

Weather Challenges?

Forage systems that reduce weather risk

By Tim Fritz, General Manager Kings AgriSeeds, Inc

Every year is different, including 2013. I have been in the agricultural industry for 25 years now and I can only remember one or two years that seemed to be about “perfect” for crop production. Most years have some challenging periods. In my home area of Southeastern PA, we started out 2011 wet then turned dry from June until early August. From August on it was wet. We had about 60 inches of rain that year and a drought. In 2012, spring came very early and spring perennial seedings were challenged by very dry conditions but the rest of the year was very good. This year, 2013, crops were planted a little late due to a cool wetter spring, then conditions were balanced in May and early June. Starting on June 8 until the date of this writing, it has been very wet. This was in Southeastern PA. As you well know, the weather patterns in your backyard, across the Mid Atlantic and Northeast, have been variable. My point is simple; despite our modern technology, we humans do not know what the year’s weather will be like until the year is over.

“Unfortunately, many plans for the next year are based on last year’s weather. This is usually a big mistake...”

At King’s we offer a full line of forage seed and cover crops suitable to your weather conditions; no matter your location. We are constantly asked, “what are the best crops for my farm?” As a general standard we suggest several options to help you build a cropping system that best fits your needs, considering your resources, goals and geography. ‘Hindsight is 20:20’ as far as deciphering which cropping options were the best for the past year. Unfortunately, many plans for the next year are based on last year’s weather. This is usually a big mistake, as every crop, hybrid or variety has unique potential and characteristics in their response to varying weather conditions. Yield and quality are impacted by

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weather conditions during the growing year, as well as harvest and management factors. Every crop has planting risks, growing risks and harvest risks. What’s most important for success is to reduce your risk by developing a balanced cropping system that includes planned crop rotations with several crop types. Below are some basic suggestions that can get you through almost any year.

BIG PICTURE RISK MANAGEMENT

Utilize a combination of:

- Summer Annual Forages
- Winter Annual Forages
- Perennial Forages

Each forage class has advantages and disadvantages to profitability. Keep a balanced approach. The optimal program will vary from farm to farm depending on resources and goals of each farming operation.

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RISK MANAGEMENT WITHIN MAJOR CATEGORIES:

Winter Annual Forages. Choose at least two species to spread out both planting dates and harvest dates. Our favorite forage crop is Triticale Plus (TriCal 815 and 2 varieties of Annual Ryegrass) as this crop can be harvested as either a one cut system or a two cut system. Two cut systems reduce weather risks and increase overall yield.

Perennial Forages. Plant a percentage of your farm each year in perennial forages and mixtures containing multiple varieties and species.

By planting a percentage of the farm each year, establishment risks are reduced.

Mixtures increase stability in yield in each cutting and over different weather conditions. For example, alfalfa handles dry weather very well but does not like wet years or wet soils. Most grasses thrive on wetter years.

Summer Annuals Forages. Choose at least two species to reduce drought risk and follow guidelines below:

Corn: Plant on fertile deep soils. Choose more than one hybrid and spread out planting dates and pollination dates.

Forage Sorghum: Plant on drier lower fertile soils. Choosing more than one hybrid and planting at least two planting dates will also help reduce risk.

Sudangrass, Sorghum Sudan, Millet and Teff: Choose best species and variety/hybrid for the soil types. Plant at least two different plantings as this will reduce both planting risk and harvest risk.

the form of organic matter. Additionally, they enhance nutrient cycling and help break up pest cycles, as well as smother weeds. Planting cover crops is a proactive and crucial step to take in managing your rotation for sound soil management and accumulating benefits for long-term soil stewardship. Long term cover crop use will increase yields, save on nitrogen costs over time and lead to a more profitable system.

There are different cover crops for varying soil types, climates and terrains. There are covers to fit into any rotation; from the most demanding large scale corn-soybean rotations to smaller, diverse vegetable production systems. Adaptability and versatility of the cover crop is an important aspect to supplement your rotation to improve the soil for profitable long-term production. Growing cover crops helps to set the stage by building up nutrients and improving soil structure and permeability. Cover crops do have the potential to enhance tillage, no-tillage and minimum-tillage systems.

