

Pasture Stocking Rate

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Last month we discussed how cattle graze and how they affect the pasture. This month, let us talk about one of the most important concepts in pasture management - stocking rate. January is generally a poor time for good pasture growth and hay feeding is the norm for most beef cow herds in Georgia. There isn't much that can be done at this time to enhance pasture growth but it is a good time to think seriously about how to better manage pastures for greater productivity and nutritive quality.

Seasonal variations in forage growth rate

It would be wonderful if pasture growth rate was uniform over the year or at least matched the seasonal variations in forage needs of the grazing livestock on a farm. Unfortunately, pasture growth rate varies greatly over the year because of variations in temperature, rainfall, and differences in plant species. Bermudagrass makes peak production during June and July with a 4 to 7 month dormant period, depending on the area of the State. Tall fescue has a long productive season with peaks in autumn and an even larger one during April and May. Winter annuals such as wheat or rye can make substantial growth during autumn, declining in January, then peaking during March and April. Thus, matching the forage available to the needs of a fixed number of animals becomes difficult and how this problem is managed can affect subsequent growth rates of pasture.

Pasture stocking rate effect on animal production

Pasture stocking rate can be defined as the number of animals per unit area for a substantial period of time. This doesn't mean much unless one knows the amount of forage available in the pasture. Another term, grazing pressure, refers to the animals in relation to the forage available. Thus, at high grazing pressure there is little forage available per animal. One can have high grazing pressure in winter at a low stocking rate because of limited forage but during

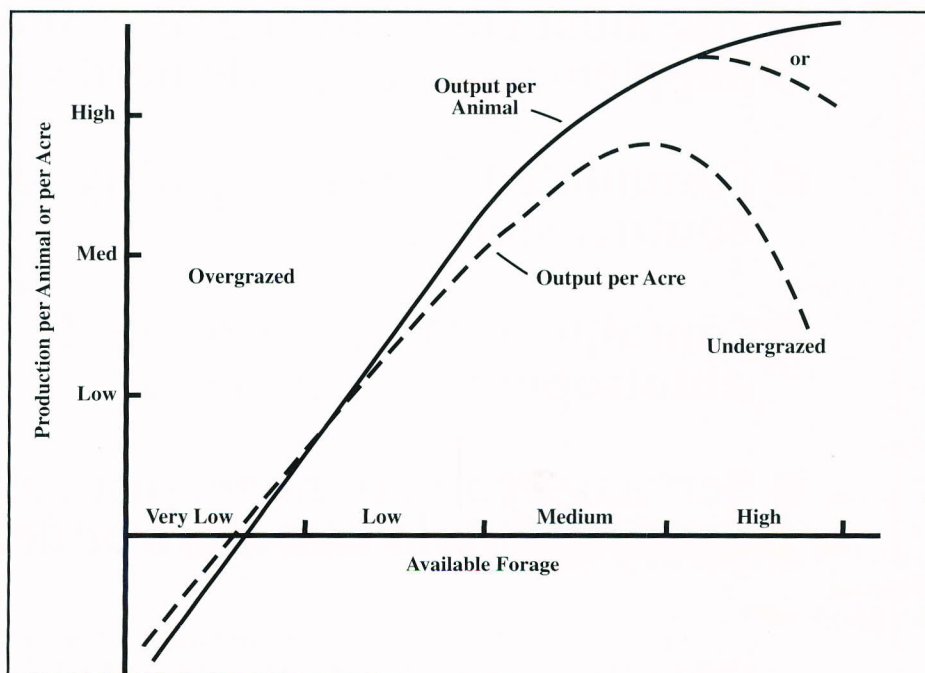
spring the grazing pressure may be low with a high stocking rate because of large quantities of available forage in the pasture. Therefore, any attempt at managing a pasture must take into account the seasonal changes in forage available.

