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## **What do summer legumes contribute to grass pastures?**

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Sometimes an idea becomes so widely accepted that we stop evaluating it. Take pasture legumes, for example. They are great, and everybody says so. That's because they "fix" nitrogen (N) by taking N out of the air, a form not available to plants, and convert it to a form that the legume can use. Nitrogen results in a plant that is high in protein (great for cattle that eat the legume), and this N can be available to grasses that grow with the legumes. Does this mean that N from legumes can substitute for N fertilizer in the pasture system? The answer depends more on when is N available than how much N is fixed.

Top growth from legumes, such as carpon desmodium, Savannah style, and aeschynomene, typically contains 50 to 125 lb/A of N. Let's say their root systems contain an equal amount or a total of 100 to 250 lb/A of N fixed annually. Nitrogen in consumed forage is available to cattle upon digestion, and cattle make N available to the grass when N is excreted. Nitrogen can also become available by underground transfer from death and decomposition of legume plant material. This covers most of the N, and takes place slowly over six months to a year.

Cattlemen have the problem of inefficient use of bahiagrass - too much in the summer and not enough in the winter and spring. They fertilize bahiagrass in March in order to obtain a quick forage response needed for spring grazing. Most Florida legumes are grown with bahiagrass, and N from these legumes is not a substitute for March N fertilizer. Matter of fact, research has shown that N fertilization of bahiagrass can depress carpon desmodium yield when grown with bahiagrass.

Few ranchers fertilize bahiagrass in June to September because what they need then is grass quality, not quantity. Animal performance in summer can be improved by having a legume in the pasture. Bahiagrass with good stands of carpon desmodium or aeschynomene had pasture quality similar to bahiagrass receiving 200 lb/ A of N in trials at Ona. Average daily gains of steers grazing bahiagrass-carpon mixtures was equal to

that of bahiagrass with 200 lb/A of N. Gains of steers grazing bahiagrass aescynomene exceeded this N-fertilized bahiagrass. Livestock production per acre is increased with N fertilization, and N from legumes can contribute a little here too, but the big contribution of legumes is improving individual animal performance, especially in summer.

Annual legumes depend on rainfall and good pasture management for their continuation. Dr. Elver Hodges, long-time agronomist at the Range Cattle REC said of aescynomene, "She's a pretty gal, but you can't depend on her." Carpon desmodium, a perennial, is difficult to establish and requires attentive management to maintain it. With the advantages comes the disadvantages.