



# FORAGE & COVER CROP GUIDE

2021





## MOUNTAIN VIEW SEEDS FORAGE & COVER CROPS - WE MAKE BUYING SEED EASY



Sheltered by Mt. Hood, the Willamette Valley enjoys mellow sunshine, gentle rain, and mild winters. It's the grass seed production capital of the world.

In 1946, farmers in Pratum, just east of Salem, founded a co-op to handle the prime seed that grows in our fertile soils. More than a half-century later, Mountain View Seeds still

reaps the benefits of the unique Willamette Valley climate, consistent grower base, and state-of-the-art cleaning facility.

The grain elevator at Pratum Co-op has been a Willamette Valley landmark since 1946. For 35 years, the co-op handled public grass seed varieties, adding private varieties in the 1980s. In 1998 Mountain View Seeds, Ltd., a subsidiary of Pratum Co-op, was created to manage mounting demand of grass seed production.

At Mountain View Seeds, we rely on experience and people. We know grass seed research, production, and processing — after all, we have more than 50 years of experience. Mountain View Seeds brings Oregon's best to you.

### GRASS SEED RESEARCH & DEVELOPMENT

Mountain View Seeds is devoted to developing and acquiring forage varieties of the highest genetic quality. We strive to bring to market products that combine yield, quality, disease and pest resistance, and persistence in a range of growing conditions. We work closely with university research programs and other private organizations. With a full spectrum of forage solutions, we can fulfill your seed needs.

### BLENDING & PACKAGING

We have multiple blending and packaging lines that can handle 500,000 pounds a day, blending and, if needed, treated seed can be provided. Whether you need 1, 15 or 50-lb units or 1,000 lb. totes, we can create attractive packages that look good on the shelf with seed that performs well in the field.

### SEED PRODUCTION & CONDITIONING

Our growers rotate the full spectrum of grasses with more than 50 other crops. Crop rotation preserves soil fertility and produces the clean, high-quality seed the Willamette Valley is famous for. We are proud of the quality seed our growers produce. Need 100 tons of forage seed in a hurry? Our state-of-the-art conditioning facility cleans up to 200,000 pounds a day.

### SERVICE & DELIVERY

You'll always talk to a real person when you call Mountain View Seeds, someone who'll answer the questions you have. And we always deliver the right seed in the right package to the right place...on time!

## MOUNTAIN VIEW SEEDS PREMIUM BRANDS



Top Choice line stands for the best quality products available to the retail industry in attractive packaging.

**TOP CHOICE®** Top Choice is a specialty line of retail-ready packaged products for the forage and turf sectors. The Top Choice product line offers the best-in-class products and packaging to match. Only top-rated varieties are used in the Top Choice forage products. Top Choice forage products are developed in conjunction with recommendations from university and regional experts. The



consistent, dependable performance you paid for. Go to [www.pureformancecc.com](http://www.pureformancecc.com) for more information.

**PURE-FORMANCE®** Mountain View Seeds PURE-FORMANCE® Cover Crop products are produced to the highest genetic purity standards. PURE-FORMANCE Cover Crop products are a healthy, sustainable choice when it comes to maintaining a balanced natural ecosystem. PURE-FORMANCE Cover Crop products increase soil fertility and quality. They also control weeds, improve water infiltration and reduce erosion. Unlike other cover crop products, only PURE-FORMANCE products contain the genetic ability to give you uniform growth and the

## SEED COATING & TREATMENT



the ability to withstand challenging growing conditions. Getting a crop off to a good, healthy start is critical to its long-term performance throughout the season. QuickStart delivers a strong start to your crop, helping it reach its full growth and yield potential.

**QUICKSTART™** QuickStart incorporates a unique, micro-nutrient package to ensure plants get off to a QUICK START. This package includes iron, zinc, and manganese, proven to be beneficial to a young grass seedling. QuickStart seed-applied fertilizer improves seedling growth by providing plants small amounts of important nutrients right after germination - before the plant can easily access soil nutrients on its own. By improving early plant growth, growers see the benefit in crop establishment, early season vigor and



**WATERGARD®** WaterGard is a unique polymer coating for grass seed that is completely biodegradable, nontoxic, odorless and pet-friendly. WaterGard seed coating works by capturing, storing and releasing available soil moisture to the seed. As water comes in contact with its insoluble matrix, it expands and encapsulates the seed within a moisture-rich environment.



## MVS FORAGE & COVER CROPS TEAM

### AARON KUENZI - EXECUTIVE VICE PRESIDENT/DIVISION MANAGER



Aaron Kuenzi grew up on a seed farm near Pratum Co-op, (Headquarters of Mountain View Seeds.). After getting his BS and agriculture business management at Oregon State he started his career in the Seed industry at Ampac Seed. In 2010 he was given the opportunity to work for Mountain View Seed and in 2016 took over the role of managing the company

### JEREMY HAYWARD - KEY ACCOUNTS MANAGER



Jeremy has worked in various roles throughout his career in wholesale and retail seed and agronomy businesses, both nationally and regionally. He works with MVS customers throughout the U.S. to boost their forage and cover crop business in size and scope with the goal of making MVS North America's go-to for all things forage and cover crops. "It's very exciting to see the growth within many categories at MVS, and when you can add value to a grower and customer's bottom line, that's really what we're most passionate about," Jeremy says. "The lineup is loaded, but it will be fun to add additional varieties to broaden our reach in the years to come."

Originally from a dairy, beef, hay and small grain operation in Southwest Missouri, Hayward earned a B.S. in Agriculture from Missouri State University and M.S. from the University of Arkansas in Forage Physiology. He and his family reside in Ozark, Missouri and are active in their local church as well as many sporting events with their boys.

### MARK THOMAS - DIRECTOR OF BUSINESS OF DEVELOPMENT



For over 30 years Mark has made a career out of the seed industry. He worked in wholesale distribution for the first 10 years of his career. This valuable experience allowed him to gain understanding of some of the challenges that the supply chain faces. For the past 20 years, Mark has worked for major forage breeding, production, and marketing companies in the grass seed industry. His work experience has given him a broad base of experience with forages for livestock, wildlife, and cover crops across the U.S. Mark and wife Annette, own and operate a first-generation cattle and small grains farm in Oklahoma, where they implement no-till planting, cover crops and adaptive grazing. Mark says, "I am excited about the potential for MVS Forages & Cover Crops to help producers across the country increase profits, reduce inputs and regenerate soils".

### STEVE JOHNSON - PRESIDENT OF PEAK PLANT GENETICS



Steve and his team develop Mountain View Seeds portfolio of high performing forage, cover crop and turfgrass varieties. Since its founding in 2008 Peak has released over 160 new varieties. These include the breakout varieties Alpine II orchardgrass, Stamina white clove and Endure chicory. "It is a pleasure to work with Mountain View Seeds" says Johnson. "They are committed to providing their customers with the best genetics and to supporting their varieties with

a knowledgeable staff."

Through his career Johnson has been active in serving the seed industry having as President of the Turfgrass Breeders Association and as Chairman of the Oregon Seed Association Research Committee. He is also a guest lecturer for Plant Breeding and Forages classes at Oregon State University. After earning a B.A. in Biology from Carleton College in Minnesota and a M.S. in Botany from Iowa State University, Johnson returned to Oregon's Willamette Valley where he grew up working on local farms. He now resides with his family near Corvallis, Oregon where he enjoys raising cattle, hunting, fishing, hiking and watching grass grow.



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## WITH ARKSHIELD® TECHNOLOGY



### ESTANCIA

ENDOPHYTE ENHANCED TALL FESCUE

- SMART ENDOPHYTE PROTECTION
- EXCEPTIONALLY HIGH-YIELDING
- EXCELLENT SEEDLING VIGOR
- PERSISTENT VARIETY
- MEDIUM MATURITY
- UNIVERSITY TESTED AND PROVEN
- HIMAG TALL FESCUE BASE GENETICS IN TANDEM WITH ARKSHIELD ENDOPHYTE

### ESTANCIA PRODUCTION WITH ARKSHIELD® PROTECTION!

**Estancia** tall fescue produces tons of nutritious, palatable, high-quality forage that results in healthier cows, heavier weaning calves and improved steer and heifer weight gains. **Estancia** is the result of years of laboratory and field research by the University of Arkansas in cooperation with the University of Missouri. **Estancia** is a medium-maturing, high-yielding tall fescue with excellent seedling vigor.

**ArkShield®** is a patented smart endophytic fungus that lives inside **Estancia** seed and plants in a mutually-beneficial relationship protecting the grass from disease, insects and environmental stresses like heat and drought. **ArkShield®** is natural and desirable in forage grasses and has no known negative effects on livestock. The **ArkShield®** endophyte makes **Estancia** a more productive and persistent perennial forage grass.



In addition, **Estancia** is unique in the non-toxic tall fescue marketplace in that it not only contains a superb non-toxic endophyte, but **Estancia** is the combination of **ArkShield®** with base genetics of HiMag tall fescue, developed for higher magnesium levels to minimize grass tetany potential in cattle and sheep.

## Put Your Pasture to Work!

Two factors that dramatically impact the profitability of a cow-calf operation are calving rate and weaning weight. Improvement to these production factors will increase the pounds of calf that can be marketed within a given calving season or year. Lower pregnancy rates, calving rates and calf weaning weights have been observed in many research studies in cows and heifers grazing tall fescue.

### 2012 MISSISSIPPI STATE DATA

VARIETY	HOLLY SPRINGS	STARKVILLE
<b>ESTANCIA ARKSHIELD</b>	<b>3.11</b>	<b>5.41</b>
KY-31	3.05	5.12
BAROPTIMA PLUS E34	2.76	4.77
JESUP MAXQ	2.71	4.28

MISSISSIPPI STATE UNIVERSITY TRIAL TOTAL DRY MATTER YIELD AT 2 LOCATIONS (TONS/ACRE).

### 2014 UNIVERSITY OF KENTUCKY DATA

VARIETY	SEEDLING VIGOR <sup>1</sup>	2-YEAR TOTAL YIELD
<b>ESTANCIA ARKSHIELD</b>	<b>3.4</b>	<b>11.47</b>
KY-31	3.5	10.59
BAROPTIMA PLUS E34	2.4	12.24
JESUP MAXQ	1.8	11.19

UNIVERSITY OF KENTUCKY TALL FESCUE TRIAL. LEXINGTON, KENTUCKY.

### 2016 KANSAS STATE UNIVERSITY DATA

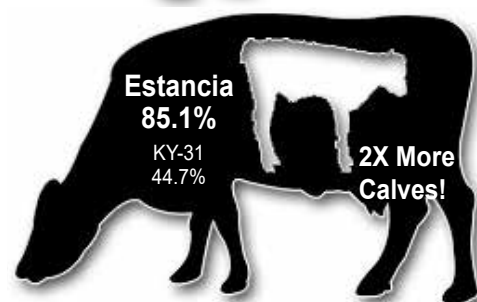
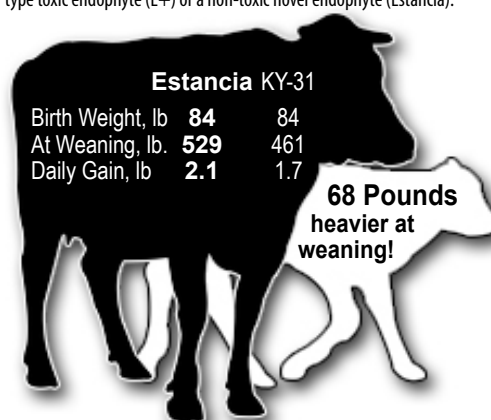
VARIETY	2015	2016	2-YEAR TOTAL
<b>ESTANCIA ARKSHIELD</b>	<b>6.94</b>	<b>8.35</b>	<b>15.29</b>
BAROPTIMA PLUS E34	6.49	7.47	13.96
TOWER PROTEK	7.02	7.80	14.82
MARTIN 2 PROTEK	5.81	7.97	13.78
KY-31 HE	6.84	7.63	14.47

KANSAS STATE UNIVERSITY TALL FESCUE TRIAL. MOUND VALLEY, KANSAS.

