King's AgriSeeds Inc.

High Energy Forages and Soil-Building Cover Crops

Newsletter Spring 2014

"I used to grow straight alfalfa but now put grass with it and I'm impressed. The cows make milk on it. Even if the protein is a bit lower, the fiber digestibility is higher. With quality grass in the baleage, I run my total ration protein slightly lower and still maintain production and components. Total crop yield is actually higher with alfalfa & grass in combination than with alfalfa alone. The Kora fescue yielded good, tested good, and the cows ate it good. I'm excited about trying more grasses, such as late-heading orchardgrasses."

-Dairy Farmer/Long-Time King's Customer
Crop: KingFisher PLH 322 Alfalfa with Kora Tall Fescue

What's Inside

Weather Impact; Long Winter Followed by a Cool Spring

By Tim Fritz, King's General Manager

The Weather Channel released its spring forecast on March 2nd, and the below average temperature weather pattern that we have been in all winter is forecasted to continue below average for March through May. Of course this is a just a forecast, but let's think about the spring planting windows and how they may be impacted.

For cool season spring seeded crops such as alfalfa, clovers, grasses and small grains, this cool forecast would indicate that the typical seeding date windows can be extended beyond normal cut offs. As seeding dates approach, we need to be weather sensitive by looking at long range forecasts and using good old-fashioned farmer intuition. For cool season crops, we need to get the plant well established before the heavy heat of summer moves in. Obviously, the risk of a late calendar date seeding is that the weather pattern makes a radical change and we skip cooler spring weather and jump right into the heat of summer.

For warm season crops such as corn sorghums, sudans, millets and teff, please keep in mind that the minimum soil temperatures that need to be sustained are 50F for corn and 60 to 65F for the other crops listed. The soil temperature is to be taken at 1.5" to 2" depth and checked early in the morning. Seed with confidence when a steady warming trend is in the forecast.

Winter Damage?

This winter has been excessively cold and wet. Take time to evaluate your crops for winter injury. Pay close attention to low areas and exposure to high winds or lack of snow cover. Hopefully, the crops will come through the winter in good shape. If the fields are severely damaged, start making plans for alternative crops if needed.

Note: The weather pattern for this winter was set up by thunderstorms in Malaysia that are still persistent in that region, causing "waves" in the atmosphere that has been causing the western US to be well above normal temperatures and the eastern 2/3 of the US to be colder than normal. It is fascinating how the weather from one part of the world can impact another.

Small Grain Growth Stages & Harvest

Abby Kautz, King's Customer Service Rep & Joshua Baker, King's Marketing Manager

With thoughts of spring dawning, our minds focus again toward small grain management. Cereal growth stages can be described in Feekes growth stages explained in the graphic below.

Key Growth Stage Terminology:

The Feekes scale of cereal development describes growth stages to help you identify management stages.

Flag leaf stage (also called pre-boot stage) occurs when the flag leaf, the last leaf, is unfolded/unrolled Feekes 8. The ligule of the flag leaf is visible Feekes 9.

Boot stage occurs when the seed head swells in the flag leaf sheath but has not yet emerged. Right before the plant switches is concentration on developing the seed head instead of the leaves. Feekes 10.

Heading/Flowering stage occurs when the seed head has emerged from flag leaf sheath, and is not longer growing vegetatively. About 5-7 days after boot. Early heading at 10.1 when awns and grain head become visible. Feekes 10.1-10.53.

Milk stage occurs when the kernels on seed head begin to thicken. If kernels are squeezed, you'll see a white, milky substance. About 10 days after heading. Feekes 10.54-11.1.

Soft dough stage occurs when the kernels are well-filled and are a playdough/clay texture if squeezed.

