**Incorporating Basic Food Storage in a Provident Living Plan**

**San Clemente Stake Plan for 2011-2012**

**Class #5**

**“**Transplanting your Tomatoes”

You’ve done all the preparation and have a house full of stocky, healthy, lushly green tomato plants. (Or you’ve purchased some great looking plants from your favorite garden center.) Now it’s time to get them out where they will spend the summer. Get ready to collect your reward - sweet, succulent, vine-ripened, homegrown tomatoes.  First some basics so you can decide where to put those precious little seedlings:

 **Hardening Off for Healthier Transplants**

Even after the temperatures rise, conditions outside in the garden are still much harsher than your home grown vegetable seedlings are accustomed to. If you were to take those sensitive plants and move them directly into the garden there’s a good chance that they would not survive the transition.

What the plants need is a hardening off period where they can slowly adapt to the more intense light, winds, temperature variations, and other conditions that they will encounter in the outdoor world. Hardening off requires time but the process itself is a simple one.

**The Hardening Off Process for Home Grown Seedlings**

Begin by carefully transporting your seedlings to a somewhat sheltered location where they can get their first taste of what life outdoors is going to be like. This initial exposure should be brief, only an hour or two during the early morning or late evening hours.

Go slowly in the beginning, and if the plants protest by wilting or flopping over take them back indoors until the following day. Tomato plants will benefit from a trick described as “tickling” to help [grow stronger tomato plants](http://www.veggiegardeningtips.com/happy-tomato-plants). Run your hands gently over the tops of the plants several times a day to “tickle” them. This with encourage them to grow sturdier stalks.

Start the hardening off process a couple of weeks before you anticipate planting the seedlings out into the garden. Each day you will be moving the plants outside for increasing lengths of time, allowing them to gradually get used to the sunshine, wind, rain, and other outdoor conditions.

**Other Tips to Harden Plants for Life in the Garden**

Without the precaution of hardening off, those tender young vegetable plants would likely become scorched, shocked, and bowed to the ground by the unfamiliar elements that weren’t part of their pampered indoor lifestyle.

In addition to gradually exposing your vegetable transplants to the outdoors you should also slightly reduce the amount of water and fertilizer that you are providing in order to further simulate outdoor growing conditions.

Yes, it can be a hassle moving flats and containers of plants in and out every day, but the effort will be rewarded by plants that won’t suffer through a setback in their growth once they are planted out in the garden.

By the end of two weeks of being hardened off you’ll have healthy vegetable plants that can comfortably spend an entire day and night outside, and are ready to be planted directly into the garden. If necessary you can speed up the process but I’d recommend spending at least a week of hardening off before transplanting those home grown vegetable seedlings.

**Tomato Growth Requirements**
Like most fruits and vegetables, tomatoes require at least 6 hours of direct sunlight a day. The more the merrier! Tomatoes also require warm weather -- frost will kill them. The ideal temperature for most tomatoes is in the upper 70's to low 80's during the day, with nights in the 60's. An adequate water supply is another essential requirement for tomatoes to produce fruits; an average of an inch and a half of water per week is considered optimal in our dry climate.

**Growing Tomatoes in Containers**

In climates with lots of hot summer heat, large pots can really heat up and the soil can be much warmer than in the ground so it is important to keep them well watered to avoid overheating as much as possible. Potting soils are designed to drain well but that can be a problem in the summer when you want them to hold water a little bit longer. A little compost added to the pots can make all the difference. Fertilizer can wash out with frequent watering and leave your plants wanting more but a simple dose of slow released fertilizer goes a long way.

What You Need (The Minimum)

All you need is a sunny, warm place and containers large enough for the plants you want to grow. Sunny decks, patios, and other areas are great for container gardening and do not require the difficult digging that starting a garden usually requires. Most tomato plants will grow quite large so your containers must be large enough to accommodate them. Container gardening requires diligent watering and regular feeding, but it can be easy and fun for kids and adults.

