MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK•EASTERN SHORE

Fact Sheet

Fact Sheet 551

# Growing Vegetable Transplants

Some gardeners prefer to grow their own vegetable transplants rather than purchase transplants from a garden center or other supplier. They may want to have transplants at a specific time of the year, prefer a particular variety that is not available commercially, or gardeners may simply enjoy growing transplants from seed. The following suggestions will be helpful for those unfamiliar with transplant production as well as for those who want to try new techniques.

## Choosing Containers

Many types of containers are available from garden centers, nurseries, mail-order catalogs, and other commercial suppliers. Container types include peat pots, peat pellets, fiber blocks, plastic pots and trays, and cell flats. The cell flats are made of rigid plastic or Styrofoam and have a number of individual cells that may be tapered at the bottom. Whatever container you choose, it should provide drainage of excess water from the bottom to keep the soil or other growing medium from staying too wet.

Many types of containers are available from garden centers, nurseries, mail-order catalogs, and other commercial suppliers.

Since the volume of medium available to the roots will determine the size to which a transplant can grow, select a container size appropriate for the size of plant you want to produce.

Seeds of slowly growing plants, such as tomato, pepper, cabbage and broccoli, can be planted in a small tray and the plants moved to a larger container when they have started to develop one or two true leaves. This step may interrupt the growth of the seedlings, however, and does require extra time. Seeds of these crops may be planted directly into a cell tray if growing space is not limited.

Seeds of rapidly growing plants, such as cucumber, muskmelon, squash, pumpkin and watermelon, should be planted directly into a container large enough for mature transplants. Be sure the root system of the seedling surrounds and holds the medium together before the

seedlings are transplanted. Vine crop seedlings are especially sensitive to root damage at transplanting.

## Choosing Proper Growing Media

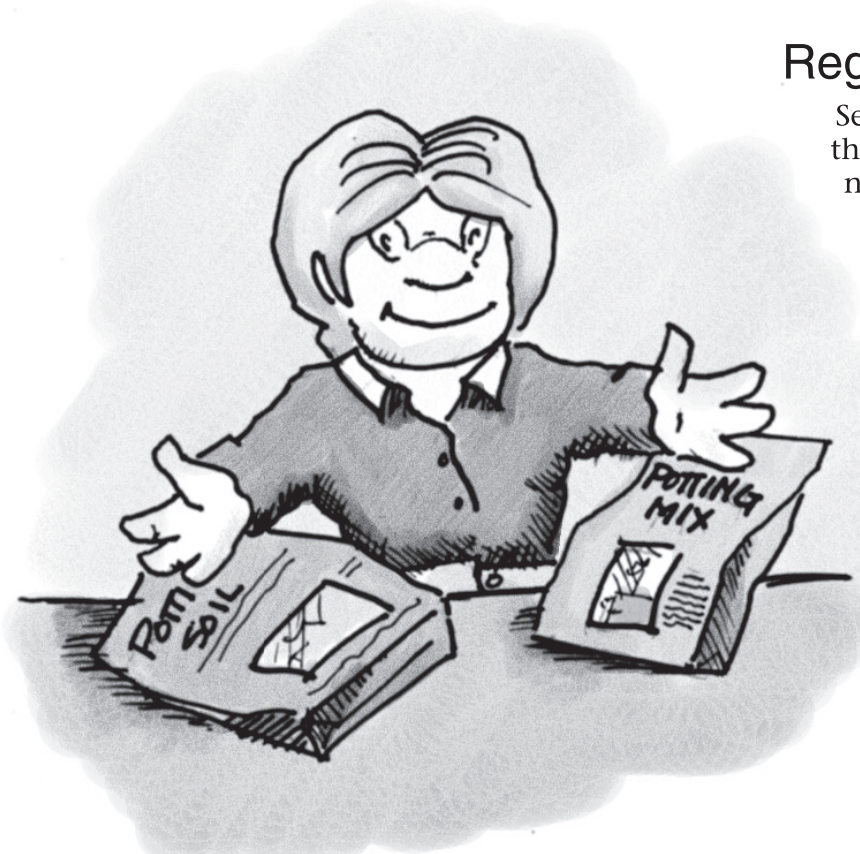
Soilless growing media usually produce better transplants than mineral soils. Soil is often contaminated with weed seeds, nematodes, fungi and bacteria that may cause plant losses. Heavy soils (those with a lot of clay) drain poorly and may keep the seedlings too wet.

