

South Dakota State University

Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange

SDSU Extension Fact Sheets

SDSU Extension

1977

Tomatoes

Cooperative Extension South Dakota State University

Follow this and additional works at: https://openprairie.sdstate.edu/extension_fact

Recommended Citation

South Dakota State University, Cooperative Extension, "Tomatoes" (1977). *SDSU Extension Fact Sheets*. 740.

https://openprairie.sdstate.edu/extension_fact/740

This Fact Sheet is brought to you for free and open access by the SDSU Extension at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in SDSU Extension Fact Sheets by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



For current policies and practices, contact SDSU Extension

Website: extension.sdstate.edu

Phone: 605-688-4792

Email: sdsu.extension@sdstate.edu

SDSU Extension is an equal opportunity provider and employer in accordance with the nondiscrimination policies of South Dakota State University, the South Dakota Board of Regents and the United States Department of Agriculture.

Tomatoes

Master



COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U.S. DEPARTMENT OF AGRICULTURE

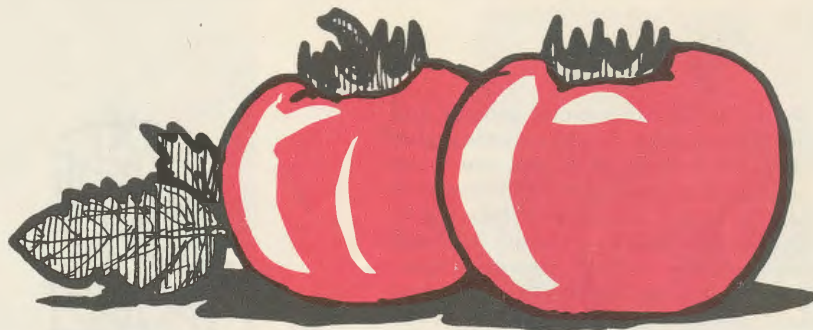


Fig 1. Put a short, stocky plant in deep enough that the soil is right up to the first leaf. If the plant is leggy, pull off a few leaves, put the plant in sideways, bend the stem up, and fill with soil to the first leaf. Roots will develop along the buried stem.

$$\begin{array}{r} 71.7\text{el} \\ \hline 144 \end{array}$$

If you are a commercial grower and using determinate (bush) varieties, give each plant 8-10 sq ft. If you are using indeterminate (vining) varieties capable of elongation all season, nonstaked, give each plant 15-30 sq ft. If staked, 8-10 sq ft for each plant is enough. However, spacing tomato plants depends on several things, such as method of cultivation, varieties, and amount of pruning to be done.

Staked and pruned plants produce earlier, cleaner, and larger fruits, greater yield per acre, and are easier to harvest. However, staking and pruning require extra labor and cost. There is somewhat greater danger of fruit cracking, sunscald, and blossom end rot.

Home gardeners can train plants to single or double-stem systems (Fig. 2). Plants can also be caged in 18-inch wide round or square cages 4-5 ft high to keep them off the ground (Fig 3).

Hardening off

Plants grown indoors are quite tender and must be hardened before planting outside. The most successful way to harden off the plants is to reduce the water supply and slowly expose them to cooler temperatures. This can be done by leaving the plants outside for a couple of weeks before transplanting. If low temperatures are forecast, bring the plants in. Hardened-off plants generally adjust to outside conditions more quickly and start growth faster.

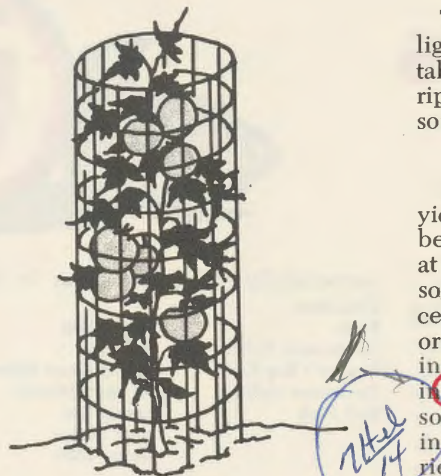


Fig 3. A tomato in a cage has more foliage cover and more protection from the sun. Pick netting large enough that you can get the ripened tomatoes out through the mesh easily. No pruning is required.