The main things you will need are:

* Large Containers approximately 20" or larger in diameter
* A method to elevate the container to allow for adequate drainage
* Watering Can or Hose
* Good Potting Soil (enough to fill your pots)
* Plant fertilizer and good compost
* A cage or some kind of support to hold the tomato upright
* (optional) A platform with wheels to move your plants into most sunlight if necessary.

**Soil**
Good soil is just as essential to success as good seeds. Healthy soil yields healthy plants and healthy plants will better withstand the challenges of weather, pests and disease. You will be rewarded a hundredfold for the time you invest in improving your soil.  The single most important addition you can make is organic matter in the form of compost, aged manures, cover crops and plant matter mulches. In clay soils organic matter adds nutrients, improves the texture and increases drainage.  In sandy soils organic matter adds nutrients, improves the water holding capacity and stabilizes the soil structure. It also encourages the living network of microorganisms that are essential to healthy soil and plants. With regular attention to your soil you can expect to see yearly improvements in the tilth and fertility of your soil that will be reflected in stronger, healthier and, therefore, more beautiful and productive plants.

If you are planting in containers, be certain to use “container potting soils” and not garden soil.

**Mulching**
Studies have shown that mulching has many desirable benefits. Mulching with organic materials is ideal because it builds the soil while conserving water and reducing weeds.  Give yourself enough room to do the necessary digging and refilling.

**Fertilizing**
Fertilize your tomato plants after about a week; but only fertilize at 1/2 strength. Once the tomato blossoms appear, you can begin using fertilizer at 3/4 to full strength. Organic fertilizers are preferable because they tend to break down slowly, releasing their nutrients into the soil over time. By "feeding the soil" the plants become stronger and less prone to attack from insects and disease. A good organic approach would be to use a combination of compost, peat, aged manure (or the bagged varieties from the store), and organic amendments such as blood meal and bone meal to create a rich soil. With this approach, additional fertilizer is usually only necessary only once or twice a season; just after the blossoms appear, and again when a plant is laden with fruit. Good organic fertilizers for this use include fish emulsion, seaweed emulsion, and "manure tea" (manure placed in a large container, filled with water, and allowed to "steep" for about a week). Make sure to dilute any such liquid fertilizer until it is the color of weak tea; even organic fertilizers can "fry" plants if applied too heavily. The organic method of gardening also benefits the environment by not adding chemicals that can upset the balance of nature. (Chemical fertilizers work quickly, but they also leach out of the soil quickly.)  If you’re buying prepared organic fertilizers look for those with a higher phosphorus (middle) number. Phosphorus is what fuels the production of flowers, and flowers are how fruits are formed. Try to find a relatively balanced mix (5-10-5 would be ok, 5-10-8 would be better).

**Worm Castings**

I especially like to use worm castings as a reliable fertilizer for not only your tomato plants, but your entire garden.  This micro-organism and nutrient rich organic fertilizer not only helps tomato fruit quality, but has been shown to help plants fight disease.

Worm composts have high concentrations of nitrogen, calcium, phosphorous, and potassium that can be readily taken up by plants.  They also provide micosites for beneficial micro-organisms that healthy soil needs for strong plants.  [Research](http://www.boku.ac.at/zoology/download/zaller/Zaller_2006BAH.pdf) by [Johann Zaller](http://publicationslist.org/johann.zaller) cites worm casting usage as cutting the infection rate of late blight (P. infestans) by half!  Such a dramatic reduction in this disease leads Zaller to state that worm castings have "a high potential as a biocontrol agent in organic farming."

If you're having trouble with disease or pests in your garden, worm castings are a proven aid to these troubles.  If you want to improve your tomato fruit quality and give your soil a healthy, organic, and potent dose of fertility, find a source of 100% pure worm castings!

Beware of worm castings sold for next to nothing in large sacks.  You get what you pay for!  We call our worm compost "black gold" because it's so valuable.   Our recipe for a soil drench or foliar spray application is easy and inexpensive.  Take a handful of worm castings and add it to a 5-gallon bucket.  Fill up the bucket with water, and let the mixture steep for 48 hours.  Be sure to stir your brewing tea periodically to help with aeration.  After steeping, strain your tea through a cheese cloth to extract the large particles.  You may then dilute this mixture up to four times and still achieve results.