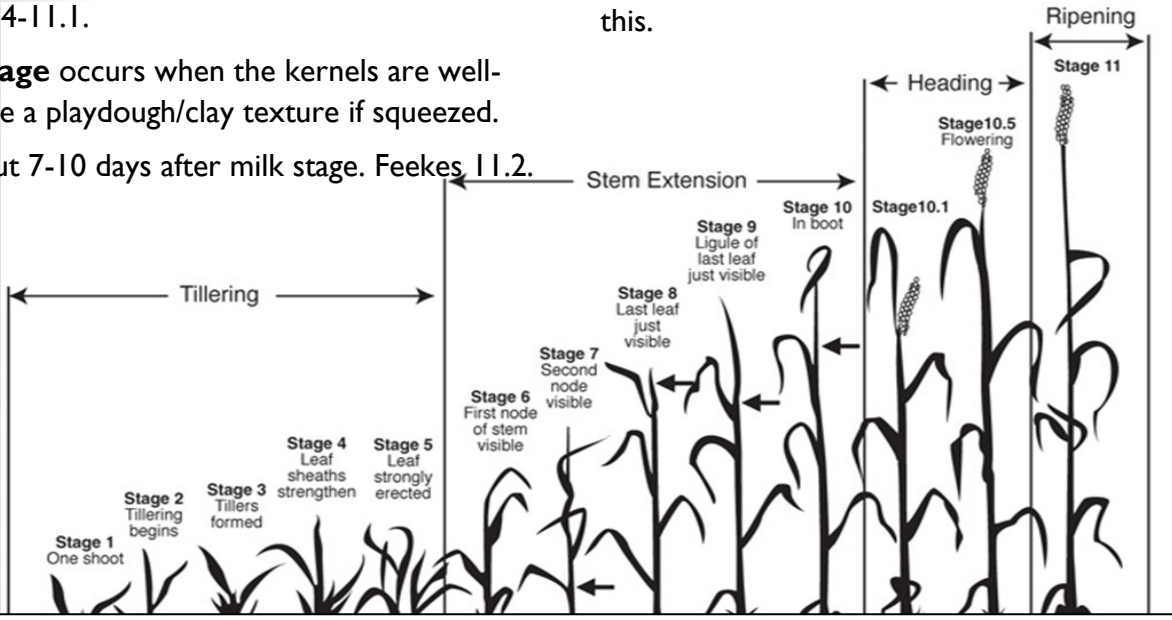
About 7-10 days after milk stage. Feekes 11.2.

Encourage spring tillering with 50 lbs N/ at spring green-up with topdressing N at Feekes 5. Nitrogen applications at Feekes 8 and later can enhance grain protein levels but do not add more to yield. Feekes 4-5 is the optimal time to make a spring top-dress application and to apply post-emergence herbicide applications- check your state's weed control guide for herbicide recommendations. Soil testing is recommended.

For hay, **haylage** and **baleage**, spring small grains should be taken at the flag leaf for the best digestibility and tonnage. Protein levels decrease if cutting is delayed. Annual ryegrass and triticale can be harvested earlier to allow for regrowth and a second cutting.

For grazing, plants can be grazed when 8-10 inches tall. During rapid spring growth, grazing could start earlier when plants are about 6 inches in height to get animals to use as much as possible at the highest quality. If stocking rates are too low or you are unable to get animals to paddocks before seed head appears, forage quality will dramatically decline. Being prepared to harvest for hay or haylage can help you maximize your spring production of high quality forage.

For silage, direct chop at soft dough stage before the crop becomes too dry. Barley works very well for this.



Feekes scale of cereal development. *Graphic by Jerry Downs. Adapted from: Large, E.C., 1954. Growth*

Wheat at boot stage (Feekes 10). *Purdue University.*

Choosing the Right Annual Grain Forage

Tracy Neff, King's Agronomist

When it comes to spring planted annual forages, many farmers consider planting small grains like oats, spring triticale or spring barley. These are often planted as forage, cover crop or a nurse crop for establishing with alfalfa. The resulting forage, with proper fertilization, can be of high quality in a relatively short period of time - approximately 60 days.

Seed Selection

In yield trials that we planted and harvested in the spring and fall of 2013, we observed that the later heading oat varieties had higher forage yields in the spring while the earlier maturing oat, spring triticale and spring barley varieties had higher yields in the fall. The maturity of the annual small grain species had the greatest effect on yield. In the spring, day length and temperatures trend longer and higher. Using a later maturing forage in the spring takes advantage of these trends using more of the growing season, which gave higher yields. In the late summer planting in the latter part of August, days get shorter and temperatures begin to drop as fall approaches, reducing heat units available for crop growth and crop photosynthesis. We saw that using a shorter maturing variety or species planted in late summer often gives higher fall yields.

