	Allied Seed, LLC	12
Peak	Brome, Smooth	Allied Seed, LLC	12
York	Brome, Smooth	Ampac Seed Company	12
Fescue			
Jesup MaxQ	Fescue, Tall	Pennington	12
Texoma MaxQ II	Fescue, Tall	Pennington	12
Flourish	Fescue, Tall	Seedway	11
Kentucky 31	Fescue, Tall	Public	11,12,13
Tower	Fescue, Tall	DLF International Seeds	13
Dominate	Fescue, Tall	Allied Seed, LLC	13
Lipalma	Fescue, Tall	DSV-Eurograss	13
BarElite	Fescue, Tall	Barenbrug	13
Festulolium			
Fojtan	Festulolium	DLF International Seeds	12,13
Gain	Festulolium	Seedway	12
Bonus	Festulolium	Growmark FS	12
Mahulena	Festulolium	DLF International Seeds	13
Rebab	Festulolium	DLF International Seeds	13
Fedoro	Festulolium	DSV-Eurograss	13
Orchardgrass			
Endurance	Dactylis	DLF International Seeds	12
Invale	Dactylis	DLF International Seeds	12
Olathe	Dactylis	DLF International Seeds	12
Pennlate		P.L. Rohrer	12,13
Bounty		Seedway	12
Extend		Seedway	12
Pawnee		Seedway	12
Haymaster		Seedway	12
Potomac		P.L. Rohrer	11
Tucker		Oregro Seed, Inc.	11

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Species/Variety	Ploidy/Species	Marketer	Appears in Table No.
Ryegrass			
Boost	Tetraploid Perennial	Seedway	12,13
Albion	Tetraploid Perennial	Grassland Oregon, Inc.	12,13
Calibra	Tetraploid Perennial	DLF International Seeds	11
Elena DS	Tetraploid Perennial	Allied Seed	11
Linn	Diploid Perennial	Public	11
Quartermaster			11
Verseka			11
Payday	Tetraploid Perennial	Mountain View Seeds	13
TetraPrime	Tetraploid Perennial	Mountain View Seeds	13
Toronto	Diploid Perennial	DSV-Eurograss	13
Intrada	Tetraploid Perennial	DSV-Eurograss	13
AstonChieftain	Diploid Perennial	DSV-Eurograss	13
Pomposo	Tetraploid Perennial	DSV-Eurograss	13
Timothy			
Crest		Seedway	12
Summit		Seedway	12
Derby		Growmark FS	12
Climax		Allied Seed, LLC	12,13
Presto		Allied Seed, LLC	13
Meadow Fescue			
Cosmonaut	Festuca pratense	Barenbrug	13
Pradel	Festuca pratense	Barenbrug	13
Liherold	Festuca pratense	DSV-Eurograss	13
Mixes			
GrassPro	Tall Fescue 49.7% Orchardgrass 35.1% Timothy 11.7%	King's Agriseeds	13
Tri Star	Festulolium 33.0% Tall Fescue 39.8% Orchardgrass 25.2%	King's Agriseeds	13
Equi-Gold		American Grass Seed Prod.	13

Forage Grass Marketers Listed in this Report

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

Grassland Oregon
Salem, OR 97305
Phone: 503-566-9900
Web: www.grasslandoregon.com