You don't have to apply worm castings with a foliar spray; you can achieve powerful results by a good root drench.  Sprinkle the fertilizer over your beds or at the base of your plants in the “drip zone” to ½ inch deep.

You can buy worm castings at most good nurseries. I buy mine from a lady who has a booth at the Farmer’s Market. Her name is “Ruby” and I can tell you personally that a bag of “Ruby’s Reds castings” is worth its weight in gold!

**Tomato Planting Instructions**
If you’ve purchased seedlings, or if you've grown your own, here are the steps for transplanting the tomatoes when you are ready to put them outside permanently.

You'll need:

* shovel or trowel
* large container or adequate area in your garden
* soil amendments (compost, aged manure, etc.) or container potting soil
* for larger tomato plants, a "cage" or a post (to help keep the tomatoes off the ground)
* mulch
* your hardened-off tomato plants.

Begin by thoroughly preparing the bed where your plants will be planted. Work the soil at least a foot deep and add organic matter to the top few inches at least 2-3 weeks before planting.

The plant spacing will be determined by the type of tomato and whether or not you intend to stake or cage them. The most space is required by an un-pruned indeterminate which will require about 3’ in all directions. Pruned and staked indeterminates can be planted from 1½ -2’ depending on the degree of pruning and staking. Determinates can generally be planted 1 - 1 ½’ apart. However, widely spaced plants of all types will be less susceptible to several diseases.

### Water the plants with a diluted fish emulsion thoroughly the day before you plan to transplant so the soil will hold together on the roots. Dig a hole deep enough to accommodate your plant up to its first healthy leaf + 4”. Place amendments in the bottom 4”of the hole.  Spread your fingers and span the stem of the plant, touching the top of the seedling container. Turn the container upside-down and gently tap the container until the tomato plant comes out. Place the plant deeply in the ground - up to its first set of healthy leaves.

### [Bury them.](http://video.about.com/gardening/tomato-staking.--5n.htm)

Bury tomato plants deeper than they come in the pot, all the way up to a few top leaves. Tomatoes are able to develop roots all along their stems. You can either dig a deeper hole or simply dig a shallow tunnel and lay the plant sideways. It will straighten up and grow toward the sun. Be careful not to drive your pole or cage into the stem. Add soil until full, gently firming the soil around the plant. Place the cage or the post in place. Give it a good drink of water, and add more soil, if necessary.

**Watering**
Drip irrigation does the best job of getting the water where it needs to be without wetting the leaves of the plant. However, you can also drench, flood irrigate or sprinkle, generally without problems. If using a method that wets the leaves try to water in the morning so that the leaves are dry by nightfall. 1-1½” of water per week is necessary for good growth.  Select one day of the week for watering your tomatoes. Water them deeply (they have the deepest roots of most all vegetable plants in the garden), then leave them alone for another week. Only in the hottest weeks do you need to consider watering more often. Your plants will let you know when they need water. (Check containers frequently for signs of wilting.)

**Disease**
While we have few tomato pests, there are a couple of diseases which can cause problems. Verticillium wilt rears its ugly head occasionally but can be largely avoided with good soil health and rotated plantings. Late blight is a wind-born virus that is best dealt with by cultural methods: Don’t plant your tomatoes so closely that they create a dense moist canopy that is ideal for culturing any late blight spores that show up. Carefully monitor plants if late blight is known to be in your area and remove and burn any infected plants at the first sign of damage.

**Pests**

*Tomato Hornworm*

 
Tomato hornworms can grow as large as 5 inches long.

