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## **Seed of Legumes in the Soil Is an Important Resource**

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The amount of legume seed in the soil, which is part of the soil seed bank, is important because it is from this seed that annual legumes must regenerate each year. We estimated the amount of legume seed in three bahiagrass pastures around the Range Cattle REC by collecting equal amounts of the top one inch of soil in February 2002. We counted the seedlings that emerged from our moistened samples in the spring, after which we let the soil dry in the summer, and followed that by moistening the soil again and counting emerging legumes in the fall. We measured emergence in spring and fall because of the "hard seededness" of legumes. Many legumes have seed coats that inhibit germination because they are impermeable to water. Time, often several years, is required to allow soil acidity and weathering to break-down the seed coat. This is nature's way of assuring the survival of a plant species by preventing all of the seedlings from perishing if conditions are not favorable for growth.

A bahiagrass pasture seeded to the annual legume *aeschynomene evenia* in June 2001 and grazed through the summer contained an average 14 seedlings/m<sup>2</sup> (a square meter is 3.3' by 3.3') in the spring 2002 and 19 seedlings/m<sup>2</sup> in the fall. *Evenia* seed averages about 85,000 seed/lb, so that is about 0.7 lb seed/acre germinating in the spring and 0.9 lb seed/acre in the fall. In this pasture where *evenia* had produced a single crop of seed in the summer 2001, a total of 1.6 lb/acre of seed germinated in the spring and fall 2002 germination periods.

By contrast, an adjacent pasture seeded to *evenia* in 1996, and where *evenia* has been grown (and has reseeded itself) a total of 6 years, there was an average 128 seedlings/m<sup>2</sup> in the spring and 276 seed/m<sup>2</sup> in the fall. This was the equivalent of 6.1 lb seed/acre germinating in the spring and 13.2 lb/acre in the fall. This indicates that it usually

requires several years for the seed bank of legumes to build up. It also emphasizes the importance of allowing annual legumes to go to seed each year.

Having plenty of reserve seed in the soil is important for perennial legumes too because plants die, and the legume must come back from seed. The great drought of 2000-2001 was responsible for the loss of much carpon desmodium in central and south Florida. The third bahiagrass pasture we sampled was one with a good stand of carpon desmodium, which was seeded in 1997. Here we found 318 seedlings/m<sup>2</sup> in the spring and 468 seed/m<sup>2</sup> in the fall. There are about 350,000 carpon seed/lb, so in the spring, 3.7 lb seed/acre germinated and 5.4 lb seed /acre germinated in the fall. Carpon is usually sown at 3 to 5 lb/acre, so there was an excellent reserve of seed on hand.

It will be interesting to see how much seed is actually in these samples we initially took in February. Since more seed germinated in the fall than in the spring, I would guess that we will find a good supply of seed after another cycle or two of drying and wetting the soil. Researchers in Australian found viable seed in the same samples after 5 years of wetting and drying.

These data show that once you get a good seed crop of a summer legume like aeschynomene or carpon desmodium that grow and produce seed, you should not have to replant again. The only requirement is to create the right conditions such these legume seed germinate, provide forage for grazing, and again produce seed for future crops.