

MANAGING THE RYEGRASS TRANSITION

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Every fall, around 3 million acres of bermudagrass and bahiagrass are overseeded with annual ryegrass. The use of ryegrass to extend the grazing season is a great tool to minimize hay feeding. But, the transition from annual ryegrass back to summer pasture sometimes comes up fast. In the South, spring is measured in days, not weeks or months. As the temperatures rise, ryegrass goes from lush and vegetative to stemmy and mature over the course of just a few days. So, it is good to have a plan to manage that transition.

Ryegrass Can't Handle the Heat

Cool season forages are very sensitive to high temperatures. Once temperatures consistently get above 75° F for 3 – 4 hours or more per day, cool season forages cannot grow rapidly (Fig. 1). Cool season forages harvest light energy and turn it into carbohydrates via C₃ photosynthesis. There are certain enzymes and proteins that make C₃ photosynthesis work that become distorted and unstable when exposed to high temperature. So, hot weather slows down the photosynthetic “assembly line.” Once the temperature goes above 85° F for 3 – 4 hours or more per day, the “assembly line” essentially stops. Consequently, the plants cease to produce vegetative growth. Cool season annuals respond to these conditions by rapidly reallocating most of their resources into setting seed, giving rise to an abundance of seedheads and lower quality forage.

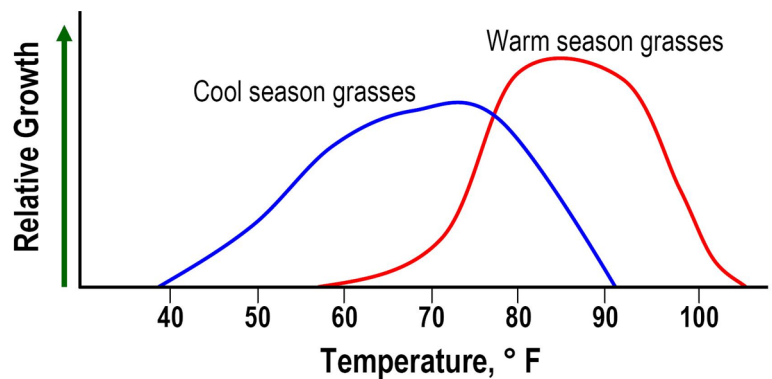


Figure 1. Relative growth of cool season and warm season grasses in response to the temperature of the crop canopy.

Anticipate When Ryegrass Will Rocket

One of the major challenges in using ryegrass is that its forage production is skewed to the end of the season. Almost all of its production comes in the last 60 days. For the first 4 to 5 months after planting, ryegrass typically grows less than 40 lbs of DM/acre per day. In the last 40-60 days, it may grow more than 200 lbs of DM/acre per day! Folks who have grown ryegrass for years have noticed that, just as it is entering into this rapid phase of growth, the canopy floor often gets covered with a white mass of adventitious roots and the cobweb-like mycelia of fungi that grow in association with the roots (Fig. 2). An old timer once told me “those white roots and web were so that ryegrass would stay anchored in the ground, otherwise it would jump out of the ground, it grows so fast.” His humorous take on this observation has proven to be a useful visual clue to determine when ryegrass growth is starting to skyrocket.

Most will stock ryegrass pastures on the basis of its early season growth rate and may not have the high stock densities necessary to keep up with the growth in March and April. Understocked pastures end up with a massive amount of ryegrass that is growing over the top of bermudagrass and bahiagrass. This is challenging to these warm season perennials, as they are trying to wake up from winter dormancy at this same time. As a result, the bermudagrass or bahiagrass underneath the ryegrass is severely weakened and starved for sunlight,

water, and nutrients. Research in North Carolina showed that bermudagrass yields were reduced by 40-50% when the fields were overseeded with ryegrass and the ryegrass was taken as a hay cutting. There is also some evidence to suggest that ryegrass can be allelopathic, meaning it exudes chemicals that suppress other plants that grow near it. The risk of ryegrass allelopathy is highest when the ryegrass is stressed by disease, heat stress, or drought.

Have a Ryegrass Management Plan

Despite these risks, annual ryegrass is a great forage and quite cost-effective because it reduces the need for winter hay feeding. However, one should have a plan to deal with the rapid spring growth rate. One helpful tactic is to reduce or avoid late winter or spring nitrogen (N) applications on a subset of one's paddocks. For example, one may have 10 paddocks in a rotationally grazed system and choose to not apply N to two or more of them after February. This will avoid promoting too much forage production.



Figure 2. At the base of healthy ryegrass right, a mass of white adventitious roots and cobweb-like fungal mycelia develop just as it enters its most rapid phase of growth.

Another useful tactic is to increase the grazing pressure on the ryegrass. Adding more livestock can do this, but one could also change the rotation sequence. For example, a livestock producer may see that three or four of his 10 paddocks are going to be well beyond the target grazing height by the time the rotation brings the herd back to them. So, he may take those three or four ryegrass paddocks out of the grazing rotation and cut those paddocks for baled silage (or hay if drying conditions allow). Alternatively, one could take the ryegrass out of the three or four paddocks that were just grazed by applying 1.5 oz. of Pastora per acre once it has begun to regrow. This should kill the ryegrass and release the bermudagrass. Pastora should NOT be used for this purpose in bahiagrass pastures, as the Pastora will kill bahiagrass. Pastora should also not be sprayed on fields where summer annual forage plantings are planned.

Minimize the Lingering Effects of Ryegrass

Once the bermudagrass or bahiagrass emerges from the literal shadow of the annual ryegrass, it is crucial to provide nutrition so that it will recover quickly. Immediately after ryegrass growth ceases or is terminated, provide the summer pasture with 50 – 75 lbs of N/acre and any phosphorus that may be recommended based on the soil test. Unless the soil test K level is high enough that no potassium (K) is recommended, one should apply at least an equivalent amount of K_2O /acre as the N rate applied during this fertilizer application. Keep in mind that a good ryegrass crop may remove or tie-up the equivalent of more than 200 lbs of K_2O /acre during the season. Even with more uniform manure distribution in rotationally grazed pastures, there will be patches that will be K deficient. Any additional K that is recommended based on the soil test levels should be applied in early August through mid-September. This is when K applications can most effectively strengthen bermudagrass and bahiagrass, as this is when reserves begin to be stored for winter dormancy.