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Introduction

- Triploid (seedless) watermelon seed have more exact growing requirements than diploid (seeded) watermelon.

- Failure to provide optimum growing practices can result in:
  - Reduced seed germination
  - Uneven seed germination and transplant size
  - Leggy/elongated transplants
  - Weaker plants resulting in yield reduction
Transplant production requirements are more precise with seedless watermelons than seeded watermelons. Note the reduced plant emergence and variable plant size in the transplant tray with a seedless variety (right) compared with the more complete uniform plant size in the transplant tray with a seeded variety (left) 5 days after sowing.
Seed Trays

- Choose trays that fit your particular set up and are economically feasible for your operation

- Use square cells when ever possible

- Make sure cell depth is at least 2”

- Remember, the smaller the cell diameter, the more attention to plant production is needed! Timely response to plant need is critical!!!
Choose trays that fit your particular set up and are economically feasible for your operation.
Styrofoam “Speedling” grow tray - clean and re-use

No. 242 cell tray

Tray Dimensions: 13.5” x 26.5”

Cell Dimensions: 2” Deep
1” square
Styrofoam “Speedling” grow trays – for re-use

Regardless of tray type, it is critical that the tray is disinfected/treated with chlorox
Rigid plastic tray suitable for re-use after sterilization

Re-usable Plastic Tray

Tray Dimensions: 13.5” x 26.5”

Cell Dimensions: 2” Deep 1.25” square

Rigid plastic tray suitable for re-use after sterilization
TLC #128 tray

Tray Dimensions:
11” x 21.5”

Cell Dimensions
2” Depth
1.19” Square
Use square cells when ever possible

Round cells cause root girdling
#288 Tray - Tray dimension 11” x 21.5”
cell size -1.5” deep X .81” square

Remember, the smaller the cell diameter, the more attention to overall plant needs must be considered!!
Soil Mixes

Choose as coarse a mix as possible for the tray chosen. (Examples are: Metro-Mix 300, Fafard Professional No 2, Pro-Mix BX)

Do not use a plug mix!
- Plug mixes are too fine.
- A fine mix makes it easy to over water making less oxygen available to the roots
Soil mixes come in all makes and sizes.
Soil mix ingredients may vary greatly in their content.

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Tray Preparation

1. Fill trays 24 hours before seeding.
2. Wet trays to field capacity.
3. Let trays stand 24 hours before seeding to drain excess water.
4. If warm water is not available, place trays in area where temperatures of the mix are at least 85°F before seeding.
Fill trays 24 hours before seeding
Wet trays to field capacity and let stand 24 hours before seeding to drain excess water
If warm water is not available, place trays in area where soil mix temperature reaches at least 85°F before seeding.
Seeding

1. Place seeds at least one inch deep, preferably with the radicle end pointed up.

2. Cover tray with warm, moist mix or pinch the area closed around the seed.

3. **DO NOT ADD WATER TO THE MOISTENED MIX!**

4. Place trays back in the warm germination room ASAP!
Seeding

5. Stacking trays OK as long as air movement around trays is provided.

6. Remove trays after 48 hours (NOT 49!)
   - seed examination not necessary.
   (more than 48 hours will cause excessive hypocotyl growth).

**If seedlings have visibly started to emerge you’re too late!
Seeding

Seeders vary in shape, size, and capabilities
Place seeds at least one inch deep

Radicle end pointed up if possible
Cover tray with warm, moist mix or pinch the area closed around the seed.
DO NOT ADD WATER TO THE MOISTENED MIX AFTER SEEDING!
Place seeded trays back in the warm germination room

Stacking trays is permissible with air movement around them
Why Germination Chambers?

- Expect a 10% greater germination rate
- Higher germination percentage
- Faster germination
- Greater uniformity
- Less space needed
- Less attention needed
Germination Chambers

- No single perfect design
- Temperature and humidity control
- Moisture is maintained by a fog system
- Shelves to place the trays
- Best temperature control is by hot water pipes along baseboards
Type Of Chamber Depends On

- How Much Space You Need
- How Precise The Temperature Should Be
- How Long You Need The Chamber
- How Much You Want To Spend!
"Home-made" germination chamber

Temperature Controls

Insulated Sidewalls

“Home-made” germination chamber
Commercial vegetable cooler converted to germ room

Heater and controls
Uniform humidity controls is a must no matter what the size of chamber chosen!
Germination Conditions

• **Seed Germination Takes Place In Two Stages**
  – A. When The Root Emerges (Germ Rooms Only)
  – B. When The Hook Appears (Greenhouse Only)

• **Uniform Soil Temperature In Germ Room Must Be Maintained**
  – A. Seedless Need 85°F
Germination Conditions

• Germination Dependent On Moisture
  – A. Too Much Inhibits Oxygen
  – B. Too Little Prevents Seed Swell

• Apply A Cover Of Vermiculite, Plug Media, Sand, Perlite
Excellent seed germination after 48 hours in the germination room at 85°F
Seed germination beyond 48 hours at 85°F to 90°F

Root elongation and initiation of root hairs
Seedling emerging through soil mix
Greenhouse Growing

1. After 48 hours, move trays to the greenhouse.

2. Temperatures.
   - Set night temperature at 65°F.
   - Cooling set to come on at 70-75°F.
   - Too warm setting will cause hypocotyl stretching.

3. Do not water until signs of seed emergence appear.
   - Excess water will also cause hypocotyl stretching.
4. Do not fertilize before appearance of first true leaf. (NOT the cotyledon leaf!)

5. At first true leaf - begin fertilization with a continuous feed of 50 ppm N or a 100 ppm twice per month.

6. Slow growing = quality transplants!

7. Four to six weeks needed from seeding to transplant.
Remove trays from germ room after 48 hours to the greenhouse!
Greenhouse Temperatures

1. Set night temperature at 65°F.
2. Cooling set to come on at 70-75°F.
3. Too warm setting will cause hypocotyl stretching
DO NOT ADD WATER TO THE MOISTENED MIX UNTIL THE SEEDS HAVE FULLY EMERGED!
If seedlings have started to emerge in the germ room you’re too late!
Do not water until signs of seed emergence appear!

Seed coat adherence caused by:
1. Seed orientation
2. Too fine a mix
Excess water and high temperatures in the greenhouse will also cause hypocotyl stretching!
Seedlings showing short hypocotyl growth caused by:

1. Controlled watering
2. Temperatures at 75ºF or below.

Seedlings showing elongated hypocotyl growth caused by:

1. Over-watering
2. Temperatures above 75ºF.
Do not fertilize before appearance of first true leaf.

NOT the cotyledon leaf!  

First true leaf.

Do not fertilize before appearance of first true leaf.
At first true leaf - maintain fertilization with a continuous feed of 25 ppm N or 100 ppm twice per month
Well formed root systems of watermelon transplants.

Slow growing = quality transplants!
Four to six weeks to quality transplants!
GOOD GROWING!