

How Germplasm Storage and Tissue Culture Fit into the Tri-State Potato Program

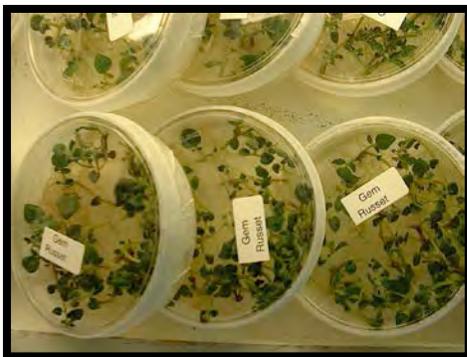
Lorie Ewing, University of Idaho

Traditional potato breeding is a long, involved process, which yields many new potential varieties. At some point in the process those potential new lines need to be made available to other researchers and growers as disease-free seed. If we bring new lines into the lab too early, we end up discarding many lines, which is a waste of time and money. If we bring them in too late, we don't have seed available when growers are ready to examine the lines. Currently, we have decided to establish them in tissue culture when the lines are advanced from Tri-State trials to Western Regional trials.

The first step is to sprout the tubers, surface sterilize the sprouts and place them on tissue culture medium. They are always infected with at least one virus, so need to be put through a virus clean up procedure. After they are clean and certified by Idaho Crop Improvement Association, they become part of our tissue culture Genebank. We have about 250 lines, which include all PVMI lines, many public lines, and the Experimental lines currently being evaluated. We maintain the Experimental lines for two years after they have graduated from Western Regional trials, after which they will be named and covered by PVMI, picked up by a private company, or discarded.



Once lines are part of our Genebank, they are available for growers to order either as tissue culture plantlets or greenhouse grown mini-tubers. We send out approximately 120,000 tissue culture plantlets each spring to growers for greenhouse production of mini-tubers. The University of Idaho also takes orders for about 4000 lbs of mini-tubers each year for growers who prefer to start with tubers.



When keeping large collections, it is important to maintain the integrity of each line. To do this, we plant out mini-tubers produced from tissue culture plantlets and have them evaluated by breeders and researchers from the state they came from to make sure they still match their varietal characteristics.

Feel free to contact me at lewing@uidaho.edu or 208-885-6663 for more information.