Planting time

Set tomatoes out only after danger of killing frost is past. If frost threatens, protect the plants by covering or by using overhead mist irrigation. Tomato varieties will not set fruit if night temperature drops below 59° F. Nor will blossoms set if day temperature is above 94° F. Tomato plants set fruit best when the average maximum temperature is not above 75° F.

Tomatoes require at least 8 hrs of sunlight daily for best growth. It normally takes 45-50 days to produce a vine ripened fruit from a fully opened blossom.

Starter solution

Experiments have shown that early yield and total yield of tomato plants can be increased by applying starter solution at transplanting time (Fig 4). Use water soluble fertilizer containing a high percentage of phosphorus such as 10-40-10 or the equivalent. Dissolve the fertilizer in water at the rate of 3 lbs per 50 gal (1 oz in 3 gal) and apply 1 pt per plant. A starter solution reduces the shock of transplanting by providing readily available nutrients and water for the plant.

Mulching

Mulch plays an important role in keeping weeds down and saving soil moisture. Mulch reduces the need for cultivation, slows soil erosion, helps prevent blossom end rot, and makes it possible to have cleaner fruit.

Mulch with a thick layer of straw, hay, grass clippings or with black plastic film. A black plastic film is put on the tomato plot before planting. Organic mulches should be 3 inches deep and placed close to the plant after a couple of cultivations and after the soil has warmed. Plants mulched with organic materials may need extra nitrogen. Sidedress with ¼-cup ammonium nitrate per plant at 2-week intervals beginning about July 15. This helps to ensure vigorous growth and continuous fruit set on the plants. Stop sidedressing after two to three applications. When organic mulches are used, be sure they are weed-free.

Blossom set

Tomatoes drop blossoms prematurely for several reasons—cool nights, too much nitrogen fertilizer, overwatering, and strong winds. Fruit set may be improved by using blossom set hormones early in the season when the nights are cool. Apply these compounds only on the blossoms since they can cause distortion of foliage. Hormones can cause fruit to become misshapen and can lower the keeping quality. Use them carefully according to directions on the label.

Water

Normally there is not enough rain during the growing season to produce a full crop of tomatoes. On the average, tomatoes require about 18 inches of water to produce a good crop. Since rain is usually not well distributed during the growing season, tomatoes should be irrigated every 7-10 days. Put on enough water to wet the soil about 8-10 inches down. This will take about 1-1¼ inches water. Never let tomatoes suffer from lack of moisture but do not water too often or too much because several diseases of tomatoes are prompted by improper watering.

