



Preventing Leaf Spot and Rust in Bermudagrass

By Dr. Dennis Hancock, Extension Forage Agronomist, University of Georgia

At the end of July and the first part of August, some producers notice their bermudagrass begins to slow down and brown off. Upon closer inspection, they'll often see spots all over the leaves. These spots can cause entire leaves to die back. In severe cases, the disease can result in large areas of the field looking as if an early frost has wiped it out. These symptoms of leaf spot and rust are common in the South during late summer. But it is preventable.

What Causes Leaf Spot and Rust?

Bermudagrass leaf spot and leaf rust are often lumped together, but they are actually caused by two different organisms (Fig. 1). Bermudagrass leaf spot is caused by the fungal species *Bipolaris cynodontis*. (This fungus was formerly taxonomically classified in the genus *Helminthosporium*, so it has historically been called *Helminthosporium* leaf spot and much of the literature refers to it in this way.) Leaf rust is caused by a different fungal species, *Puccinia cynodontis*. They can be distinguished from one another by examining the fungi under a microscope or hand lens. The fruiting bodies of *B. cynodontis* are cylindrical, multi-cellular conidiophores, where the fruiting bodies of *P. cynodontis* are small, round, orange to red, single-celled urediniospores.

In the field, though, these fungal infections are practically indistinguishable from one another. Both diseases typically appear in the high heat and humidity of late summer. Forage yields and quality are lost to heavy infestations of either disease. Finally, from a practical standpoint, both are managed in the same way: prevention.

An Ounce of Prevention

Though our modern society seems to suggest that every ill has a quick fix or cure, most farmers know that there is no such thing as an easy fix. In the case of bermudagrass leaf spot or rust, there are no fungicides that have proven to be economical or effective and none are labeled for this purpose. The most effective way to treat bermudagrass leaf spot or rust is to prevent it.

There are four management practices that decrease the risk of disease infection, including: a) using a resistant variety b) maintaining soil fertility c) burning bermudagrass fields prior to spring green-up and d) harvesting forage in a timely and appropriate manner.

Variety selection – The most effective method to control leaf spot or rust is to use a resistant variety. All of the sprigged bermudagrass varieties recommended by UGA have been screened for leaf spot/rust resistance. These include Coastal, Tifton 44, Russell and Tifton 85, all of which have some degree of disease resistance. Though any of these varieties can have these diseases, infections are not typically severe. In contrast, some bermudagrass varieties are highly susceptible (e.g., common, Alicia, World Feeder and others). Establishing varieties that are highly susceptible or have not been evaluated for disease resistance should be avoided.

Soil fertility – Once the stand is established, the most important practice is to conduct regular soil tests and maintain adequate levels of fertility. The most important nutrient for leaf spot resistance is potassium (K). Most of the

Figure 1.



outbreaks of these diseases are directly related to K deficiency in the plant. Bermudagrass hay removes nearly as much K in each bale as N. Split applying K fertilizer can also improve crop performance, as well. The recommended amount of K should be applied in at least two splits, with 30-50 percent of the recommended amount applied at spring green-up and the remainder applied in July or early August.

Please note that soil tests can sometimes be misleading. There are many cases where adequate soil levels were present, but plant tissue samples indicated a nutrient deficiency. If disease has become a problem, submit a clipped sample of hay for plant tissue analysis 1 week prior to the July harvest. If the sample analysis indicates a K level less than 1.8-2.0 percent on a dry matter basis, then apply additional K₂O fertilizer. If a bermudagrass field has a history of annual or regular outbreaks of leaf spot or rust and a plant tissue test has identified a K deficiency, consider applying K₂O fertilizer at the same rate (lbs per acre) as the N rate for the field.

Burning prior to spring green-up – Removal of residual biomass or thatch can reduce the incidence of disease. Thatch ties up nutrients and contains abundant decaying material, which may serve as a “spore reservoir.” In addition, thatch retains water and reduces air circulation, creating humid conditions that promote leaf spot incidence. The only practical way to reduce thatch is to burn in spring months just prior to bermudagrass green-up. Consult your local forestry group to make sure that all precautions are taken, as fires can easily escape.

Timely and appropriate harvests – Timely harvest intervals ensure high-quality hay production, but they can also reduce the build-up of disease. As alluded to earlier, K

nutrition is key to disease resistance. But K concentration in individual leaves is not static, since K is mobile in plants and typically moves from older to younger tissue when there is a nutrient deficiency. This predisposes older tissue to infection. If harvests are delayed, disease pressure can build extraordinarily quickly. You may recall that the worst outbreak of bermudagrass leaf spot and rust in recent memory was in the summer of 2013. During this year, nearly daily rainfall caused major delays in hay harvests throughout the summer. By August, disease had resulted in large yield losses in nearly every bermudagrass pasture and hayfield.

Disease and the Bermudagrass Stem Maggot

It is also worth noting that bermudagrass leaf spot or rust symptoms are sometimes confused with damage done by the bermudagrass stem maggot (BSM). Symptoms of BSM are similar, but the damage is usually confined to the uppermost 2-3 leaves. This is in contrast to disease, which usually affects the older leaves down in the canopy. Be sure to know whether it is the BSM or disease before attempting control or implementing a management change. To further complicate matters, we have tended to observe heavier BSM pressure in fields that are suffering from disease pressure. It is premature to speculate too wildly about the linkage between the two pest problems. Suffice it to say, however, that proper prevention of disease in bermudagrass may be helpful in preventing BSM injury.

For more information about bermudagrass leaf spot and rust, visit www.georgiaforages.com. For more information about other forage management issues, visit our website or contact your local county Extension Office at 1-800-ASK-UGA1. 