

Forage Species for Mississippi Horse Pastures

Using forages to feed horses has many benefits for horses and horse owners. One benefit is the reduction of gastro-intestinal problems, such as colic. Also, the horse owner can greatly reduce the time and costs of buying feed by growing his own forages, whether he uses them as fresh feed or makes them into hay. Having a nice green pasture for horses to graze and exercise on is better for the overall wellbeing of the horse and is more eye appealing for the owner.

Establishing and maintaining horse pastures can often be difficult, though. Horses are natural browsers, which means they prefer certain parts or species of a mixed pasture and will tend to pick out these and leave the rest. Over time, this often leads to loss of desirable forage species and growth of weeds. Horse hooves can also damage grass sod, threatening a stand even more.

All this is complicated by the fact that many horse owners have only limited pastureland available for each horse. Ideally, under Mississippi conditions, each mature horse requires anywhere from 1 to 2 acres of pasture to meet most of its annual forage needs. This much land is not always available for many horse owners. That could lead to overgrazing, making it very difficult or even impossible for many of the commonly used forage species to grow. Despite these horse-related problems, it is generally possible to find a suitable forage species for each pasture situation.

Several different forages are suitable for horse pastures in Mississippi. Selecting a forage for your pasture depends on the pasture's location, soil type, and management. For most horse pastures, you should use a perennial forage grass to establish the pasture base, since the perennial grasses generally tolerate high grazing pressure and traffic better than annual grasses, and there is no need to reseed these pastures each year. There are a number of warm-season and cool-season forage species you can use in combination to grow forage for most of the year in Mississippi. However, many horse owners do not often have the land resources to have specific warm- and cool-season areas, so it is generally practical to choose one main forage type as the basis for your pasture.

Whichever type of forage you use, there will be times of the year that these pastures are not productive, and you may have to feed hay or other supplements. Sometimes mixing one of the annual forage species into a perennial pasture base may be a good alternative to buying and feeding supplements. Following is a range of forage species that may be suitable for horse pastures in Mississippi and some important management considerations for each species.

Warm-Season Perennial Grasses

The warm-season grasses can grow in hot, dry environments. They are widely used for providing forage in the summer in Mississippi, when most cool-season forages will not grow. The major limitation of these species is their lack of production during the cool months, when they are dormant.

Bermudagrass

Bermudagrass is one of the most common warm-season perennial grasses grown throughout Mississippi for horse pasture and hay. It is well adapted for grazing and is very productive between May and September. The two main types of bermudagrass are hybrid types, which require vegetative propagation, since they produce little or no viable seed; and seeded types, which you can start directly from seed. The hybrid types will typically produce higher dry matter yields than the seeded types and will keep higher total digestible nutrient (TDN) levels at similar stages of maturity.

You can do vegetative propagation from March through April. You must cultivate to prepare a seedbed before sprigging. This can be impractical if you don't have access to cultivation equipment or have relatively small pastures. The seeded types, which include common bermudagrass, offer more flexibility in establishment method and may be a better option if you have a relatively small land area.

Seeded bermudagrass, especially common types, also tend to have lower, denser growth, which can mean better persistence under heavy grazing. Therefore, in horse pastures that are subject to high

grazing pressure and traffic, common bermudagrass may have certain advantages.

Bermudagrass responds well to nitrogen fertilizer and will also require enough phosphate, potassium, and sulfur to stay productive. Regular soils tests and applying recommended rates of each nutrient are important in maintaining a healthy pasture stand.

Bahiagrass

Bahiagrass is also used often as warm-season perennial forage grass in Mississippi for both pasture and hay. It tolerates lower fertility soils and overgrazing well and has a longer growing season than bermudagrass (April through October). That makes it a popular option for many horse pastures. Bahiagrass spreads through long rhizomes and forms a thick sod that helps it tolerate high stocking densities. Like all warm-season grasses, bahiagrass pastures need to be kept short (4 to 6") to avoid losing their nutritional quality.

Bahiagrass is propagated from seed in March or April, but only a few "varieties" are available. Tifton 9 is the most recently released variety and appears to have significant yield advantages over both Pensacola and Argentine bahiagrass. While bahiagrass will tolerate low fertility conditions better than bermudagrass, it is very responsive to nitrogen fertilizer and will produce better when you provide adequate levels of fertility.