Combining cow and calf performance data, year-round grazing of toxic fescue could be costing cattle producers more than \$250 per head in lost revenue based on the Arkansas Beef Improvement Program's reported annual direct costs of maintaining beef cows.

## Improved Weaning weights and Spring Calving Rates!

Calf performance while grazing tall fescue pastures containing either the wild-type toxic endophyte (E+) or a non-toxic novel endophyte (Estancia).\*



\* Arkansas Animal Science Department Report 2007

ArkShield Technology is protected by US patent No. 7,465,855 B2 & No. 7,553,654 B2.

## Planting Guide for Estancia Tall Fescue

- Closely graze or harvest existing toxic fescue
- Spray stubble with a non-selective herbicide; i.e. glyphosate
- Take a soil test, begin to correct any deficits in soil maintenance levels on pH, phosphorus, potassium, etc.
- Plant a cover-crop
- Graze/harvest break-crop (don't transfer toxic fescue seeds in manure to break-crop forage)
- After useful life of the break-crop, spray out with a non-selective herbicide
- No-till Estancia in September to November in the Southern states and August to September or March to May in the Mid-western and Northeastern states
- Plant Estancia at 20-25lbs per acre
- Apply nitrogen as needed to boost establishment and outpace weeds, apply a broadleaf herbicide as needed after tall fescue has 3-4 tillers
- Estancia can be planted with other species such as white or red clover, alfalfa, or other cool-season grasses
- Don't graze or harvest seedling pasture the first winter
- Be sure not to feed toxic fescue hay in newly established Estancia pasture (or transfer toxic seed via manure)
- Apply nitrogen as needed during growing season based on stocking rate, yield goals, etc.



## **TETON II**

TALL FESCUE

- EXCEPTIONALLY HIGH-YIELDING
- EXCELLENT SEEDLING VIGOR
- PERSISTENT VARIETY
- HEAT AND DROUGHT TOLERANT
- ENDOPHYTE FREE
- MEDIUM MATURITY

### **PRODUCES A MOUNTAIN OF FORAGE**

**Teton II** is a new generation, top-yielding, non-toxic endophyte-free tall fescue variety. **Teton II** has excellent seedling vigor, establishing quickly to create a healthy, high-yielding and permanent pasture. **Teton II** is a deep-rooted, medium-maturing variety with heat and drought tolerance. **Teton II** rated #1 in the 2012-2014 University of Kentucky and Mississippi State University tall fescue forage and persistence trials, and over 30 years of university yield trial data, making it a industry lead in reliable, durable, endophyte-free tall fescues.

## 2014 UK TALL FESCUE DATA

VARIETY	SEEDLING VIGOR	TOTAL YIELD (tons/acre)			
		2012	2013	2014	3 Yr. Total
<b>TETON II</b>	<b>4.5</b>	<b>3.09</b>	<b>5.32</b>	<b>3.27</b>	<b>11.69</b>
BAROPTIMA +E34	4.8	3.03	5.65	3.00	11.69
JESUP MAXQ	4.6	3.21	5.20	2.79	11.20
BRONSON	4.6	3.10	4.98	2.98	11.07
CAJUN II	4.6	2.73	4.88	2.98	10.58
ENHANCE	4.0	2.95	4.75	2.44	10.14
KY-31	5.0	2.75	4.80	2.58	10.13
LSD VALUE	0.5	0.54	0.67	0.54	1.42

2014 TALL FESCUE AND BROMEGRASS REPORT UNIVERSITY OF KENTUCKY

## 2016 KANSAS STATE UNIVERSITY DATA

VARIETY	2015	2016	TOTAL
<b>TETON II</b>	<b>6.51</b>	<b>8.44</b>	<b>14.95</b>
BAROPTIMA PLUS E34	6.49	7.47	13.96
TOWER PROTEK	7.02	7.80	14.82
MARTIN 2 PROTEK	5.81	7.97	13.78
KY-31 HE	6.84	7.63	14.47

2014 KANSAS STATE UNIVERSITY TALL FESCUE TRIAL. MOUND VALLEY, KANSAS.

Teton II is best suited to high fertility and heavy soils, but can withstand acid, alkaline as well as poorly-drained soils. Highest growth is achieved during spring and fall seasons, with moderate growth during the summer season. Most endophyte free and novel endophyte varieties should not be over-grazed or harvested (closer than 5 inches) during the summer.

First harvest of hay should be cut in the late boot stage for high quality. Subsequent harvests can be made as growth permits. Teton II can also be fall stockpiled for late feed.

Teton II is highly-palatable, unlike Kentucky 31, so avoid over grazing. Graze at approximately 10-12 inches and remove animals when at 4-5 inches. As with any forage, management practices dictate the final yield and quality of the forage. With proper management practices, Teton II should provide high-yielding, high-quality forage that will result in improved producer profitability.

**ESTABLISHMENT** Plant at a rate of 20-250lbs./ac. Proper seed bed preparation is essential. A soil sample will identify necessary inputs to achieve proper pH, P, K and other macronutrient levels (extension service or agronomy supplier can advise). No-till seeding is generally very effective. Use of a non-selective herbicide will reduce weed competition; spray per label recommendation when crop is mature enough. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Apply timely broadleaf herbicide if needed. Be careful not to overgraze, especially during dry periods.

# PALATINE

## SOFT LEAF TALL FESCUE



### PALATINE

SOFT LEAF TALL FESCUE

- EXCEPTIONAL PALATABILITY
- EXCELLENT FORAGE QUALITY
- ENDOPHYTE FREE
- IDEAL FOR GRAZING
- USE IN THINNING ALFALFA STANDS
- HIGHLY PERSISTENT
- DENSE FOLIAGE SHADES YIELD AND QUALITY-ROBBING WEEDS

### HIGH QUALITY SOFT LEAF TALL FESCUE

**Palatine** is a dense, soft, fine-leaved tall fescue with excellent forage quality. **Palatine** is free of toxic endophytes that cause animal health issues often associated with KY-31. The lack of toxic alkaloids, forage quality, and finer leaf makes it an ideal choice for grazing cattle, sheep and horses. **Palatine's** forage quality also makes it an excellent choice for grass-based dairy operations. **Palatine** can be sown as a monoculture grass or used in mixtures with other grasses, legumes and forbs. The high Relative Feed Quality (RFQ) of **Palatine** makes it a suitable selection for thinning alfalfa stands.



## 2019 CORNELL UNIVERSITY DATA

VARIETY	2018 YIELD	2018 % STAND	2019 YIELD	HEADING DATE ('19)	2-YEAR YIELD TOTAL
PALATINE	6.43	68	4.38	MAY 27	10.81
SWAJ	5.77	53	4.86	MAY 30	10.64
SOFTANE	6.23	70	4.00	MAY 27	10.24
KY-31+	5.52	63	4.40	MAY 27	9.92

CORNELL UNIVERSITY FORAGE TRIAL. SOWN MAY 18, 2017.

## FORAGE QUALITY DATA

VARIETY	CP	ADF%	aNDF%	NDFD48	RFQ	MILK/TON
PALATINE	17.2	27.9	45.3	77.5	209.6	3681
ESTANCIA	17.2	27.6	46.8	72.7	192.2	3636
CAJUN II	15.9	28.0	47.3	71.9	188.5	3605
FAWN	15.9	30.6	49.7	75.4	187.4	3516

2019 PEAK PLANT GENETICS

## GRAZING MANAGEMENT

Palatine is best-suited to high fertility and heavy soils, but can withstand acid, alkaline as well as poorly-drained soils. Best growth is achieved during spring and fall seasons, with moderate growth during the summer season. Most endophyte free and novel endophyte varieties should not be over-grazed or harvested (closer than 5 inches) during the summer.

First harvest of hay should be cut in the late boot stage for high quality. Subsequent harvests can be made as growth permits. Palatine can also be fall stockpiled for late feed.

Palatine is highly-palatable, unlike KY-31, so avoid over grazing. Graze at approximately 10-12 inches and remove animals when at 4-5 inches. As with any forage, management practices dictate the final yield and quality of the forage. With proper management practices, Palatine should provide high-yielding, high-quality forage that will result in improved producer profitability.

**ESTABLISHMENT** Plant at a rate of 20-250lbs./ac. Proper seed bed preparation is essential. A soil sample will identify necessary inputs to achieve proper pH, P, K and other macronutrient levels (extension service or agronomy supplier can advise). No-till seeding is generally very effective. Use of a non-selective herbicide will reduce weed competition; spray per label recommendation when crop is mature enough. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

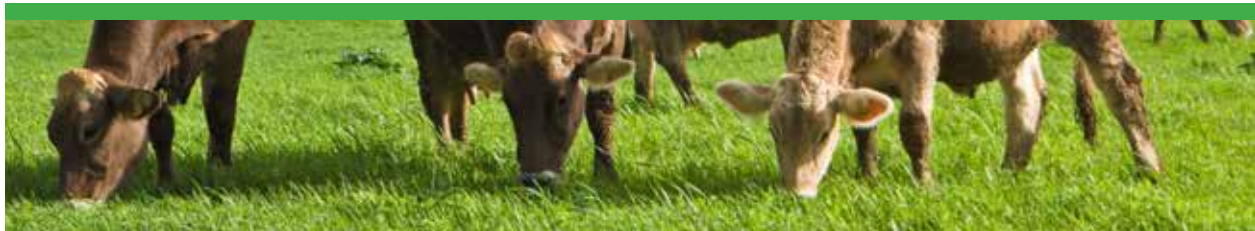
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# Rushmore II

early maturity orchardgrass



## RUSHMORE II

ORCHARDGRASS

- EARLY MATURITY
- EXCELLENT WINTER HARDINESS
- SUPERB FORAGE YIELDER
- ENHANCED DISEASE RESISTANCE
- HIGH FEED QUALITY

### EARLY MATURING FOR HIGH QUALITY

**Rushmore II** is an early-maturing orchardgrass ideal for use in grazing and hay operations. An ideal fit for colder northern climates, **Rushmore II** exhibits excellent winter hardiness, but also performs well in further South locations as seen in University of Kentucky forage variety trials. **Rushmore II** produces tons of forage that is very high in protein, perfect for dairy cows or beef cattle. With improved disease resistance, **Rushmore II** can withstand grazing pressure as well. **Rushmore II** has great seedling vigor, establishes quickly, and persists as a variety with 25+ trial years in university variety trials, it performs in a wide geography.



## 2016 UK TRIAL DATA

VARIETY	SEEDLING VIGOR <sup>1</sup>	MATURITY <sup>2</sup> 2015	DISEASE RESISTANCE <sup>3</sup>	YIELD 3-YEAR TOTAL
<b>RUSHMORE II</b>	<b>3.8</b>	<b>52.3</b>	<b>5.0</b>	<b>10.11*</b>
PRAIRIE	4.1	56.0	4.5	10.64
PERSIST	3.4	56.0	5.0	9.95
PROFIT	4.0	52.8	4.3	9.63
BENCHMARK PLUS	3.1	56.5	5.8	9.14
POTOMAC	4.3	56.5	4.8	9.06
LSD VALUE	1.4	4.5	0.9	2.33

UNIVERSITY OF KENTUCKY FORAGE TRIAL SOWN SEPTEMBER 7, 2012 AT LEXINGTON, KENTUCKY.

