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**Bermuda grass “*Friend or Foe*”**

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**Introduction**

Bermuda grass (*Cynodon dactylon*) is considered by many to be an awesome forage and soil conservation material but dreaded by others as an invasive weed that vigorously compete for space and nutrients (Kopec,2003).

**History**

Bermuda grass was brought to the United States from Africa many years ago. Seeds were brought with it and spread over the eastern United States. Some these of seed survived and spread to the southern US where adaptation was most like its country of origin. It is a perennial warm-season grass that can survive many years without being replanted. It’s relatively fast growing, deep-rooted, sod forming plant that produce seed but can also spread by above ground runners called stolons, and underground shoots called rhizomes ( Hansen et al,2000). These specialized stems produce new plants at each joint or node. This explains why the plant has the ability persist by crowding out most other plants (Kopec,2003).

**Forage**

In the humid southeastern United States, Bermuda grass is extensively grown for pasture and hay. It makes good quality pasture alone and is an outstanding companion crop for other forage species such as bahai grass or dallas grass. Its greatest advantage is when it is grown in combination with a cool season perennial such as tall fescue. Bermuda grass is productive during the months of June, July and August, when quantity and quality of cool season grasses are low. Farmers are also able to extend the growing season thereby decreasing the dependency on winter feeds which is the largest deterrent to profitability for a livestock grazing enterprise. Much of Bermuda grass growth accrue after May 1st with spikes in June and early July because of moisture, and continue until a frost in the fall which can vary from mid-September to late October depending on location (Hansen et al,2000 ). Tall fescue, on the other hand, begins its growth in the fall around September 1st, with spikes in March, April, and May, and start to decline by mid-June (Hansen et al,2000). When managed this pasture system is far superior to other systems being used. Bermuda grass can withstand heavy traffic of animals and will rebound from serious grazing abuse. Because its growing points are in the base of the plant stem, animals can safely graze Bermuda grass down to two inches from the soil surface. When grazed below two inches some growing points are damaged however stands recover if given a month’s rest or regrowth period.

When adequately stocked, pastures of Bermuda grass can handle continuous grazing but can be best utilized in a rotational grazing system where paddocks are allowed to rest for at least 28 days. After 28 days forage quality goes down as biomass production may continue to increase. The choice of which system to use depends on the management available (Hansen et al,2000 ). Bermuda grass pastures can support 1.5 to nearly 2 pounds per day weight gain for steers when climatic conditions and nutrient availability is present. In a rotational system livestock can graze for periods from as short as six hours to as long as seven days and still maintain a healthy lush stand of forage. Pastured should receive 100 pounds of nitrogen at green up and an additional 50 pounds every 30 days until August(Hansen et al,2000). Applications after September may make the plant subject to winter kill. Introduce animals when Bermuda grass reaches six to eight inches tall and remove animals before the grass is an average of two inches in height. Mowing grazed pastures to three inches is a good practice after animals are removed but can add to overall farm expense. If Bermuda grass is allowed to reach eight inches, the stand will considerably drop in quality. Clipping or haying is recommended at this point.

When moisture is available Bermuda grass can be an excellent warm season hay crop. It responds well to fertility, produces large quantities of dry matter, dries down rapidly, and when harvested between 21-30 days, has reasonably good quality for warm season stored forage (Hansen et al,2000). Nitrogen fertilizer increases the quantity and the quality of Bermuda grass hay produced. The response is linear as the more nitrogen fertilizer applied from 0-300 lbs(Hansen et al,2000). per acre, the more hay produced. Split applying nitrogen fertilizer is the most efficient method of fertilizer application. Typically apply about 100lbs. /ac. in mid-May after green up and apply between 50 to 100 lbs. /ac. every 30 days after each cutting depending on projected rainfall( Hansen et al,2000). The plant will use more potassium than it needs for plant growth therefore it is a good practice to apply nitrogen, phosphorus, and potassium in split applications to minimize luxury consumption. Soil test should be used to determine the rates of phosphorus and potassium to be applied. When soil test are not available nutrients should be applied at a ratio of 4-1-3( Hansen et al,2000). Dry matter yields may range from 6 to 8 tons per acre per year depending on climatic conditions, cultivar, and fertility. With all forage grasses, the quality of the hay decreases with the length of time it grows. The stage of growth is critical when the goal is quality. When Bermuda grass hay is harvested between 21 and 28 days of growth, protein (CP) can range from 16% to 20%, neutral detergent fiber (NDF) can be between 55% and 60%, and acid detergent fiber (ADF) between 25% and 30%( Hansen et al,2000 ).