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

Barenbrug USA
Tangent, OR 97389
Phone: 541-926-5801
Web: www.barusa.com

Growmark FS
York, PA 17402
Phone: 800-338-4769
Web: www.growmarkfs.com

P. L. Rohrer & Bro., Inc.
Smoketown, PA 17576
Phone: 717-299-2571
Web: www.rohrerseeds.com

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

King's AgriSeeds
Ronks, PA 17572
Phone: 717-687-6224
Web: www.kingsagriseeds.com

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

DSV-Eurograss
Lipstadt, Germany
Web: www.dsv-saaten.de

Mountain View Seeds
Salem, OR 97305
Phone: 503-588-7333
Web: www.mtviewseeds.com

Seedway
Mifflinburg, PA 17844
Phone: 800-338-2137
Web: www.seedway.com

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

	First Cut Date*	2015 Yield	2014 Yield	2013 Yield	Three-year Average	Stand 10/28/2015	30-hr NDFD
Ryegrass							
Linn	27-May	3.54	5.37	4.22	4.38	84	71
Elena	27-May	3.36	5.04	3.05	3.82	75	76
Quartermaster	27-May	3.33	4.57	3.03	3.64	68	79
Calibra	27-May	2.92	4.86	3.08	3.62	75	74
Verseeka	27-May	2.95	4.68	2.48	3.37	79	76
GRAND MEAN		3.22	4.90	3.17	3.77	76	
CV %		15.18	13.39	16.61	8.89	5.08	
LSD (p = 0.05)		ns	ns	0.81	0.51	5.98	
Tall Fescue							
Kentucky 31 E-	3-Jun	3.56	10.33	8.22	7.37	83	48
Kentucky 31 E+	3-Jun	3.33	9.30	8.35	6.99	82	55
Flourish		3.11	7.06	7.65	5.94	86	54
GRAND MEAN		3.33	8.90	8.07	6.77	84	
CV %		17.15	11.52	6.38	5.61	4.72	
LSD (p = 0.05)		ns	1.77	0.89	0.65	ns	
Orchardgrass							
Excellate SA	3-Jun	4.49	7.81	6.70	6.34	77	50
Potomac	3-Jun	4.13	8.53	5.60	6.08	81	51
GRAND MEAN		4.31	8.17	6.15	6.20	79	
CV %		21.40	7.74	12.61	7.17	6.75	
LSD (p = 0.05)		ns	ns	1.75	ns	ns	

*Date when the first cutting was made in 2015. First cutting was made at the early boot stage.

CV = coefficient of variation

LSD = least significant difference

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

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Table 12. 2013 cool-season grass variety trial—Rock Springs.

	First Cut Date*	2015 Yield	2014 Yield	Two-year Average	Stand 10/15/2015	30-hr NDFD
Brome						
York	19-May	3.56	6.90	5.23	80	58
AC Success	19-May	4.12	6.31	5.22	83	58
Peak	19-May	3.52	6.55	5.04	70	55
GRAND MEAN		3.74	6.59	5.16	78	
CV %		11.02	7.52	6.25	1.75	
LSD (p = 0.05)		ns	ns	ns	2.36	
Festulolium						
Fojtan	19-May	6.16	8.11	7.14	96	54
Gain	19-May	3.63	6.26	4.95	83	58
GRAND MEAN		4.90	6.56	6.04	89	
CV %		6.31	11.85	10.28	6.15	
LSD (p= 0.05)		0.70	1.35	1.39	12.36	
Orchardgrass						
Endurance	19-May	5.60	8.77	7.18	95	59
PPG-OG-106**	19-May	5.43	8.54	6.98	94	53
Olathe	11-May	5.43	8.46	6.95	94	59
Pawnee	11-May	5.37	8.47	6.92	96	61
Extend	11-May	5.22	8.53	6.87	96	58
Pennlate	11-May	5.22	8.41	6.82	96	57
PPG-OG-103**	19-May	5.52	8.08	6.80	96	47
Haymaster	11-May	4.89	8.68	6.79	97	63
Bounty	11-May	4.82	8.65	6.74	96	62
Inavale	19-May	4.74	8.63	6.69	95	61
GRAND MEAN		5.22	8.52	6.87	95	
CV %		10.53	7.49	6.92	0.81	
LSD (p = 0.05)		0.80	ns	ns	1.11	
Tall Fescue						
Texoma MaxQ II	19-May	5.61	8.76	7.19	97	49
Jesup MaxQ	19-May	4.99	9.30	7.15	98	52
PPG-FTF 101	19-May	5.60	8.52	7.06	96	50
KYFA9821/ AR584**	19-May	5.12	8.62	6.87	97	52
Kentucky 31	19-May	5.23	8.26	6.75	98	59
GT213 AR584**	19-May	4.95	8.47	6.71	96	56

(continued)