*The data (**in Table 1**) shows a comparison of forage yields of different grain forages from spring to fall. The data we collected shows the longer maturing forages yielded better in the spring and the shorter maturing forages yielded better in the fall.*

Summary

Selecting the correct annual grain forage for early spring or late summer plantings can make a difference. If we select an early maturing annual grain for spring planting, we may be able to harvest 7 to 10 days earlier, but yields could be less than selecting a later maturing annual grain to harvest at a later date. A later maturing annual grain could still be planted as a late summer seeding but it should be planted in early to mid August. And for late August through early September seeding, the data shows an early maturing annual grain could be the better choice.

Table 1. Differences in yield from Spring to Fall sorted by increasing maturity

Oat Varieties		Harvest Date	DM Yield Tons/A	Tons @ 65%	Plant Height "	Days to Harvest	Days to Boot	Feekes @ Harvest
Badger Oats	Spring	24-May	1.1	3.1	24.0	50	50	10.0
Badger Oats	Fall	30-Oct	2.5	7.0	34.3	59	57	10.1
AC King's Barley	Spring	31-May	1.5	4.4	28.5	57	57	10.0
AC King's Barley	Fall	30-Oct	2.7	8.0	28.3	59	NA	9.5
Pronghorn Triticale	Spring	31-May	1.4	3.9	28.0	57	57	10.0
Pronghorn Triticale	Fall	30-Oct	2.5	7.1	26.7	59	NA	8.7
Reeves Oats	Spring	31-May	1.7	4.9	23.0	57	57	10.1
Reeves Oats	Fall	30-Oct	2.6	7.5	30.0	59	NA	8.0
Jerry Oats	Spring	11-Jun	2.5	7.3	35.3	68	63	10.4
Jerry Oats	Fall	30-Oct	1.6	4.6	25.3	59	NA	7.0
Bay Oats	Spring	11-Jun	3.4	9.6	30.0	68	64	10.3
Bay Oats	Fall	30-Oct	1.8	5.3	26.3	59	NA	7.0
ProLeaf 234 Oats	Spring	11-Jun	2.8	7.9	30.7	68	64	10.3
ProLeaf 234 Oats	Fall	30-Oct	2.0	5.7	26.3	59	NA	7.0
Forage Maker 50 Oats	Spring	11-Jun	2.9	8.2	35.0	68	65	10.2
Forage Maker 50 Oats	Fall	30-Oct	1.7	4.8	25.3	59	NA	7.0
Everleaf 126 Oats	Spring	11-Jun	2.3	6.7	27.3	68	68	10.0
Everleaf 126 Oats	Fall	30-Oct	2.1	5.9	24.3	59	NA	7.0

Spring harvest occurred on different days based on maturity to boot stage

Fall harvest occurred all on the same day

Double Cropping for the Northeast

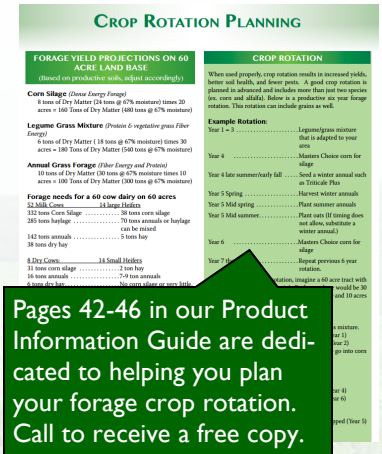
David Hunsberger, Kings Regional Coordinator

The basis for a successful double crop rotation is plan first, and then execute. Success hinges on the foundation of soil testing, weed and pest control, scouting, appropriate seeding rates, seed selections and fertility applications. In planning ahead to multi-crop, a few questions must be addressed; *Which fields will we attempt to multi-crop? What are the crops following and in the next year? What rotation do we wish to establish moving forward?*

To set up the rotation, consider the seeding date for the winter annual crop following the corn crop. Now, take into account the growing degree days required to grow your corn crop. This is where the decision on the relative maturity (RM) of the current corn crop is made.

Highlight– Growth performance of the winter annual crops hinges upon timely seeding. Timely seeding hinges upon the RM of your corn hybrid.

With the RM of your corn hybrid considered, let's evaluate what adding a winter annual to the rotation does to overall yield; assuming that we are using an appropriate RM corn to allow for timely winter annual seeding. Properly-timed winter forage (i.e. Triticale, Triticale Plus, etc.) along with manure pre-plant and 75-100 lbs of top-dressed nitrogen at green up, can yield over 3.5 tons of DM.



Pages 42-46 in our Product Information Guide are dedicated to helping you plan your forage crop rotation. Call to receive a free copy.

