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Evergreen seed germination technique

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INTRODUCTION

Successful evergreen azalea seed germination can be achieved using healthy viable seeds and the appropriate conditions. Evergreen azaleas are in the genus *Rhododendron*, subseries *Obtusum*. The seed capsules begin to form after a complete azalea flower opens and matures and pollen is transferred to the stigma of the pistil. This occurs via physical contact, wind, pollinators or controlled crossing by humans. The pollen moves down the pollen tube to the ovary and with successful pollination - it will develop into a capsule maturing to approximate size of 0.6 cm X 0.6 cm (0.25 in. X 0.25 in.). A mature seed capsule can contain 100-500 azalea seeds (Figure 1).

Seed capsules are usually harvested in the fall of the year. However, care must be taken not to harvest too late because the seed capsule will dry and split open into a star shaped configuration and the seed will be disbursed.

AUGUST 1, 2018

Azalea seed capsules were collected in early August as the result of a controlled pollination on March 15, 2018.

Figure 1. Evergreen azalea seed capsules (arrow).

In observations from the past, seed collected at least ninety days after pollination seem to have many viable seed especially - if the outer portion on the seed capsule is starting to turn brown. The capsules were collected and placed on a folded sheet of paper and moved to a dry area away from direct sunlight. The folded paper helps to remove moisture from the capsules. By August 12, the seed capsules were dry and ready to be cleaned. The dried capsules were then placed on a flat sheet of paper so that the tiny seeds dropping out of the capsule could be collected.

To facilitate extracting the seeds from inside the capsule, a small pair of forceps was used to gently crack the seed open, starting at the base of the capsule and carefully moving along the capsule to the end tip - breaking the dried seed capsule shell. Once the capsule is cracked open, the seeds start falling into the sheet of paper and can easily be seen (Figure 2).

Figure 2. Evergreen azalea seed capsules and dispersed seed (arrow).

After all the capsules have been cracked opened and seeds released, the old capsule parts and the seeds can then be separated by using a small mesh screen that allows the seeds to pass through - and collect on a sheet of paper under the screen. The old capsule pieces can be discarded.

With the clean seed ready to be sown, seed trays need to be prepared. Evergreen azaleas thrive best in an acidic, well drained, organic material. A pH of around 5.5 is usually best for azaleas. Solid sides and bottom Standard 1020 trays with drain outlets on the bottom of the tray can be used as container flats.

A good media is to mix of 50% fine ground pine bark: 50% PRO-MIX BX general purpose media. This mixture provides the material for the bottom portion of the tray. Fill approximately eighty percent of the tray and level the media. The remaining twenty percent is then filled with moistened peat moss to the top of the tray and leveled off. Using a water spray nozzle, wet the media to settle in the mixture and make sure that the material is thoroughly soaked. Place the tray in a protective greenhouse. To make a smooth and level seed bed - remove any exposed peat stems or other large moss structures from the top of the tray seed bed.

AUGUST 12, 2018

Cleaned azalea seeds were sown on prepared seed germination tray. For sowing seed, I use a sheet of paper and fold it in half. After placing the seed on the inside of the fold, I gently shake the seed down the crease of the paper until they start spilling out onto the peat moss in the seedling trays. Care must be taken to avoid thickly sowing seed. It is best to perform seed sowing in the greenhouse with fans off, and as little wind as possible.

Azalea seeds are very tiny and can be blown is every direction with the slightest puff of wind. After the seeds have been sown, the seed is misted with a very light mist spray. This mist will allow the seed to settle and anchor into the peat most. Place the tray of planted seeds back on the bench and do not allow them to become dry; however, do not let them become overly wet. Use only a light mist to moisten the peat moss. Check the tray at least once a day to make sure the peat does not become dry. The water that I use to irrigate my seedling trays has a pH of 5.2, with no measurable salts. It is my experience that azalea seed germination is slowed or hindered using irrigation water from neutral to a slightly alkaline pH – and higher.

My greenhouse/germination chamber, where the seedling trays are placed, has a dimension of 3 m X 6.1 m (10 ft by 20 ft). The bench that the trays sit on is about 1.2 m (4 ft) off the floor. The top of the greenhouse is covered with hard clear plastic sheeting; during seed germination, 35% shade cloth is doubled and also placed on the top of the

greenhouse. The greenhouse faces the East and gets direct morning sun. However, the shade cloth is also in the top front of the greenhouse and blocks the direct sun. In the afternoon, shade from trees help keep the greenhouse cooler. The bottom sides of the greenhouse are open during the summer and late fall. This allows better air flow which keeps the area cooler than the outside temps. The cooling fan thermostat is set to turn on at 35°C (95°F). The temp inside the greenhouse very seldom exceeds 35° C (90°F) during August and September. In August, the average ambient temperature for this area of Southeast Louisiana is a high of 33°C (92°F) and a low of 23°C (73°F). In September, the average high is 31°C (88°F) and a low of 21°C (69°F).

Later in fall/winter, when the weather gets cooler - the sides are covered with plastic sheeting. Heat is then provided to keep temp from dropping below 4.4C° (40°F) during the winter. The methods that I use for this greenhouse to create a favorable environment for seed germination has evolved over years of growing azalea seedlings. It works well for me at this location. However, at other locations, you will need adjust your greenhouse and environmental conditions.

SEPTEMBER 3, 2018

In September, the tiny azalea seeds show visible signs of germination. Once they start to germinate, it is very important to monitor them daily. Make sure the peat moss remains moist. At this time, I start applying Gnatrol® Biological Larvicide at the recommended rate. It is applied weekly for protective control against fungus gnat larvae. Fungus gnat larvae can eat away at small azalea seedling roots and destroy the seedlings. I closely monitor for fungus gnats and other pests throughout the process because it doesn't take very long for a pest to destroy many seedlings in a very short time.

OCTOBER 15, 2018

By mid-October, he little azalea seedlings are growing well and are approximately 0.3 to 0.6 cm (1/8 to ¼ in.) long. As the seedlings continue to grow, they are monitored for signs of stress and disease, which can be corrected quickly (Figure 3).

Figure 3. Two-month-old evergreen azalea seedlings.

No fertilizer is needed at this time because the peat moss has enough nutrients to sustain the seedlings. When the seedlings are five to six months old, I usually start applying liquid fertilizer at 25% or less of the recommended rate. A fertilizer for acidic plants is best for azaleas. Be very careful with fertilizer. It's always best to try a trial application on a small area of seedlings and wait a few days to make sure that there is no damage. When I am sure that the fertilizer rate is safe, I will usually apply the fertilizer two to three times a week. I use a handheld two-gallon size spray to mist over the top of the seedlings and allowing a small amount of fertilizer to soak into the soil. It does not take a lot of fertilizer to make the young azalea seedlings thrive and look healthy and green.

When the seedlings reach approximately 2.5 cm (1 in.) in height they can be successfully transplanted into small individual cell plugs. I use fifty cell size that fit in a standard nursery tray (Figure 4).

A mix of 75% fine grounded pine bark and 25% medium perlite is used for the growing media. Once the seedlings are well rooted in the fifty cells, a light application of glandular nursery fertilizer can be applied. As the seedlings grow and the root system becomes well developed, they then came be potted up into larger containers and grown and maintained under usual nursery production routine.

Figure 4. Evergreen azalea seedlings transplanted into 50-cell nursery seedling trays.