



The Bermudagrass Advantage

News and Information on Seeded Forage Bermudagrass

PENNINGTON OFFERS PREMIUM LINE OF SEEDED FORAGE BERMUDAGRASS

Bermudagrass is an integral component of southern pasture and hay forage systems. As a summer perennial forage, bermudagrass is productive, durable and able to withstand heavy grazing pressure and weather extremes seen in many areas of the U.S. With good management and favorable weather, bermuda can produce crude protein levels ranging from 8 – 16% and total digestible nutrient (TDN) content of 55% or higher.

Advantages of Seed

- ✦ Easy to plant on small acreage
- ✦ Can plant on rough ground
- ✦ Less cost per acre
- ✦ Can plant no-till
- ✦ Plant when conditions are right (no waiting on custom sprigger)
- ✦ Make fewer trips over the field
- ✦ Excellent first year results
- ✦ Easily done with existing equipment

Over the years, extensive research has gone into developing improved cultivars of both hybrid and seeded bermudas. The result has been the release of better yielding, more digestible and wider adapted bermuda varieties.

Following a well established tradition of offering superior forages, Pennington Seed markets a premium line of seeded bermudagrass products including Cheyenne II, Mohawk and Rancho Frio. Each

produces top yields for hay or grazing and has excellent digestibility and palatability.

Seeded bermuda varieties offer numerous advantages over hybrid varieties that must be sprigged including faster establishment and less initial cost per acre. In addition, they work well for the do-it-yourself farmer who may wish to establish a few acres using existing equipment. With an extensive dealer network, Pennington bermudagrass seed are readily available from a nearby store in most areas of the country.

Each variety of Pennington forage bermudagrass features Pennington's exclusive Penkoted® seed for a faster start, stronger root system and a thicker, healthier grass stand. It should be noted that Pennington seeded bermudas are improved, stable varieties that will not revert to common.



MOHAWK BERMUDA GIVES TOP YIELDS & IMPROVED COLD TOLERANCE

Bermudagrass has long been a staple of southern pasture and hay forage systems. Traditional varieties of forage bermudagrass have been generally better adapted to the lower South. However, with Pennington's "Mohawk" seeded bermudagrass, producers in the upper South are now enjoying the benefits of this durable livestock forage.

Developed by Dr. Lincoln Taylor at Virginia Tech, Mohawk is one of the most cold tolerant bermuda varieties available. It is high yielding

and can be used for both grazing and hay production. When compared to other popular seeded bermudas, Mohawk is a proven top performer (see tables).

With superior cold tolerance, it is well adapted from the southern areas of California, Oklahoma and Missouri, east to Virginia. For a number of years, it has been a key component of Pennington's ultra popular Ranchero Frio forage bermuda blend.

Mohawk
Bermudagrass with Cold Tolerance

Bermudagrass Trial Bandera, TX*

Variety	Dry Matter lbs/acre
Mohawk	3434
Coastal	3383
Giant	2928
Wrangler	2853

**planted 2004*

2001-03 Bermudagrass Trial - Blackstone, VA

Variety	2001	2002	2003	3 yr. avg.
-----Dry Matter lbs. per Acre-----				
Ranchero Frio	6774	19144	15288	13735
Cheyenne	6547	18781	14695	13341
Mohawk	4902	14796	17739	12479
Wrangler	3695	13643	18801	12046
Pyramid	4782	14752	16310	11948
Guymon	3664	12849	16859	11124

WHAT'S BEING SAID ABOUT THE PENNINGTON **BERMUDAGRASS ADVANTAGE?**



"I stack my hay in the barn according to the variety and everyone goes right to the Mohawk because of its finer stem and leaf. My horse customers now want nothing but Mohawk. With Mohawk, I have found a hay product that is high in digestibility with excellent nutritive value. It establishes quicker than sprigged varieties and grows as tall as Coastal and Jiggs but with a finer stem and leaf. I will use Mohawk again to renovate fields and establish new ones."

Bill Wade
Dayton, TX



"Even throughout a severe drought year we produced eight 1,000 lb. rolls of hay per acre. The quality of hay produced with Cheyenne was so excellent, customers were begging for more hay. One customer stated that her horses ate every sprig and stolon of the Cheyenne, which had never happened with other bermudas. Cheyenne is a wonderful hay that brings customers back every year."