Dr. Cox and Dr. Cherney of Cornell University have documented that, on average, there is a 0.75 ton decrease in 35% dry matter (0.26 ton DM) silage yield for each 5-day RM reduction of hybrid choice. Tom Kilcer of Advanced Ag Systems in Kinderhook, NY has calculated and published a report on this topic. According to Kilcer: dropping from a 105-day corn to an 85-day corn resulted in a 1.05 ton of DM loss/acre.

Given these figures, the decrease in yield from shorter season hybrids is insignificant compared to the potential net gain derived from the yield of the short season corn silage coupled with the winter annual forage.

Synopsis- A lower RM corn plus a properly-timed winter forage can yield more total DM for the season than a longer RM with no winter annual forage. (Additional research data from PSU on short-lived annual grasses in 2012 and 2013 can be found on page 53 of the PIG.)

Potential Short Rotation Scenarios?

- Seed red clover (autumn) or frost seed (winter) into your triticale. Harvest two times that season and the year following.

- Spring-seeded Green Spirit Italian ryegrass will not form reproductive seed heads in the seeding year. You might harvest every 28-35 days (fertilizing with 50lbs of N each cut), with one big harvest the following spring and then return to corn or other summer annual.

- If you desire to return a field to a perennial hay crop, you could late spring seed BMR sudangrass/ sorghum-sudangrass, taking two cuts or late spring seed BMR Forage Sorghum for a boot stage harvest (see page 5). Seed perennial crop in August, following summer annual harvest. The following year the yield of that perennial stand will be equivalent to an established stand without the loss of seeding year tons of forage and without the broadleaf weed pressure of spring forage seeding.

- Are you short of corn silage coming into spring? Have you seeded barley or triticale acres in the fall of 2013? You could consider a soft dough barley harvest, followed by a boot stage forage sorghum or short season corn.

In summary, the keys to multi-cropping are planning the rotation of crops first, soil testing and nutrient application as needed. Success hinges on you planting the initial crop while always keeping in mind the next crop. Happy 2014 growing!

Summer Annual; High Energy Livestock Feed

Joshua Baker, Kings Marketing Manager

When analyzing any summer annual, you need to take a critical look at both your crop rotation as well as your overall management style. Considering the maturity of the crops, as well as your ability to harvest and store them appropriately will help you better understand your expected value from the crops. I'll outline our recommended options for summer annuals production; organizing them by management.

Direct Chop

BMR Gene 6 Forage Sorghum

BMR Gene 6 Forage Sorghum offers a highly digestible silage alternative to the traditional corn silage. With greater drought tolerance than corn, forage sorghum provides you the tonnage and quality you need on the more drought prone acres and in droughty years. We see it as a great fit on Shale or Clay type soils with low water holding capacity. With seed and management costs being more economical than corn silage, forage sorghum is a fantastic summer annual forage.

- AF7401- 110-15 Days to Soft Dough
- AF7101- 82-85 Days to Soft Dough
- AF7102– 85-89 Days to Soft Dough
- AF7202– 90-95 Days to Soft Dough
- AF8301– 100 Days to Soft Dough

One Cut Mow/Wilt Harvest

Forage Sorghum Boot– See Page 6

Sorghum Sudan- 6501

In addition to the Forage Sorghum at boot stage, photoperiod sensitive 6501 is fantastic for a mow and wilt, one cut system. With light sensitivity, it will stay vegetative and maintain quality longer into the season. As a Gene 6 BMR is makes fantastic silage or baleage.

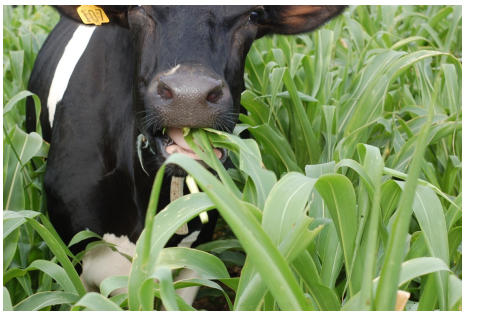
Gene 6 BMR

It's worth it to use BMR sorghum products. We have repeatedly seen the BMR Gene 6 products outperform the BMR Gene 12 and Non BMR. The difference is in the fiber digestibility. BMR Gene 6 products have the most pronounced BMR Gene, meaning that characteristically they are more digestible. Don't settle!