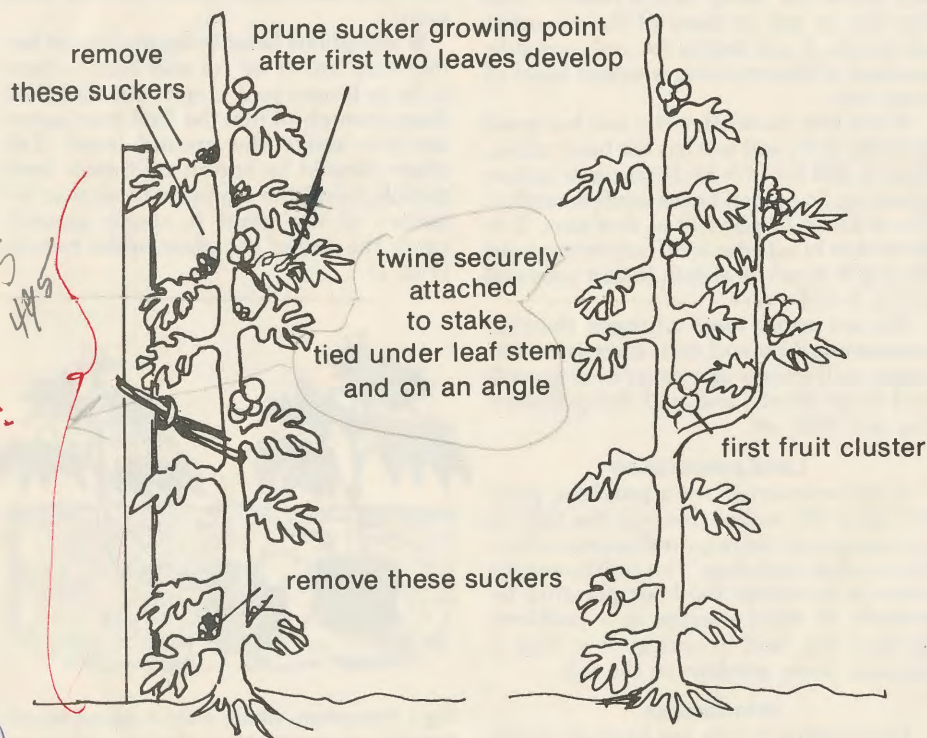


Fig 2. A single-stem tomato will give you fruit a little earlier, but total yield will be reduced. A double-stem plant will give more tomatoes, and there will be better foliage protection against the sun. Note the sucker just below the first cluster of fruit has been allowed to grow and form the second stem. If you are staking, keep the string loose on the vine.

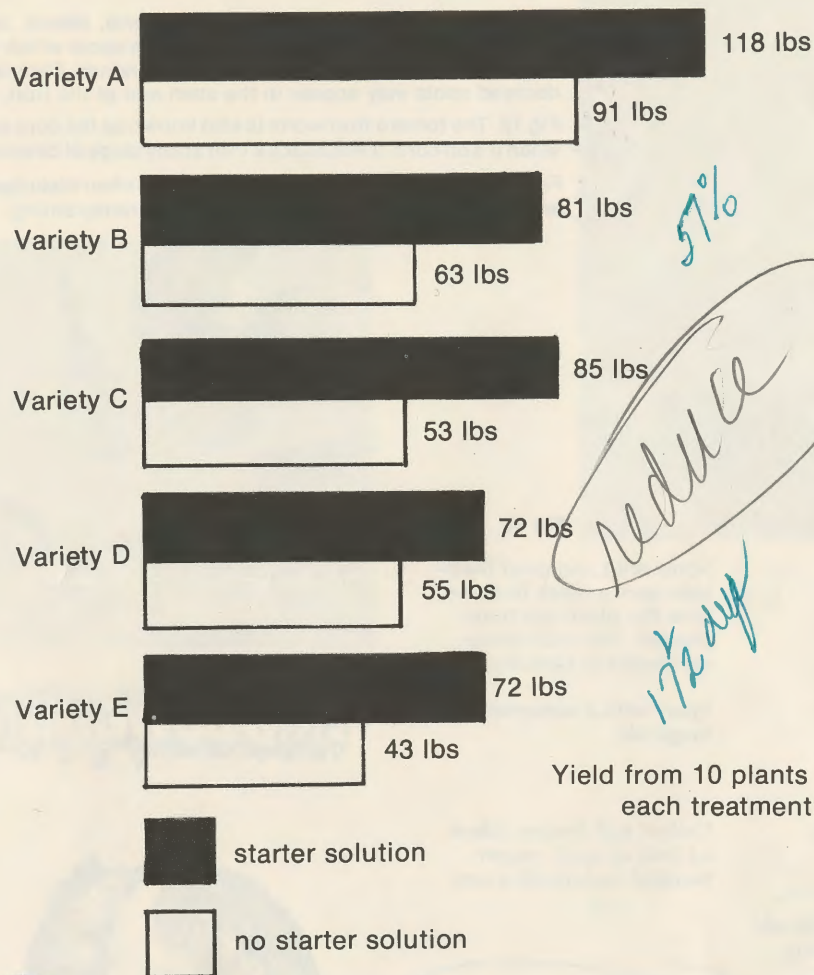


Fig 4. One essential for a good tomato crop is to apply starter solution at transplanting. It reduces transplanting shock.