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	First Cut Date*	2015 Yield	2014 Yield	Two-year Average	Stand 10/15/2015	30-hr NDFD
KYFA9301/ AR584**	19-May	5.19	8.12	6.65	97	55
AGRFA-200 AR584**	22-May	5.04	8.12	6.58	97	50
AGRFA-178 AR584**	22-May	5.17	7.69	6.43	96	52
AGRFA-179 AR584**	19-May	5.12	7.65	6.39	95	47
PPG -FTF-104**		4.67	7.99	6.33	94	41
GRAND MEAN		5.16	8.32	6.74	96	
CV %		9.47	10.35	7.62	5.82	
LSD (p = 0.05)		0.71	1.24	0.74	1.39	
Ryegrass						
Boost	22-May	4.05	6.26	5.15	89	52
PPG -LHF-104**	27-May	4.44	5.80	5.12	91	56
GO-AX12**	22-May	4.21	5.55	4.88	64	60
Albion	2-June	2.40	5.83	4.12	95	54
GRAND MEAN		3.77	5.86	4.82	85	
CV %		9.07	8.95	6.86	9.91	
LSD (p = 0.05)		0.55	ns	0.52	13.42	
Timothy						
TM0801**	19-May	5.33	9.20	7.27	88	63
Derby	19-May	4.19	8.34	6.27	91	63
TM0802**	19-May	4.63	7.67	6.15	93	62
Summit	19-May	4.79	7.35	6.07	93	60
Crest	19-May	4.16	7.03	5.59	90	60
Climax	2-June	4.00	6.85	5.42	92	59
GRAND MEAN		4.52	7.74	6.13	91	
CV %		15.00	10.48	10.81	3.92	
LSD (p = 0.05)		1.02	1.53	0.99	5.38	

*Date when the first cutting was made in 2015. First cutting was made at the early boot stage.

**Entries that are experimental and not currently marketed.

CV = coefficient of variation

LSD = least significant difference

- Seeded April 26, 2013.
- Yield (tons per acre DM Basis).
- Grand Mean, CV, and LSD values represent 37 total entries.
- Variety means are means derived from LS Means
- Yields indicated represent the sum of four cuttings.

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Table 13. 2014 cool-season grass variety trial—Rock Springs.

	First Cut Date*	2015 Yield	Stand 10/15/2015	30-hr NDFD
Timothy				
TM0603**	2-Jun	7.21	98	51
Climax	2-Jun	6.68	95	52
Presto	2-Jun	6.38	97	50
GRAND MEAN		6.76	97	
CV %		6.21	1.89	
LSD (p = 0.05)		0.73	ns	
Tall Fescue				
Tower	27-May	8.13	95	52
Kentuck 31	19-May	7.55	97	53
FAF3/08-139**	27-May	7.29	95	51
DLFPS FTF 82**	19-May	7.27	96	49
TF0402**	19-May	7.25	96	53
TF0705SL**	19-May	7.16	96	51
DLFPS FTF 84**	19-May	7.09	96	52
Brava	19-May	6.76	96	50
Lipalma	19-May	6.71	96	54
BAR FABLD**	19-May	6.70	97	52
BarElite	19-May	6.47	96	52
BAR FAF 131**	19-May	6.36	94	53
GRAND MEAN		7.06	96	
CV %		7.79	0.82	
LSD (p = 0.05)		0.79	1.12	
Ryegrass				
Tetraprime	22-May	6.15	95	50
Toronto	27-May	5.73	97	51
Intrada	27-May	5.69	96	54
Payday	27-May	5.33	96	41
Albion	27-May	5.29	95	53
Pomposo	27-May	5.17	94	55
GO-13AXT**	27-May	5.02	97	51
AstonChieftain	2-Jun	4.98	97	44
Boost	19-May	4.91	95	57
GO-AX-11**	19-May	4.78	95	50

(continued)

