

# Production of Greenhouse Tomatoes in Soil Beds

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Tomatoes can be grown in greenhouses in various ways. For some growers, it is easiest to simply grow them in the soil inside the greenhouse.



## Preparations before starting a tomato crop

- The soil in the greenhouse should be tested before you plan to use it. Tests should be completed 3-6 weeks before plants will be planted to allow enough time to follow the recommendations received. Bring samples to your county extension agent who will send the sample to the University of Kentucky Soil Testing Laboratory. Be sure to label the sample "Greenhouse Test", fill out the soil test form for greenhouse soils and include information on previous crops, fertilizer applied and crops you plan to grow. A complete test includes the concentration of nitrate nitrogen, phosphorus, potassium, calcium, magnesium, soluble salts and the pH.
- Make sure that the greenhouse and its heating, ventilating and air circulation systems are ready for use.
- Be sure the necessary supplies are on hand, e.g., pots, fertilizer, insecticides, fungicides, string, labels, marketing containers and spraying equipment.
- Use only soils or materials that have been sterilized, pasteurized or that were manufactured under clean conditions.

## Fertilizer program for tomatoes grown in soil

Good quality, sterilized soil with 5-8% organic matter should be used for tomato production. Prepare or rototill the soil beds and work in organic matter, such as straw, peanut hulls, ground corncobs, to a depth of 6 to 8 inches. Do not use muriate of potash (potassium chloride, KCl) or nitrate of soda (sodium nitrate,  $\text{NaNO}_3$ ), for tomato fertilization. Even though these fertilizers are relatively inexpensive, they leave high salt residues that will cause problems in the fertilization program. All fertilizers listed below should be applied per 1,000 sq.ft. of production bed space.

## Base program

Use the following fertilizers to establish starting nutritional program and rake or rototill into the soil if no fertilizer has been applied to the soil. Apply around January 20 (spring crop) or Aug 10 (fall crop) before plants are set.

- Apply 10 lb. triple superphosphate (0-45-0) with either 23 lb. of 0-20-20 sulfate fertilizer plus 1/3 lb. of ammonium nitrate (33-0-0). OR 10 lb. nitrate of potash (13-0-44).

## Starter Fertilizer

- Mix 3 lb. of 10-50-10, 10-52-17, or 10-20-10 in 50 gal. of water and pour ½ pint carefully around the roots of the newly set plants.

## Spring Crop

First Top-dressing - apply 3 weeks after plants are set, about March 7.

- Apply 1.1 lb. triple superphosphate (0-45-0) with either 1.3 lb. of ammonium nitrate (33-0-0) plus 3.8 lb. sulfate of potash (0-0-53) OR 3.5 lb. nitrate of potash (13-0-44).

Second Top-dressing - apply 2 weeks after first topdressing, about March 21.

- Apply 2.3 lb. triple superphosphate with either 1.7 lb. ammonium nitrate plus 3.8 lb. sulfate of potash or 3.5 lb. nitrate of potash.

Third Top-dressing - apply 2 weeks after second topdressing, about April 7; the third fruit cluster should be set by this time.

- Apply 1.2 lb. triple superphosphate with either 1.7 lb. ammonium nitrate plus 3.8 lb. sulfate of potash OR 3.5 lb. nitrate of potash.

Fourth Top-dressing - apply 2 weeks after third, about April 21.

- Apply 1.2 lb. triple superphosphate with either 2.3 lb. ammonium nitrate plus 2.3 lb. sulfate of potash OR 3.5 lb. nitrate of potash.

Fifth Top-dressing - apply 2 weeks after fourth, about May 7.

- Apply 1.2 lb. triple superphosphate with either 2.3 lb. ammonium nitrate plus 2.3 lb. sulfate of potash OR 3.5 lb. nitrate of potash.

Sixth Top-dressing - apply 2 weeks after fifth, about May 21.

- Apply 2.3 lb. ammonium nitrate plus 1.5 lb. sulfate of potash OR 3 lb. nitrate of potash; no superphosphate.

Seventh Top-dressing - apply 2 weeks after sixth, about June 7.

- Apply 2.3 lb. ammonium nitrate plus 1.5 lb. sulfate of potash OR 3 lb. nitrate of potash; no superphosphate.

Eighth Top-dressing - apply 2 weeks after seventh, about June 21, if the price of tomatoes justify continuing the crop.

- Apply 2.3 lb. ammonium nitrate plus 1.5 lb. sulfate of potash OR 3 lb. nitrate of potash; no superphosphate.



## Fall Crop

First Top-dressing - apply approximately 4 weeks after plants are set, before small fruit have set on the third cluster, about September 15.

- Apply 1.1 lb. triple superphosphate (0-45-0) with either 2.5 lb. ammonium nitrate (33-0-0) plus 1.1 lb. sulfate of potash (0-0-53) OR 1.5 lb. ammonium nitrate plus 1.2 lb. nitrate of potash (13-0-44).

Second Top-dressing - apply 2 weeks after first top-dressing, about September 30.

- Apply 1.1 pounds triple superphosphate with either 1.5 lb. ammonium nitrate plus 2.5 lb. sulfate of potash OR 3 lb. nitrate of potash.

Third Top-dressing - apply 2 weeks after second top-dressing, about October 15.

- Apply 1.1 lb. triple superphosphate with either 2.5 pounds sulfate of potash OR 2.5 pounds nitrate of potash.

## **General Crop Information**

Tomato seed should be sown between Dec. 15 - Jan. 15 for the spring crop and June 10 - June 25 for the fall crop. Growing medium temperature should be maintained at 70°-75° F during germination. Seedlings can be transplanted to pots or cell flats about 2 weeks later. Seedlings should be grown at 62°-65° F night temperatures with day temperatures of 65° to 75°; plants will tolerate the high temperatures in summer.

Plants should be planted in ground beds around Feb. 15 (spring crop) or around Aug. 15 (fall crop). Allow 4 sq. ft. of floor space per plant. Use the row spacing most convenient to you. Thoroughly water each plant daily until the roots are established in the soil. Water plants thoroughly 1-2 times per week in when grown in soil beds.

Low light in November and December greatly reduce yields when heating costs are highest. Do not plan to grow plants and harvest fruit from December 15 to February 15 until you have enough experience to determine that it can be done economically.

Tomato production requires nutrition to be monitored carefully. Many types of fertilizer have been used for tomatoes, so it is difficult to give a specific recommendation. Generally, the fertilizer is low in nitrogen and high in phosphorus, potassium, calcium and magnesium. Normal plant and fruit growth requires these nutrients to be present in the correct amounts.