The key to understanding cover crops is not necessarily understanding what is seen above ground, but rather what is hidden below the soil surface. A robust and extensive root system is a critical benefit of growing cover crops. The plant's root-zone environment is the most active microbial site in the soil. Keeping the soil covered and active, with a living root zone more days of the year, leads to long term soil improvements, productivity and profitability. Cover crops add the crucial element of biodiversity to rotation.

Triticale and Rye are two commonly utilized winter cover crops

The Cover Crop Value

Dave Wilson, Research Agronomist Kings AgriSeeds, Inc

Your most valuable resource on your farm is your soil. Cover crops slow erosion of that resource, improve its tilth, feed its microbiological life and improve water infiltration rates and holding capacity. They create root channels and increase, or sequester, carbon in the soil in



Winter Annual Forages

Feature Products

TRITICALE PLUS

Triticale & Annual Ryegrass. Designed for one or two cuts of spring haylage. This mixture will have excellent NDFd when harvested prior to boot stage. Even more tonnage than Triticale by itself. It's also great to thicken alfalfa fields in the fall for one huge cutting in the spring.

- Great double crop forage
- Utilizes a lot of nutrients
- Great for baleage or grazing
- High sugars for better fermentation & VFA
- More energy than triticale by itself

OATS PLUS

Mixture of Forage Oats and Annual Ryegrass. This mix combines the strengths of each product and can be planted in early spring and late summer. Works great for machine harvest and grazing. Harvest prior to boot stage for superior harvest. One fall cut, plus up to two spring cuts.

C.A.R.G.O.

A combination of Crimson Clover, annual ryegrass and oats works well as a late summer/early fall planted cover crop or as a forage mix. The oats provide the early cover mentioned, and the crimson clover and annual ryegrass overwinter as a grass-legume cover. If using this as a forage combination, target a planting date in August and increase the seeding rate from 60#/acre (as recommended for cover crop use) to 120#/acre. This will give you a nice harvest of oats in the fall, and then the grass-legume mix can overwinter to provide a soil cover and produce forage spring harvest.

BARLEY + CRIMSON

This is an early cover crop that produces high yielding quality forage if proper planting dates are available. Put barley in the big box and crimson clover in the small box. Seed at 100#/acre of barley with 25#/acre of crimson clover. This option works quite well where they can be planted in a timely manner according to barley planting dates. With the earlier planting date, the winter barley will tiller earlier compared to the later planted small grains. The high leaf to stem ratio of barley and its high digestibility contribute to a high NDFd analysis, while the addition of the crimson clover increases the dry matter yield and quality components, including the protein value of the mix. If growing this as forage, top-dress nitrogen just prior to spring green up time. For optimum quality

and high tonnage, watch the barley and aim to harvest at flag leaf to boot stage (Feekes stage 9 to 10). The typical harvest date will be later than rye for ryelage, yet earlier than typical triticale harvest dates in the same area. This option further spreads the harvest window risk around rye and triticale.

TRIT-OATS

A mix of TriCal and Jerry Oats designed for one fall cut and one spring cut. Does not contain annual ryegrass. Recommended seeding rate is 150 lb/A.

TriCal® 815 TRITICALE

This leafy winter triticale was bred for high forage yield and quality. 815 consistently has the superior NDF digestibility in our test plots! Its maturity date is similar to most winter wheats. Very wide harvest window allows you flexibility in attaining both forage quantity and quality. Harvest before head emergence. It can be no-tilled into thin alfalfa stands to increase first cut tonnage. Also a great grain and straw product. Ask for our brochure.

HURON RYE

A later-heading cereal rye with big yields and good forage quality. It tested extremely well in the 2012/13 Penn State Short Lived Annual Trials (Over 3 Tons DM 80+ NDFd30)

CRIMSON CLOVER

A high quality winter annual that can be used for both forage (usually mixed with a small grain or annual ryegrass) or as a nitrogen fixing cover crop. Will be ready for plow down in Lancaster in early May. Adapted to warmer parts of Pennsylvania and south. Crimson clover also has a beautiful crimson colored flower. Plant by September 1st for best results in Lancaster, PA. Ready to plow down 2 to 3 weeks earlier in spring than hairy vetch.

MOI

This is an excellent new annual ryegrass that was bred in Missouri and selected for improved winter hardiness. Winter hardiness is a major consideration of annual ryegrasses.