Dallisgrass

Dallisgrass is a close relative of bahiagrass but is generally less persistent because it has shorter rhizomes and requires higher fertility soils with better water-holding capacity. Dallisgrass produces forage from April through September, and the quality is generally better than both bahiagrass and bermudagrass. Dallisgrass is propagated from seed in March or April, although no "improved" varieties are currently available. The viability of dallisgrass seed is often very low, and the pasture can be slow to establish. This can make dallisgrass unsuitable for horse pastures where you can't reduce grazing pressure during establishment. Dallisgrass pastures can cause some health problems in horses when ergot (fungus) forms in the seedhead. You should clip dallisgrass pastures from time to time to remove any seedhead where ergot may develop.

Warm-Season Annual Grasses

Warm-season annuals are also drought and heat tolerant. The warm-season annual species typically have better nutritional quality than the warm-season perennials but need to be established from seed each year, which can greatly increase pasture costs. In addition, only a few warm-season annual species are considered suitable for horse pastures (see the section on sorghum x sudan grass in this information sheet). With all warm-season annuals, severe drought conditions and high application rates of nitrogen-based fertilizer can cause the buildup of nitrates in the plant tissue to levels that are toxic to livestock, including horses. While we believe horses can tolerate higher levels of nitrate in the forage than cattle can, levels should not be more than 1 percent nitrate in the feed to be safe.

Millet

A number of millet species are suitable for grazing, including brown top and pearl millet. You should **not** use German and foxtail millet for horse pastures because they contain a toxin that can cause joint and kidney problems in horses. Pearl millet is considered the most suitable millet species for horse grazing or hay. It is a high yielding annual grass you can sow from April to June, and it produces from June through September. It has moderate to good nutritional quality if you keep it short (less than 20-30"), but it can be difficult to stock, since the growth rate can differ greatly during the growing season. This often leads to excessive forage production and loss of nutritional quality in early summer. To keep nutritional quality, you may need to clip the pearl millet or make it into hay during times of high growth rate.

Crabgrass

Crabgrass is a warm-season annual grass that often volunteers in Mississippi pastures and reseeds itself very well. You can seed it from March through May. Most crabgrass is "common," but a variety called red river has been developed specifically for grazing. Crabgrass pastures are productive from May through September and have nutritional quality that is generally higher than perennial warm-season grasses. Crabgrass has a more even growth profile through the summer than the other warm-season annual species, such as millet, so it is often easier to manage and maintain nutritional quality.

Johnsongrass, Sorghum, Sudangrass, and Sorghum x Sudan Hybrids

None of these warm-season annual grasses are recommended for horses. These grasses produce prussic acid that can cause serious health problems in horses, including cystitis, paralysis, and urinary tract disorders.

Cool-Season Perennial Grasses

Cool-season grasses generally have better nutritional quality than warm-season grasses, but most have limited use under Mississippi climatic conditions. Tall fescue is the only cool-season perennial grass that will reliably persist in Mississippi, and even this is limited to soils with higher clay content in the northern half of the state.

Tall Fescue

Tall fescue is the most persistent of the cool-season perennial grasses, and it is well-adapted for grazing. Tall fescue will form a dense sod that resists high grazing pressure and traffic. However, most of the tall fescue sown over the last 70 years was infected with a fungus that causes serious animal health problems in many livestock species, including horses. The most common symptoms in horses grazing infected tall fescue occur in pregnant mares and include birthing difficulty, placental thickening, birth deformities, poor milk production, and in extreme cases, death of both the mare and the foal. The severity of these problems has rightly caused horse owners to avoid grazing tall fescue where possible. Removing the fungus from the tall fescue eliminates animal disorders, but the tall fescue plant is made much less persistent, and stands decline very fast under the heavy grazing and traffic pressure common to many horse pastures. If you are using fungus-free fescue for horse pastures, be careful to avoid overgrazing during the summer months or during drought.