One Cut Mow/Wilt Harvest Cont...

MasterGraze (Harvest or Graze)

MasterGraze BMR tillering corn is a 60 day corn that is harvested or grazed in the time period from just before tasseling to just after tasseling. We have seen it make anywhere from 4 to 6 tons dry matter of high sugar, highly digestible feed.



Multiple Harvests/Grazings

Sudangrass

With thin stems and dry stalk characteristics, sudangrass is the most versatile of the summer annuals. With a few good drying days, it can be taken as dry hay. Additionally, sudangrasses recover faster after mowing or grazing than many of the sorghum sudan varieties.

- AS9301– BMR Gene 6, Dry stalk
- AS9302– BMR Gene 6, Dry stalk, Dwarf
- HayKing– BMR Gene 12

Sorghum Sudan

We have multiple varieties of SSX that have varying characteristics for specific management situations. All except for one of the ones we offer are BMR Gene 6. These BMR Gene 6 SSX are great for multiple harvests and we expect to see around 3 tons dry matter per acre total yield.

- AS6201– Fast starter with a short harvest window
- AS6401– Improved disease tolerance, fast regrowth
- AS6402– Leafy dwarf, can be cut/grazed shorter
- AS6501– Photo period sensitive

Brassicas (Grazing Only)

Brassica crops are very heat tolerant. They are great grazing material and maintain soft, palatable texture rather than getting woody in the summer months. These can be mixed with sudangrass or seeded alone. Below are the ones recommended for summer grazing.

- T-Raptor Hybrid– Superior grazing, no bulb
- Barkant Turnip– Leafy, tankard bulb
- Barsica– Forage rape, fast starting

Forage Sorghum; Boot Stage Harvest

King's Research Team

One concept that is fairly new to the market is the idea of harvesting summer annual forage sorghum at the boot stage. Boot stage harvest is managed as a mow and wilt rather than direct chop. Much like in small grain forages, the plant is allowed to mature to the point that it begins filling the seed boot in preparation for seed head formation (Feekes stage 10-10.5). The crop is then mowed, allowed to dry to ~35% dry matter and chopped. Kings has completed a few trials using this management practice. To date we have seen that this program works well after short season corn in our more southern regions. In addition, boot stage harvest also provides quick forage in our more northern season regions to allow for timely planting of small grain forages.

Management Tips

- Seeding Rate– 25lbs/Acre
- Seeding Depth– Seed into moisture (1 inch)
- Manage according to plant maturity. This will requiring monitoring the plant to ensure boot stage harvest is met.

The figure below shows forage sorghum yields at the same location, both dry matter and at 65%/silage moisture . The sorghum was drilled in 7 inch rows and harvested at boot stage or when the head was slightly emerging. AF 8301 showed higher yields in most research locations, but it is a non-BMR, which means the digestibility and NDFd are lower.

All sorghums were harvested at Feekes stage 10-10.5, which is boot stage through early head emergence, the stage of optimal quality for a cut and wilt system.

2013 King's Sorghum Boot Stage Harvest Trial

Planted 06/20/13- Harvested 08/08-08/28 **Previous Crop– Soybeans** **Fertility– 70 Units of N**

	DM Tons/A	Tons @ 65%	Plant Height "	Boot Stage Date	Days to Boot	Days to Harvest	% CP	% aNDFom	% NDFd 30 hr	% Sugar	% NEL	% Kd Rate
AF 8301	11.0	31.5	60.0	20-Aug	61	69	10.9	57.3	37.7	4.0	0.63	5.01
AS 6501	10.1	29.0	78.3	Vegetative	NA	58	11.1	57.0	41.1	4.3	0.62	5.22
AF 7401	9.3	26.5	44.3	28-Aug	69	69	12.6	54.5	41.5	3.3	0.61	5.54
AS 6402	6.2	17.6	58.3	17-Aug	58	58	13.7	53.5	40.3	3.1	0.63	5.17
AF 7201	4.5	12.8	67.0	8-Aug	49	49	12.2	56.7	41.0	5.3	0.69	5.58
AF 7101	4.3	12.2	63.7	3-Aug	44	49	12.2	57.4	43.0	4.2	0.69	5.82
Mean	**7.0**	**20.0**					**11.9**	**56.5**	**41.5**	**4.1**	**0.65**	**5.36**
LSD (.05)	**1.16**											
cv (%)	**9.8**											

