



Pasture Condition Score: An approach to optimize nitrogen fertilization in bahiagrass pastures in Florida

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Bahiagrass is the main forage used by the beef cattle industry in Florida because of its reliability and persistence under adverse climatic conditions and management practices. However, several years of challenging climatic conditions (floods and droughts) and mismanagement (low soil fertility and overgrazing) may lead to significant decrease in bahiagrass stand. The decreased bahiagrass population in the pasture may lead to less forage production, weed infestation, and consequently lower stocking rates and calves weaned per acre.

Nitrogen fertilization is commonly used to increase bahiagrass forage production and nutritive value; however, it is one of the most costly management practices in cow-calf operations. Therefore, the decision of which pastures will be fertilized must be made with criteria to optimize the investment.

Pasture condition score (PCS) is a visual estimate of the proportion of the desirable forage in a given pasture. The procedure is comprised by walking a pre-determined number of steps in the pasture and report if the forage species at the stop location (10 x 10 ft around the observer) is bahiagrass or another species. If the evaluation is conducted in a larger pasture, it can be done on horseback or motorized vehicle (ATV, Four wheeler, Truck). It is recommended to follow a zig zag pattern to have the most possible representation of the pasture. The number of stops is conditional to the size of the pasture but it is recommended to have the greatest number of possible stops. The number of stops with bahiagrass ground cover, divided by the total number of stops will result in the proportion of ground cover. The PCS values range from “3”, which is a pasture with 80-100% bahiagrass cover (Figure 1), to “1”, which is a pasture with 60% or less bahiagrass cover (Figure 3). The bahiagrass cover from a PCS “2” are from 80 to 60% (Figure 2). It is also important to note that the presence of weeds is not a parameter to determine PSC because some pastures may have a significant presence of weeds but still have desirable bahiagrass ground cover. However, it is expected that areas not covered by bahiagrass are likely to be occupied by weedy species. A proper weed control program is recommended to achieve greater nitrogen fertilization efficiency.

Producers should prioritize the nitrogen fertilization of pastures with PCS 3, followed by 2, and it is not recommended to fertilize pastures with PCS below 2. The expected responses of bahiagrass pastures fertilized with 50 lb N/acre in the spring with different PSCs are shown in Table 1.



Figure 1. Pasture condition score 3



Figure 2. Pasture condition score 2



Figure 3. Pasture condition score 1

Table 1. Relationship between forage production and pasture condition score in bahiagrass pastures fertilized with 50 lb N/acre in the spring and harvested after 5 weeks.

Pasture condition score	Expected forage production (lb DM/acre)	Ratio of N fertilization: Forage Production/acre	Nitrogen Fertilization Recommendation
3	1350	27	Yes.
2	1000	20	Yes. After pastures with PSC 3 have been fertilized and extra forage is needed
1	< 800	< 16	No. Producer should consider renovation

Please note that the bahiagrass response to nitrogen fertilization is highly dependent upon other soil fertility parameters (pH, P, K, etc.) and climatic conditions; however, pastures with greater PSC will have greater forage production under similar soil and climatic conditions. The general fertilization for bahiagrass pastures in Florida should follow the UF/IFAS recommendations <http://edis.ifas.ufl.edu/ss163>.

At this point in time, we have conducted the procedure with bahiagrass only, and further measurements will be done in the future to fine-tune the parameters and test this procedure with other warm-season perennial grass species. It is expected that bermudagrass, stargrass, and

bermudagrass would have different patterns of response due to the ability of the plants to propagate by stolons and potentially cover some areas that were not previously covered by the desirable forage species.

If you have any questions about PCS, please contact Joe Vendramini, jv@ufl.edu.