GREEN SPIRIT

A true Italian ryegrass blend of tetraploid and diploid varieties with strong winterhardiness and excellent quality. The advantage over annual ryegrass for late summer/early fall seedings is superior forage quality and yield in a multi-harvest system. Green Spirit can also be seeded in the spring in good cool season grass regions.

Grandfather's Grass

By Peter Ballerstedt, Product Manager, Barenbrug, USA

Sixty years. Two generations. For those who have experienced the changes in dairy farming since the early 1950s, it may be hard to remember what it used to be like. For those of us who did not, it may be impossible. A lot has changed in the United States since then. Imagine gasoline at about 27 cents a gallon! Or first class postage at 3 cents. Or milk at 92 cents a gallon.

Profound changes have taken place in the US dairy industry, too. While robots were still the stuff of science fiction, inventors had developed the tanks, pumps and machinery that made it possible for dairy producers to handle milk in bulk. No more one-legged stools and open buckets. Milk cans and cream separators were fast becoming antiques. The first commercial automatic milking systems were sold in 1948, and within seven years or so, dairy producers found it virtually impossible to have milk picked up by the creameries if it was in a can.

In the 1950's, scientists discovered that sperm could be frozen and then thawed to fertilize eggs and develop normal, healthy calves. This technology has permitted genetic improvement that was unthinkable previously. The increase in milk production per cow is one indication of this impact. In 1950, the average production per cow was just over 5,300 pounds, little changed from the level in 1925. In 2011, average production was estimated to be just over 21,000 lb. per head. Can you imagine a modern dairyman using a 1950s bull or breeding for cows of that era? Hardly! But that's exactly the situation when it comes to several common cool season grass varieties.

"Our grandfathers' grass for our grandfathers' cows. But we aren't dairying with our grandfather's cows!"

Potomac orchardgrass, Kentucky 31 tall fescue, and Linn perennial ryegrass were all released prior to 1940. Climax timothy was released in 1947, and Gulf annual ryegrass was released in 1958. The fact that these varieties are still being planted today is not a testament to their strength. It is, instead, evidence of the lack of attention paid to cool season grasses in American agriculture

in general and the US dairy industry in particular. The rate of genetic improvement in forage yield in cool season forages, and animal performance from them, has been estimated between 0.2 and 1.5 percent per year. This represents an enormous

yield "opportunity cost" incurred by planting these old varieties. Today's modern grasses offer greater ranges in maturity dates, improved disease resistance, and better fiber digestibility than the old "standards." They were good varieties in their day. Our grandfathers' grass for our grandfathers' cows. But we aren't dairying with our grandfather's cows!

What will our grandchildren's dairy industry look like in 2070? Prudence suggests caution in making too many specific predictions, given the unknowns of societal shifts, world events, and technological disrupters. Could our grandfathers have predicted where we'd be today? What is certain, though, is that controlling the cost of production, and feed costs in particular will be critical to surviving until the future arrives. Nutrient management and environmental issues, likewise, will be critical. Today's grasses address these issues. Regardless of what the future holds, today's modern grasses will help us get there. Hopefully our grandchildren won't still be planting our grandfathers' grasses.

Earlier this month, members of Kings staff as well as your local Kings dealers showed out to hear from Barenbrug's Devesh Singh and Peter Ballerstedt on the importance of advances in grass genetics and what advances are to come.



Dealers Compete in the Plant ID Contest

Test Plot Field in Lancaster, PA. Alfalfa Grass Mixture seeded with a nurse crop of oats.



Same field getting ready for second harvest.

Perennial Forages

Mechanical Harvest Featured Products

HIGHLAND HAY CT– *Dried, Wrapped, Chopped*
An Alfalfa/Grass mixture that will handle heat and drought very well. Great Mid-Atlantic mix that also works well farther north. The grass provides great fiber digestibility and adds to yield.

LOWLAND HAY– *Dried, Wrapped, Chopped*
A late heading Grass/Clover mixture that tolerates wetter soils very well and has a wide harvest window. The Tall Fescue adds consistent high fiber digestibility, superb yields and traffic tolerance. The mix also contains Timothy and Freedom MR Red Clover (a fast drying clover).

GREENFAST– *Wrapped, Chopped, Grazed*
A fast starting mix with very high quality. The mix contains, festulolium, orchardgrass, ryegrass and clovers. This mix can be used for wet hay or managed grazing.