<sup>1</sup>Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup>Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

<sup>3</sup>Disease score based on a scale of 1 to 9 with 9 being almost all leaves affected.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

## 2019 CORNELL TRIAL DATA

VARIETY	2017 YIELD	2018 YIELD	2019 YIELD	3-YEAR TOTAL
<b>RUSHMORE II</b>	<b>7.90</b>	<b>5.77</b>	<b>4.29</b>	<b>17.95</b>
ECHELON	8.17	5.30	4.35	17.82
INAVALE	8.20	5.23	4.19	17.62
POTOMAC	7.71	5.61	4.22	17.53
PENNLATE	7.39	5.59	4.35	17.33
TRAIL BURST	8.12	4.77	4.29	17.18
TREPONSO	7.00	4.68	3.93	15.61
LYRA	6.62	4.13	3.74	14.49

CORNELL UNIVERSITY FORAGE TRIAL AT ITHACA, NEW YORK.

**ESTABLISHMENT** Plant at a rate of 15-20lbs./ac. Proper seed bed preparation is essential. A soil sample will identify necessary inputs to achieve proper pH, P, K and other macronutrient levels (extension service or agronomy supplier can advise). Use of a non-selective herbicide will reduce weed competition; spray per label recommendation when crop is mature enough. No-till seeding is generally very effective. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

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## BIGHORN

ORCHARDGRASS

- MEDIUM MATURITY
- VERY HIGH-YIELDING
- EXCELLENT RUST RESISTANCE
- GOOD SEEDLING VIGOR
- PERSISTENT VARIETY

### MEDIUM MATURITY - BIG ON FORAGE YIELD

**Bighorn** Orchardgrass is a medium maturity variety simply bred for big yields. **Bighorn** has been widely-tested in university variety trials in Kentucky, New York and Pennsylvania, and more than exceeds expectations on yield and persistence. **Bighorn** shows industry-leading seedling vigor and quick establishment for great first year yields, as well as excellent disease resistance that adds to the variety's great persistence. One of Mountain View Seeds newest releases, **Bighorn's** maturity fits a wide geography and management types, and is a workhorse in our orchardgrass lineup.



## 2015 UK TRIAL DATA

VARIETY	SEEDLING VIGOR <sup>1</sup> OCT. 2015	MATURITY <sup>2</sup> MAY 2015	PERCENT STAND OCT. 2015	3-YEAR YIELD TONS/ACRE
<b>BIGHORN</b>	<b>4.1</b>	<b>47.5</b>	<b>74</b>	<b>11.00</b>
PRAIRIE	3.4	54.0	64	10.69
PROFIT	5.0	48.8	59	10.50
PERSIST	3.6	56.0	66	10.48
POTOMAC	4.1	56.5	59	10.03
TEKAPO	2.9	52.3	58	8.41

UNIVERSITY OF KENTUCKY FORAGE TRIAL 2013-2015 AT PRINCETON, KENTUCKY.

<sup>1</sup>Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup>Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

## 2019 PSU TRIAL DATA

VARIETY	2-YEAR YIELD TONS/ACRE
<b>BIGHORN</b>	<b>7.22</b>
OLATHE	7.04
INVALE	6.54
TRAILBURST	6.36
ALDEBARAN	5.39

PENN STATE UNIVERSITY FORAGE TRIAL 2017-2019 AT  
ROCK SPRINGS, PENNSYLVANIA..

**ESTABLISHMENT** Plant at a rate of 15-20lbs./ac. Proper seed bed preparation is essential. A soil sample will identify necessary inputs to achieve proper pH, P, K and other macronutrient levels (extension service or agronomy supplier can advise). Use of a non-selective herbicide will reduce weed competition; spray per label recommendation when crop is mature enough. No-till seeding is generally very effective. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.

# ALPINE II

LATE-MATURING ORCHARDGRASS



## ALPINE II

ORCHARDGRASS

- LATE-MATURITY
- EXCELLENT FORAGE QUALITY
- HIGH YIELDING
- IMPROVED DISEASE RESISTANCE
- GOOD SEEDLING VIGOR
- USE FOR HAY OR GRAZING

## THE LATEST OF LATE-MATURING ORCHARDGRASSES

**Alpine II** Orchardgrass is a top-rated, very late-maturing orchardgrass. Late-maturing orchardgrasses can quickly become disease susceptible varieties with lower yield potential, which isn't the case with **Alpine II**. It's able to produce high-quality, disease-free forage later in the season, making it the industry's go-to for very late orchardgrass, especially as a companion crop with alfalfa, red clover or other legumes. **Alpine II** performs well in university variety trials in Kentucky and Wisconsin, as well as New York and Pennsylvania.

**Alpine II** Orchardgrass exhibits superb agronomic traits such as strong seedling vigor, quick establishment, and high winterhardiness as well.



## 2019 UK TRIAL DATA

VARIETY	SEEDLING <sup>1</sup> VIGOR	MATURITY <sup>2</sup> MAY 2019	YIELD 3-YEAR TOTAL
<b>ALPINE II</b>	<b>3.6</b>	<b>47.5</b>	<b>10.45</b>
OLATHE	2.8	56.0	10.31
ENDURANCE	3.3	56.0	10.05
ECHELON	2.9	47.5	9.79
ALBERT	3.0	51.5	9.75
PERSIST	3.3	58.0	9.68
PRODIGY	4.3	56.5	9.63
INIVALE	3.1	50.0	9.30
POTOMAC	4.3	58.0	9.25

2017 UNIVERSITY OF KENTUCKY FORAGE TRIAL AT LEXINGTON, KENTUCKY.

<sup>1</sup>Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup>Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

## 2015 UK TRIAL DATA

VARIETY	MATURITY <sup>1</sup> MAY 2015	PERCENT STAND OCT. 2015	YIELD 3-YEAR TOTAL
<b>ALPINE II</b>	<b>45.0</b>	<b>68</b>	<b>11.11</b>
PROFIT	48.8	59	10.50
PERSIST	56.0	66	10.48
ELISE	46.3	39	10.03
TEKAPO	52.3	58	8.41
LSD VALUE	4.4	26	1.15

2012 UNIVERSITY OF KENTUCKY FORAGE TRIAL AT PRINCETON, KENTUCKY.

<sup>1</sup>Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

**ESTABLISHMENT** Plant at a rate of 15-20lbs./ac. Proper seed bed preparation is essential. A soil sample will identify necessary inputs to achieve proper pH, P, K and other macronutrient levels (extension service or agronomy supplier can advise). Use of a non-selective herbicide will reduce weed competition; spray per label recommendation when crop is mature enough. No-till seeding is generally very effective. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.

# DEVOUR

o r c h a r d g r a s s



## DEVOUR

ORCHARDGRASS

- HIGHLY-PERSISTENT-WITHSTANDS GRAZING PRESSURE
- VERY PALATABLE
- LATE-MATURING - CAN BE SEEDED WITH CLOVER OR ALFALFA
- EXCEPTIONAL YIELD
- GOOD SEEDLING VIGOR

## GRAZE AWAY ON DEVOUR

**Devour** is the new leader of the class of grazing-type orchardgrasses. **Devour** was bred to withstand the rigors of intensive grazing systems which can destroy lesser varieties. The lower-growing pattern of **Devour** (picture at right) enables it to persist under extended periods of hoof traffic. **Devour** is quick to establish and canopies quickly after harvesting, outcompeting weeds for higher-quality, higher-yielding pasture for your livestock. **Devour** is a late-maturing variety, with great disease resistance that can be used in tandem with clovers, alfalfa, or like-maturity cool-season grasses.

## 2020 UK GRAZING TRIAL DATA

VARIETY	SEEDLING VIGOR <sup>1</sup>	GRAZING PREFERENCE <sup>2</sup>			PERCENT STAND		
	OCT. 2016	APR. 2017	MAY 2018	MAY 2020	OCT. 2018	NOV. 2019	OCT. 2020
<b>DEVOUR</b>	<b>3.4</b>	<b>4.8</b>	<b>6.3</b>	<b>4.5</b>	<b>92</b>	<b>85</b>	<b>65</b>
PERSIST	4.1	3.2	1.2	2.7	82	74	59
PRAIRIE	4.1	2.8	2.0	4.3	78	72	48
POTOMAC	4.2	2.8	1.7	4.8	76	70	37
PRODIGY	4.2	3.5	2.7	4.0	72	67	42
HARVESTAR	3.7	4.3	6.7	6.2	63	55	27
ELISE	3.4	5.3	6.3	5.3	60	50	28
LSD (0.05)	0.6	1.0	1.1	1.8	14	13	14

UNIVERSITY OF KENTUCKY FORAGE TRIAL 2015-2020 AT LEXINGTON KENTUCKY. <sup>1</sup>Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth. <sup>2</sup>Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

## 2015 PSU TRIAL DATA

VARIETY	2014 YIELD	2015 YIELD
<b>DEVOUR</b>	<b>8.54</b>	<b>5.43</b>
OLATHE	8.46	5.43
PAWNEE	8.47	5.37
EXTEND	8.53	5.22
PENNLATE	8.41	5.22
BOUNTY	8.65	4.82
INVALE	8.63	4.74
MEAN	8.52	5.22
LSD VALUE	ns	0.8

2013 PENN STATE UNIVERSITY COOL-SEASON GRASS VARIETY TRIAL - ROCK SPRINGS, CENTRE COUNTY, RUSSELL E. LARSON AGRICULTURAL RESEARCH CENTER.



**ESTABLISHMENT** Plant at a rate of 15-20lbs./ac. Proper seed bed preparation is essential. A soil sample will identify necessary inputs to achieve proper pH, P, K and other macronutrient levels (extension service or agronomy supplier can advise). Use of a non-selective herbicide will reduce weed competition; spray per label recommendation when crop is mature enough. No-till seeding is generally very effective. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

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## TETRASWEET

PERENNIAL RYEGRASS

- LATE-MATURING
- HIGHLY-DIGESTIBLE
- EXCEPTIONAL YIELD ALL SEASON LONG
- EXCELLENT WINTER HARDINESS
- HIGH ENERGY GRASS
- STRONG REGROWTH
- FOLIAR DISEASE RESISTANT

## TETRASWEET IS *THE* HIGH-ENERGY FORAGE

**Tetrasweet** is a highly-adaptable, fast establishing, tetraploid perennial ryegrass. **Tetrasweet** tillers extensively and recovers rapidly making it an excellent choice for all types of forage production. **Tetrasweet** is very disease tolerant, late-maturing, with superb fiber digestibility, producing a versatile forage used in monoculture or in combo with other legumes or comparable cool-season grasses for grazing, hay, greenchop or silage. **Tetrasweet** has also shown the ability to persist and perform under tough heat and drought conditions that dampened production of other competitive perennial ryegrasses.