A good pasture manager must be able to estimate the stocking rate based on the amount of forage available in the pasture if adjustments are to be made. If the pasture is being grazed by growing animals, the available forage can influence the output of animal product from the pasture. The graph shown is based on many grazing trials with growing steers. At a low stocking rate, available forage and productivity per animal are high but output per acre is low. Animals have plenty of opportunity to select green leaves but as the quality of perennial grasses declines with accumulation of stems and dead leaves, dry matter intake may decrease and lower animal output. As stocking rate is increased on a pasture, less forage is available per animal. Individual animal output decreases as they compete for forage and have less opportunity to select for high-quality leaves. However, animal output per acre

increases with stocking rate until individual animal gains are depressed to the point that the additional animals carried on the pasture do not compensate for the loss. The effects of stocking rate are much less dramatic with beef cows and calves than growing steers or heifers because the cow requirements for maintenance are lower and the cow can make use of body reserves to sustain lactation when forage intake is limiting. However, as the calf grows and obtains most of its sustenance from forage it will be responsive to forage available and the quality of that forage. Maintaining a good supply of green leafy forage rather than old stemmy and dead leaves in a pasture will improve calf weaning weights.

Stocking rate effect on pasture plants

Tall fescue pastures during late autumn and winter are generally closely grazed as animals supplement their diets with limited amounts of green leaves to supplement hay feeding. No harm is done to the grass as tiller (shoot) populations decline during winter. Tiller numbers normally increase rapidly during



spring. If these pastures continue to be grazed hard into late winter they will take longer to reach full efficiency because of insufficient leaf tissue for photosynthesis. As forage growth accelerates in late winter and early spring, the problem changes from shortage to surplus forage. If the stocking rate is too low in spring, forage rapidly accumulates and the development of flowering tillers which animals are reluctant to graze. Tall fescue pastures with heavy accumulations of old grass not only waste forage and lower nutritive quality but more importantly result in loss of tillers with reduced potential for subsequent growth in summer and autumn.

Obviously, stocking rates should be greatly increased in spring to favor high tiller production. Since animal numbers on the farm are fixed, then there is only one solution and that is reduce the forage available by fencing off part of the pasture for hay harvest and thus concentrating the animals on a smaller area. This must be done early enough so that the animals will be able to remove the available forage and maintain tiller production. Plant height on the pasture needs to be maintained at about 3 to 5 inches.

Bermudagrass is often grazed early in spring to utilize high-quality weeds. As the bermudagrass begins growth, stocking rate can be increased. With warmer temperatures, growth is rapid and surplus forage becomes a problem. Cross-fencing to concentrate animals on a smaller area with the remainder harvested for hay will maintain more leafy green forage for the animals to graze. Heavy accumulations of old bermudagrass will shade buds and prevent development of new leaves. Thus, a low stocking rate on bermudagrass pasture in summer will result in reduced forage quality of old dead grass and lower calf weaning weights. In autumn, close grazing of old grass residue will make it much easier to establish winter annuals by sodseeding.

How to adjust stocking rate

Utilizing the current forage available in a pasture to the livestock on a farm is often a difficult problem. Obviously, it would be very easy if one could just add or subtract numbers of animals to a pasture as needed to consume the forage available. But, most producers have a fixed number of animals except when weaned calves or old cows are sold. Thus, the solution must be sought in adjusting pasture acreage to the available number of animals to maintain an ade-

quate stocking rate on the grass. This can best be accomplished by cross fencing large pastures into smaller units. Some people will choose to maintain cattle on one area and then harvest surplus growth for hay from other pastures during peak growing seasons. Actually, a better approach is to utilize a rotational method of grazing where animals are moved one pasture to another at intervals to consume the forage. More uniform grazing

is accomplished over a number of pastures and others can be harvested for hay during surplus periods. This system often results in a higher carrying capacity than continuous grazing since grasses can be grazed closely and allowed to recover, producing more leaves and less stems. We will have more to say on grazing methods in a later article. In the meantime, think about stocking rate and how it can influence pastures on your farm.

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