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	First Cut Date*	2015 Yield	Stand 10/15/2015	30-hr NDFD
GRAND MEAN		5.31	96	
CV %		9.38	0.69	
LSD (p = 0.05)		0.72	0.95	
Orchardgrass				
OGO506**	11-May	6.84	96	60
OGO604WH**	11-May	6.76	96	59
Pennlate	11-May	6.30	94	56
GRAND MEAN		6.63	95	
CV %		8.55	0.39	
LSD (p = 0.05)		ns	0.64	
Mixes				
Grass Pro	19-May	6.45	97	57
BAR FAFP**	19-May	6.14	98	55
Tri-Star	19-May	5.97	98	52
Equi-Gold	19-May	5.30	96	53
GRAND MEAN		5.97	97	
CV %		7.53	0.43	
LSD (p = 0.05)		0.72	0.66	
Meadow Fescue				
Pradel	19-May	5.58	97	53
Cosmonaut	19-May	5.57	97	57
Liherold	19-May	5.23	98	55
GRAND MEAN		5.46	97	
CV %		6.60	0.34	
LSD (p = 0.05)		ns	ns	
Festulolium				
Mahulena	19-May	7.51	98	49
Rebab	19-May	6.32	96	55
Fedoro	19-May	6.03	96	56
Fojtan	19-May	5.84	96	56
GO-13GX**	19-May	4.64	95	49
GRAND MEAN		6.07	96	
CV %		8.34	0.74	
LSD (p = 0.05)		0.78	1.09	

*Date when the first cutting was made in 2015. First cutting was made at the early boot stage.

**Experimental entries that are not currently marketed.

CV = coefficient of variation

LSD = least significant difference

- Seeded April 21, 2014.
- Yield (tons per acre DM Basis).
- Grand Mean, CV, and LSD values represent 40 total entries.
- Variety means are means derived from LS Means.
- Yields indicated represent the sum of four cuttings.

2014–2015 SHORT-LIVED COOL-SEASON GRASS TRIAL

In the fall 2014, a Short-lived Cool-Season Grass Trial was seeded at Rock Springs. The trial was planted on September 19, 2014. 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 using the multi-cut system. Some of the ryegrass varieties were entered in both cutting systems. With the multi-cut system, grasses were cut about every three weeks and the plots were cut three different times based on maturity. The first cut was taken at flag leaf (target 20 inches). The varieties in the single-cut system were cut when they reached the early to mid-boot stage. Cutting started on May 4 and was completed June 16. Our soil fertility program is designed around maintenance applications of phosphorus and potash to meet soil test requirements. Plots received 30 units in the fall, 100 units of nitrogen in the spring at green-up, 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 14. Short-lived grass varieties listed in this report.

Variety	Species	Marketer	Appears in Table No.
Annual Ryegrass			
Bar Extra	Italian Ryegrass	Barenbrug	15, 16
Barprisma	Italian Ryegrass	Barenbrug	15, 16
Bill	Annual Ryegrass	Smith Seed Service	15
Centurion	Italian Ryegrass	Mountain View Seeds	15, 16
Fria	Annual Ryegrass	Allied Seed, L.L.C.	15
GO-FLN2	Annual Ryegrass	Grassland Oregon	15
Green Farm	Annual Ryegrass	Smith Seed Service	15
Jackson	Annual Ryegrass	The Wax Company, LLC	15, 16
Kodiak	Annual Ryegrass	DLF-Pickseed	15
Kospeed	Annual Ryegrass	Smith Seed Service	15
Kowinearly	Annual Ryegrass	Smith Seed Service	15
LMT 15	Annual Ryegrass	DLF-Pickseed	15
Lonestar	Annual Ryegrass	Grassland Oregon	15
M2CVS	Annual Ryegrass	The Wax Company, LLC	15
Marshal	Annual Ryegrass	The Wax Company, LLC	15, 16
McKinley	Annual Ryegrass	DLF-Pickseed	15
ME-4	Annual Ryegrass	The Wax Company, LLC	15
ME-94	Annual Ryegrass	The Wax Company, LLC	15
Meroa	Italian Ryegrass	Smith Seed Service	15
MO1	Annual Ryegrass	DLF-Pickseed	15
Nelson	Annual Ryegrass	The Wax Company, LLC	15, 16
Ribeye	Annual Ryegrass	Barenbrug	15, 16
Tillage Rootmax	Annual Ryegrass	Cover Crop Solutions	15
Tam 90	Annual Ryegrass	Smith Seed Service	15
TetraPrime	Italian Ryegrass	Mountain View Seeds	15, 16
Cereals			
Brasetto	Rye	Seedway	17
Hy Octane	Triticale	Seedway	17
Traction	Triticale	Growmark FS	17
Trical 336	Triticale	Syngenta	17
Trical 815	Triticale	Syngenta	17
Mixes			
King's Soil Builder Plus	66.7% TriCal, Crimson clover, Hairy vetch, Annual ryegrass, Daikon radish	King's AgriSeeds, Inc.	18
Triticale Plus	60% triticale 40% annual ryegrass	King's AgriSeeds, Inc.	18

