

## ***Where do all of Those Hot New Hostas Come From? Rob Mortko***

If you see carts and carts of plants at a store and they all seem to be infected with Virus X, can I assume that the grower tissue cultured a virused plant and why would the grower do that, and what should we, the public do about it if seen???

More likely they were field grown and infected during the soil removal/washing process. The best approach is to simply shop elsewhere and from reputable growers. A virus and nematode free TC'd hosta plug can still become infected based on how it is handled when being grown on.

Do all hosta tissue culture well and the same? What makes some more difficult than others?

Every hosta is a little different in culture. Variegation is more difficult than a solid colored hosta. Some variegation patterns ('Striptease' for example) are very difficult to produce in TC. Hostas with unique ploidy (aneuploid) like 'Stitch in Time' and 'Mango Tango' can also be quite difficult. Some hostas are difficult to TC for no explainable reason (like 'Goodness Gracious').

So how does one go about starting their own tissue culturing Is it feasible on a personal or small scale or is that prohibitive by cost or some other reason?

Start by doing some research. There is plenty of info online and some Facebook groups focused on "kitchen culture" for hobbyists. A plastic box can be used in lieu of a laminar flow hood. A pressure cooker (or even a microwave) can be used in lieu of an autoclave.

Where can I get more information on tissue culturing hostas an related landscape/edible plants any people books websites

companies?

The best book on the subject is “Plants from Test Tubes” by Kyte and Kleyn.

What do you use to adjust the pH?

We use potassium hydroxide to raise pH and hydrochloric acid to lower pH.

How many varieties are you working with at a given time?

We have had as many as 400 cultivars in the lab when we were producing primarily to support our retail operation. Now as a contract lab we typically have 150 to 200 cultivars in the lab.

How long is the process from when a new plant is chosen for TC to it being available from one of our favorite sellers?

It is typically three years – 2 years in the lab to produce a few hundred plants and a year for the grower to grow the plant on into a saleable size. If everything goes perfectly the total timeline can be reduced to two years.

How do you treat for nematodes?

In a dormant hosta bud, nematodes reside in the outer 2 or 3 layers of primordial leaves. In preparing a plant for culture, we “peel the onion” in removing several layers of primordial leaves. That mechanically removes most (or all) of nematodes that are present. Any remaining nematodes are killed by the use of bleach during the disinfecting step.

It appears that as plants go through this process they do not have the freeze cycle in the first year or two. Is that correct?

TC plants do not go through a dormant phase while in the TC lab. Once in the greenhouse if not given proper lighting exposure (both intensity and duration) they may go into dormancy. A grower will typically grow the TC liner on for a full growing season. After that the plant receives it's first cold dormancy (vernalization) and are ready for sale the following spring.

If you were to tissue culture an originator stock plant of H. liberty, for example, would the resulting tissue culture plants have the exact same genetic makeup of the original H. Liberty plant? If so, why are originator stock plants more expensive than tissue plants of the same cultivar?

Hosta 'Liberty' is a bad example since it is a patented plant. A lab could not legally propagate a patented plant without a license from the plant patent holder. Generally TC'd plants are identical to the parent plant. However just like in the garden, sports do occur. Originator plants usually carry a higher price simply due to supply and demand.

When you want to create a new species, how would you mix the two or more to create this new plant?

Do you wear a face mask during the sterile procedures?

No. Short of sneezing directly into the hood, normal breathing is fine with the positive pressure and gentle air flow in the hood.

What about compound in marigold for root fungus?

Where did you study these procedures and how long is this science?

I studied at the “School of Hard Knocks”. Experience is the best teacher. You can read and research all you want (which is definitely helpful), but you never really learn until you do it yourself. And a lot of that learning is centered around the specific equipment you are using.

How successful is TC from a Streaker Hosta?

TC'ing streaked hostas is a “crap shoot”. You never know what you are going to get. However if you are lucky you not only get streaked plants, but the edged and centered forms as well.

When we show leaves do they something to make them shine?

How many sports have you found in the 10 plus years you been doing this? What is your favorite?

Not as many as you might think. It is common to get solid colored culls from a variegated plant, but they are usually not so marketable and they are discarded. You often cannot see the sport while it is in culture with the juvenile foliage. You would think you could easily tell the difference between gold and green tissue, but not so in the lab. Once a sport is discovered in the greenhouse, you have to start the entire process over to introduce the sport back into the lab. We recently isolated a white margined sport of ‘Gentle Giant’ in the lab that we are excited about. It will be introduced shortly and is named “And You and I” (a tribute to my wife of 40 years).