

# Disaster Relief

## *Starting New Crops in Flooded Greenhouses/Shadehouses*

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Flooded greenhouses/shadehouses need special procedures to avoid problems with new plantings.

### General Cleaning

- Remove flood deposits from benches and walkways.
- Disinfect all surfaces and tools by washing them with a 10% chlorine bleach solution containing a liquid dish detergent or a 10% trisodium phosphate (TSP) solution available from most paint or grocery stores. Do not mix chlorine bleach with ammonia. Rinse all surfaces with clear water.
- For additional disinfection, spray all areas with a formaldehyde solution. Mix 1 pint formaldehyde with 6 gallons water. Formaldehyde fumes are toxic. Wear protective clothing and a gas mask when spraying.

### Soil Preparation

- Remove flood deposits and the top inch of old greenhouse soil. If soil is heavily polluted with oil and chemicals, replace it with a fresh soil mixture.
- Test soil for toxicity by planting tomato seeds directly into old soil. If seeds germinate and seedlings appear normal, the soil is probably free from toxic chemicals.
- Allow soil to dry before sterilizing it. Turn wet soil with a spading fork to expose more soil surface and reduce drying time.
- Take a soil test, if possible, to determine fertility levels.

If soil test information is not available, apply one inch of chopped straw to the soil surface, plus 5 pounds per 100 square feet of each of the following materials: dolomitic limestone, 20% superphosphate, and gypsum (available from building suppliers). When soil is dry enough for planting, work these materials into the soil with a power cultivator or spade.

### Soil Sterilization

Greenhouse soil should be sterilized before new plantings are made. There are several ways to sterilize soil:

- Steaming is the best way to rid soil of weed seeds and organisms that may produce plant disease. Steam soil until it reaches a temperature of 180 °F for 30 minutes. If your greenhouse does not have an operating boiler, you may wish to consider another method of soil sterilization.
- Custom steaming can be done with a portable boiler mounted on a truck. Units of this type can sterilize a 150-foot bench in 50 minutes. Contact your County Extension office for information about this service.
- Chemicals may be used when greenhouses are completely empty. Follow pesticide label directions. Allow about 2 weeks for complete aeration before planting new crops.
  - Methyl bromide may be used for all crops except carnations and snapdragons. Allow 7 to 12 days prior to planting for aeration.
  - Chloropicrin is effective against a wide range of disease organisms. Allow 10 to 21 days for aeration prior to planting.
- Artificial mixtures that are pre-sterilized may be used if no sterilizing method is practical. Commercial mixtures are available in large bags or bales. Mixing your own soil is more economical than buying it commercially if you have your own equipment. A common mix is composed of one-half peat moss and one-half perlite by volume. Prepare as follows:

11 bushels vermiculite (#4 size)  
11 bushels shredded peat moss  
7 pounds dolomitic limestone  
2 to 10 pounds 5-10-5 fertilizer  
2 pounds powdered 20% superphosphate  
1 level tablespoon borax  
2 level tablespoons chelated iron

Peat moss is another growing medium. Use the following mixture per cubic yard of moss:

- 7 pounds dolomitic limestone
- 3 1/2 pounds powdered 20% super-phosphate
- 1 2 pounds potassium nitrate
- 2 level tablespoons chelated iron
- 1 level tablespoon chelated trace element mix

## Disinfecting Bench Surfaces

Before sterilized soil is added to benches, disinfect bench surfaces by painting them with copper naphthenate wood preservative. Allow the painted surface to dry before filling benches. Do not use creosote or other materials toxic to plants.

## Fertilizing

After crop is planted, fertilize all artificial growing media with a 15-15-15 fertilizer or a similar material that contains at least half its nitrogen in the nitrate form.



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