Forage Grass Marketers Listed in this Report

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

Barenbrug USA
Tangent, OR 97321
Phone: 541-926-5801
Web: www.barusa.com

Cover Crop Solutions
Robesonia, PA 19551
Phone: 800-767-9441
Web: www.covercropsolutions.com

DLF Pickseed
Halsey, OR 97348
Phone: 800-445-2251
Web: www.pickseed.com

Grassland Oregon
Salem, OR 97305
Phone: 503-566-9900
Web: www.grasslandoregon.com

Growmark FS
York, PA 17402
Phone: 800-338-4769
Web: www.growmarkfs.com

Mountain View Seeds
Salem, OR 97305
Phone: 503-588-7333
Web: www.mtviewseeds.com

Seedway
Mifflinburg, PA 17844
Phone: 800-338-2137
Web: www.seedway.com

Smith Seed Services
Halsey, OR 97348
Phone: 541-369-2831
Web: www.smithseed.com

Wax Company
Amory, MS 38821
Phone: 662-256-3511

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Table 15. Annual ryegrass—multiple cut.

Variety	Species	Harvest Dates	DM Yield (tons/acre)				First Cut Analysis		
			Cut 1	Cut 2	Cut 3	Total	Spring Stand	CP (%)	30-hr NDFd
Marshal	Ryegrass	5/4, 5/26, 6/16	2.21	2.56	0.94	5.71	98	19.4	72.5
M2CVS	Ryegrass	5/4, 5/26, 6/16	2.16	2.47	1.00	5.63	97	19.7	70.5
MO1	Ryegrass	5/4, 5/26, 6/16	2.22	2.08	1.19	5.50	97	22.5	71.0
ME-4	Ryegrass	5/4, 5/26, 6/16	2.31	2.12	0.91	5.34	98	20.1	70.5
ME-94	Ryegrass	5/4, 5/26, 6/16	2.16	2.10	1.04	5.30	96	19.4	70.5
Kodiak	Ryegrass	5/4, 5/26, 6/16	2.05	2.26	0.89	5.20	98	21.7	73.5
Meroa	Italian	5/4, 5/26, 6/16	2.06	1.78	1.30	5.13	94	22.0	72.5
Ribeye	Ryegrass	5/4, 5/26, 6/16	2.02	1.97	1.10	5.09	95	25.4	75.5
Fria	Ryegrass	5/4, 5/26, 6/16	1.95	2.15	0.95	5.06	95	20.2	73.0
Bar Extra	Italian	5/4, 5/26, 6/16	1.81	2.04	1.15	5.00	96	23.6	77.5
McKinley	Ryegrass	5/4, 5/26, 6/16	2.08	1.88	1.02	4.98	97	19.9	75.0
Rootmax	Ryegrass	5/4, 5/26, 6/16	1.93	2.08	0.96	4.97	98	20.4	69.0
TetraPrime	Italian	5/4, 5/26, 6/16	1.72	2.32	0.91	4.95	95	22.9	78.0
LMT 15	Ryegrass	5/4, 5/26, 6/16	1.76	2.21	0.92	4.90	96	21.0	74.5
Nelson	Ryegrass	5/4, 5/26, 6/16	1.82	2.20	0.86	4.88	96	24.9	79.0
Jackson	Ryegrass	5/4, 5/26, 6/16	2.08	1.91	0.88	4.87	98	21.0	70.5
Green Farm	Ryegrass	5/4, 5/26, 6/16	2.16	1.77	0.87	4.81	99	22.1	65.5
Kospeed	Ryegrass	5/4, 5/26, 6/16	2.18	1.77	0.85	4.80	99	22.2	70.5
Barprisma	Italian	5/4, 5/26, 6/16	1.85	1.76	1.14	4.74	96	22.8	71.0
Lonestar	Ryegrass	5/4, 5/26, 6/16	1.89	1.79	0.95	4.64	96	21.8	70.0
Kowinearly	Ryegrass	5/4, 5/26, 6/16	1.97	1.64	0.86	4.47	97	24.4	73.0
Tam 90	Ryegrass	5/4, 5/26, 6/16	1.82	1.72	0.92	4.47	97	21.2	71.0
GO-FLN2	Ryegrass	5/4, 5/26, 6/16	1.74	1.74	0.95	4.43	98	22.6	71.0
Bill	Ryegrass	5/4, 5/26, 6/16	1.55	1.79	0.92	4.26	96	24.6	77.5
Mean			1.92	1.98	1.01	4.91	97	21.9	73.1
LSD (p = 0.05)			0.32	0.34	0.26	0.54			
CV %			11.86	12.13	18.52	7.90			

