TOMATO GROWING

Boys' and Girls' Club Circular 9

COLUMBIA, MO. JUNE, 1923

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

A. J. MEYER, Director, Agricultural Extension Service

Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914

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TOMATO GROWING

Tomatoes are a very important cash crop for the commercial gardener and one of the most profitable and dependable for home use for they supply fresh fruit during the bearing season and canned fruit for winter use. By proper methods, good yields can be obtained in all parts of this state by Boys' and Girls' Club members.

CLUB YEAR AND REQUIREMENTS

The club year begins March 1 and ends September 1.

Each club member is required to:

1. Produce economically, as large a yield of tomatoes as possible from 100 or more plants.

2. Demonstrate the best cultural methods for tomatoes in his locality.

(a) By using good seed or plants of suitable varieties

(b) By showing best methods of —

1. Plant growing
2. Transplanting
3. Fertilizing
4. Cultivating
5. Controlling diseases and insects
6. Harvesting

3. (a) Make an exhibit of one plate, 5 tomatoes, of each variety grown, at the local or county fair. (b) Judge tomatoes and recognize varieties best adapted to Missouri conditions.

4. Keep a record of the methods and cost of growing tomatoes, the yield and the value of the crop.

5. Write a story on the Growing of Tomatoes and the Club Work for the Year.

RECORD BOOK

In the tomato club project it is most important to keep careful records of all work done, as fertilizing, planting, spraying, cultivating, etc., the expenses connected with the project, the income and

NOTE.—This circular was prepared by E. M. Page, Extension Assistant Professor of Horticulture in collaboration with Mrs. J. K. Fyfer, Special Assistant in Boys' and Girls' Club Work.

the profit. By doing this it is an easy matter to find out whether or not the project has been a success and these records will be most helpful in writing up your story at the end of the club year.

MEETINGS SUGGESTED

The Club Leader and club members, can decide just how often they wish to meet and where they want to hold their meetings. If the meetings are held at the homes of the members it gives all the club members an opportunity to see each one's tomato patch, however, if it is more convenient to meet at the school, that is for the members to decide. Meetings are suggested here only as a help in making your plans. You are free to change them in any way that your Leader and you desire. Remember in making your program that the social part is important and should receive careful attention.

I. Organization, Discussion of Varieties, Methods of Making Hotbeds, and Growing Plants. (Time about March 1.)

II. Soils, Preparation of Soil, Fertilizers. (Time about April 1.)

III. Spraying, Transplanting, and Early Cultivation. (Time about May 1.)

IV. Cultivation, Spraying: Diseases and Insect Enemies of Tomatoes. Plans for Achievement Day. (Time about July 1.)

V. Tour to Each Member's Field. (Time about July 1.)

VI. Achievement Day, Exhibit and Judging Contest. (Time about July 15 to August 1.)

I. Organization, Discussion of Varieties of Tomatoes, Methods of Making Hotbeds and Growing Plants

ORGANIZATION

The Club Leader will take charge of the first meeting while the officers, president, vice-president and secretary are elected. The Leader will explain at this meeting the work for the club year, the keeping of the Record Book, and the tools necessary for the work. At this meeting committees should be appointed to make a constitution, a program for the club year, one to choose a club name and a club motto. When the business part of the program is finished the Club Leader will discuss the best varieties of early and late tomatoes, the methods of making hotbeds, and growing plants.

VARIETIES

The variety to be grown depends upon the purpose for which the tomatoes are to be used. For the market garden, or home garden, earliness is often important. Very early varieties that are satisfactory are Earliana and June Pink. Medium early varieties are Bonny Best, John Baer and Livingston Globe. Late varieties suitable for market or for canning are: Stone, Red Rock and Greater Baltimore. There are, of course, other desirable varieties in each group. Since there are wide variations between different strains in the same variety it is often worth while to save seed from year to year in order to keep and improve a suitable strain.

The Plant Supply.—When only a small planting is to be made, it may be more economical to buy plants if the desired variety grown from good seed, can be obtained.