### 2019 UK TRIAL DATA

VARIETY	SEEDLING VIGOR <sup>1</sup>	MATURITY MAY 2018	YIELD (TONS/ACRE)			
			2017 TOTAL	2018 TOTAL	2019 TOTAL	3-YR TOTAL
TETRAMAG	4.4	53.5	5.77	2.07	1.46	9.30
ELENA	4.0	53.0	5.14	1.67	1.19	8.00
REMINGTON	4.3	44.8	4.83	1.84	1.25	7.92
<b>TETRASWEET</b>	<b>4.78</b>	<b>51.8</b>	<b>4.16</b>	<b>2.10</b>	<b>1.30</b>	<b>7.56</b>
CALIBRA	4.0	53.0	4.31	1.54	1.29	7.14
PAYDAY	4.3	53.0	3.87	1.49	1.02	6.38
LINN	4.4	62.0	3.26	1.79	1.01	6.06
MELPETRA	3.1	39.0	3.93	1.21	0.88	6.03
LSD VALUE	0.9	3.7	1.11	0.58	0.45	1.55

UNIVERSITY OF KENTUCKY FORAGE TRIAL SOWN SEPTEMBER 7, 2016 AT LEXINGTON, KY. <sup>1</sup>Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

### 2019 PSU TRIAL DATA

VARIETY	2019 TOTAL	2018 TOTAL	2-YR AVERAGE	% STAND 10/29	CP	ADF	aNDF	NDFD30
TETRAMAG	5.27	8.03	6.65	95	14.2	26.7	44.7	58
REMINGTON	4.70	7.89	6.30	97	11.7	30.1	49.9	58
ELENA	4.94	7.46	6.20	94	13.9	27.7	45.2	57
<b>TETRASWEET</b>	<b>4.73</b>	<b>7.21</b>	<b>5.97</b>	<b>97</b>	<b>12.2</b>	<b>29.6</b>	<b>48.7</b>	<b>57</b>
KENTAUR	5.01	6.66	5.83	97	11.7	26.0	45.6	60
POLIM	4.39	6.82	5.60	95	14.5	23.8	41.6	62
QUARTERMASTER	4.58	6.53	5.56	96	12.9	27.8	46.0	56
BAREXTRA	4.86	6.13	5.50	86	12.6	25.6	44.0	55
GARBOR	4.81	6.10	5.46	96	11.6	26.6	46.3	57
DEXTER 1	5.11	5.73	5.42	98	12.9	26.2	45.5	60
MELPETRA	4.00	6.53	5.26	95	14.6	25.7	43.8	61
PREMIUM	3.39	5.44	4.41	97	13.8	26.5	44.8	60
LSD VALUE	0.85	0.34	0.44	0.29	1.00	0.51	0.62	5.37

PSU FORAGE TRIAL SOWN AUGUST 22, 2017 AT ROCK SPRINGS, PA.

**ESTABLISHMENT** Plant at a rate of 15-20lbs./ac. Proper seed bed preparation is essential. No-till seeding is generally very effective. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.



## **TETRAMAG**

HYBRID RYEGRASS

- **EXCEPTIONAL YIELD**
- **20 TRIAL YEARS OF UNIVERSITY DATA – 17.4% HIGHER YIELD THAN THE AVERAGE TRIAL MEAN!**
- **SUPERB FORAGE QUALITY**
- **EXCELLENT SEEDLING VIGOR**
- **PERSISTENT**
- **COLD TOLERANT**

## **A MAGNUM FORAGE YIELDER**

**Tetramag** is a true dually-beneficial hybrid; carrying the superior forage yield and feed value of an Italian ryegrass with the persistence and durability of a perennial ryegrass in one, very impressive package. No matter the university variety trial location, **Tetramag** is turning heads on overall yield, seedling vigor and establishment, regrowth, and forage quality, especially on fiber digestibility compared to other competitive perennial ryegrasses. Whether you're considering a perennial ryegrass, or a shorter-term ryegrass as part of a grazing/haying operation, or extending an alfalfa or red clover stand, or in a pasture/hay mix, **Tetramag** needs to be a part of your plan.



## 2016 UK TRIAL DATA

VARIETY	2014 SEEDLING VIGOR <sup>1</sup>	2015 YIELD	2016 YIELD	2-YEAR YIELD TOTAL
<b>TETRAMAG</b>	<b>4.6</b>	<b>5.45</b>	<b>3.76</b>	<b>9.21*</b>
REMINGTON (NEA2)	3.8	4.60	3.46	8.05
GRAND DADDY	2.6	4.52	2.75	7.27
ALBION	2.3	4.40	2.72	7.13
POWER	4.0	4.09	2.72	6.81
REMINGTON	2.6	3.97	2.48	6.44
CALIBRA	4.3	3.59	2.30	5.89
BG34	3.8	3.44	2.28	5.73
LINN	3.5	3.49	2.14	5.63

UNIVERSITY OF KENTUCKY FORAGE TRIAL SOWN SEPTEMBER 5, 2014 AT LEXINGTON, KENTUCKY.

<sup>1</sup>Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

## 2019 PSU TRIAL DATA

VARIETY	2018 YIELD	2019 YIELD	2-YEAR YIELD TOTAL	CRUDE PROTEIN (%)	30-HR NDFD
<b>TETRAMAG</b>	<b>8.03</b>	<b>5.27</b>	<b>13.30</b>	<b>14.19</b>	<b>57.89</b>
REMINGTON	7.89	4.70	12.59	11.69	57.55
ELENA	7.46	4.94	12.40	13.91	57.30
KENTAUR	6.66	5.01	11.67	11.69	60.08
POLIM	6.82	4.39	11.21	14.47	61.53
QUARTERMASTER	6.53	4.58	11.11	12.92	56.29
GARBOR	6.10	4.81	10.91	11.57	57.45
DEXTER 1	5.73	5.11	10.84	12.91	60.32

PENN STATE UNIVERSITY FORAGE TRIAL AT ROCK SPRINGS, PENNSYLVANIA.

**ESTABLISHMENT** Tetramag readily establishes on loosened bare soil or in close cut harvested fields for interseeding or cover crop use. For typical new seeding applications apply at a rate of 25-35 lbs. per acre and 5-10 lbs. per acre into thinning alfalfa stands. Use a Brillion seeder, a no-till drill or broadcast followed by a culti-packer. Seed to soil contact is critical to successful germination and establishment. For highest quality hay harvest at first boot stage.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.



## TETRAPRIME

ITALIAN RYEGRASS

- IMPROVED WINTER HARDINESS
- EXCELLENT DROUGHT TOLERANCE
- SUPERB FORAGE QUALITY
- SELECTED FOR GRAZING TOLERANCE
- HIGH FORAGE YIELD
- IMPRESSIVE VIGOR & DISEASE TOLERANCE

## IMPROVED YEAR-ROUND PERFORMANCE

**Tetraprime** establishes the new benchmark for Italian ryegrass varieties. With a very low seedhead count at harvest, rest assured that forage quality and palatability will far exceed that of traditional annual ryegrass cultivars. Selected for grazing applications, **Tetraprime** has excellent grazing tolerance and can be grazed close without jeopardizing the integrity of the field. This close-graze ability also allows for total forage usage. **Tetraprime** has a high fiber digestibility, coupled with improved improved winter hardiness, excellent drought tolerance and low aftermath heading, and you have an Italian ryegrass with unparalleled flexibility.

### 2018 UK TRIAL DATA

VARIETY	WINTER INJURY JAN*	% STAND		TOTAL YIELD (T/A) % OF MEAN
		2017 Oct	2018 May	
<b>TETRAPRIME</b>	<b>6.8</b>	<b>88</b>	<b>86</b>	<b>109</b>
KOGA	7.0	69	50	104
GULF	7.5	95	61	96
FEAST II	8.8	95	51	96
MELQUATRO	8.0	75	36	80

2017 UNIVERSITY OF KENTUCKY FORAGE TRIAL. \*WINTER INJURY RATED ON A SCALE OF 0-9.

### 2013 UK TRIAL DATA

VARIETY	PERCENT STAND				YIELD						
	2012 Oct	2013			2012 Dec	2013					
		Mar	Jul	Aug		Apr	May	Jun	Jun	Jul	Total
<b>TETRAPRIME</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>0.51</b>	<b>1.78</b>	<b>1.34</b>	<b>0.49</b>	<b>0.23</b>	<b>0.37</b>	<b>4.72</b>
TAMTBO	100	93	25	7	0.97	1.69	1.36	0.38	0.05	0.00	4.44
FEAST II	100	70	93	92	0.96	0.98	1.41	0.49	0.20	0.31	4.35
TILLAGEMAX BRISTOL	89	87	18	4	0.98	1.60	1.20	0.38	0.08	0.00	4.24
JACKSON	100	100	13	4	1.20	1.69	0.98	0.36	0.02	0.00	4.24
GULF	100	63	6	1	1.06	0.76	1.26	0.29	0.07	0.00	3.34
TILLAGEMAX INDY	91	90	14	3	0.76	1.74	1.20	0.41	0.07	0.00	4.19
LSD VALUE	5	16	13	11	0.29	0.29	0.21	0.14	0.04	0.07	0.62

2013 ANNUAL AND PERENNIAL RYEGRASS AND FESTULOLIUM REPORT, UNIVERSITY OF KENTUCKY

**ESTABLISHMENT** Tetraprime readily establishes on loosened bare soil or in close cut harvested fields for interseeding or cover crop use. For typical new seeding applications apply at a rate of 25-35 lbs. per acre and 5-10 lbs. per acre into thinning alfalfa stands. Use a Brillion seeder, a no-till drill or broadcast followed by a culti-packer. Seed to soil contact is critical to successful germination and establishment. For highest quality hay harvest at first boot stage.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.





## CENTURION

ANNUAL RYEGRASS

- PROVEN WINTER HARDINESS
- FORAGE YIELD LEADER
- SUPERIOR DISEASE RESISTANCE
- SELECTED FOR COVER CROP USE
- SUPERB FORAGE QUALITY
- DEEP ROOTS
- QUICK AND VIGOROUS ESTABLISHER

## THE WINTERHARDY ANNUAL RYEGRASS LEADER

**Centurion** is an ideal choice for dairies, beef, and hay operations that need an annual ryegrass that can perform in multiples roles, as well as for growers looking for a strong cover crop. **Centurion** sets the bar in university testing across the U.S. with a 109% average of the trial means in 15 locations and 29 trials over 8 years versus competing varieties. **Centurion** establishes quickly, outcompeting and suppressing weeds, capturing residual nitrogen and helping build organic matter. A proven winterhardy annual with agronomic traits that growers trust for forage or cover crop.

### 2015 PSU TRIAL DATA

VARIETY	DM T/A TOTAL	CP%	CP/A (lbs.)	NDF%	NDFD <sup>30</sup>
<b>CENTURION</b>	<b>5.06</b>	<b>12.5</b>	<b>1265</b>	<b>55.7</b>	<b>77</b>
MARSHALL	4.30	12.6	1085	54.8	73
JACKSON	4.21	13.4	1129	56.9	72
BARMULTRA II	3.83	14.7	1126	49.2	73
NELSON	3.80	14.1	1073	52.9	72
MEAN*	4.01	13.5	1079	53.9	73

2015 PENN STATE UNIVERSITY FORAGE TRIAL. \*MEAN OF ALL 10 TRIAL ENTRIES.

### 2014 UK TRIAL DATA

VARIETY	DM T/A TOTAL	% OF MEAN	WINTER INJURY <sup>2</sup>
<b>CENTURION</b>	<b>3.74</b>	<b>150</b>	<b>0.5</b>
WINTERHAWK	3.39	136	1.5
MARSHALL	2.84	114	0.5
JACKSON	2.84	114	1.0
GULF	1.95	78	6.3
MEAN*	2.49	-	2.8

2014 UNIVERSITY OF KENTUCKY, LEXINGTON FORAGE TRIAL. \*MEAN OF ALL 29 TRIAL ENTRIES. <sup>2</sup>WINTER INJURY RATED ON A SCALE OF 0-9.