Commercial soilless mixes are made of peat moss, vermiculite, pine bark and other organic materials. They usually contain some added nutrients, are free of pests, and have good drainage and water-holding properties. Pure vermiculite is sometimes used for starting seedlings, but its fertility is low and plants will be stunted unless they are replanted soon after emergence. If transplants begin to develop a yellowish color, it may be necessary to use a small amount of a soluble fertilizer. Water transplants with a fertilizer solution containing 2-3 teaspoons per gallon (or follow manufacturer's recommendations) of a soluble 20-20-20, 15-30-15 or similar soluble fertilizer. Soluble fertilizers are available from garden suppliers.

## Regulating Light

Seedlings will not need light until they emerge from the medium. Once they appear, transplants will grow better if they receive at least 6 hours of direct sunlight each day. Hotbeds, coldframes and small greenhouses are thus preferable to windowsills or basements of most homes. Too little light will result in plants that are small and spindly.

Artificial light can be provided to transplants by placing 40-watt fluorescent tubes 6 to 8 inches above the tops of the seedlings as they grow. Artificial light in combination with some window light will give better results than artificial light alone. The lights should be turned off at night.




Various types of potting media are available from potting soils to soilless and hydroponic media.

## Regulating Temperature

Seeds of cool-season crops (those that can tolerate frost) will germinate at temperatures of 45˚F to 80˚F (optimum 60˚F-75˚F), while warm-season vegetables (those that are susceptible to frost) will germinate at 70˚F to 90˚F (optimum 70˚F-85˚F). Germination will be most rapid in the upper 10° of these ranges.

After germination occurs, cool-season crops should be grown at 60˚F to 70˚F during the day and 50˚F at night. Warm-season crops do best at day temperatures of 70˚F to 75˚F and 60˚F at night.