NORTH STAR MIXTURE–*Dried, Wrapped, Chopped*
This mixture contains strong alfalfa varieties with modest amounts of later maturing grass added for improved nutrition. It's designed primarily for central PA and North, where the grasses will provide consistent yield and quality for several years.

Grazing Featured Products

KING'S GRAZING–*Grazed, Wrapped, Chopped*
Mixture of meadow fescue, orchardgrasses, clovers and forage chicory. Designed for high production livestock. Chicory is included for better mineral nutrition and other animal health benefits.

HILLSIDE– *Grazed, Wrapped, Chopped*
Mixture of drought tolerant species and varieties that thrive under grazing. Contains multiple orchardgrass, meadow brome, and a touch of perennial ryegrass as a nurse crop. Also includes Freedom Red Clover and Regalgraze Ladino Clover.

CREEKSIDE– *Grazing, Wrapped, Chopped*
Mixture of varieties and species designed for wetter soils and colder climates. Forms a nice sod that is tolerant to traffic. The mix is based on Meadow Fescue and includes Ryegrass, Timothy, Bluegrass and Grazing Tolerant Clovers.

TRI-STAR– *Wrapped, Chopped*
This all grass mix is primarily designed to be seeded into established alfalfa and clover stands where more yield and more digestible fiber is desired. Also a great complement for new alfalfa and/or clover seedings. The Perun is a very aggressive starter with very high quality; whereas the premium tall fescues and orchardgrasses

are very shade tolerant. Put your legume in the small box and this grass mix in the large box.

Seeding Rate & Planting Date

By Dave Wilson, Research Agronomist
Genevieve Slocum, Assistant Marketing Manager

As you get ready for fall seedings, there are two important points to consider: **seeding rate** and **planting date** can both mean the difference between success and failure in crop establishment. Timing and amount are both critical.

Size of the Seed – a smaller seed means a lower seeding rate (pounds per acre) than a crop with a larger seed to achieve a comparable population; smaller seed size also means shallower seeding depths.

Balance of Species – your needs and goals for the crop determines what proportion of each species in the mix is most suitable

Conditions – more challenging weather and soil conditions (including high-residue no-till situations) often dictate a higher seeding rate.

Intended Use – a cover crop often means a lower seeding rate than growing the same crop as both a cover and forage.

Seeding rate and seeding date are mutually influential. For example, a later seeding date with a grass crop might mean less tillering in the fall, demanding a higher seeding rate to achieve the same ground cover.

One of the highest-yielding winter annual mixes we observed this spring was **TriCal 815** (a lower-growing, dense triticale) mixed with **Crimson Clover**. The sweet spot for seeding rate turned out to be about 100 #/acre of TriCal 815 and 25#/acre of Crimson. If you use more triticale or less clover, the clover gets drowned out and play little role in ultimate yield. This may seem like a high rate for clover, but keep in mind that Crimson has a larger seed than most other clovers.

An earlier planting date means better growth and establishment in the fall, so you can reduce the seeding rate slightly. Crimson clover can be planted at 15-20 #/acre if you get it in the ground in early.

Forage Oats mixed with Daikon Radish is a useful cover crop that provides winter-killed ground cover over winter, as well as a grazing crop in the fall. In this combination, we recommend 40-60 lbs. of oats; 40 #/acre of oats as a cover crop, and 60 #/acre of oats in a grazing scenario. In general, 50 lbs. of oats with 6-8 #/acre of radish makes a good mix.

For a grain farmer using it as a winter-killed cover crop, we would recommend slightly less oats and more radish, about 40 lbs. of oats and 6-10 lbs. of radish. The higher radish seeding rate gives you a higher number of thinner radish tap roots that can grow deep into the soil, ideal for breaking up hard pans.

A grazer or forage grower, however, is usually not looking for soil improvement as a primary goal and should plant a higher proportion of oats to get the best dry matter yield for feeding (radishes will provide a nutritious high protein supplemental forage as a component in the mix, but the radish leaves are high in moisture and less dense in dry matter) This means cutting back the radish to 4-6 lbs. and increasing the oats to 60 lbs. to get both digestible fiber from the oats and a nutritious brassica leaf forage from the radish.

