

The Acclimation of Tissue Cultured Plants

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A PRACTICUM

Success in acclimating tissue cultured plants balances on the fulcrum of carefulness. Tissue cultured plants are similar to a newborn baby in an incubator. The work is critical and each stage demands close attention. Trained professionals assure that the process can be done successfully.

I have developed seven Ps that direct us through each stage of the process:

Proper Prior Planning Precludes Pitiful Poor Performance

STAGE I—PREARRIVAL

Know when your tissue will be delivered from the lab. This date must be no surprise. Prepare the soil mix, pots and trays. I use Sunshine #4 potting directly into 218 Jiffy pots in 1020 trays. Sterilize the mist and fog area. Clorox bleach diluted 15 to 1 through a Hozon (Hyponex Brass Siphon Mixer) proportioner works well.

Arrange the shade and tenting area. The house should be shaded 55%. The actual work tent must also be shaded 55%. Finally, place a plastic tent over the bench area.

Drenching the soil is the final step in prearrival. Drench with 9 oz calcium nitrate and substitute for Benlate (8 oz) in 3 gal of water through a Hozon proportioner.

STAGE II—ARRIVAL

Inspect your plants! Have the packages been broken? Do the plants appear scorched? Are they dried or burned? Plants that arrive in poor condition have little chance of survival. After inspection you may begin potting.

Grade the plants by size as you pot them. Keep the mist handy in a spray bottle and spray as you pot each tray. Hold the humidity as high as possible. Speed is essential. Inspect and pot as soon as possible, and return to high humidity quickly.

STAGE III—POSTPOTTING CARE

This stage easily divides into six substages. The first stage requires maintaining high humidity without overwatering or drenching the plants. Keep a dome over the individual trays for five days.

The second stage begins on day five, now we begin plastic removal. Whether over the tray or over the whole area roll the plastic up beginning two hours per day. Gradually increase each day for five days.

Day seven marks the beginning of the third stage, and is the day of the first fertilizer application. The application is as follows:

20-10-20 Peter's

4 oz/3 gal through Hozon proportioner

On this day also begin the first fungicide application. Rotate the following fungicides and repeat this entire rotation every ten days:

Chipco 26019—7th day

Daconil 2787—17th day

Kocide 101 or Blueshield—27th day

On the 10th to the 14th day we remove the plastic completely. This is the fourth stage in postpotting care. Note this is not shade removal but plastic removal. Removal is best done on a cloudy day. This process reduces humidity.

On the 14th day roll back the shade cloth for the first time. Gradually begin rolling it back a few hours at a time until day 21.

During the fifth stage plants are fertilized twice weekly. Maples are more tolerant of nitrogen than birches. New plants must be studied and fertilizer balanced according to trial and error.

This brings us to the final stage of postpotting care, which is the removal from the entire greenhouse.

FINAL ACCLIMATION

Gradually reduce the mist and continue the fertilizer and fungicide programs. Every 30 days we grade to prevent the shading of plants by overshadowing. In eight to ten weeks we remove the plants from shade and mist house.

If the weather permits, we put them into another house with no shade or high humidity. Here we water them regularly. In 12 to 14 weeks plants are ready for the field or containers.

We normally begin our operation in mid- to late January. We try to have the plants ready to ship in mid-April. However, plants can be acclimated any time of the year with the usual weather considerations.

Finally, I would again emphasize the great importance of speed in dealing with newly delivered tissue. Watch the humidity in those early stages of the process. Observe carefully the responses during the different stages. Observation is still our greatest instructor.