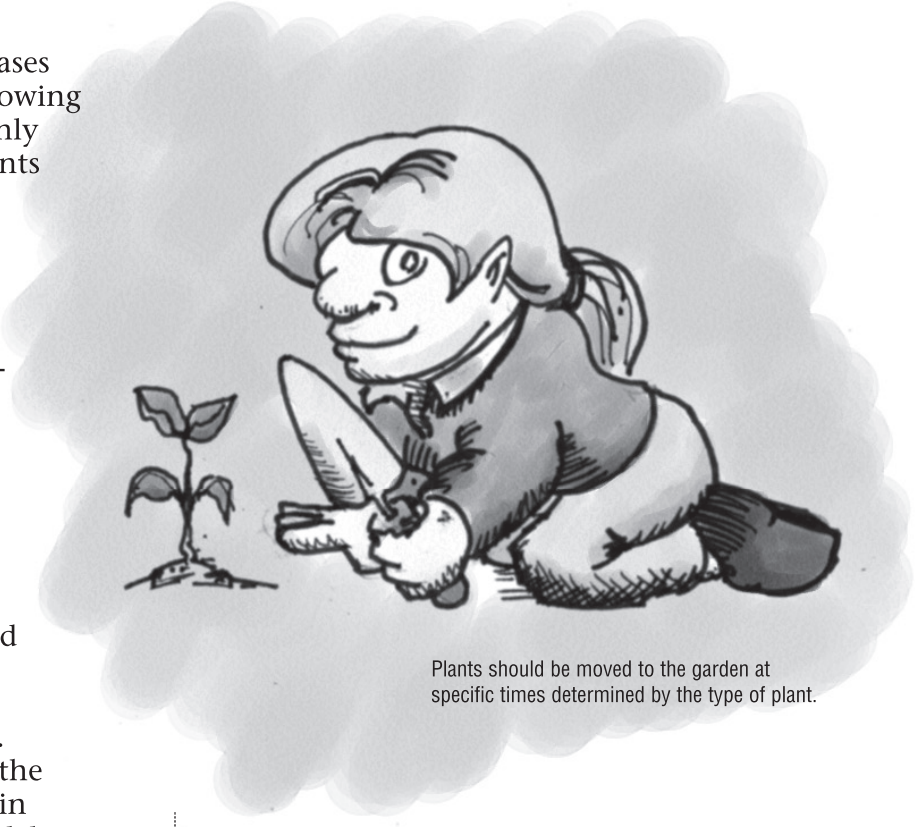
## Watering Vegetable Transplants

Vegetable seeds and plants will need an adequate amount of moisture for germination and growth. Avoid over-watering, however, since root

development will be poor and diseases are more likely to develop if the growing medium is kept saturated. Water only when needed, but don't let the plants wilt if you can avoid it.

## The Float Method

Some commercial growers have recently begun using the "float system" for producing transplants. In this system, Styrofoam cell trays are floated on several inches of water in a greenhouse or outdoors. The water under the trays keeps the medium moist, and roots will grow down into the water, which reduces care needed. A fine-textured soilless medium is required for the trays, and it must be pressed into the cells to assure uniform wetting. Air spaces in the cell, especially in the bottom, will result in the medium in the cell remaining dry, which will delay or inhibit germination and growth. Gardeners could easily construct a float area by making a frame of 2x4's or 2x6's on edge and lined with a plastic sheet.



Plants should be moved to the garden at specific times determined by the type of plant.

## Protecting Transplants from Disease

Damping off is probably the most common disease of young seedlings. It is caused by several types of fungi that attack the stem at or near the soil level. This causes a collapse of the stem, and the seedling falls over and dies. Use of a soilless growing medium and careful watering to allow the surface of the medium to dry between waterings will help reduce damping-off problems.

Peat pots and other organic materials sometimes develop a brownish or whitish mold. These molds are unsightly, but do not cause any injury to healthy plants. Proper watering will minimize growth of these molds.

Those who use tobacco should wash their hands thoroughly with soap and water before handling tomato and pepper plants as a precaution to prevent the introduction and spread of tobacco mosaic virus to these plants.

## Hardening Vegetable Transplants

Reduction of temperatures and moisture or exposure to outdoor conditions for 7 to 10 days prior to transplanting will help plants to acclimate to outdoor conditions. More information on this is available in Fact Sheet 552, "Hardening Vegetable Transplants."

## When to Move Plants to the Garden

The time required to grow transplants to desired sizes will vary with the type of vegetable, the temperature, and the amount and quality of light. The following are approximate times required from planting seeds until transplants are ready to be planted into a garden:

- 2-3 weeks: cucumber, muskmelon, pumpkin, squash, watermelon
- 5-7 weeks: tomato, head lettuce, broccoli, cabbage, cauliflower, brussels sprouts
- 6-8 weeks: eggplant, pepper

Growing your own vegetable transplants allows you to grow plants at a specific time, or grow plants that are not available commercially.

## Suggestions

Do not allow transplants to become too large, especially if they are grown in small containers. Tomato and pepper transplants should be about 6 to 8 inches tall. Cucumbers, squash, and related vine crops should be planted when the second true leaf is expanding. If plants are small, remove any flowers or fruit from plants prior to transplanting.

**Growing Vegetable Transplants**


by

**Charles A. McClurg**
**Extension Vegetable Specialist**
**Department of Natural Resource Sciences and Landscape Architecture**
**University of Maryland, College Park**

**Reviewed by:**

**Dr. Stephen A. Garrison**
**Extension Vegetable Specialist**
**Rutgers, The State University of New Jersey**

**Dr. Michael D. Orzolek**
**Extension Vegetable Specialist**
**The Pennsylvania State University**



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