If, however, plants are to be grown, they can be produced easily by one of the following methods. If no seed has been saved it is best to buy from a reliable seed dealer or grower. Cheap tomato seed is usually a poor investment and it is safer to buy the best.

METHODS

Methods of plant growing influence greatly the earliness and yield of tomatoes. It is always desirable to get the plants set early and rooted well before dry weather. The ideal should be to produce large stocky plants in time for early setting in the field but the amount of effort justified will depend upon the need for earliness. The most elaborate method is to grow the plants in a greenhouse and harden in coldframes but this is not often possible.

Hotbeds.—For very early plants a hotbed should be prepared late in February or early in March. A hotbed is an enclosed plant bed usually with glass or canvas cover and provided with some artificial means of heating, such as fermenting stable manure. In making a hotbed a well drained spot should be selected on the south side of a building if possible so it will be protected from cold winds.

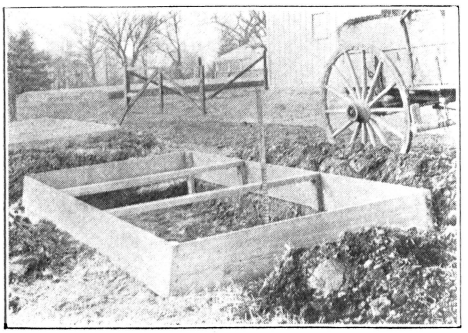


Fig. 2.—First steps in making a hotbed; digging the shallow pit, bracing and staking the frame.

The beds are usually made to run lengthwise east and west and the north side is higher than the south so the bed will get the full amount of sunlight. For temporary beds the boards used in making the frame can be 1 inch thick but for permanent beds the boards should be 2 inches thick. The north board should be 12 inches high and the south one should be about 8 inches high. The beds can be any length desired but should be 6 feet wide as all standard glass sash or other hotbed covers are 6 feet long. After making the frame drive stakes about 3 feet long into the ground at the corners and about every 8 or 10 feet along the sides. The frame should be nailed to these stakes to hold it in shape. Braces of 2-by-2-inch boards placed across the frame every 3 feet make it still stronger.

After the frame is made the earth should be thrown out to a depth of 10 or 12 inches and this pit tramped full of fresh, heating stable manure. Be sure to tramp the edges and corners well. If the manure is very dry it should be wet with warm water. This will make the heat continue longer and more uniformly. Rich sandy dirt is spread on top of the manure to a depth of 4 or 5 inches as soon as possible.

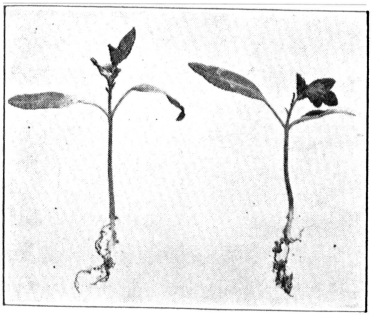


Fig. 3.—Tomato plants at the time of first transplanting.

Glass sash make the best covering for either a hotbed or cold-frame but if these are not available muslin or canvas can be used

and should be painted with hot linseed oil or drawn through a small vat of hot linseed oil or paraffin to make it water-proof and transparent. In very cold weather it may be necessary to put loose straw on top of the covers. In two or three days when the tempera-

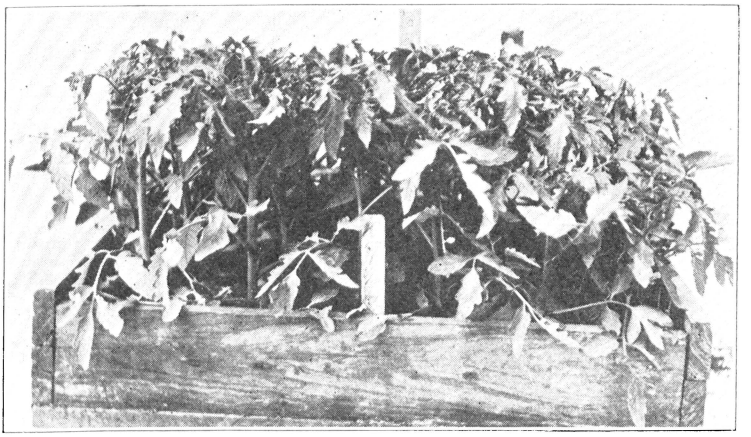


Fig. 4.—Healthy tomato plants grown in a flat box in a hotbed. These plants have been transplanted only once and are now ready to set in the field.

