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How Much Flooding Will Bahiagrass Seed Take?

By Rob Kalmbacher

University of Florida, Range Cattle REC



For questions or comments regarding this publication contact

[Rob Kalmbacher](#)

They say you are no more than four weeks from a drought or five minutes from a flood in Florida. Since we are into the rainy season now, the latter can be of real importance to cattlemen establishing pastures. Perennial grasses established from sprigs, such as stargrasses and limpgrass, are not affected by standing water - so long as water does not cover the plant material. With grasses established from seed, it's a different matter. Rice is the only grass of agricultural importance that will germinate and emerge from under water. Seed of most grasses, such as ryegrass or small grains used for winter pasture, will perish even if the soil becomes waterlogged. Because Florida cattlemen are faced with this problem all summer long, I was curious about the effect of flooding (standing water) on bahiagrass germination and seedling emergence.

We sealed Tifton-9 bahiagrass seed in petri dishes that were filled with water for 0, 2, 4, 6, 8, 10, 14, 21, and 28 days. At the end of each flooding period, water was drained and seeds were incubated for the standard 28-day germination test. To confirm what we found with the petri dishes, we seeded pots filled with soil, and set the pots in water so that water was maintained 1 inch above the soil. Pots were flooded for 0, 4, 8, 14, and 28 days after which they were drained and observed for 28 days. We conducted three individual petri dish and two pot trials with three replications of each treatment at each date. In the petri dish trials, we measured germination, similar to what you see on the tag attached to the seed you buy. In the pot trial, we measured seedling emergence from the soil, which is what you see in the field. Keep germination and emergence separate in your mind.

In the petri dish study, germination was not affected by flooding and averaged 77% after 0 to 28 days flooding over the three trials. With 0-days flooding, almost all the germination took place in the first 10 days of the 28-day germination test period. With flooding, germination was delayed until water was removed, except when bahiagrass was flooded for 28 days. Then germination started before water was removed (after about 21-

days). In the first pot trial, flooding significantly reduced seedling emergence from 72% with 0-days flooding to 28% with 28-days flooding. In the second pot trial, seedling emergence was reduced to 54% with 28-days flooding. I think that some of the seedlings died before they emerged. With 28 days flooding, as many as 25% of the seedlings had emerged under water. Once a seed germinates, the seedling will not tolerate flooding and may die before or after emergence.

There is nothing that cattlemen can do about rainfall, but they can seed pastures early in the rainy season and possibly avoid flooding. It seems that bahiagrass will tolerate at least 21 days of standing water without negative effects if seedlings can emerge above water.