Oats can be combined with other forage brassicas (hybrids or turnips) for fall grazing. The best combinations for maximum biomass for grazing in about 60 days are a combination of oats at 2 Bushel per acre (64 lbs.) of oats along with 4 to 6 lbs. of turnips (Appin or Barkant turnip) Appin is quicker than Barkant. Or plant the oats with 2 to 3 lbs. of other forage brassica (T-Raptor or Pasja) The daikon radish could be used as well.

To gain the maximum amount of biomass for grazing the

optimum planting date is about six to eight weeks prior to wheat planting date. As we plant later in the season we can increase the seeding rate of the oats, this will make up to some extent growing more biomass with more plants per ft² compared to having the oats grow more from the increased growing temperatures when planted earlier. T-Raptor, Appin and Barkant are the preferred brassicas for with oats for quick growth of biomass.

Planting dates that stretch later into the fall produce far less cover crop biomass, heights, and ground cover. The month's difference between mid-September and mid to late October can reduce biomass by 50%. Earlier planting means faster seed germination and growth, and allows the crop to become better established prior to fall dormancy. This provides maximum groundcover. An earlier planting also helps buffer against adverse fall

weather. Delaying planting by a day in the fall, really shows up negatively in the spring harvest.

Seeding rate is sometimes but not consistently a predictor of yield and establishment. Small grains often make up for low seeding rates with more abundant tillers –which is more cost-effective for you. When seeding a cover crop in the fall, grabbing an early planting window is probably more critical than a higher seeding rate, but you may have no choice and be forced to make up for late planting with a higher rate.

We've also found that with some small grains like wheat and barley, increasing the seeding rate from 100 lbs to 130 lbs. doesn't make a whole lot of difference to final tonnage, (if planted in a timely manner) but adding another species, like crimson clover at 20-25 lbs., can significantly improve yield.

Penn State Short Lived Trial Highlights

Rock Springs, PA

2012 Yield Data

Dry Matter Yield tons/acre

Multiple Harvest Trial

Cut 1 Cut 2 Cut 3 Total

Triticale Plus	3.20	1.98	1.35	6.53		1.58	1.66	0.93	4.18
MO-1 Annual Ryegrass	2.09	1.97	1.46	5.52		1.12	2.73	0.73	4.58
Marshall Annual Ryegrass	1.86	2.29	1.57	5.71		1.04	1.97	0.68	3.69
Bardelta Italian Ryegrass	1.82	2.10	1.70	5.63		0.81	2.50	1.02	4.33

2013 Yield Data

Dry Matter Yield tons/acre

Single Cut Trial

Cut 1 Cut 2 Cut 3 Total

Cut 1 Cut 2 Cut 3 Total

TriCal 815 Triticale	2.91	-	-	2.91		2.90	-	-	2.90
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These separate trials were planted in the previous September, harvested in the spring then terminated in June.

King's products listed were entered in both trials. We did not include products with one year of Penn State Data.

Triticale Plus contains: TriCal 815, MOI and Marshall Annual Ryegrass

Bardelta is a component of Green Spirit.

See Trial reports for complete data set and details of cutting dates and management information.



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KF Enhancer II

High yielder with excellent feed quality. Very eye catching variety with an excellent disease package.

(Also Available in Organic)

- Fall Dormancy 4
- Winter Hardiness 1.6
- Disease Rating 30/30

KF Profusion HX

The next generation of alfalfa! Top yielding variety with high density and very fine stems. Dries fast and produces a highly palatable and digestible forage. Excellent seedling vigor and regrowth after harvest.

- Fall Dormancy 4
- Winter Survival 1.6
- Disease Rating 30/30

KF PLH 322

Leaf hopper resistance in a plant with exceptional quality and yield. It maintains high forage quality even in a delayed harvest regime and is highly resistant to six major diseases. *(Also Available in Organic).*

- Fall Dormancy 3
- Winter Survival 2.2
- Disease Rating 30/30

KF Traffic Pro

Very traffic tolerant, sunken crown variety. The sunken crown helps protect the plant from wheel and animal damage. Great aphanomyces race 1 and 2 resistance.

- Fall Dormancy 3.7
- Winter Hardiness 1.5
- Disease Rating 34/35

KF 525

High yielding robust multifoliate alfalfa with excellent quality.

- Fall Dormancy 5
- Winter Hardiness 2
- Disease Rating 30/30