ture of the bed has become uniform and is not over 90° the seed should be sown, rather thickly in rows about 4 inches apart. When the plants are about 2 inches high they should be transplanted to a coldframe or in the hotbed placing them 3 or 4 inches apart each way. By transplanting these small plants into flat boxes containing 2 or 3 inches of rich dirt it will be possible to move them into coldframes when desirable without transplanting again. An even better system is to place these young seedlings in dirt contained in wooden bands about 4 inches square such as old strawberry boxes. When this method is followed the plants can be set in the field without disturbing the roots (see illustration on cover). A coldframe differs chiefly from the hotbed in that it has no means of artificial heating. Its soil should contain plenty of rotted manure and sand.

Fig. 5.—Healthy plant grown in thin wooden band.

Another way to provide early plants on a small scale is to plant the seed in a flat box or soil in a window, transplanting later to a coldframe.

A method which provides good plants more cheaply, but somewhat later is that of sowing the seed in a coldframe in the latter part of March. The soil should be rich and mellow and the seed sown thinly in rows about 4 inches apart. When about 2 inches high the plants should be thinned, leaving at least, 1 inch between the bed. This method is generally best for a late market or canning crop.

The watering and ventilation of plant beds require careful attention. The object is to keep the plants growing fairly fast with-

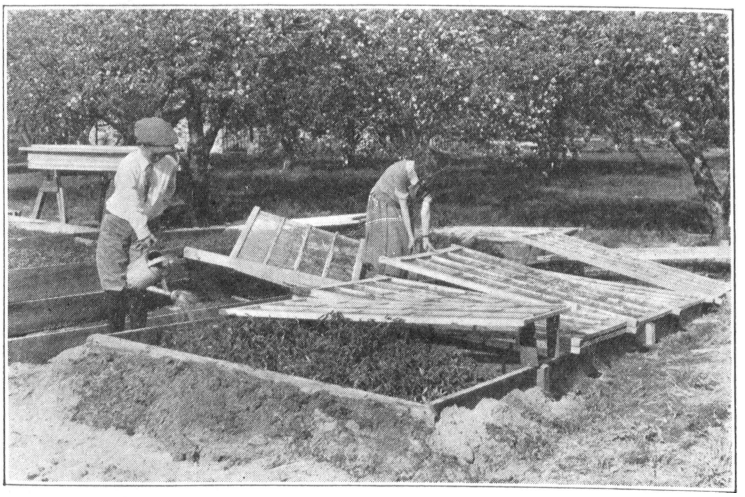


Fig. 6.—The completed hotbed. Watering plants and ventilating the bed.

out becoming weak and spindling. Watering should be done on warm days and the plants allowed to dry before night. Insufficient watering will stunt the growth while too frequent watering may cause plants to "damp off". "Damping-off" is a fungus or mold disease which makes the plant rot off at the surface of the soil and thus causes much loss. It is especially troublesome during damp cloudy weather. The beds should be ventilated during the day whenever the outside temperature permits. A day temperature of from 60 to 80°, and night temperature of 45 to 50° are desirable. Tomato plants will not stand freezing.

For about a week or ten days before transplanting to the field the beds should be left open night and day without watering, cover-

ing only in case of frost. This "hardens" the plants, making them better able to withstand the shock of transplanting. Plants should be set in the fields as soon as danger of frost is past which is usually during the first half of May.