### 2011 MSU TRIAL DATA

VARIETY	TOTAL YIELD	% OF MEAN
<b>CENTURION</b>	<b>3.86</b>	<b>123</b>
MARSHALL	3.8	121
WINTERHAWK	3.37	107
LONESTAR	3.36	107
JACKSON	2.72	87
MEAN*	3.14	-

2011 MISSISSIPPI STATE UNIVERSITY FORAGE TRIAL. POPLARVILLE, MS. \*MEAN OF ALL 36 TRIAL ENTRIES.

Miss St Univ Cover Crops Summary 2019		March 15			April 15		
Variety/Species	Entries	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac
Centurion Annual Ryegrass		10	44	1,400	10	65	4,266
Aerifi Radish		8	37	1,532	8	53	2,363
Jackpot Turnip		9	33	977	8	74	2,766
Vivant Hybrid Brassica		8	48	1,033	6	56	1,725
Annual Ryegrass	2	9	44	1,027	10	59	3,457
Radish	4	7	32	1,125	8	47	2,371
Turnip	1	8	41	1,005	7	65	2,245
Cereal Rye	6	9	36	2,354	10	8	4,856

**ESTABLISHMENT** Centurion readily establishes on loosened bare soil or in close-cut harvested fields. For typical new seeding, plant at a rate of 30-35 lbs. per acre. For overseeding and cover crop use seed at a rate of 25-35 lbs. per acre for pastures. Use a Brillion seed-er, a no-till drill, or broadcast followed by a cultipacker. Seed to soil contact is critical to successful germination and establishment. For highest hay quality harvest at initial boot stage.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.



## RANAHAN

TETRAPLOID RYEGRASS

- FULL SEASON PRODUCTION
- LATE MATURITY
- EXCELLENT YIELDS
- DISEASE RESISTANT
- GUARANTEED TETRAPLOID

### A FORAGE AS IMPORTANT AS YOUR TOP RANCH HAND

**Ranahan** is an ideal choice for beef and dairy cattle providing season long production. The higher intake and more digestible fiber of tetraploid ryegrass can mean greater animal performance.

**Ranahan**, with its erect growth, is suitable for green chop, baleage, silage or hay. Late maturity or delayed heading allows for extended grazing for a greater harvest window. The more open sward of a tetraploid ryegrass allows for more diversity of plant species which contribute to soil health, nitrogen fixation, and rumen fill. **Ranahan** was developed by utilizing the highest-yielding and disease resistant Southern ryegrass cultivars crossed with Peak Plant Genetics private plant collection.

*QUALITY ASSURANCE: To ensure the highest level of quality, every 55,000 lb. lot of Ranahan is tested for mechanical purity, germination and ploidy levels.*



### LSU & MSU TRIAL DATA

VARIETY	2019 LSU & 2018 MSU FORAGE YIELD								
	LSU LOCATIONS				MSU LOCATIONS				
	FRANKLINTON	JEANERETTE	WINNSBORO	MEAN	HOLLY SPRINGS	STARKVILLE	NEWTON	POPLARVILLE	MEAN
<b>RANAHAN</b>	<b>10,898</b>	<b>4,235</b>	<b>5,267</b>	<b>6,800</b>	<b>5,305</b>	<b>6,922</b>	<b>6,098</b>	<b>6,277</b>	<b>6,150</b>
NELSON	10,460	3,904	5,641	6,668	3,611	6,002	6,231	7,864	5,927
BIG BOSS	10,588	3,924	5,692	6,735	5,680	6,771	5,812	6,031	6,074
TAMTBO	12,299	3,879	4,891	7,023	5,666	4,855	6,033	7,095	5,912
TETRASTAR	9,388	3,874	5,409	6,224	5,389	5,584	5,605	6,915	5,873

2019 LOUISIANA STATE UNIVERSITY AND 2018 MISSISSIPPI STATE UNIVERSITY FORAGE TRIAL. YIELD FROM MULTIPLE LOCATIONS.

### 2020 TEXAS A&M TRIAL DATA

VARIETY	FEB. 25 LBS DM/AC	MAR. 26 LBS DM/AC	MAY 11 LBS DM/AC	TOTAL LBS DM/AC
<b>RANAHAN</b>	<b>2,230</b>	<b>2,839</b>	<b>1,815</b>	<b>6,884</b>
TAMTBO	2,073	2,847	1,496	6,417
MAXIMUS	1,995	2,929	1,487	6,411
NELSON	1,838	3,097	1,392	6,327
PRINE	1,905	2,589	1,722	6,217
WAX MARSHALL	1,699	2,789	1,241	5,730
JUMBO	1,322	2,723	1,626	5,672
GULF	1,650	2,737	1,238	5,626
JACKSON	1,722	2,775	1,052	5,550
PASSEREL PLUS	1,812	2,641	1,015	5,469

2019-2020 TEXAS A&M FORAGE YIELD TRIAL.

**ESTABLISHMENT** Ranahan readily establishes on loosened bare soil or in close-cut harvested fields. For typical new seeding, applications apply at a rate of 40-45 lbs. per acre. For overseeding and cover crop use seed at a rate of 25-35 lbs. per acre for pastures and 3-5 lbs. per acre into thinning alfalfa stands. Use a Brillion seeder, a no-till drill, or broadcast followed by a cultipacker. Seed to soil contact is critical to successful germination and establishment. For highest hay quality harvest at initial boot stage.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.



## MVS 4220Q

ALFALFA

- HIGH-YIELDING AND HIGH-QUALITY
- FALL DORMANCY: 4
- WINTER HARDINESS: 2
- DISEASE RESISTANCE INDEX (DRI): 35/35
- HIGHLY RESISTANT (HR) TO STEM NEMATODE

## THE NEXT STEP IN ALFALFA DEVELOPMENT

Mountain View Seeds is proud to announce a new proprietary alfalfa variety, **MVS 4220Q**. Bred for maximum performance thanks to its high yield, persistence and quality, **MVS 4220Q** promises to be a major improvement for alfalfa growers across the country.

**MVS 4220Q** is an FD4 variety that packs a big punch against alfalfa diseases with a DRI of 35/35, backed by high resistance (HR) to stem nematode and spotted alfalfa aphid, as well as resistance (R) to pea aphid.

**MVS 4220Q** is a variety built to excel in a wide range of environments, geographies, and management systems.

MVS 4220Q ADAPTABILITY



# AGRONOMIC & PEST RESISTANCE TRAITS

FALL DORMANCY	4
WINTER HARDINESS	2
DISEASE RESISTANCE INDEX	35/35
ANTHRACNOSE	HR
BACTERIAL WILT	HR
FUSARIUM WILT	HR
VERTICILLIUM WILT	HR
PHYTOPHTHORA ROOT ROT	HR
APHANOMYCES ROOT ROT (RACE 1)	HR
APHANOMYCES ROOT ROT (RACE 2)	HR
PEA APHID	R
SPOTTED ALFALFA APHID	HR
STEM NEMATODE	HR

Competitor	Platform	MVS 4220Q Yield % Check	Competitor Yield % Check	Adv %	Locations
AFX 457	Alforex Seeds	104.7	89.8	15.0	2
Rebound 6.0	Croplan	104.7	95.5	9.2	2
S5V12	Pioneer	106.5	97.4	9.1	6
Hi-Gest 360	Dairyland	104.7	97.2	7.5	2
S4Q14	Pioneer	103.7	98.2	5.5	16
Grandstand II	Dyna-Gro	104.7	99.6	5.1	2
WL 363HQ	W-L Research	103.7	99.4	4.3	16
HybriForce-3400	Dairyland	103.6	99.8	3.8	14
WL 354HQ	W-L Research	103.7	100.0	3.7	16
LegenDairy XHD	Croplan	104.7	101.4	3.3	2
FSG 524	Allied Seed	104.7	102.0	2.7	2
S5Q28	Pioneer	103.7	101.2	2.6	16
HybriForce-3420Wet	Dairyland	104.7	102.3	2.4	2
Lightning Bolt	Preferred Seed	104.7	102.8	1.9	2
S4Q29	Pioneer	104.7	104.2	0.5	2
AFX 579	Alforex Seeds	104.7	104.4	0.3	2
S4VQ52	Pioneer	103.7	103.5	0.3	16
S5V50	Pioneer	104.5	104.2	0.3	22
Rebound 6.0XT	Croplan	104.7	105.5	-0.8	2
PGI 529	Alforex Seeds	103.6	104.8	-1.2	14
S5Q27	Pioneer	104.4	105.8	-1.3	20
FSG 426	Allied Seed	104.7	107.2	-2.5	2
AFX 469	Alforex Seeds	104.7	108.3	-3.6	2



LEGUMES

- Alfalfa is a very “foundational” crop; start with adequate fertility levels; pH 6.7-7.0; P ≥ 50 lbs/ac; K ≥ 220-250 lbs/ac
- Plant into well-drained soil type, firm seedbed, seeding depth ¼”
- Planting rate, regardless of nurse or companion crop is 17-22 lbs/ac; if broadcast or no-till seeded, consider increasing seeding rate 10-20%
- Keep nurse crop < 1 bu.; companion crop < 2 lbs.
- Imperative to plant into moist soils where irrigation not available, not in dry soil soils anticipating rainfall
- **GOAL:** maximum amt. of alfalfa seedlings per sq. ft. (20-30 plants per sq ft in seeding year)





## STAMINA

WHITE CLOVER

- INTERMEDIATE TYPE
- HIGH-YIELDING
- EXCELLENT PERSISTENCE
- AGGRESSIVE GROWTH PATTERN AND STOLON DENSITY
- USE IN GRAZING SYSTEMS, WILDLIFE HABITAT OR EROSION CONTROL

### A LONG-LASTING, HIGH-YIELDING CLOVER

**Stamina** White clover is a new intermediate-type selected for higher forage yield and persistence under extreme grazing pressure. As an intermediate, **Stamina's** aggressive growth pattern has high stolon density and rooting, allowing it to persist well under hoof and grazing pressure. In yield and persistence testing across Midwest, Northeast and Mid-South universities, **Stamina** has firmly established itself as an elite high-yield, very persistent, durable white clover. Choose **Stamina** if you want a white clover for the long haul.

### 2018 UK GRAZING TRIAL DATA

VARIETY	PERCENT STAND								
	2014	2015		2016		2017		2018	
	NOV. 3	APR. 6	OCT. 30	MAR. 24	OCT. 17	MAR. 22	OCT. 19	MAR. 20	SEP. 26
STAMINA	72	88	88	89	68	45	66	58	65
DURANA	83	91	91	86	69	48	64	59	65
PATRIOT	87	93	93	90	78	53	62	53	55
ALICE	91	92	92	85	53	35	53	47	52
LSD VALUE	9	8	8	10	16	17	16	17	13

UNIVERSITY OF KENTUCKY FORAGE TRIAL PLANTED SEPTEMBER 9, 2014 AT LEXINGTON, KENTUCKY.

### 2018 MSU YIELD TRIAL DATA

VARIETY	2018 YIELD ALL LOCATIONS	2018 % OF YIELD MEAN
<b>STAMINA</b>	<b>4.34</b>	<b>110</b>
RENOVATION	4.17	106
COMPANION	4.01	102
REDHAWK	3.92	100
ROMANO	3.78	96
COBRA	3.67	93
RAMPART	3.65	93

MISSISSIPPI STATE UNIVERSITY FORAGE TRIAL PLANTED OCTOBER 17 2017  
AT HOLLY SPRINGS, NEWTON, AND STARKVILLE, MISSISSIPPI.

### 2019 PSU YIELD TRIAL DATA

VARIETY	2 YR. AVG.	% OF MEAN
<b>STAMINA</b>	<b>3.18</b>	<b>108</b>
SCLO-16KA	2.90	104
LEGACY	2.68	97
RENOVATION	2.40	95

PENN STATE UNIVERSITY FORAGE TRIAL  
PLANTED AUGUST 15, 2017 AT ROCK SPRINGS, PENNSYLVANIA.

LEGUMES

**ESTABLISHMENT** The standard seeding rate is 2-5 lbs per acre. For pasture establishment, seeds are drilled into a well-prepared seedbed that has been plowed, harrowed, and compacted to produce a firm seedbed. Stamina White Clover can also be established successfully by no-tilling or broadcast while grasses aren't rapidly growing. Avoid overapplying nitrogen during establishment of Stamina White Clover. The seeds are inoculated before seeding. The proper time of seeding is determined by seasonal and moisture conditions. This may vary from April to May. Late summer and fall seedings should be conducted while adequate moisture is still in the soil to assure establishment before freezing.

