

## **What Makes a Great Transplant: How to Achieve It & Mistakes to Avoid**

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What makes a great transplant:

- Proper maturity at transplanting
- Free of disease and pests
- Not root-bound
- Hardened-off, but not stressed

How to achieve it:

- Proper timing of seeding, crop scheduling
- Sanitation and disease control
- Proper plug size
- Proper soil mix, soil pH, watering, nutrition

In theory, raising transplants is not very difficult. Unfortunately, things can go wrong. Some common problems include:

### **Seeding too soon**

You will have to use a lot of extra heat when planting in late winter. Young seedlings may suffer from damping-off on cold days without a lot of sunlight, and the surviving seedlings may end up “leggy”.

### **Germination Chamber**

Germination chambers can help speed up germination, but make sure to remove the trays from the chamber as soon as the first seedlings emerge. The emerging seedlings need to be exposed to light as soon as they emerge from the soil, or the seedlings will stretch and be floppy and twisted.

### **Soil pH**

Many problems with poor performance in the plug trays are related to poor soil pH. A simple soil pH meter will be very useful when trying to determine why plants have poor color, uneven growth, or “failure to thrive”.

### **Water pH and temperature**

Nothing says “good morning!” like an ice-cold shower! Your young vegetable plants will love you for tempering the irrigation water. Also, check the pH and bicarbonate content of irrigation water, and inject acid if needed to balance alkaline water.

When watering in the afternoon, you will notice that the water in the hose can get pretty hot. Run some water through the hose before scalding your germinating seeds.....

**Nutrition**

Together with poor soil pH, plant nutrition is responsible for a large number of problems in transplant production. Check fertilizer concentration in your irrigation water and stock solutions, and make sure that the injector is calibrated correctly. Use a conductivity meter to check your work.

**Plug size**

Smaller plugs allow you to produce more plants in the same space. Transplants produced in smaller plugs will be ready earlier (but smaller...), will need to be watered multiple times each day, will become root-bound earlier, and will not allow you to hold the plants in good quality if you cannot get into the field to transplant on time....

**Disease and Pest Control**

Plants in a protected greenhouse environment will be more “tender” than plants growing outside. This means that these plants are more sensitive to damage from chemical pesticide applications – make sure to follow label directions carefully, and do not over-dose!

**Sanitation**

Bacterial diseases are very easily spread from plant to plant in a high-density greenhouse setting (Black Rot in Brassicas, Canker in tomatoes, etc.) Start with clean seed (seed should be tested!), and start with clean trays, benches, etc.

**Technology**

Technology can fail. Heaters break, fans seize up, injectors plug. Check your equipment regularly.

**Hardening off**

Like cold showers, hardening off is over-rated. Give your young plants a chance to get used to the outside weather, wind, and sun. Just don't bake them and let them die from thirst....

You will produce a good crop with actively growing, young and healthy transplants – planted in a nice and welcoming soil.

I wish you great success!