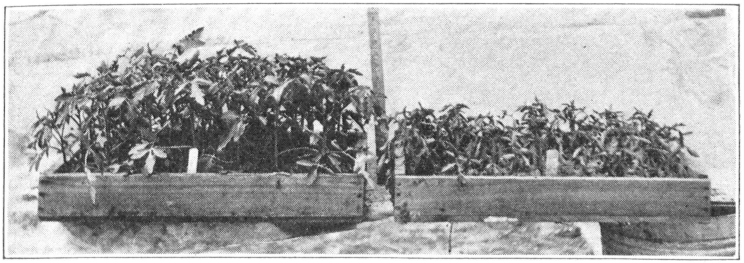


Fig. 7.—Plants on the right show effects of neglect in watering.

RECORD BOOK

It is time now to make the first reports in your Record Book. These should be done neatly, correctly and interestingly. Tell who were elected officers, those who were appointed on committees and the number of members. What variety of tomatoes did you select? Where did you obtain seed or plants? How deep did you plant the seed? What date did you do your planting? How long before the seed sprouted? What method of plant growing did you select? Give a full account of your meeting with any points of interest.

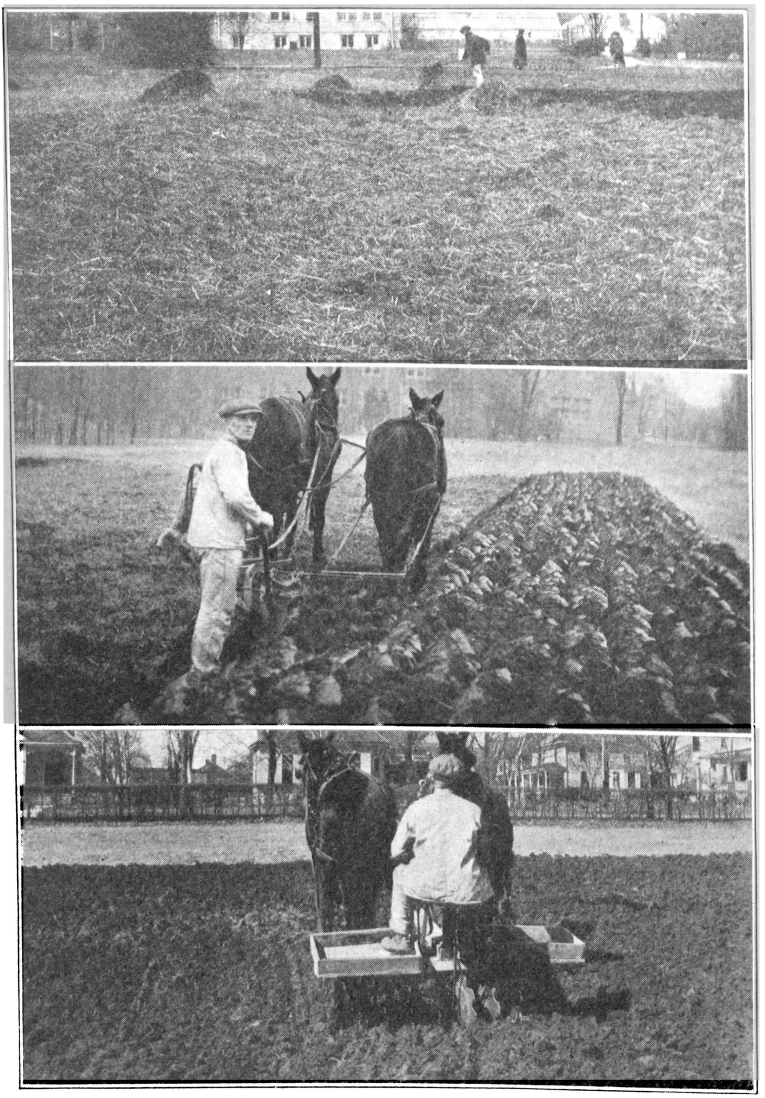


Fig. 8.—Three steps in preparing tomato land: (Above) Spreading heavy coat of manure in fall; (Center) Breaking deeply in late fall; (Below) Disking into fine condition before planting, early spring.