**MANAGEMENT** Management for forage is aimed at maintaining 20% to 30% clover. Close grazing (2 inch stubble height) favors clover, whereas light grazing favors grass. Well-fertilized grass will outgrow clover in fall and winter and could smother the clover. Spring applications of nitrogen will stimulate grass and provide early feed, but excessive rates are detrimental to the clover stand. Maintaining proper potassium and phosphate levels per soil test greatly benefit clovers in grass.

# BLAZE



## RED CLOVER



### BLAZE

RED CLOVER

- HIGH-YIELDING
- EXCELLENT PERSISTENCE
- IMPROVED RESISTANCE TO ANTHRACNOSE, POWDERY MILDEW AND BLACK PATCH
- FOR USE IN BEEF, DAIRY OR HAY OPERATIONS

### THE HOTTEST RED CLOVER ON THE MARKET!

**Blaze Red Clover** is a multi-purpose red clover that is suitable for hay, grazing, cover crops and pollinators. **Blaze Red Clover** is widely-adapted from the Upper Midwest and throughout the Transition Zone. Studies have shown that the addition of red clovers, like **Blaze Red Clover**, can significantly improve animal health and growth rate while fixing nitrogen and creating healthier soils. **Blaze Red Clover** is coated and preinoculated for planting ease. It can be easily frost seeded with a broadcast seeder or drilled at the same depth as cool season grasses.



### 2019 UNIV. OF WISC. YIELD TRIAL DATA

VARIETY	1 YEAR TOTAL TONS/ACRE	% OF TRIAL MEAN
<b>BLAZE</b>	<b>1.74</b>	<b>109.7</b>
RUBY RED	1.66	104.5
MARATHON	1.65	104.2
BART TP 11	1.61	101.5
FREEDOM MR	1.60	100.9
BART TP 9	1.52	96.2
LSD	0.37	-

2019 UNIVERSITY OF WISCONSIN FORAGE TRIAL, PRAIRIE DU SAC, WI.

### 2019 PSU YIELD TRIAL DATA

VARIETY	YIELD(TONS/ACRE)			
	CUT 1 JUL. 11	CUT 2 AUG. 20	2019 TOTAL	% OF TRIAL MEAN
<b>BLAZE</b>	<b>2.50</b>	<b>1.26</b>	<b>3.76</b>	<b>107</b>
FREEDOM MR	2.53	1.15	3.69	105
BART TP 9	2.41	1.03	3.43	98
BART TP 11	2.30	1.08	3.38	97
FREEDOM!	2.20	1.03	3.23	92

2019 PENN STATE CLOVER TRIAL, ROCK SPRINGS, PA.

### 2017 FFR META ANALYSIS

VARIETY	YIELD(TONS/ACRE)		% STAND		BLACK PATCH RESISTANCE IN-2010 <sup>5</sup>	BLACK PATCH RESISTANCE IN-2011 <sup>5</sup>
	KY <sup>1</sup> 2-YR TOTAL	IN <sup>2</sup> 2-YR TOTAL	IN <sup>3</sup> 4TH YR	VA <sup>4</sup> 3RD YR		
<b>BLAZE</b>	<b>8.34</b>	<b>7.51</b>	<b>30.0</b>	<b>86.7</b>	<b>3.3</b>	<b>1.3</b>
ARLINGTON	6.59	3.72	1.0	26.7	9.0	7.0
FREEDOM	8.07	6.48	15.0	78.3	5.7	3.7
KENLAND	7.38	5.96	25.0	26.7	5.7	4.3
MARATHON	6.72	5.61	18.3	30.0	6.3	4.0

FFR JUNE 2017 REPORT. <sup>1</sup>FRANKLIN, KY; <sup>2</sup>OTTERBEIN, IN; <sup>3</sup>BUCK CREEK, IN; <sup>4</sup>HARRISONBURG, VA. <sup>5</sup>Rating: 1 = < 10% infection; 9 = > 90%

**ESTABLISHMENT** Seeding rates are 6-8 lbs. per acre with companion grasses or 10-12 lbs. per acre as a stand-alone crop. Blaze Red Clover can also be established successfully by no-tilling or broadcast while grasses aren't rapidly growing. Avoid overapplying nitrogen during establishment of Blaze Red Clover. Blaze Red Clover is preinoculated for seeding. The proper time of seeding is determined by seasonal and moisture conditions. This may vary from late winter to May. Late summer and fall seedings should be planted with adequate moisture to assure establishment before freezing.

**MANAGEMENT** Management for forage is aimed at maintaining 20% to 30% clover. High nitrogen applications (>50-60 lbs N per acre) of cool-season grass will outgrow clover in fall and winter and could smother the clover. Spring applications of nitrogen will stimulate grass and provide early feed, but excessive rates are detrimental to the clover stand. Maintaining proper pH, potassium, and phosphate levels with a soil test greatly benefit clovers in grass.

# AERIFI

## RADISH



### AERIFI

CERTIFIED RADISH

- VERY LATE MATURING
- LONGER TAP ROOT
- GUARANTEED GENETIC PURITY
- INCREASE SOIL FERTILITY
- IMPROVE SOIL QUALITY
- WEED SUPPRESSION
- REDUCE WATER RUNOFF

### CERTIFIED FOR PREDICTABLE RESULTS

**Aerifi** Radish is a leading forage and cover crop variety in the brassica category, and is certified, guaranteeing that the seed you plant will produce the crop that you paid for. **Aerifi** is bred for uniform growth, fast establishment and late maturity, and usually flowers 3-4 day later than competitive varieties. **Aerifi's** late maturity delivers an extra long tap root, which in two years of testing has been shown to be more than 2x longer than the leading competitors brand. This deeper growth allows **Aerifi** to scavenge lost nutrients deep in the soil profile, and when decomposing, reclaimed nutrients are released back into the topsoil, becoming available for the next crop.

**Aerifi** is quick to germinate and establish, outpacing weeds with rapid canopy, but also grows well with comparable brassicas, small grains or annual ryegrass. **Aerifi's** quick growth certainly allows a better shot at establishment before temperatures drop and kill less vigorous varieties. Whether you utilize brassicas for forage or cover crop, **Aerifi** needs to be part of your plan.

## WHAT ARE COVER CROPS

Cover crops are crops planted primarily to manage soil fertility, soil quality, water, weeds, pests, diseases, biodiversity in farm systems.

Cover crops are of interest in sustainable agriculture as many of them improve the sustainability of farm attributes and may also indirectly improve qualities of neighboring natural ecosystems. Farmers choose to grow and manage specific cover crop types based on their own needs and goals but can also be influenced by the biological, environmental, social, cultural, and economic factors they operate in.

## INCREASE CROP PRODUCTION

One of the primary uses of cover crops is to increase soil fertility. These types of cover crops are referred to as "green manure." They are used to manage a range of soil macronutrients and micronutrients. Of the various nutrients, the impact that cover crops have on nitrogen management has received the most attention from researchers and farmers, because nitrogen is often the most limiting nutrient in crop production.

Often, green manure crops are grown for a specific period, and then plowed under before reaching full maturity in order to improve soil fertility and quality.

Green manure crops are commonly legumes. Legume cover crops are typically high in nitrogen and can often provide the required quantity of nitrogen for increased crop production. This quality of cover crops is called fertilizer replacement value.

## ADD VITAL ORGANIC MATTER

Cover crops can also improve soil quality by increasing soil organic matter levels through the input of cover crop biomass over time. Increased organic matter enhances soil structure, as well as the water and nutrient holding and buffering capacity of soil.

Soil quality is managed to produce optimum circumstances for crops to flourish. The principal factors of soil quality are soil salination, pH, microorganism balance and the prevention of soil contamination.

## CROWD OUT COMPETITION

Thick cover crop stands often compete well with weeds during the cover crop growth period, and can prevent most germinated weed seeds from completing their life cycle and reproducing. If the cover crop is left on the soil surface rather than incorporated into the soil as a green manure after its growth is terminated, it can form a nearly impenetrable mat. This drastically reduces light transmittance to weed seeds, which in many cases reduces weed seed germination rates.

In a recent study released by the Agricultural Research Service (ARS) scientists examined how rye seeding rates and planting patterns affected cover crop production. The results show that planting more pounds per acre of rye increased the cover crop's production as well as decreased the amount of weeds. The same was true when scientists tested seeding rates on legumes and oats; a higher density of seeds planted per acre decreased the amount of weeds and increased the yield of legume and oat production.

## STOP SOIL EROSION AND BETTER UTILIZE WATER

By reducing soil erosion, cover crops often also reduce both the rate and quantity of water that drains off the field. Cover crop biomass acts as a physical barrier between rainfall and the soil surface, allowing raindrops to steadily trickle down through the soil profile. In addition increasing the biomass of the soil helps to retain this moisture.

Just before cover crops are killed they contain a large amount of moisture. When the cover crop is incorporated into the soil, or left on the soil surface, it often increases soil moisture. On farms where water for crop production is in short supply, cover crops can be used as a mulch to conserve water by shading and cooling the soil surface. This reduces evaporation of soil moisture.

## UTILIZE LOST NUTRIENTS BURIED DEEP IN THE SOIL

Cover Crops are an ideal way to re-capture lost nutrients. Nutrients are often carried down the soil profile never to be utilized. Cover crops can tap into those lost nutrients and bring them to the surface. Choose species with long root systems.

## COVER CROP DATA

Aerifi's ability to hold down weeds, sequester nitrogen, and yield whether utilized early or late season compared to other brassicas make it a go-to product in the cover crop or winter annual forage space.

### 2019 MSSU COVER CROP TRIAL

AERIFI % OF TRIAL MEAN*	WEED SUPPRESSION	TOTAL N AVAIL	DM YIELD LBS/AC
MARCH	115	116	136
APRIL	100	113	100

MISSISSIPPI STATE UNIVERSITY COVER CROP TRIAL

Miss St Univ Cover Crops Summary 2019		March 15			April 15		
Variety/Species	Entries	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac
Centurion Annual Ryegrass		10	44	1,400	10	65	4,266
Aerifi Radish		8	37	1,532	8	53	2,363
Jackpot Turnip		9	33	977	8	74	2,766
Vivant Hybrid Brassica		8	48	1,033	6	56	1,725
Annual Ryegrass	2	9	44	1,027	10	59	3,457
Radish	4	7	32	1,125	8	47	2,371
Turnip	1	8	41	1,005	7	65	2,245
Cereal Rye	6	9	36	2,354	10	8	4,856

BRASSICAS



# JACKPOT

## F O R A G E • T U R N I P



### JACKPOT

FORAGE TURNIP

- LOWER-GROWING BULB
- IDEAL FOR GRAZING AND COVER CROP
- EXCELLENT REGROWTH AFTER GRAZING
- HIGH FORAGE YIELD
- EXCELLENT PALATABILITY

### GRAZING AND COVER CROP TURNIP

**Jackpot** is a new erect-growing forage turnip with multiple crowns and a firmly anchored round bulb suitable for grazing and cover crops. The **Jackpot** bulb doesn't protrude out of the soil as much as other types, allowing it to regrow and reduce hoof damage. In addition, **Jackpot** has excellent palatability and digestibility which increases intake and animal performance. Maturity is within 60-90 days of germination with optimum regrowth within 30 days for rotational grazing. **Jackpot** is also an excellent nitrogen scavenger making it ideal for use in cover crops. With greater soil contact than the old purple tops or tankard shaped bulbs, **Jackpot** is the superior choice for soil health. Strike it rich with **Jackpot**!