**Establishment**

Bermuda grass can be propagated in a variety of ways. It can be seeded, or sprigged using rhizomes and stolons or mature green cuttings from the crown of the plant. It is adapted to a extensive array of soil conditions but prefers drained environments (Jennings et al, 2013). It thrives in deep sandy loam and medium textured soils that have a pH range of 5.5 to 7.5.( Jennings et al,2013 ) Good fertility at establishment is critical for fast growth and coverage during the first growing season. For seeded or common bermudagrass, plant four to eight pounds of pure live seeds between April 1 and June 1 on a well prepares and firm seedbed by broadcasting or drilling seed at a depth of no greater than 1/4 inch(Jennings et al,2013 ). Hybrid varieties do not produce viable seed. These cultivars have to be planted using vegetative growth. One bushel of sprigs is usually enough for adequate coverage however; increasing the rate of sprigs planted will increase the rate of coverage. Fresh sprigs (less than 24 Hrs. after digging) should be planted in rows of 20 to 40 inches at a depth of 1 -2 inches(Hansen et al,2000 ). Deeper planting will delay emergence. Commercial sprigging machines are available for well-prepared seedbeds where the machine buried vegetative plant parts in a controlled manner at the desired depth. Stands may also be established by using a manure spreader to broadcast vegetative growth over a field and lightly disking them in. With both methods, rolling or cultipacking after planting will aid in plant to soil contact and moisture retention (Jennings et al, 2013).

**Pest management**

Bermuda grass, is a hardy plant that has the ability to recover after severe damage from defoliation. Its underground stems store the necessary nutrients to push up new plants and cover open spaces quickly. Fall army worms are probably the biggest insect threat to pastures and hay meadows. They can quickly defoliate a field of lush bermudagrass if not treated. Producers should scout fields for the present on worms and contact their local extension for control measures. There are many chemical and biological weed control measures for controlling weeds during the establishment, post emergence, and dorment phases of production (Hansen et al, 2000).

**Varieties**

The main thrust of plant breeders when considering varieties of Bermuda grass is winter hardiness. Remember that the plant’s origin goes back to Africa so its nature is a worm humid environment. After breeders are able to create a plant that can survive winters then yield and palatability become second and third on a sliding scale of importance. Some of the most common varieties are as follows;

* Common Types are planted from seed and grow on a wide range of environments but yields low compared to hybrid varieties. Mostly used for erosion control, pastures, and some turf fields and lawns.
* Coastal is the old standby that has great resistance to leaf diseased but is not very cold tolerant.
* Tifton 85 is a big stemmed robust producer that has good nutritive value but is not very cold tolerant.
* Midland is a tall leafy variety that is a cross between coastal and a winter hardy common variety.
* Hardie is a high yielding hay producer but can’t stand low pH soils.
* Guymon can be planted by seed and is winter hardy. It does not produce the biomass of higher yielding varieties but may have good grazing tolerance.
* Wrangler is a seeded variety that has good winter hardiness and preforms like Guymon.
* Greenfield may yield slightly less that high yielding varieties but adapts to a wide range of environments and has good cold tolerance.
* Tifton 44 is a high yielding variety that is a cross between Coastal and a common type from Germany. It is widely used throughout the southeastern US.
* Midland 99 is a variety best suited for hay it grows like Tifton 44 but can produce higher yields than Tifton 44 and midland.
* Quickstand as the name implies, is a short growing cold tolerant plant that is best suited for pasture production and erosion control.
* World Feeder is a highly promoted variety that has some winter hardiness but has not yielded as promoted.

Source

University of Missouri Extension, 2000

**Conclusion**

Bermuda grass can be a “friend or foe” depending on the desires of the landowner, because it’s one of the toughest grass used for turf in the south. Plant breeders have not been able to match its ability to resist heat and drought, respond to a wide range of management techniques. Plant breeders have developed varieties that are finer stemmed and have resistance to foliage diseases. Tiflawn is the most commonly used variety on golf courses. If you would like more information please contact your local exaction service or local NRCS Field Service Center.

**Literature Cited**

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