Tomatoes grow best when there is no serious fluctuation in the moisture content of the soil. The best time to water is forenoon or just after noon, so that the leaves are dry by the time the sun goes down.

Early market tomatoes are a high-cost crop. It will be a very risky investment to grow them without irrigation. Adequate applications of water will produce a more uniform soil moisture level, resulting in high yield and improved quality.

Cultivation

Cultivation should be shallow and frequent enough to control weeds. The first cultivation could be deep and close to the plants, but subsequent cultivations should be away from the plants to prevent damage to the roots. Be sure to stay at least 6 inches away from the plants.

Sidedressing

A tomato plant needs extra nitrogen when the fruit is about half grown. If

additional nitrogen is not applied at this stage of growth, the yield will be reduced and the size of the tomatoes will rapidly decline after the first two pickings (Fig. 5). A sidedressing of 100 lbs of ammonium nitrate per acre, every 2 weeks, (one Tbsp per plant) should be applied when the fruit is half its normal size on the first cluster. This should be repeated two to three times. (If the tomatoes are grown on soil too high in nitrogen to start with, the blossoms may fail to set fruit.)

Care in harvesting

Tomato fruits are highly perishable and must be handled carefully. In harvesting tomatoes, set the container on the ground and harvest fruit with both hands, placing harvested fruit in the container with stem end down. Use only containers with smooth inside surfaces.

Much tomato spoilage is due to mechanical injury or bruising during harvesting operations. Breaks in the skin

let disease producing organisms enter the fruit. Tomatoes handle and market with less damage if shallow containers of about 20 lbs or less are used.

Tomatoes for home use are picked when they are fully ripe on the vine. For roadside stands and for local supermarkets the tomatoes should be picked in the pink stage. Tomatoes which are shipped long distances should be picked in the early pink stage. It is best to pack them in boxes in three layers, stem off and stem end facing down. This will increase the quality and shelf life of the tomatoes. Tomatoes of one size and about the same stage of maturity should be packed in each box.

If an early frost threatens, several things can be done to reduce losses. Harvest tomatoes at the white ripe stage or riper and store in a cool place. Pull the vines with fruit still intact and hang upside down in a shed or garage to ripen. Cover the vines in the field with newspapers, straw, or any insulating material to keep a light frost from damaging the crop. Remove the cover every morning and replace it in the evening.

A fresh ripe tomato will not retain its quality in any type of storage. Fresh green tomatoes will ripen in a cool room where the temperature is in upper 50's or 60's.

Diseases

Tomatoes are susceptible to a number of diseases and insects. It is beyond the scope of this publication to discuss all of the diseases and insects, but a few of the common ones in this area are listed.

Commercial growing

If you are going to raise tomatoes commercially, you should consider the following:

Find your market. Before growing tomatoes have your market outlet established. It may be a local wholesaler, a supermarket buyer, restaurants, hotels, a roadside market, mass food service or possibly another market. You are sure to have a problem if you wait until the tomatoes are ready for harvest before looking for a market.

Know what your market wants. Establish with your buyer the type of tomato he prefers, how it should be packed, and when and where it should be delivered.

Meet your market needs. In general, all markets want a tomato that is early, firm, smooth, and crackfree. Markets may differ in their demands as to size, color, and shape of fruit and type of package. Find out what your markets want. A commercial producer must have an early, productive tomato to make a reasonable profit.