CV = coefficient of variation

LSD = least significant difference

- Planted September 19, 2014.
- Yields (tons per acre DM basis).
- Stand score based on a scale of 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 32 total entries.
- Means are LSMeans derived from statistical analysis.
- Rankings are based on total yields.

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

Table 16. Annual ryegrass—single cut.

Variety	Species	Harvest Dates	DM Yield (tons/acre)		First Cut Analysis	
			Total	Spring Stand	CP (%)	30-hr NDFd
Bar Extra	Italian	18-May	3.82	98	16.3	59.5
Jackson	Ryegrass	11-May	3.66	98	15.9	59.0
Ribeye	Ryegrass	11-May	3.63	97	18.0	63.5
Centurion	Italian	18-May	3.39	97	13.2	57.0
Barprisma	Italian	18-May	2.94	98	14.1	54.5
Marshal	Ryegrass	18-May	2.93	96	13.7	55.0
Nelson	Ryegrass	11-May	2.88	98	17.0	64.5
TetraPrime	Italian	18-May	2.73	97	17.1	60.5
Mean			3.22	97	16.0	59.6
LSD (p = 0.05)			0.54			
CV %			11.58			

CV = coefficient of variation

LSD = least significant difference

- Planted September 19, 2014.
- Yields (tons per acre DM basis).
- Stand score based on a scale of 1 to 100. A 100 is considered to be a perfect stand.
- Grand Mean, CV, and LSD values represent 10 total entries.
- Means are LSM means derived from statistical analysis.
- Rankings are based on total yields.

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Table 17. Short-season cereals forage trial.

Variety	Species	Harvest Date	DM (tons/acre)		First Cut Analysis	
			Total	Spring Stand	CP (%)	30-hr NDFd
Brasetto	Rye	5/11	4.62	97	18.1	55.0
Traction	Triticale	5/18	4.24	97	13.5	51.0
Trical 815	Triticale	5/12	4.05	98	17.8	61.0
Hy Octane	Triticale	5/13	4.02	95	14.7	55.5
Trical 336	Triticale	5/13	3.93	96	15.0	59.0
Mean			3.87	97	16.0	57.3
LSD (p = 0.05)			0.49			
CV %			8.83			

CV = coefficient of variation

LSD = least significant difference

- Planted September 19, 2014.
- Yields (tons per acre DM basis).
- Stand score based on a scale of 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 total yields.

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Table 18. Short-season forage mixes.

Variety (multi-cut)	Species	Harvest Dates	DM Yield (tons per acre)				Spring Stand	First Cutting Analysis	
			Cut 1	Cut 2	Cut 3	Total		CP (%)	30-hr NDFd
Triticale Plus	60% triticale 40% annual ryegrass	5/4, 5/26, 6/16	2.09	1.61	0.90	4.60	99	22.9	69.5
Mean						4.48	99	22.9	69.5
LSD (p = 0.05)						0.65			
CV %						8.43			
Variety (single-cut)									
King's Soil Builder Plus	66.7% TriCal, 11.7% crimson clover, 10% hairy vetch, 10% annual ryegrass, 1.5% Daikon radish	5/13				4.66	98	19.2	64.0
Triticale Plus	60% triticale, 40% annual ryegrass	5/13				3.77	98	14.3	59.0
Mean						4.21		16.8	61.5
LSD (p = 0.05)						0.39			
CV %						4.14			

CV = coefficient of variation

LSD = least significant difference

- Planted September 19, 2014.
- Yields (tons per acre DM basis).
- Stand score based on a scale of 1 to 100. A 100 is considered to be a perfect stand.
- Means are LSMeans derived from statistical analysis.
- Rankings are based on total yields.

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