SEED STERILIZATION PROTOCOL

Supplies

- Small rubber bands
- Small & Large fine mesh bags
- Twist ties
- Permanent marker
- Tsunami 100
- Measuring spoons
- Ziplock bag
- Scissors
- Clear Packing tape
- 3-5 gallon buckets

Sterilization Procedure

1. Locate & Organize seed to be sterilized.
2. Fill cooler in seed sterilizer with WARM water, cold water can put extra stress on the sterilizing machine. A bucket of hot water from the tap in the packing shed mixed with the cold water from the hose works well.
3. Make sure all cords are correctly connected.
4. Turn on “Dyna-Sense” box and set the temperature as appropriate for the seed you are sterilizing.
5. Turn on water circulation pump.
6. Plug in air compressor to initiate bubbles in sterilizer.
7. Fill appropriate size mesh bags with seeds, make sure bags are not too small, there needs to be ample room for seeds to roll around in the water within the bag. NOTE: for very small seed, make sure the mesh is sufficiently fine without holes to insure that seeds are not lost through the mesh. Nylon hosiery works well for very fine seeds (eg celeriac).
8. Seal the top of the mesh bag with a small rubber band, and place sealed bag in a second mesh bag as a safe guard.
9. Write the seed variety & lot number on a flagged twist tie with a permanent marker –this is a very important step! Tie the twist tie to the bag. Note: Do not dispose of original seed packet until bag is made for holding sterilized seed.
10. Prepare a bucket of warm water—cooler than the sterilizing temperature. Pre-wet seeds with warm water before immersing in hot water.
11. Place bags in basket and submerge in hot water for proper heat and time (Listed at end of protocol).
12. Seed bags may need to be moved around a couple of times during sterilizing to insure complete contact with hot water.
13. When time is up remove basket and drain.
14. Put bags in a solution of warm water treated with Tsunami 1000 at a rate of ½ oz per 5-gallons water for not less than 45 seconds. NOTE: Cold water may damage hot seed, the seed should initially
be put in a lukewarm water and Tsunami solution, and then transferred to a cooler water rinse solution to avoid any drastic temperature shock.

15. Transfer seed to cold water to cool seed down the rest of the way, and to rinse off excess Tsunami.

16. Arrange bags evenly in washing machine and spin dry.

17. Open bags and carefully place seeds on a clean drying sheet in food dehydrator with twist tie to label the tray.

18. Run food dehydrator with no heat, and fan speed set at approximately 1/4 overnight, or until sufficiently dry to work with.

19. Once dry, place seeds in well labeled bags (ie producer, lot number, germ and date of germ test.) With seeds in which a whole packet was used, the label on the original package should be cut out and taped to the bag. For seed in which a whole package or can was not used, use a permanent marker to label the bag.

<table>
<thead>
<tr>
<th>SEED</th>
<th>TEMPERATURE</th>
<th>TIME (min)</th>
<th>Disease Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic</td>
<td>125°F</td>
<td>20</td>
<td>N/A</td>
</tr>
<tr>
<td>Alliums</td>
<td>125°F</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>Broccoli, Cauliflower, Collards, Kale, Kohlrabi</td>
<td>122°F</td>
<td>20</td>
<td>Alternaria, blackleg, black rot</td>
</tr>
<tr>
<td>Brussels Sprouts, Cabbage</td>
<td>122°F</td>
<td>25</td>
<td>Alternaria, blackleg, black rot</td>
</tr>
<tr>
<td>Celery, Celeriac</td>
<td>120°F</td>
<td>20</td>
<td>Early, Late Blight</td>
</tr>
<tr>
<td>Eggplant</td>
<td>122°</td>
<td>30</td>
<td>Phomopsis blight, anthacnose</td>
</tr>
<tr>
<td>Pepper</td>
<td>122°</td>
<td>25</td>
<td>Bacterial spot, rhizoctonia</td>
</tr>
<tr>
<td>Tomato</td>
<td>122°</td>
<td>25</td>
<td>Bacterial canker, bacterial spot, bacterial speck. 132°F--antracnose</td>
</tr>
<tr>
<td>Turnips</td>
<td>122</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Parsley</td>
<td>120°</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Dandelion</td>
<td>120°</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Table Modified from Knott’s Handbook for Vegetable Growers fourth ed., 1997