Novel endophyte technology may offer a solution to the problems associated with fungus in tall fescue. Some strains were discovered that did not produce the major group of toxins responsible for the health problems in horses but maintained the persistence of the plant in a grazing environment. Novel endophyte products are now available on the market, but so far the only product to have been tested and found safe for horses is one called MaxQ™.

Cool-Season Annual Grasses

With the limited number of cool-season perennial grasses that will persist in Mississippi, cool-season annual grasses, such as annual ryegrass, are commonly used to provide forage for livestock during the fall, winter, and early spring. Other cool-season grass species suitable for horses include the small grain species, such as wheat, oats, and rye. Cool-season annual species are often an effective option for overseeding or interseeding dormant warm-season perennial pastures to extend the annual productivity of the pasture.

Annual Ryegrass

Annual ryegrass is very tasty to horses and provides high quality forage from November through May. In most situations you can broadcast the seed or drill it into existing bermudagrass or bahiagrass sod in September and October. Annual ryegrass can reseed very well, and once seed are in the soil, some will germinate each year. Grazing down or clipping summer growth in the fall and lightly harrowing the ground will let the annual ryegrass seed germinate.

Small Grains

The small grains, such as oats, wheat, and rye, are similar to annual ryegrass in their use for winter forage and have similar management requirements. The seasonal production of most small grain species is from November through April. The small grains will typically yield higher in the fall but flower and die earlier in the spring than annual ryegrass. You can mix small grains with annual ryegrass to extend the grazing season further into the spring.

Legumes

Several annual and perennial clover species and alfalfa are suitable to include in Mississippi horse pastures. Legumes are valuable and high quality to include in grass-based horse pastures. The clover content of horse pastures should not be more than 25 to 30 percent, since there will be more risk of colic and laminitis above these levels. Besides being a good source of crude protein for horses, legumes can fix atmospheric nitrogen into the soil, and this can reduce the need for nitrogen-based fertilizer. Most legumes are very sensitive to soil pH, so you should try to keep soil pH in the 6 to 7.5 range.

Perennial Cool-season Clovers and Alfalfa

You can seed perennial clovers into grass-based pastures in the spring or fall. White clover is the most common perennial clover used in horse pastures. Ladino-type white clovers are high yielding but will not often persist for more than two to three years in southern Mississippi and may need frequent overseeding to maintain the stand. Smaller-leaved medium and Dutch-type white clovers are generally more tolerant of close grazing and lower fertility soils so will often persist longer than the ladino types.

You can effectively use red clover in Mississippi horse pastures. Red clover will typically last for only two to three years in north Mississippi, and generally you will need to overseed it every year in south Mississippi to maintain the stand. You should be aware that red clover may become infected with the fungus *Rhizoctonia leguminicola*, which produces an alkaloid called slaframine that causes slobbering in horses. While this alkaloid is generally only mildly toxic to horses, you should remove the animal from the clover pastures if symptoms persist. Both red and white clovers are ideal companion species in tall fescue and dallisgrass pastures but can also be seeded into bermudagrass pastures to extend the grazing season and provide nitrogen.

Alfalfa is also a suitable pasture species for horses when seeded into grass-based pastures. Like the other perennial legumes, alfalfa will not persist well in many parts of Mississippi but is generally more tolerant of drought than other cool season legumes.

Annual Clovers

A number of annual clovers can be seeded into horse pastures, including crimson, berseem, ball, and arrowleaf clover. You should seed these clovers from September to October. They will provide growth from November through April or May.

You should not use alsike clover for horse pastures because it can cause sensitivity to light and possible liver damage in horses.

Soil Testing and Grazing Management

While selecting a suitable forage species or combination of species is the first step in establishing a horse pasture, the role and importance of management cannot be understated. Regular soil tests (every one to two years) and fertilizing pasture to levels recommended in the soil test reports will help pastures remain productive. Adopting rotational grazing management can also improve the persistence and productivity of horse pastures. Splitting a horse pasture in half with temporary electric fencing and rotating the horse between each half can dramatically improve the pasture health.

You can find information on seeding the forage species mentioned in this publication in Extension Publication 1168. You can get a copy of this publication from your county Extension agent or from the official Extension web site: MSUcares.com.



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