Forage Analysis Winners

A big 'Thanks' to all Kings customers who submitted forage samples for the first ever PA Forage Analysis Competition. Kings had multiple top finishers and as well as winners in multiple categories. The Pennsylvania Dairy Summit Forage Analysis Competition is hosted by the Penn State Extension Dairy Team, Professional Dairy Managers of Pennsylvania, Dairy Business Communications, Cumberland Valley Analytical Labs and the Center for Dairy Excellence. For feedback regarding this year's competition or inquiries regarding next year's contest, please contact Rebecca White with the Penn State Extension- Dairy Team at 814-863-3917 or raw4@psu.edu.

Kings AgriSeed's Products Winners

Conventional Corn Silage

1st – Mahlon King Gap, PA- MC 4050
3rd – Clayton Shirk Kutztown, PA– MC 6580

Forage Sorghum Silage

1st – Elvin Wise Blain, PA- AF 7201
2nd – Paul Levan, Jr. Hamburg, PA- AF 7401
3rd – Duane Graybill, Thompsontown, PA- AF 7401

Mixed Perennial

2nd – Daniel Good McAlisterville, PA– King's Haymaster

Perennial Legume

3rd – Alvin Jacob Peachy Belleville, PA-
KF PLH 322 + Kora Tall Fescue

Cool Season Annual

1st – Marlin Hoover Elliotsburg, PA- Forage Maker Oats
2nd – Danny Beiler Christiana, PA- Marshall Ryegrass

King's believes in the value of understanding your forage analysis. Contact us to request a copy of our 'Understanding Forage Samples' article.

Forage Sorghum Sample

A Word from the Winners

Mahlon King (King's Dealer)
Lancaster County, PA
1st Place Winner for Conventional Corn Silage
Crop: MC 4050

"Cows have done real well on the 4050 corn silage. Milk production has increased even when we fed it green. Just the fact that the cows are doing well on it tells me it's good quality, even before I look at the numbers."

Marlin Hoover
Green Park, Perry Co., PA
1st Place Winner with Cool Season Annual Silage
Crop: Forage Maker 50 Oats

"I like this crop because it fits well as a double crop following wheat. I combine the wheat, and then I have about a month's time to plaster the field with liquid dairy manure. I cleaned the field up with Round-Up, drilled the oats at 100 lbs/A on August 14, and then could forget about them until late fall. Despite very dry weather last fall, I was still pleased with the yield. The bales were fed to the dairy replacement heifers, free choice, along with TMR."

Elvin Wise
Blain, Perry Co., PA
1st Place Winner with Forage Sorghum
Crop: AF 7201 Forage Sorghum

"We grow forage sorghum where we can't grow corn because of severe deer pressure. We feed it to our milking herd, replacing about half of the corn silage in the TMR mix. The cows like it. When we planted it, we drilled it on 30" rows at the recommended seeding rate of 6-8 lbs/A. Then we planted corn between those rows at 28,000 population, so we had 15" rows with every other row corn/forage sorghum. Around the 10th of July, when we side-dressed with 60 units of N, the corn and sorghum rows looked 'OK.' However, by harvest time, the corn was gone. The deer ate the corn away, but left the sorghum. It still yielded about 16 ton per acre. We used Silo King inoculant/preserver at harvest. One issue with the 7201 was standability. The crop was down and we had to drive a certain way with our Claas (Kemper head) chopper to get it. This year, we're thinking of mixing it with the dwarf sorghums, instead of with corn." Note from Kings: This is not a typical management practice and the sample could have contained a small amount of corn silage."

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High Energy Forages and Soil Building Cover Crops

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"2012 was a dry year and both AS 9301 and Hayking Sudangrasses grew back really well - thicker and with more tillering after cutting than the sorghum-sudans. They do better when conditions are on the drier side rather than too wet. Both did well next to competitor sudangrasses."

-Mahlon King, King's Dealer, Lancaster County, PA

"(Badger Oats) Fantastic yield and fantastic test. All around for grain oats, it has done very well for me. The last two years, I've had a 37 pound test weight."

-Dale Stoltzfus, King's Dealer, Schuylkill County, PA

"People are particularly happy with Premium Clover Blend. They are happy with how it grows and how it feeds."

-Shawn Lasher, King's Dealer, Schenectady County, NY

www.KingsAgriSeeds.com