Found throughout the United States, these large, fat caterpillars feed voraciously on the leaves and fruits of tomatoes, peppers, eggplants, and potatoes. Adults are rather spectacular sphinx moths: grayish-brown with orange spots on the body and a 4- to 5-inch wing span. After overwintering in the soil in 2-inch brown spindle-shaped pupal cases, moths emerge in late spring to early summer to lay greenish-yellow eggs on the undersides of leaves. Caterpillars feed for about a month, and then enter the soil to pupate. There is one generation per year in the North; two or more in the South.

*Aphids –*

Aphids are tiny, green to black soft-bodied, winged or wingless insects that cluster on the underside of leaves or on stems. They are sucking insects that can cause curled and distorted leaves & stunted plants. Localized aphid infestations can be hand-picked or pruned out or blasted off the plants with water. Applications of insecticidal soap, horticultural oil, or Neem oil may also be effective. Aphids are a favorite food of lady beetles. Damsel bugs and the larvae of lacewings and flower flies are also effective predators of aphids. Many tiny wasps act as parasites of aphids as well so use even organic pesticides with care.

**Controls**

**The best control is YOU** - Monitor your tomato plants daily so you can detect insect, disease or watering problems before they have a chance to really affect your plants. If you see curled leaves, open them and look at the underside for aphids. If you find them, wash them off carefully with soapy water. If they reoccur, consider an insecticidal soap or getting a package of lady bugs to help you control them. If you notice leaves with missing chunks chewed away, look carefully for those tomato horn worms. Hand-pick (or use tongs to pick and destroy any large (or small) caterpillars. Don't worry -- caterpillars cannot sting with their "horn." If you find a caterpillar with what looks like grains of white rice attached to its body, do not kill it. The "grains" are the pupae of a parasitic wasp that attacks hornworms. Leave the parasitized caterpillar in the garden (off your tomato plant, though) so the pupae it carries can turn into more wasps to help control other hornworms.

How would you like to have an army of helpers to watch your tomatoes and remove those nasty pests? When you stake your tomatoes, nail an empty tuna fish-sized can to the top of the stake and fill it with peanuts. The “peanut eating birds” like jays and black birds will be attracted to your feeder and while they are sitting there on that stake eating a peanut or two, if there are any tomato hornworms, the birds will spy them so quick and will nab him up for “lunch”! Now, birds get thirsty after eating those peanuts and worms and to avoid having them peck at your tomatoes for a “peanut chaser” drink, place a nice dish of water close by. They’ll be more apt to drink the water and leave your tomatoes alone.

*Blossom End Rot*. 

This is thought to be caused by insufficient calcium. However, don't rush out to by a calcium supplement for your soil. This calcium deficiency is probably caused by irregular watering and a fluctuation in water levels. Water carries calcium throughout the tomato plant. Without enough water, the calcium, which is being used first for foliage growth, doesn't make its way to the fruits. Other factors may include: too much nitrogen fertilizer, too much salt in the soil, root damage and a soil pH that is too high or too far below the optimum 6.5.

There's no saving the rotting fruits. Remove the affected fruits, make sure the plants are getting at least and inch of water per week, correct any other problems, [mulch](http://gardening.about.com/od/gardenmaintenance/a/Mulch.htm) under the plants and you should see improvement.

Now go home, “tickle” your plants, harden them off and transplant them outside. Watch them and care for them carefully (talk to them and pray for them) and you will be rewarded with an abundance of the most delicious tomatoes you’ve ever eaten. Later this summer we will learn how to can, freeze, dehydrate and make wonderful recipes with your harvest of garden-fresh tomatoes…..remember to include your entire family in your gardening experience and to ENJOY.

**Quinn is available at:**

 **Shore Garden Nursery,**
**201 South Ola Vista San Clemente, CA 92672-4194
(949) 492-3526**

**qbplantman@yahoo.com**

**NOTE:**

**Don’t forget to go to our website** [**www.southocreliefsociety.org**](http://www.southocreliefsociety.org) **for a copy of this handout and other food storage/provident living tips.**

**In the future, all handouts will be posted on the website a week before the class and you will be able to print them and bring them with you to class. This will greatly cut down on our expenses and save our limited budget for other necessary class items.**