Therapeutic Horticulture Activity
Seed Germination Test

Source: multiple
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Overview: Testing seeds to determine their likelihood of germinating. This can be done purely out of curiosity or to determine viability of older or questionably stored seeds. This particular method is referred to as the "Ragdoll" seed germination test.

Precautions:

1. None

Completion Time: 30 - 45 minutes

Materials: (10 participants)

1. Seeds to be tested (10 or 25 for each depending on seed size) (100-250)
2. Paper towel, half sheets work well (10+)
3. Crayon, test to make sure color shows on paper towel (10)
4. Quart zip lock bags (10)
5. Water source (1)
6. Water bucket or vessel (1-10)
7. Small/mini paint pallet,or other device to manage counting of seeds (10)

8. Waterproof work surface or waterproof table covering (1+)
9. Spray bottles (optional) (10)
10. Seed packets with info on variety and growing information or index cards with information on them (10)

Pre-Session Prep:

1. Collect supplies.
2. If each participant is not getting a different or individual seed packet write the following information on a note card: seed type and variety, seed manufacturer, sell by date on packet, and germination rate if that is listed.
3. Create an example of a finished product, sprouting if possible (do 3-7 days prior to session).
4. Cover work surface with waterproof covering as needed.
5. If fine motor dexterity is of concern, precount seeds and place in paint pallets.
6. Put water into bucket(s)/vessel(s)

Step-By-Step Process/Instructions:

1. Discuss seed viability, see Tip #1 below. Talk about how knowing the viability is important to farmers with regards to not wasting land and home gardeners to not waste seed starting supplies and space. Talk about how you implement adjustments to seed planting once you know the germination rate; such as not planting at all or planting many more seeds in the same space than is recommended.
2. Introduce the activity and show the example. Explain that we will do this test and then check the seeds for sprouting on a regular basis as well as ensure the paper towel does not dry out.
3. Discuss the calculations to determine a germination rate; for example, if using 25 seeds you multiply the number of sprouted seeds by 4 and that is the % rate of germination; if using 10 seeds you multiply the number of sprouted seeds by 10 to get the % rate of germination.
4. Pass out a paper towel to each participant and instruct them to fold it in half.
5. Pass out seed packets, or if not using separate seed

packages for each participant, pass out the note cards created during Pre-Session Prep.

6. Pass out crayon.
7. Talk about whether participant will put 10 or 25 seeds on paper towel; 10 is recommended for larger seeds (ie.,melon or squash)and 25 for smaller seeds (ie., tomato or parsley)
8. Instruct participants to write the following on one half of the paper towel: seed type and variety, seed manufacturer, number of seeds to be placed, and today's date as reference for when the test was started.
9. Pass around the water bucket/vessel and have the participants dip their paper towel with the writing into the water and lightly wring it out.
10. Have them lay the paper towel out fully flat, without it being folded in half, with the writing face down on the surface
11. Pass out the paint pallets.
12. Discuss the importance of having the correct number of seeds on the paper towel in order to calculate the germination rate.
13. Have the participants count out the predetermined number of seeds (10 or 25) into the paint pallets.
14. Once counted, and recounted if needed, have them drop the seeds onto one half of the wet paper towel with some space between the seeds as they are able.
15. Instruct to fold the half of the paper towel that does not have the seeds on it over the half that does.
16. Pass out zip lock bags and have the participant place the folded paper towel into the bag, flat if possible and if not then loosely rolled into a tube shape.
17. Lightly press the air out of the bag and seal the top.
18. Keep the bag in a warm spot of the home (ideally about 70°F), such as near a sunny window, near a heater vent or on top of the refrigerator.
19. Instruct the participant to check the bag daily or every other day to ensure the paper towel is not drying out; if moisture is needed open the bag and mist with a water bottle or slowly add drops of water by hand.
20. When sprouts are noticed, begin counting how many and

recheck for several days in a row to see if more sprouts have appeared; continue until the number does not change for 2-3 days in a row.

21. Report back to the group what your sprouting numbers are and what you have calculated the germination rate to be.

Tips:

1. **What is seed viability?**

Seed viability is a measure of the number of seeds that are still alive to produce plants. Some seeds stay viable for many years, while others might only last a short time. For example, parsley and onion seed only last a year or two, while watermelon and cabbage should last four years or more. Most seed packets are dated so you know how old they are.

Seeds last longer when they are stored in a cool, dry place. In the winter, a cool basement or garage that doesn't freeze works well. In the summer, a cool room or refrigerator will keep them at the right temperature and humidity level.

2. Dead seeds usually do not absorb moisture and may be moldy at the end of the germination test; dormant seeds (that have not germinated) absorb moisture but do not germinate - dormant seeds can easily be flattened by pushing down on them with the flat part of a pencil.
3. If it is too much to have participants write out detailed information on the paper towel, create a master list and assign a number for each of the seed types and have the participant write the number on the paper towel. Include the date test started and the number of seeds per test.
4. Soil Temperature Conditions for Vegetable Seed Germination
5. Seed and Seedling Biology
6. Light Requirements for Seed Germination