

# Forages



## CULTIVARS OF BERMUDAGRASS (*CYNODON DACTYLON*)

D. J. Undersander and B. W. Pinkerton

All bermudagrasses used for forage in the United States are of the genus and species, *Cynodon dactylon*. This forage was first brought to the U.S. in 1751, when Henry Ellis, former Governor of South Carolina, introduced it to Savannah. The common bermudagrass he introduced was shortly considered to be the most important grass of the South.

In the past fifty years much breeding has been done to improve agronomic and quality characteristics of bermudagrass through the development of hybrids. All hybrids are essentially sterile and will produce seedheads with little or no seed; the seed that is produced will be common bermudagrass. Therefore hybrid bermudagrasses must be sprigged. The hybrids are often referred to as improved grasses because of increased yields (improved fertilizer response), forage quality, or cold tolerance when compared to common bermudagrass. Unlike other agronomic crops, the improvement does not necessarily mean improved disease or insect resistance.

### Common

Both a forage and a weed, common bermudagrass frequently occurs as an invader in other pastures, crops, and lawns. Common bermudagrass is the most widely adapted type but is not a true cultivar

and is highly variable depending on the seed source. This type is the major seeded bermudagrass — most other types do not produce seed and are available only as sprigs. Common bermudagrass is rhizomatous and can also be propagated vegetatively. It is generally short, but some ecotypes are almost as tall as some of the hybrids. It is the lowest in yield, and forage quality ranges from equal to slightly higher than Coastal. Common bermudagrass is more winterhardy and has a longer growing season than most cultivars. It responds favorably to good management and growth conditions.

Common bermudagrass may be desirable wherever environmental concerns require a dense sod or aesthetic considerations suggest shorter growth. It may be the desired type where animal traffic is heavy and most of the nutritional requirements are met by supplemental feeding. Common bermudagrass is also used where a seeded type is desired.

### Coastal

Coastal is a hybrid that was released in 1943 by the USDA and the Georgia Coastal Plains Experiment Station for improved vigor, yield, and forage quality. It is a tall-growing, coarse-stemmed type that has both rhizomes and stolons. Coastal produces few seedheads, and those that do occur rarely contain

viable seed. The cultivar responds well to fertility and irrigation, but at the same time has considerable drought tolerance. When planted in a root-knot nematode infested soil the nematodes become lodged in the Coastal roots and die before they can lay their eggs. For this reason rootknot-susceptible legumes grow much better in association with Coastal than with common bermudagrass. Coastal tolerates frequent and close grazing. It lacks sufficient winterhardiness for the northern areas of the bermudagrass growing region but has persisted and produced well in all areas of South Carolina. It is similar in nutritive quality to common bermudagrass and is among the lowest in quality of the hybrid bermudagrasses.

Coastal will spread faster and maintain a weed-free sod longer than common, under reasonable management. It grows well over a wide range of soil pH, but generally will do best if the soil is limed to at least a pH of 5.5 (6.0 should be maintained if legumes are overseeded).

Coastal will yield up to twice as much as common bermudagrass. Further, it will generally produce more forage in the late summer and early fall than common. In a five-year study done at Tifton, Georgia, pastures of common bermudagrass carried 0.8 steers per acre and produced 161 lb of live-weight gain per/acre per year, while Coastal carried 1.3 steers and produced 277 lb of gain. Other studies have indicated an even greater advantage to Coastal bermudagrass.

### **Tifton 44**

Tifton 44, a hybrid between Coastal and a winter-hardy bermudagrass from Berlin, Germany, was released by the USDA and the Georgia Agricultural Experiment Station in 1978. It has finer stems, is darker green, and forms a denser sod than Coastal. Tifton 44 is slower to establish than Coastal, seldom providing grazing during the establishment year. It is more winterhardy and usually greens up 7 to 10 days earlier in the spring. Tifton 44 has yielded about 10 percent less than Coastal over ten years of trials in North Carolina.

The higher nutritive value of Tifton 44 over Coastal has resulted in 15 to 20 percent higher average daily gains for cattle grazing during summer. It is important to note that the improved animal perform-

ance will not be realized unless the pasture and grazing management systems are optimal. In a more casual management system the benefits of the improved quality may not be observed.

Use of this hybrid may be advised where a tighter sod is desired or where more winterhardiness is needed.

### **Tifton 68**

Tifton 68, released by the USDA and the Georgia Agricultural Experiment Station in 1984, is a hybrid of two plant introductions that were selected for high digestibility. It is a large bermudagrass with big stems and large stolons that spread rapidly. The hybrid is not rhizomatous. It is higher in yield and digestibility than Coastal but is not very winterhardy and is not recommended for most of South Carolina.

### **Tifton 78**

Tifton 78 is a cross between Tifton 44 and Callie that was released in 1984 by the USDA and the Georgia Agricultural Experiment Station. It is taller than Coastal and is more stoloniferous, spreading more rapidly than Coastal. It can be established either from top cuttings or sprigs. The hybrid is not as winterhardy as Coastal or Tifton 44. Northern limits have yet to be established but it appears that the cultivar will overwinter in the southern and coastal plain regions of South Carolina. Tifton 78 has more spring growth than Coastal. The hybrid is similar to Callie in many respects but is resistant to rust.

Tifton 78 has great potential because it is both higher in yield and in quality than Coastal. Dr. Glenn Burton has reported that, in a three-year clipping trial planted in 1978, Tifton 78 produced 25 percent more dry matter and was 7.4 percent higher in digestibility than Coastal. When compared with Coastal bermudagrass in a three-year grazing trial, Tifton 78 produced 27 percent more steer days and 13.5 percent better average daily gains resulting in 36 percent more live-weight gain.