## APPLICATION

Jackpot has broad adaptation and can be used for all classes of livestock, including dairy, beef and sheep. Jackpot can extend the grazing season when cool season pastures slow down in summer are late fall. Jackpot re-grows along with other summer annual grasses for multiple grazings. Plant Jackpot with cereal grains or Annual ryegrass in the spring or late-summer to provide excellent tonnage and high quality forage to this mix. Jackpot can also be used as a break-crop in order to renovate older pastures to different species and newer varieties. An annual crop gives a bigger window to eliminate the old undesirable forage through the use of herbicides and tillage.

With the potential to yield 10,000lbs of dry matter per acre over multiple grazings, Jackpot has very good productivity and shows excellent plant persistence after multiple grazings. It is a fast establishing variety which gives high quality feed, ready for grazing within 42-70 days of sowing.

## MANAGEMENT

Allow at least 35– 40 days before initial grazing of Jackpot and then expect to re-graze in 25-30 day intervals. Graze no lower than 4" if for multiple grazings. Over-grazing can damage the crown and should be avoided. To maximize regrowth potential, graze before the plant bolts. For best results, soil pH should be at least 5.6 and ideally between 5.8 and 6.2. Apply at least between 35-55 lbs of phosphate per acre at planting and a light application of nitrogen after grazing. However, its recommend to avoid high nitration levels in order to reduce nitrate issues in the crop. For best results, retain a soil sample analysis and adjust soils accordingly.

## SEEDING RATES

Avoid sowing seeds too deep and too far apart. Ideal depth for most forage seeds is 1/8-1/4 inches. Planting seeds deeper than ¼ inch may not allow them to establish. Sufficient seed-to-soil contact is extremely vital. Rolling or packing the soil after seeding can ensure this. If no-tilling, the right seeding depth is 1/4 inches deep. Jackpot can be broadcast seeded followed by harrowing, packing or livestock hoofing it in. Jackpot may be aerial seeded in late summer for fall/winter grazing.

*Direct Drilling:* 3-5 lbs. /ac

*Broadcasting:* 4-6 lbs. /ac

*Seeding with other species:* 2-3lbs. /ac

## COVER CROP DATA

The chart below indicates Jackpot's ability to suppress weeds mid and late-season. Additionally, Jackpot's late-maturity allows it to scavenge N and yield more-compared to other well-known turnip varieties. These traits combine to make Jackpot a true multi-purpose turnip.

### 2019 MSSU COVER CROP TRIAL

JACKPOT % OF TRIAL MEAN*	WEED SUPPRESSION	TOTAL N AVAIL	DM YIELD LBS/AC
MARCH	125	94	90
APRIL	103	139	119

MISSISSIPPI STATE UNIVERSITY COVER CROP TRIAL

Miss St Univ Cover Crops Summary 2019		March 15			April 15		
Variety/Species	Entries	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac
Centurion Annual Ryegrass		10	44	1,400	10	65	4,266
Aerifi Radish		8	37	1,532	8	53	2,363
Jackpot Turnip		9	33	977	8	74	2,766
Vivant Hybrid Brassica		8	48	1,033	6	56	1,725
Annual Ryegrass	2	9	44	1,027	10	59	3,457
Radish	4	7	32	1,125	8	47	2,371
Turnip	1	8	41	1,005	7	65	2,245
Cereal Rye	6	9	36	2,354	10	8	4,856

BRASSICAS

# VIVANT

## HYBRID BRASSICA



### VIVANT

HYBRID BRASSICA

- LESS BOLTING
- HIGH DIGESTIBILITY
- FAST-ESTABLISHING
- HIGH-YIELDING, LEAFY FORAGE
- GOOD FOR GRAZING
- STRONG REGROWTH
- PROVIDES QUICK FORAGE

### VIVANT LOW-BOLTING HYBRID BRASSICA

**Vivant** is a new, exciting rape x turnip hybrid brassica with great potential and versatility in forage or cover crop use. **Vivant** was selected for late-bolting and vigorous regrowth after grazing. **Vivant's** high feed quality, growth characteristics, and durability as a hybrid make it an outstanding forage or cover crop, combining well with other brassicas, small grains, or other cool-season, winter annual species.



## APPLICATION

Vivant has broad adaptation and can be used for all classes of livestock, including dairy, beef and sheep. Vivant can extend the grazing season when cool season pastures slow down in summer are late fall. Vivant re-grows along with other summer annual grasses for multiple grazings. Plant Vivant with cereal grains or Annual ryegrass in the spring or late-summer to provide excellent tonnage and high quality forage to this mix. Vivant can also be used as a break-crop in order to renovate older pastures to different species and newer varieties. An annual crop gives a bigger window to eliminate the old undesirable forage through the use of herbicides and tillage.

With the potential to yield 10,000lbs of dry matter per acre over multiple grazings, Vivant has very good productivity and shows excellent plant persistence after multiple grazings. It is a fast establishing variety which gives high quality feed, ready for grazing within 42-70 days of sowing.

## MANAGEMENT

Allow at least 35– 40 days before initial grazing of Vivant and then expect to re-graze in 25-30 day intervals. Graze no lower than 4" if for multiple grazings. Over-grazing can damage the crown and should be avoided. To maximize regrowth potential, graze before the plant bolts. For best results, soil pH should be at least 5.6 and ideally between 5.8 and 6.2. Apply at least between 35-55 lbs of phosphate per acre at planting and a light application of nitrogen after grazing. However, its recommend to avoid high nitration levels in order to reduce nitrate issues in the crop. For best results, retain a soil sample analysis and adjust soils accordingly.

## SEEDING RATES

Avoid sowing seeds too deep and too far apart. Ideal depth for most forage seeds is 1/8-1/4 inches. Planting seeds deeper than ¼ inch may not allow them to establish. Sufficient seed-to-soil contact is extremely vital. Rolling or packing the soil after seeding can ensure this. If no-tilling, the right seeding depth is 1/4 inches deep. Vivant can be broadcast seeded followed by harrowing, packing or livestock hoofing it in. Vivant may be aerial seeded in late summer for fall/winter grazing.

*Direct Drilling: 3-5 lbs. /ac*

*Broadcasting: 4-6 lbs. /ac*

*Seeding with other species: 2-3lbs. /ac*

## COVER CROP DATA

Vivant's primary use is for earlier season weed suppression and nitrogen sequestration, or in tandem with a product such as Jackpot Turnip to fill in early and late in cover crop growth. Vivant also yields well alongside small grains, annual ryegrass or other brassicas for winter annual pasture.

### 2019 MSSU COVER CROP TRIAL

VIVANT % OF TRIAL MEAN*	WEED SUPPRESSION	TOTAL N AVAIL	DM YIELD LBS/AC
MARCH	111	136	95
APRIL	77	105	74

MISSISSIPPI STATE UNIVERSITY COVER CROP TRIAL

Miss St Univ Cover Crops Summary 2019		March 15			April 15		
Variety/Species	Entries	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac	Weed Suppression Rating	Total N Availability	DM Yield Lbs/Ac
Centurion Annual Ryegrass		10	44	1,400	10	65	4,266
Aerifi Radish		8	37	1,532	8	53	2,363
Jackpot Turnip		9	33	977	8	74	2,766
Vivant Hybrid Brassica		8	48	1,033	6	56	1,725
Annual Ryegrass	2	9	44	1,027	10	59	3,457
Radish	4	7	32	1,125	8	47	2,371
Turnip	1	8	41	1,005	7	65	2,245
Cereal Rye	6	9	36	2,354	10	8	4,856

BRASSICAS

# bonus

FORAGE TEFF GRASS



## BONUS

FORAGE TEFF GRASS

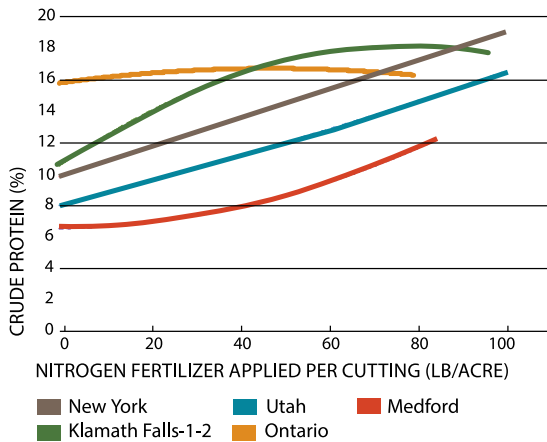
- EXCELLENT FORAGE QUALITY
- FAST-GROWING
- HIGH-YIELDING
- EXCELLENT ROOT STRUCTURE FOR DROUGHT TOLERANCE
- FOLIAR DISEASE RESISTANCE
- EXCELLENT FOR HAY

## BONUS TEFF FOR BONUS SUMMER FORAGE

**BONUS** is a fine-stemmed warm season annual grass that produces multiple crops of high quality forage in a short growing season.

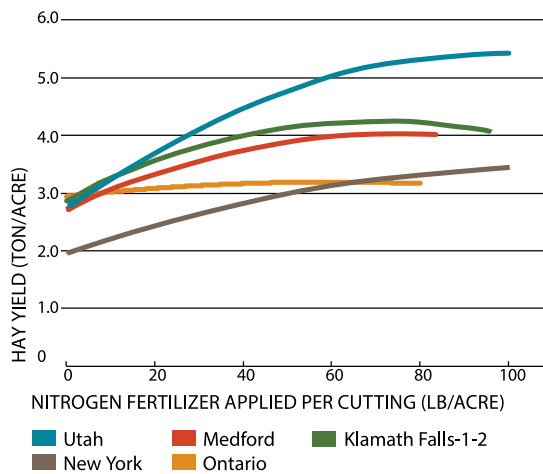
**BONUS** has performed very well for growers across the country and in limited university tests for this new variety. **BONUS** can be used for all classes of livestock and gives growers the option of a warm season annual without concern for issues with prussic acid. Overall forage quality of **BONUS** teff is above average compared to many warm season grasses whether considering crude protein, digestible fiber or relative forage quality. **BONUS** is a very fine-textured hay, comparable to timothy, and nicely fills the gap in summer forage production for all classes of livestock.

**Figure 1. Teff second cut crude protein**



Data from Hunter et al., 2009; Creech et al., 2012; Roseberg et al., 2006

**Figure 2. Teff total yield, two cuts**



Data from Hunter et al., 2009; Creech et al., 2012; Roseberg et al., 2006

## TEFF GRASS NITROGEN RESPONSE

With adequate moisture and fertility teff produces high yields of quality forage in a short period. Analysis of the data illustrated in Figure 1. suggest that 40-60 units of N will result in very suitable crude protein levels for most types of livestock. Figure 2. suggest that the same rate of 40-60 units of N results in yields from 3-5 tons of forage in two harvests. Splitting applications of nitrogen will reduce the issues with elevated nitrate levels.

### 2011 MSU TRIAL DATA

Dry Matter Yields (% of Trial Mean) Starkville, Mississippi, 2011

VARIETY	PLANTING 1	PLANTING 2	Total
<b>Bonus</b>	<b>103</b>	<b>106</b>	<b>104</b>
CW604	101	104	102
Tiffany	97	98	98
Dessie	99	92	96

**ESTABLISHMENT** New seeding: 8-12 (coated) lbs. or 4-6 (raw) lbs./ac. Into existing alfalfa: 4-5 lbs./ac. Any establishment technique should requires a frost-free growing season. Planting must prioritize seeding depth and if possible, a firm seedbed. Ideal depth for most forage seeds is 1/8-1/4 inches. Planting seeds deeper than 1/4 inch may not allow them to germinate and establish well. Sufficient seed-to-soil contact is extremely vital. Rolling or packing the soil after seeding can ensure this. If no-tilling, the right seeding depth is 1/4 inches deep. Bonus can be broadcast seeded followed by very shallow harrowing or packing.