II. Soils, Soil Preparation, Fertilizer

SOILS

After the report of the committees appointed at the first meeting is made and the business part of the program is finished there should be a discussion of soils, soil preparation, and fertilizers.

Tomatoes are grown successfully on a wide range of soils but usually do best on a fertile, well drained loam or silt loam. Light sandy soils are adapted to growing early tomatoes but the bearing season is usually short. Very heavy clay soils, which remain sticky while damp and bake hard when dry, are to be avoided. The brown loess hill soils near the Missouri River and the gravelly loam soils of the Ozark region are especially adapted to growing tomatoes of high quality. The soil must be kept fertile by rotating crops, plowing under green manure crops such as soybeans or cowpeas and using stable manure. Too rich a spot, such as an old barn lot, should not be planted in tomatoes, such conditions cause too rank a growth of vines with little fruit. However, garden soil, even if manured, is seldom too rich, for tomatoes are rank feeders.

SOIL PREPARATION

Plowing should be done some time in advance of planting and the land disked or harrowed several times to kill young weeds and to pulverize and compact the soil. Deep plowing or breaking is important; the tomato is a deep rooted plant. The last harrowing or raking should be done just before plant setting so the soil will be in good mellow condition.

FERTILIZERS

Manures.—Stable manure is especially good on thin land where continuous grain farming has been practiced. Such land is usually low in organic matter and nitrogen and has a tendency to run together and bake when dry. These faults will be largely overcome by using manure. On such land it can be applied as heavily as ten to twenty tons per acre with good results. When only a small supply of manure is available it should be spread on the land, worked into the soil, then commercial fertilizer used to supplement the manure. Fertilizer is also valuable where green manure or sod has been turned under.

Commercial Fertilizer.—Experiments in all parts of the State show that in nearly all cases the yield of tomatoes and the earliness of the crop can be increased by the use of commercial fertilizers.

On rich soil, or when used with liberal amounts of manure, 16 per cent acid phosphate is the fertilizer which usually gives most economical results. On soils of medium fertility or with small amounts of manure a mixed fertilizer containing about 2 per cent nitrogen and 12 per cent phosphorus gives good results. Nitrogen, phosphorus and potassium are the elements of plant food which fertilizers add to the soil. On poor, badly worn or thin upland soils, a "complete" fertilizer such as 2-12-2 or 2-16-2 is best. The formula

Fig. 9.—Effect of fertilizer on early vine growth. Rows at the left were fertilized with a 2-12-2 fertilizer at the rate of 400 pounds per acre, mixed with the soil before the plants were set.

2-12-2 means 2 per cent nitrogen, 12 per cent phosphorus, and 2 per cent potassium. This is especially needed on sandy upland soil where potash is usually lacking.

The amounts used may vary greatly but in Missouri most profitable returns have usually been from applications of 250 to 500 pounds per acre, using the larger amounts on the poorer soils and for the earlier crops. This is from 3 to 5 pounds to each 100 feet of row. The most economical use of fertilizer is obtained by drilling it into the rows before planting. Rows may be marked where plants are to be set, and several days before planting, the fertilizer should be drilled in by hand or with a small fertilizer drill. It should be mixed with the soil before setting plants.

RECORD BOOK

Describe the location of your tomato patch. How large is it? What kind of soil have you in your patch? How did you prepare the soil? What implements did you use? Did you use manure? How much? Did you use commercial fertilizer? What kind?

Fig. 10.—Scattering fertilizer along the marked rows. The single shovel plow mixes the fertilizer with the soil and opens a shallow furrow for planting.