Ron Wickens
Arlington, TN

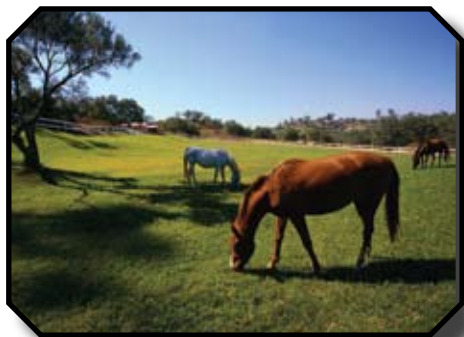


RANCHERO FRIO BERMUDA BLEND PROVIDES SUPERIOR YIELDS AND BROADER ADAPTABILITY

Farmers desiring a fast establishing, high yielding and persistent forage bermudagrass hayfield or pasture should strongly consider planting Pennington's premier bermuda blend Ranchero Frio. Ranchero Frio is a unique combination of Pennington's outstanding forage bermudagrass varieties such as Cheyenne, Cheyenne II, Mohawk and Giant. It is adapted throughout the traditional bermudagrass growing region.

Ranchero Frio is unique in that it can be used farther northward because one of its components, Mohawk, is one of the most cold tolerant bermudagrass varieties available. Developed by Dr. Lincoln Taylor at Virginia Tech, Mohawk can withstand colder winters compared to other common bermuda varieties.

While Ranchero Frio offers fast germination and greater cold tolerance, it also has exceptional heat & drought tolerance and produces excellent first year yields. It establishes rapidly and provides cover in 45-60 days under desirable growing conditions. This one-of-a-kind blend of forage bermuda gives producers a great choice for hay production or pasture grazing. From Southern California east to Virginia, no other blend of seeded bermudagrass outperforms Ranchero Frio.



CHEYENNE II

Improved Forage Bermudagrass

CHEYENNE II FORAGE BERMUDAGRASS RELEASED

A new seeded variety of bermudagrass with improved production traits has been added to the already outstanding Pennington forage product lineup. Named "Cheyenne II", this improved variety was developed cooperatively by Seeds West, Inc. in Roll, AZ, and Texas A&M University.

Seeds West bermudagrass cultivars were evaluated three years for seed production characteristics in Arizona and three years in Overton, Texas by Texas A&M for forage yield and quality traits. From these trials came Cheyenne II – a 23 clone synthetic with 57% of its germplasm related to Pennington's current Cheyenne variety.

The original Cheyenne variety is a proven performer for both grazing and hay production; however, it is not a prolific seed producer. This lack of seed production has limited its availability in the market. Cheyenne II is a more reliable seed producer and is predicted to yield approximately 10% more forage than Cheyenne with the same excellent forage quality. It is adapted across the southern 1/3 of the U.S. from California to Virginia.

Like Cheyenne, Cheyenne II is a certified, stable variety that will not revert to common. It produces top hay yields and has an excellent leaf to stem ratio leading to outstanding palatability.

PROPER FERTILIZATION VITAL FOR BERMUDAGRASS GROWTH & HEALTH

Because of its durability, bermudagrass has long been a favorite pasture forage in the southern U.S. It thrives under warm, humid conditions, has relatively few pests, withstands heavy grazing pressure and tolerates weather extremes often experienced in this region.

While bermudagrass is commonly considered a hardy and low maintenance forage, it cannot tolerate low soil fertility over long periods of time. To cut costs, farmers often apply ample amounts of nitrogen but fail to maintain proper soil pH and adequate soil levels of phosphorus and potassium. This leads to poor yields, plant decline and thinning stands.

Phosphorus plays a key role in several metabolic functions within the plant including photosynthesis, respiration and nutrient storage and transfer. Potassium is of particular importance to bermuda. Like phosphorus, potassium aids in several metabolic functions within the plant. But perhaps more importantly, it is a key component of cell wall structure giving the plant improved winter hardiness and disease resistance. Potassium also increases rhizome and stolon production which allows bermudagrass to spread. Failure to maintain adequate soil potassium levels often leads to increased disease, lower production and stand loss (See Tables).