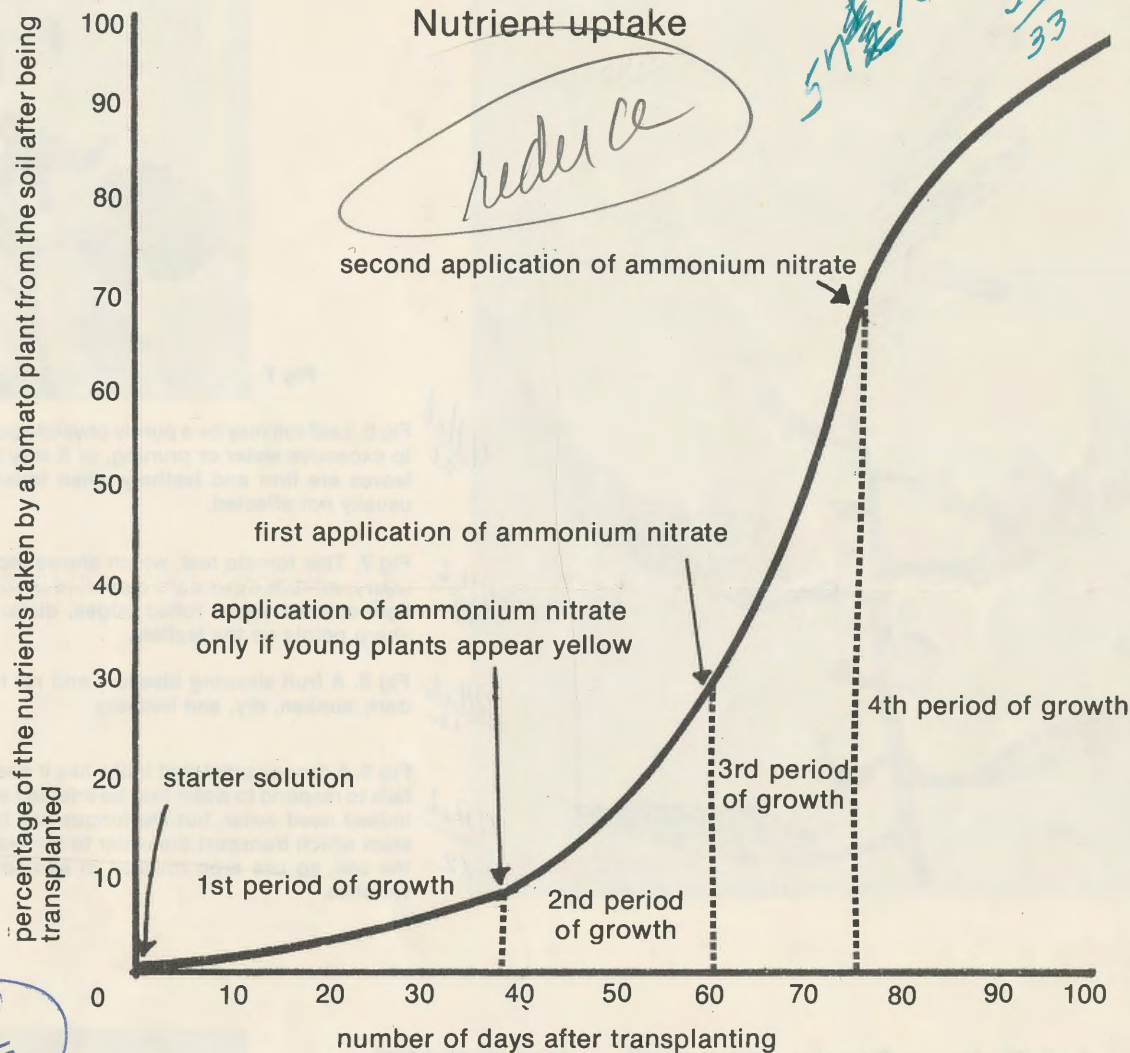


Fig 5. Additional nitrogen is necessary as the plant grows. Use the ammonium nitrate form. At 40 days, go by the color of the plants. If they are yellow, add fertilizer.

Diseases

Symptoms	Possible cause	Corrective action
Blossom drop	Low night temperature (several nights in a row) when temperature is below 60° F.	Avoid planting too early in the spring.
	Too much nitrogen in soil.	Avoid using high nitrogen fertilizer in the area where tomatoes are to be planted.
	Overwatering.	Avoid soggy conditions.
	Low moisture supply in soil with blossoms exposed to hot, dry weather.	Use a 3-inch mulch around plants to conserve moisture or apply a proper amount of moisture.
	Disease (early blight, Septoria leaf spot, etc.)	Use recommended fungicide.