III. Spraying, Transplanting, Early Cultivation

BORDEAUX MIXTURE SPRAY

It is a splendid practice to spray the plants with bordeaux mixture while they are still in the plant bed. This protects them from leaf diseases such as leaf spot or early blight. Bordeaux mixture can be purchased as a powder or paste ready to dissolve in water and use. Where this is done, follow directions on the package for field spraying, but for spraying the plant bed make the solution just half as strong as directed. Bordeaux can also be made at home as follows: Dissolve ½ pound of bluestone (copper sulphate) in 1 gallon of water. Slake and dissolve in another gallon of water ½ pound of stone lime. These two are stock solutions and will keep as long as desired. When ready to spray, dilute the stock solutions by adding 5¼ gallons of water to each, still keeping them separate. The bordeaux mixture is made by pouring these two dilute solutions together at the same time and in equal amounts into the spray tank and mixing thoroughly. It should be used the same day it is made up. This makes a 2-2-50 bordeaux which means it is made at the rate of 2 pounds bluestone, 2 pounds of stone lime to 50 gallons of water. This 2-2-50 bordeaux is suitable for spraying the plant beds. For later spraying when plants are in the field a 4-4-50 bordeaux mixture should be used. This is just twice as strong as the 2-2-50 and can be made by using 1 pound each of copper sulphate and stone lime instead of ½ pound each.

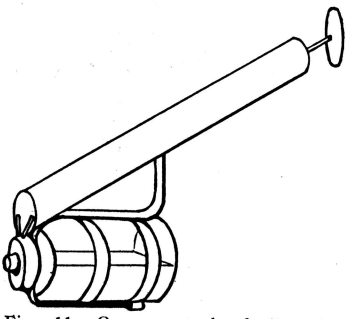


Fig. 11.—One quart hand "atomizer" type of sprayer suitable for plant beds or small gardens.

TRANSPLANTING

Before removing the plants from the beds they should be watered thoroughly and taken up with a clump of earth on the roots of each. When setting plants on a large scale a horse-drawn planter can be used to good advantage. For the smaller planting, however, a shallow furrow can be opened with a small plow, single shovel or cultivator and the plants set in by hand. Plants should be set

fairly deep especially if they have grown somewhat "leggy". Roots will form along the buried stem making the plant more resistant to drouth.

Distance of Planting.—Depends somewhat on the variety grown, richness of the soil and cultural methods. The early varieties do not vine as heavily as late ones and as a general rule should be set, 3 feet by 4 feet while the late, vigorous growing sorts in rich soil can be set 4 feet by 5 feet. These distances are satisfactory when vines are allowed to grow at will. If they are to be staked and pruned the plants can be set much closer; about 18 inches by 42 inches.

RECORD BOOK

When were your plants transplanted? What was the distance between the plants? How did you set the plants? Are you going to stake and prune plants? In the Record Book you will find a place to report the expense of plants, labor, spray material, etc.; don't fail to keep an accurate account. What have you done in the social side of your program? Give a full account of your last meeting.

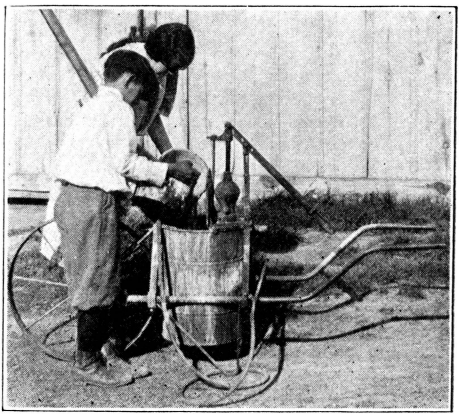


Fig. 12.—Making Bordeaux mixture by pouring the dilute lime solution and dilute copper sulphate solution together directly in the tank of a wheelbarrow sprayer and stirring. This type of sprayer is suitable for almost any kind of spraying.

IV. Cultivation, Spraying, Diseases, and Insect Enemies. Plans for Achievement Day

CULTIVATION

Careful and frequent cultivation is required from the time the plants are set until the vines begin to cover the ground. The first cultivation should form a slight ridge about the plants. Fairly deep cultivation is good while plants are small, but later cultivations should be shallow. The soil should be kept mellow and free from weeds at all times. An ordinary 5-tooth, one-horse cultivator can be used for early cultivation and a 12- or 14-tooth, one-horse cultivator is best for the shallow, late cultivation.

The practice of mulching tomatoes with straw by covering the entire surface of the ground 4 to 6 inches deep just after the first

Fig. 13 (above).—Tomatoes mulched with straw to hold moisture in the soil and save cultivation.

