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## **How Much Lime Do You Need For Forage Crops?**

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Limestone has been applied to acid soils for well over 2000 years to increase crop yields and quality. Limestone increases soil pH and also increases the calcium and/or magnesium content of the soil.

The majority of soils in Florida on which Forage grasses are grown are acid, coarse textured sands. These soils tend to be low in calcium and magnesium, both of which are required for plant growth. It has been well established that crop growth is reduced under strongly acid conditions.

Acid mineral soils found in Florida can contain toxic aluminum which will stunt plant root systems and reduce nutrient and water uptake. Aluminum is normally present in its toxic form at soil pH levels less than 5.0 to 5.5. Thus, when an acid soil is limed to a pH level over 5.0, any toxic aluminum present in the soil will be converted to a non-toxic form, alleviating aluminum toxicity. It should also be noted that organic soils found in Florida contain little aluminum and therefore it is not necessary to lime these soils, regardless of soil pH.

Addition of limestone can also affect nutrient availability to crops. Under acid soil conditions (pH less than 5.0) nutrients such as phosphorus can be tied up in the soils in various forms making it unavailable to the plant. If too much lime is applied to the soil and the pH gets too high (greater than 7.5) nutrients such as phosphorus, manganese, copper, iron and zinc can also be changed to forms making them unavailable to the plant. Thus it is important that limestone not be applied haphazardly. It is important to take soil samples from the field and have them analyzed for pH and lime requirements prior to applying limestone. Soil samples should be analyzed by a reputable soil testing laboratory that can make a lime recommendation.

The amount of limestone needed depends upon the initial soil pH, soil texture and the crop to be grown. The table below lists the target pH for various forage crops grown in Florida.

Whenever possible one should use dolomitic limestone. The reason is that ordinary calcitic limestone only increases soil pH and provides calcium for the plant, while dolomitic limestone provides magnesium in addition to increasing soil pH and providing calcium. One will also need to consider the cost of the various limestone materials when making this decision.

Research is currently being conducted at the Ona Research and Education Center to re-evaluate the limestone recommendations for forage grasses. Studies are being conducted around the state evaluating rates as well as sources of limestone for forage grasses such as bahiagrass.

**TABLE 1. TARGET PH FOR DIFFERENT FORAGE CROPS GROWN ON MINERAL SOILS.**

Crop Category	Crops Included	Target pH
Bahiagrass	Bahiagrass	5.5
Other improved perennial grasses	bermudagrasses, stargrasses limpograsses & digitgrass	5.5
Warm season annual grasses	com, sorghum, sorghum- sudans  & millets	6.0
Cool season annual grasses	small grains & ryogress	6.0
Warm season legumes or legume grass mixtures	perennial peanut, desmodiums, aeschynomene, alyce clover, hairy indigo, & other tropical legumes	6.0
Cool season legumes or legume grass mixtures	All true clovers (white, red, arrowleaf, crimson, subterranean), vetches, lupines, and sweet clover	
Alfalfa	Alfalfa	7.0