

Seed Germination Testing (“Rag-Doll” Test)¹

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It is often important to determine the potential germination rate of seeds that have been held over from previous years. A fairly simple procedure can be conducted at home. Seeds that will not germinate in a “rag doll” most likely will not germinate in the field.

Properly used, the rag-doll test is very useful. After a simple, quick test, you will know if you need to buy new seed because the leftover seed has deteriorated, or if you need to plant at a higher rate because some reduction in germination has occurred and you recognize that you will not have ideal seedling vigour.

The following steps describe the “rag doll” test and provide suggestions for obtaining the most reliable results.

- Use a firm paper towel such as a brown hand towel or equivalent (the soft, very absorbent paper towels often used in a kitchen make poor rag dolls because they allow roots and shoots to penetrate into the fiber, making seedlings difficult to remove during counting). If no other type of towel is available, the soft towels can be used, but it is best to use a double layer. These towels often hold too much water, which drowns the seeds.
- Wet the paper towel and allow free water to drip off for a minute. Lay the wet towel on a clean surface (bleached if possible) and add seeds.
- Count out 100 seeds (50 for larger seeds like corn, peanuts, and soybeans) and place them on one half of the towel. Fold the towel over and roll it into a moderately tight tube. Rolling it around a pencil works well. If there is more than one rag doll, be sure to label each one. It works well to put a piece of paper with identification written in pencil in the upper margin of the rag doll. Either tie at the end to make a rag doll, or place the tube in a jar or sealable plastic bag.
- Position the rag doll so the tube is upright—doing this causes roots to grow down and shoots to grow up so that seedlings are more easily removed during counting. The rag doll should be kept in a warm place (between 75° and 85°F). A little water in the bottom of the jar or plastic bag ensures adequate moisture.
- Make the first germination count in about three days, for most crops. Open the towel and count the seedlings as you remove them. Fold and roll back into a tube. After another three to four days make another count. If you had 100 seeds, the number of seedlings removed equals the percentage germination. If you had 50 seeds, the number of seedlings removed multiplied by 2 equals percentage

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germination. Germination time for most forage seeds is approximately between 7–20 days (Table 1).

- You can distinguish hard or firm (dormant) seeds from dead seeds by pushing down on each nongerminated seed with the flat part of a pencil eraser. If the seed does not flatten with gentle pressure, it is considered hard. Hard seeds are dormant and may germinate later on in the same season or next season. These are counted as good seed. Dead seeds are usually moldy at the end of the test and will flatten under an eraser.

Table 1. Seed germination time for common forage plants in Florida*.

| Common Name | Approximate Germination Time (days) |
|--|-------------------------------------|
| Alfalfa | 7 |
| Alyceclover | 21 |
| Austrian Winter Pea | 8 |
| Bahiagrass | 21 |
| Clovers | 7–10 |
| Corn | 7 |
| Cowpea | 8 |
| Crabgrass (aged) | 12 |
| Dallisgrass | 21 |
| Indiangrass | 21 |
| Millet | 7 |
| Peanut | 8 |
| Ryegrass, annual | 7 |
| Small grains (Barley, Oats, and Wheat) | 7 |
| Sorghum | 10 |
| Soybean | 7 |
| Sudangrass | 7 |
| Switchgrass | 21 |
| Velvetbean (mucuna) | 14 |
| Vetch, hairy | 10 |

*Adapted from Ball, Donald M., Carl S. Hoveland and Garry D. Lacefield, eds. *Southern Forages*, 3rd ed. Atlanta: Potash & Phosphate Institute, 2002.