



Step Three: “GROWING A WILD NYC” Stratification Classroom Activity

Overview: We need more native plants in our school yard gardens and parks. Native plants flower, which allow bees to thrive. Bees make our food and also help plants make seeds, food for birds! To help restore native plants to our environment, students collected and cleaned native seeds at Gateway National Recreation Area. Next: classes help seeds mimic winter by cold stratifying them in their classrooms by placing the seeds in soil in seed trays, covering the seed trays with a dark material, and labeling and storing their seeds in a cool dark place – either outside the school for about 6 weeks in winter, or in refrigerators.

Introduction to cold stratification: Like many animals and insects, plant seeds need a period of “**dormancy**” or sleep in the cold before they become active in the spring. For plant seeds this winter time sleep time prevents the seeds from trying to begin growing or “**germinate**” when the weather is too cold for them to survive. By placing the seeds in a tray of wet soil and into cold place for 3-6 weeks we can simulate winter. This process is called “**cold stratification**” or putting seeds in wet soil in the cold. After three to six weeks bringing them in a warm room will “trick” them into thinking it is spring. The seeds will then begin to germinate or grow into seedlings in your classroom.

Materials:

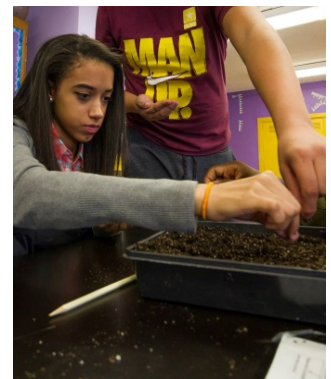
- Eight 1’x1’ seed trays
- Twelve sieves with 1/8” holes
- Potting soil for eight seed trays
- Labels for eight trays
- Four spray bottles
- Black plastic bags for the seed trays
- Stratification sign for black plastic bags

Group Activity:

All class demonstration (7 Minutes total):

The teacher will have the students sit together and watch the teacher do all the steps of cold stratification. After discussing with the class (see above) why cold stratification is important, demonstrate these steps:

- 1) Put soil in the trays.** Make sure that there is plenty of air in the soil but loosening the soil with your fingers in the tray. Gently smooth the soil on the top of the tray.
- 2) In one tray make several half-inch deep rows with your finger.** Explain that it is important that the row is no deeper than half an inch because the seedlings won’t be able to grow to the soil surface if they are planted too deep.
- 3) Sprinkle small seeds** such as evening primrose and rough leafed goldenrod into the rows.
- 4) Fill a sieve half full of soil and gently shake soil on top of the rows** until the rows are not visible.
- 5) Create a label** with the name of which plant species you planted and place it in the tray.
- 6) Take out the second tray** and ask the class to describe the steps to the teacher. After filling the tray with soil and making sure the soil is loose, **make holes no deeper than half an inch.**



Step 3



7) Place larger seeds such as native fuzzy bean seeds or milkweed seeds into. It is very important to count out the number of large seeds placed in the tray.

8) Use a sieve and soil to cover the holes.

9) Make a label with the plant specie name and the number of seeds planted. When planting the large seeds it is important for us to do a scientific study to see how many of the total seeds sprout and become seedlings. Writing the number of seeds planted will help us conduct this study.

10) Spray both seed trays with water, this will help the seeds germinate in the spring.

Review the steps with the class: 1) soil in both trays 2) tray one: ½ inch deep rows 3) tray one: seeds in rows 4) tray one: lightly cover seeds 5) tray one: label 6) tray two: push large seeds ½ inch down 7) tray two: cover seeds 8) tray two: label and number 9) water both trays

Student Activity (Forty minutes):

Students divide into groups of six to eight students around. Each group will work on two plastic trays. The plastic growth trays have holes in the bottom, so teachers may want to put newspaper on the work tables. Students will work with an adult to prepare two trays each for stratification:

- 1) Put soil in the trays. Make sure that there is plenty of air in the soil by loosening the soil with your fingers in the tray. Gently smooth the soil on the top of the tray.



Step 1: First, loosen the soil to allow air pockets



Step 1: Then, gently smooth the surface

- 2) In one tray make several ½ inch deep rows with your finger. It is important that the row be no deeper than half an inch deep because the seedlings won't be able to grow to the surface if they are planted too deep.
- 3) Sprinkle small seeds such as evening primrose and rough leafed goldenrod into the rows.
- 4) Fill a sieve half full of soil and gently shake the soil on top of the rows until the rows are not visible.
- 5) Create a label with the name of which plant species you planted and place it in the tray.
- 6) Take out the second tray and ask the class to



Step 2: For small seeds make ½ inch deep rows and sprinkle seeds into the rows



describe the steps to the teacher. This tray should already be filled with soil. Make ½ inch deep holes for larger seeds in the second tray.



Step 4 and 8: Put soil in sieve and cover holes or rows with soil sifted from the sieve



Step 5 and 9: Label the seed tray



Step 6: Make ½ inch deep holes for larger seeds

- 7) Place larger seeds such as native fuzzy bean seeds or milkweed seeds into holes no deeper than half an inch. It is very important to count out the number of large seeds placed in the tray.
- 8) Use a sieve and soil to cover the holes.
- 9) Make a label with the plant specie name and the number of seeds planted. When planting the large seeds it is important for us to do a scientific study to see how many of the total seeds sprout and become seedlings. Writing the number of seeds planted will help us conduct this study.
- 10) Spray both seed trays with water, this will help the seeds germinate in the spring. Each student will use a spray bottle to spray the seed tray ten times.



Step 10

Place the soil trays into black plastic bags. Place them either in a shady or dark place outdoors, or in a refrigerator. Be sure to clearly label the bags so they will not be confused for garbage.