**MANAGEMENT** A soil test is highly recommended as teff needs adequate phosphorous, potassium and sulfur for optimum growth. Applying 50 pounds of nitrogen per acre at planting will be sufficient for good forage production. For optimum forage quality, teff should be harvested in the pre-boot to early boot stage, approximately 50 days after planting at a cutting height of 3 to 4 inches. Harvest regrowth in 35 to 45 days depending on environmental conditions.

SPECIALTY



# CARSON

F O R A G E T I M O T H Y



## CARSON

TIMOTHY

- EARLY-MATURING, WITH HEAD EMERGENCE BETWEEN CLAIR AND CLIMAX
- SUPERB SPRING VIGOR AND YIELD
- IMPRESSIVE DURABILITY AND REGROWTH FOR SUMMER CUTTINGS
- TALLER GROWTH HABIT BUT NOT STEMMY; SUPERIOR FORAGE QUALITY
- GREAT FOLIAR DISEASE RESISTANCE
- DARK GREEN, SOFT FOLIAGE IN HAY

## TIMOTHY AT A WHOLE NEW LEVEL

**Carson** is an impressive new release, and really sets itself apart from other marketed timothys with its solid yield and quality in independent testing across the U.S. as well as university testing thus far.

**Carson** establishes well, has great Spring vigor and canopies quickly, outpacing Spring weeds. **Carson** reaches 50% head emergence slightly later than Clair and earlier than Climax. **Carson** maintains good quality with a taller growth habit, with seedhead expression on multiple cuts. Summer growth is more aggressive than many competitive timothys and thus multiple cuts with seedhead expression can be achieved with **Carson**. Needless to say, if you're in the timothy hay business or utilize timothy in mixed stands of hay or pasture, **Carson** needs to be on your list!

### 2019 UK TRIAL DATA

VARIETY	SEEDLING VIGOR <sup>1</sup> OCT 2017	YIELD (TONS/ACRE)		
		2018	2019	2-YEAR TOTAL
<b>CARSON</b>	<b>4.9</b>	<b>3.96</b>	<b>2.14</b>	<b>6.10</b>
DAWN	5.0	3.53	1.99	5.53
BARPENTA	4.0	3.61	1.77	5.38
BARFLEO	4.8	3.60	1.76	5.36
CLAIR	4.5	3.52	1.61	5.13
CLIMAX	4.8	4.34	1.78	5.12

UNIVERSITY OF KENTUCKY FORAGE TRIAL SOWN SEPTEMBER 8, 2017 AT LEXINGTON, KENTUCKY.

<sup>1</sup>VIGOR SCORE BASED ON A SCALE OF 1 TO 5 WITH 5 BEING THE MOST VIGOROUS SEEDLING GROWTH.

### 2019 NEW YORK TRIAL DATA

VARIETY	2019 YIELD	2018 YIELD	2-YEAR YIELD TOTAL
<b>CARSON</b>	<b>4.62</b>	<b>5.26</b>	<b>9.88</b>
RAKEL	3.84	4.90	8.74
CLIMAX	3.85	4.76	8.61

NEW YORK FORAGE TRIAL SOWN MAY 18, 2017 ITHACA, NY.

**BELOW** This photo below shows the regrowth after the second cutting of Carson versus Climax. Carson regrows faster and provides more forage than Climax.



**ESTABLISHMENT** Timothy is a very small seed, so seeding depth is of utmost importance. Timothy is best established in a very firm seedbed via Brillion seeder or conventional drill or broadcast followed by a cultipacker or roller for good seed-soil contact, without pushing deeper than ¼". Per acre seeding rate is 8-10 lbs. It's critical with timothy to have some seed on top of the ground post planting.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.

**SPECIALTY**

# ENDURE

- CHICORY -



## ENDURE CHICORY

- EXCELLENT FORAGE QUALITY
- HIGH-YIELDING VARIETY
- INCREASED SUMMER PERFORMANCE
- DROUGHT TOLERANT
- IMPROVED PERSISTENCE IN WET SOILS
- PERFECT FOR WILDLIFE

### PERSISTENCE EVEN IN WET SOILS

**Endure** is the newest chicory variety available from the Mountain View Seeds forage program. Bred to withstand wetter soils,

**Endure** excels where other chicory varieties fail. **Endure** is a very high-yielding variety that produces tons of high-quality forage. Drought tolerant with superb summer production, Endure can extend and enhance available grazing days throughout summer. Endure is surprisingly versatile, durable, persistent and provides a high protein diet for livestock or wildlife.



## ESTABLISHMENT

Chicory prefers well to moderately drained soil of medium to high fertility. Flooding, particularly during the summer months, can injure chicory stands so low-lying ground should be avoided.

Chicory establishes best on a moist firm seedbed. The seedbed should be cultipacked before and after broadcast seeding to ensure good seed-to-soil contact and correct planting depth. If using a drill, set the planting depth to no more than ¼ inch.

If no-till seeding clear the area of all standing forage by close grazing, haymaking, or clipping close with a bush-hog. Then spray glyphosate (41% a.i. at 2.5 pts/acre plus surfactant), to kill the existing stand of forage. After applying the glyphosate, wait seven days before planting to ensure no herbicide residue remains.

Lime, Phosphorus and Potassium should be applied according to soil test recommendations with alfalfa as the specified crop. Soil pH should be at least 5.5. Nitrogen fertilizer should be applied at planting at a rate of 35 pounds per acre to stimulate chicory establishment. Subsequent nitrogen applications (30-50 lbs/acre) can be made after each grazing in the spring and fall up to 200 lbs/acre/year.

*Yield and Quality Trials established in Fall 2020 at Mississippi State University and University of Kentucky versus competitive checks and varieties (Data pending).*

## GRAZING MANAGEMENT

Do not allow newly established chicory stands to be grazed until the chicory is at least 8 inches tall. This will generally occur 60 to 80 days after seeding, depending on climatic conditions. Chicory can be grazed to a stubble height of three inches. Chicory should be allowed to accumulate growth of four to six inches before going dormant in the fall.

Chicory will become dormant after the first frost of the year. Grazing may resume in the spring when the plant is at least ten inches tall.

We do not recommend continuously grazing chicory. Chicory production and animal performance is optimized under rotational stocking (rotational grazing) management. Depending on time of year and climatic conditions (and thus the rate of re-growth), a rest period of 14 to 25 days between grazing periods is best for chicory persistence and performance. A stubble height of three inches should remain after grazing. Caution should be taken to not over graze in August as chicory growth slows in August during periods of high temperatures.

Seeding rates for chicory alone or in mixtures.

Seeding rates (lb/ac)	Seeding mixture		
	Chicory	Legume	Grass
Chicory alone	4 to 5		
Chicory in a mixture with:			
Red clover	4 to 5	6 to 8	
White clover	4 to 5	3 to 4	
Red clover and orchardgrass	2 to 3	3 to 4	4 to 6
White clover and orchardgrass	2 to 3	1 to 2	4 to 6
Red clover and tall fescue	2 to 3	3 to 4	8 to 10
White clover and tall fescue	2 to 3	1 to 2	8 to 10

\*Adapted from Penn State publication Agronomy Facts Publication No. 45, Forage Chicory







## SUGARCREST

FESTULOLIUM

- MEADOW FESCUE X PERENNIAL RYEGRASS TYPE
- HIGH FORAGE QUALITY
- EXCELLENT PERSISTENCE
- HIGH-YIELDING
- FAST ESTABLISHMENT

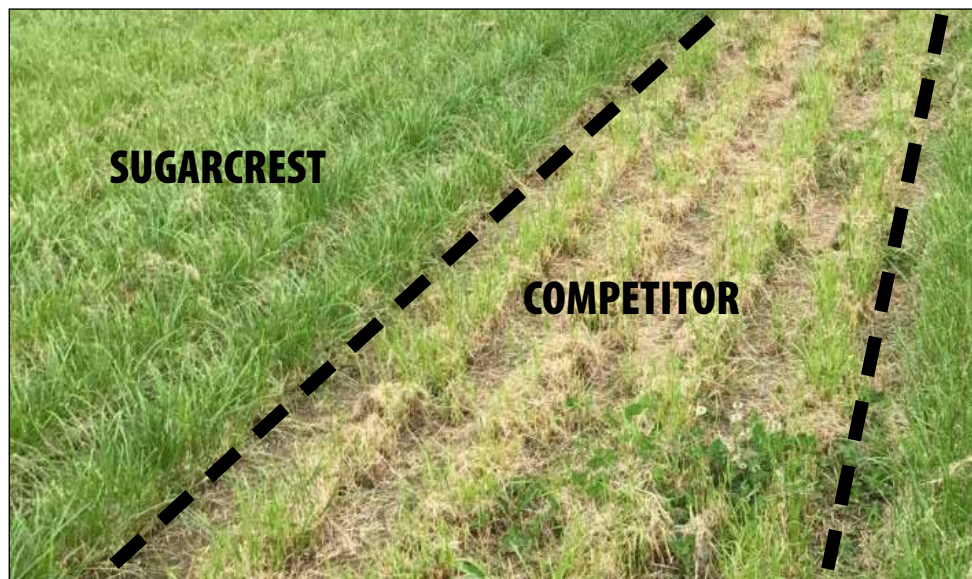
## HIGH QUALITY AND PERSISTENT

**Sugarcrest** is a new perennial ryegrass X meadow fescue hybrid, better known as a festulolium. Festulolium is a term used to describe a number of ryegrass X fescue combinations. Festulolium parents can be Italian ryegrass or perennial ryegrass crossed with tall fescue or meadow fescue. Meadow fescue has long been accepted as a superior quality forage species compared to tall fescue, and although Italian ryegrass will outyield perennial ryegrass in the short run, Italian is short lived. **Sugarcrest** is a combination of perennial ryegrass and a U.S.-adapted meadow fescue which produces a winter-hardy hybrid with added drought tolerance, seedling vigor, and a high feed value. With its unique durability and forage quality package, **Sugarcrest** will be a highly sought after festulolium for some time to come.

# 2018 CORNELL TRIAL DATA

VARIETY	2016 YIELD % OF MEAN	2017 YIELD % OF MEAN	2018 YIELD % OF MEAN	3-YR TRIAL % OF MEAN
<b>SUGARCREST (FEST)</b>	<b>114</b>	<b>100</b>	<b>105</b>	<b>106</b>
BARVITRA	125	114	104	115
REMINGTON	103	111	115	110
SPRING GREEN (FEST)	111	102	107	106
LPTNEAROM	86	104	100	97
CALIBRA	89	95	91	92
GO-AXT	85	87	92	88
LINN	86	87	86	87

Cornell Univ, Ithaca, NY Planted May 1, 2015



**ESTABLISHMENT** Plant at a rate of 15-20 lbs./ac. Proper seed bed preparation is essential. No-till seeding is generally very effective. Avoid planting too deep. Irrigation to supplement seasonal moisture, if available, will insure best establishment and fill-in. Plants should be firmly established before grazing is allowed. Particularly in the first year, overgrazing can seriously reduce stand longevity.

**MANAGEMENT** Proper management begins with correct fertilization. Soil sampling is a great tool to get baseline soil fertility inventory, especially on pH, organic matter, phosphorus, potassium and other macro and micro elements to best determine application rates based on soil maintenance and nutrient removal. Correct nitrogen application rates should consider organic matter, yield goals, stocking rate, etc. Your local agronomy input supplier or extension service can provide valuable regional information. Control broadleaf weeds as necessary.

SPECIALTY





# MVS

## FORAGE & COVER CROPS

*Our Mission: An Agricultural Cooperative Dedicated To Innovative Solutions, Excellent Service, & Long-Term Relationships.*

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