*no need
for any
partic order*



Fig 6



Fig 7

7/20
Hel

Fig 6. Leaf roll may be a purely physiological reaction of the plant to excessive water or pruning, or it may be due to disease. The leaves are firm and leathery when touched. The crop yield is usually not affected.

7/12
Hel

Fig 7. This tomato leaf, which shows moderate to severe 2,4-D injury, exhibits downward curvature of young leaflets, prominent light-colored veins, rolled edges, distorted leaf surfaces, and sharp points on the leaflets.

7/12
Hel

Fig 8. A fruit showing blossom end rot has a spot which looks dark, sunken, dry, and leathery.

7/12
Hel

Fig 9. A droopy plant that looks like it needs moisture but which fails to respond to water may be infected with wilt. The plant does indeed need water, but the fungus has blocked the cells in the stem which transport the water to the leaves. The fungi live in the soil, so use crop rotation in addition to planting resistant varieties.

Tomato leaf roll (Fig 6)

Excessive moisture in soil.

Avoid overwatering.

Excessive pruning (sucker-ing).

Remove suckers when very small (1-2 inches).

Excessive accumulation of food materials in plants.

None.

Disease.

Identify disease and apply recommended control practices.

Downward curvature of young leaflets, prominent light colored veins, rolled edges, distorted leaf surface, and sharp pointed leaflets.

2,4-D injury. (Fig 7).

Avoid use of 2,4-D near the garden area.

Large, dry, brown, leathery, scalelike blemish of the blossom end of the fruit.

Blossom end rot (Fig 8).

Avoid excessive use of nitrogen fertilizer. Avoid deep cultivation. Maintain a uniform soil moisture by applying adequate amount of water every 7-10 days.

Lack of growth, plant wilting in spite of enough watering, cross section of the main stem shows brown discoloration in a ring to the outside.

Wilt (Fig 9).

Use wilt resistant varieties.

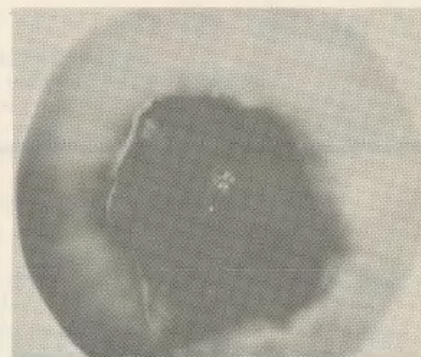


Fig 8



Fig 9



Small light tan to brown spots (1/16-1/8 inch) with dark margins, and usually having tiny black dots scattered within the spot.

Septoria leaf blight (Fig 10).

Dark brown to black spots on leaves, most spots irregular and with concentric rings (target spots).

Early blight (Fig 11).

Greenish-brown worms usually about 1 1/2 inch long and with light stripes along the sides and back. They commonly burrow into the developing fruit and feed inside.

Fruit worms (Fig 12).

Plant cut at ground level.

Cut worm (Fig 13).

Spray with approved fungicide once a week from the time the plants are transplanted. The only practical control is sanitation.

Spray with a recommended fungicide.

Collect and destroy infected fruit or apply recommended insecticide every

Wrap the main stem of the transplants with wax paper. Allow it to extend about 1 inch into the ground and 1 inch above ground before transplanting. Apply recommended insecticide at the time of planting.

Fig 10



Fig 12



Fig 13

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the USDA. Hollis D. Hall, Director of Cooperative Extension Service, South Dakota State University, Brookings. Educational programs and materials offered without regard to age, race, color, religion, sex, handicap or national origin. An Equal Opportunity Employer. File: 7.1-5,000 printed at estimated 11 cents each-5-77mb-86A

COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U.S. DEPARTMENT OF AGRICULTURE



Stakes

Tomatoes