

# What causes bermudagrass stands to thin?

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“We have an old bermudagrass stand that is thinning and filling in with weeds. What can we do?” I receive this question many times a year, and the problem is fittingly called “bermudagrass decline”. If a plant pathologist is asked what causes bermudagrass decline, several leaf spot diseases including *Helminthosporium* will probably be listed. Even though these diseases are the official reason for bermudagrass decline, many factors can cause the gradual thinning of fields. In general, three critical factors predispose fields to bermudagrass decline. In this article the importance of fertility, moisture, and light will be discussed. Specific management applications will also be reviewed so this information can be applied on farms.

## ***Factors that cause decline.***

***Fertility.*** The largest problem limiting bermudagrass productivity is low fertility. Many producers have been applying adequate amounts of nitrogen for many years; but have failed to apply potash, phosphate or lime to hayfields or pastures. Failure to apply these nutrients *in the short term* does little harm as there are often adequate reserves present in the soil. However, over time, soil reserves of potassium and phosphorus are removed or “mined” by deep rooted bermudagrass leaving little to maintain the plants. How long has your bermudagrass been established? There are many 5, 10, 20, and even 40 year old bermudagrass stands where potash in the soil has been almost totally depleted. Complete fertilizer applications are critical to maintaining the health and productivity of bermudagrass.

***Light.*** Light is needed for photosynthesis and is also crucial for runners or rhizomes to grow and thicken stands. Bermudagrass performs best in full sun; shading can severely impact plant performance. Producers rarely consider effects of light intensity, but shading can decrease runner formation and vigor and have large effects on productivity- even in open fields. See the management tips below for more information on light management.

***Moisture.*** Even though bermudagrass is extremely drought tolerant, poor moisture conditions can stress and thin stands. Drought stress, on its own, will usually not result in bermudagrass failure. But the sum of overgrazing, poor fertility and other stress factors can make drought “the straw that breaks the camel’s back”. Excluding irrigation or site selection, few things can be done to greatly alter drought stress.

## ***Putting this information to work.***

Improving fertility status of bermudagrass fields is absolutely critical for maintaining bermudagrass fields. Potash is needed for cold hardiness and increases rhizome and stolon production to allow bermudagrass to spread. When adequate potassium is available, the plant’s resistance to leafspot diseases also increases. Potash application is crucial in hayfields because large amounts are removed with harvests. A good rule of

thumb is that for every 6 tons of bermudagrass hay removed from the field about 260 lbs of nitrogen, 290 lbs of potash and 60 lbs of phosphate are removed in hay.

Grazing animals remove little potash and phosphate, but these nutrients are often redistributed to areas of shade or loafing where animals deposit it in dung or urine. Controlled grazing systems improve nutrient distribution in pasture areas by spreading manure more uniformly across the grazed area. If your bermudagrass stand is thinning, a soil or plant tissue test is the first place to begin troubleshooting.

Producers usually think of shading as something that occurs underneath trees, but leaves of all plants (including bermudagrass itself) can shade lower parts of the canopy. To verify this, take a close look at bermudagrass plants just before cutting hay or grazing a high yielding area. Note that little light reaches the base of the plant in tall canopies. Light encourages stolon growth and greatly influences the regrowth potential of bermudagrass. Frequent cuttings (4 week intervals) allow light to reach the base of the plant more often and result in more rapid regrowth of bermudagrass after harvest (more on this in a future article). Of course, hay quality will also be improved with more frequent harvests.

A thick thatch layer also decreases light reaching the base of plants. These dead leaves provide a thick layer that can totally prevent light from reaching lower levels of plants. It also provides shelter for insects and diseases. Burning before greenup in early spring removes thatch and releases bound nutrients to the soil. Burning also kills weeds and overwintering insects and can hasten greenup.

Overseeded winter annuals can shade and delay greenup of bermudagrass. This is particularly true when overseeded annual ryegrass is undergrazed in late spring. Work by Dr. Gary Hill in Tifton demonstrates that properly grazed annual ryegrass does not dramatically affect early bermudagrass production. If annual ryegrass is underutilized, shading of bermudagrass can occur and delay greenup. In severe cases, stand reduction can result from poor ryegrass grazing management. Annual ryegrass not only competes for light, but also competes with bermudagrass for water resources in late spring. Plant only the amount of ryegrass that is needed for spring grazing or harvest excess annual ryegrass in a timely manner for hay or baleage. This will reduce competition with bermudagrass and improve vigor.

Ordinarily it takes a combination of stresses to result in bermudagrass stand failure. However, it is important to manage plant stressors as much as possible to improve productivity of pastures and hayfields. Use these tips to troubleshoot problem fields and plan for improvement. As always, your local county agent is a fantastic source of information for improving forage systems, aiding with soil testing, and determining the appropriate bermudagrass variety for your area if total replacement is necessary.