## **Midland**

Midland, a hybrid between Coastal and a cold-tolerant bermudagrass found in Indiana, was jointly released in 1953 by the USDA and the Georgia and Oklahoma Experiment Stations. It is leafier, darker green, and tends to produce a more open sod than Coastal. The cultivar is more winterhardy and tends to green up earlier in the spring than Coastal but usually produces less fall growth. Disease resistance is not as good as that of Coastal and yields are usually lower where winterkill is not a factor. There are few, if any, situations where this variety would be recommended for South Carolina producers.

## **Callie**

Callie was released by Mississippi State University in 1974 after selection from some plant introductions from South Africa. It is probably a hybrid but its exact origin is unknown. Callie is a tall-growing bermudagrass with large stolons and wide leaves that produces an open sod. This cultivar establishes more rapidly than Coastal and has higher yields during the establishment year. It is not as winterhardy as Coastal and is very susceptible to rust. Where winterhardiness is not a problem, yields are similar to Coastal after the establishment year. Forage quality is six to eight percent higher than that of Coastal. Lack of winterhardiness and disease resistance preclude Callie from being recommended for planting in South Carolina.

## **Coastcross-1**

Coastcross-1 is a hybrid between Coastal and an introduction from Kenya that was released in 1967 by the USDA and the Georgia Coastal Plains Experiment Station. It is a tall, broad-leafed type. Coastcross-1 produces more stolons than Coastal with few and small rhizomes. The open sod makes this hybrid susceptible to invasion by common bermudagrass. Coastcross-1 was selected primarily for its improved forage quality. Forage yields are about equal to Coastal. This hybrid lacks cold tolerance to the extent that it is adapted only to Florida, Alabama, Mississippi, and Louisiana.

Hill Farm Coastcross-1 is a selection of Coastcross-1 that produces rhizomes. The yield of this type is below Coastal and forage quality is similar to Coastcross-1.

## **Brazos**

Brazos is a hybrid bermudagrass from materials of African origin released in 1982 by the USDA and the agricultural experiment stations of Oklahoma, Louisiana, and Texas. It has wider leaves and thicker stems and rhizomes than Coastal. The sod is more open than Coastal. This hybrid has about the same winterhardiness as Coastal but has earlier spring growth. Forage production is similar to Coastal on clay and clay loam soils but slightly less on sandy soils. The nutritive value is 2 to 4 percent higher than that of Coastal. There are reports that Brazos requires a little more time than Coastal to cure when making hay. Brazos has produced about 20 percent better animal gains than Coastal over several years of testing in Texas. This variety has not been adequately tested in South Carolina.

## **Alecia (Alicia)**

Alecia was developed by Cecil Greer Grass Farms, Edna, Texas, from a strain collected in South Africa and released in 1967. It can be established either from sprigs or top cuttings. Alecia spreads and becomes established more rapidly than Coastal. It is less winterhardy, drought tolerant, and resistant to diseases than Coastal. Forage production may be slightly greater than Coastal during the establishment year but is generally considered to be approximately equal thereafter. Forage quality is typically less than Coastal. This hybrid is very susceptible to rust.

## **Grazer**

Grazer is a hybrid of introductions from Kenya and Italy released in 1985 by the USDA and the Louisiana Agricultural Experiment Station. It is more prostrate than most hybrids and was developed primarily for grazing. The hybrid has winterhardiness, persistence, and drought tolerance about equal to Coastal. Grazer establishes more rapidly, forms a

shorter, denser sod, and produces fewer rhizomes than Coastal. This hybrid is a darker green than Coastal. Forage yields have been lower than that of Coastal but digestibility is higher so that average daily gain is higher and gain per acre is comparable or higher than that of Coastal.

## **NK37**

NK37 is a seeded bermudagrass selection developed by Northrup, King and Co. that has been marketed for about thirty years. It was selected from the arid, southwestern U.S. where it is well adapted. The selection is susceptible to the fungal disease, helminthosporium. In the southeastern U.S., NK37 has been productive for a short time after establishment and then has declined rapidly in yield.

## **Pasto Rico**

Pasto Rico is a seeded blend of bermudagrass marketed by Northrup, King and Co. It is a blend of hulled and unhulled seed of common bermudagrass and NK37. As with NK37, yields of Pasto Rico have been reported to decline the second year after establishment as the stand reverts to common bermudagrass.

## **Other Varieties**

LeGrange, Zimmerly, Scheffield, Naiser, Luling, Oklan, Guymon, and Hardie are bermudagrass types that have been marketed for forage production

in some regions of the U.S. but have not been tested in South Carolina and are probably not adapted to the region.

## **TurfTypes**

The following cultivars of bermudagrass have been developed primarily for turf use and would not produce as much dry matter or necessarily be of as high nutritive quality as the forage types: Bayshore, Everglades, FB-137, Midway, Ordmond, Pee Dee, Royal Cape, Santa Ana, Sunturf, Texturf 1F, Texturf 10, Tifdwarf, Tiffine, Tifgreen, Tiflawn, Tifway, Tufcote, U-3, Uganda.

## **RECOMMENDATIONS**

Coastal is the most adapted bermudagrass state-wide. Tifton 44 will perform as well in the piedmont and decisions for use should be based on individual needs given the characteristics of each cultivar. There is a place for common bermudagrass as discussed previously. Of the newer cultivars, Tifton 78 and Grazer show promise for South Carolina but more information is needed before recommendations can be made.

A final, very important point is that improving the management of existing forage resources may provide a better opportunity to increase profitability in many instances than to kill existing pastures and plant new ones. Similarly, planting pastures of improved bermudagrass types without adding improved management may not result in increased forage yield or animal performance.