Maintaining proper soil pH and providing adequate amounts of phosphorus & potassium is crucial to keeping bermudagrass stands thick, productive and healthy

Applying adequate amounts of potassium to bermudagrass hayfields is of utmost importance because of the large amounts removed with each hay harvest. According to Clemson University Forage Specialist John Andrae, a six ton per acre annual bermudagrass hay harvest removes approximately 260 lbs of nitrogen, 60 lbs of phosphorus and 290 lbs of potash per acre with it.

Soil tests are essential for determining and maintaining adequate soil pH and nutrient levels and should be taken on a regular basis. The local university extension office or farm supply dealer can offer information and assistance on collecting and processing soil samples.

Effect of K₂O on Coastal Bermuda Stand

K ₂ O rate, lb./A	% stand*
0	17
120	59
240	88

*Late summer

Source: International Plant Nutrition Institute

Effect of K₂O on Yield and Leafspot Disease in Coastal Bermuda

N-P-K applied lb./A	Disease rating*	Dry forage yield lb./A (second cutting)
500-0-0	3.8	2,693
500-0-60	1.4	4,509
500-0-120	1.0	4,679

*Rating of 1-5, with 1.0 being disease free

Source: International Plant Nutrition Institute

SUCCESSFULLY ESTABLISHING SEEDED BERMUDAGRASS

Competition from other grasses and weeds is the number one reason for bermudagrass stand failure. Taking steps to reduce this competition will increase one's chance of success.

Don't get in a hurry to plant. If soil temperature is not 65° F or higher at a depth of 4", bermudagrass will not germinate. When the seed does germinate, it will be weaker and more subject to disease.

For No-Till

- Check that seed is not dropping too deep; 1/8" or less is ideal. One method to prevent deep planting is to pull the drop tubes from the openers and let the seed fall behind the opener to be pressed into the loosened soil by the press wheel.
- Be sure that existing residue is not too thick for seedlings to emerge and that the seed is making soil contact beneath the residue.

For Clean-Tilled Ground

- Plow and disk, then culti-pack before and after planting to form a very firm seedbed. Several passes may be necessary to achieve proper firmness. Bermudagrass seed will not establish in a fluffy, loose seedbed. Take care to place seed at a proper depth of 1/8" or less.
- For fields with a history of undesirable weeds and annual grasses, prepare the seedbed well in advance to allow the first flush of crabgrass and other weed and grass competition to emerge. Use a non-selective, non-residual herbicide such as glyphosate to kill this flush of weeds before planting Cheyenne II, Ranchero Frio or Mohawk.

Planting Rate:

15 lbs./acre

Date:

Late spring through early summer when soil temperatures at a 4" depth are 65°F or above. Plow and cultipack to develop a firm seedbed. Proper firmness is indicated by a heel print no more than 1/8" deep in the soil.

Depth:

1/8" depth maximum.

Fertilizer:

Apply lime, phosphorus and potassium fertilizer according to soil test recommendations. Apply 20-30 lbs/A of nitrogen at planting time. When the new plants begin to develop runners, apply an additional 50-60 lbs/A of nitrogen.

Management:

Delay grazing newly established bermuda until forage is 8-10" tall. On established bermuda stands, apply 50-75 lbs/A of nitrogen for each cutting of hay. If grazed, apply up to 150 lbs. of nitrogen per year in split applications throughout the summer. The last nitrogen application each year should be made a minimum of 6-8 weeks prior to the expected date of a killing frost to help prevent cold injury. Do not graze or clip for hay shorter than 2". Rotate animals more often during periods of drought stress.



Photo courtesy of U.S.D.A. ARS, Tifton, GA

A grass variety's winter hardiness is critical in deciding whether it is suitable for your area. Cheyenne II is considered to possess average cold tolerance and can be planted in areas where bermudagrass is naturally adapted. However, this does not mean that instances of winter-kill could not occur under certain situations. If you are concerned about winter-kill in your area or you are located north of areas where bermudagrass is naturally adapted, consider planting a variety with improved cold tolerance such as Mohawk.

The Pennington **Bermudagrass Advantage**



- High Yielding
- Excellent Quality
- Widely Adapted
- Durable
- Easily Planted
- Establishes Quickly
- Superior Cold Tolerance

From Southern California east to Virginia, no other seeded forage bermudagrass outperforms Pennington's premium bermuda line.



Mohawk
Bermudagrass with Cold Tolerance

CHEYENNE II
Improved Forage Bermudagrass

For more information, contact Pennington Seed at 1-800-285-SEED or www.penningtonseed.com



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