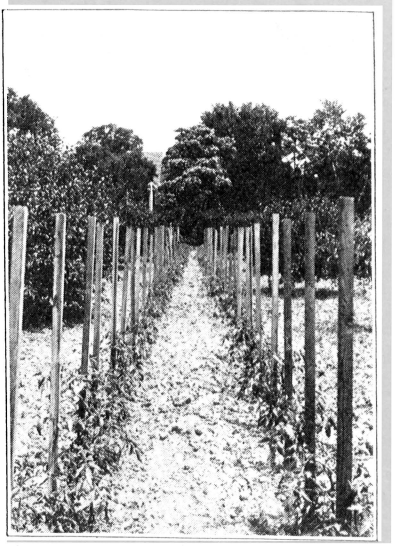


Fig. 14 (at right).—Starting tomatoes for culture by staking and pruning method.

cultivation does away with further cultivation and retains moisture so that the yield is usually greatly increased later in the season. Mulching is recommended for tomatoes intended for home use or late market in sections where summer drouth is injurious.

The system of supporting each vine by a stake 5 to 6 feet long, pruning to a single stem and tying this stem loosely to the stake with strips of cloth or coarse cord, usually results in a greater yield of early fancy tomatoes, but requires more plants and much more labor and the total yields are about the same as for unstaked

fields. They are sometimes kept pruned to two or three stems which are trained on a wire trellis or fence by tying. This is a good practice especially in a small home garden.

SPRAYING

If the plants were sprayed well while in the plant bed it may not be necessary to spray again. They should be watched carefully, however, for insects and diseases; and if any are noticed the remedies suggested should be used at once.

DISEASES

Tomatoes have diseases just as most plants and animals do. The most common ones and their preventives are mentioned below.

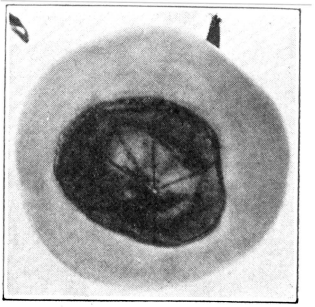


Fig. 15.—Blossom end rot.

Blossom End Rot is a disease that is caused by lack of moisture in the soil. This disease takes the form of brown or black rot at the tip ends of the tomato fruit. This can be controlled or reduced only by irrigation or by frequent shallow cultivation or by mulching with straw or other material to hold the soil moisture.

Wilt is a fungus disease which lives in the soil for several years. It causes the lower leaves and branches and finally the whole plant to turn brown and die. By slicing into the stem near the base

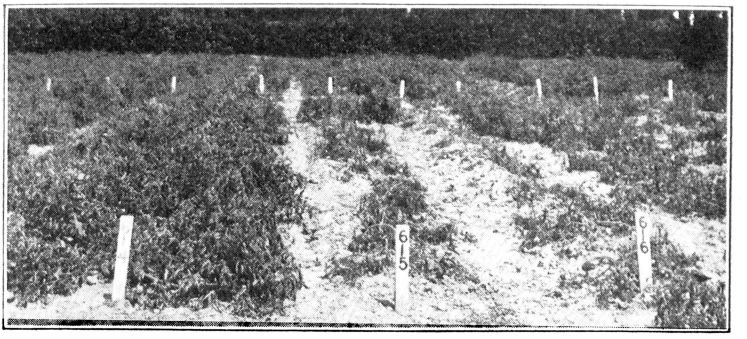


Fig. 16.—Wilt resistant tomatoes and ordinary varieties on wilt infected soil.

of a diseased plant dark brown streaks can be seen. When the wilt is present in a field, tomatoes should not be grown on the land for

several years unless "wilt-resistant" varieties are used. There are a number of these varieties being developed, some of which possess a fair degree of wilt resistance, and they are now on the market in a limited way. The Norton is a good late wilt-resistant variety similar to the Stone. The Marvel is a medium early variety. Both have red tomatoes.

Leaf Spot appears as small water soaked spots on the under side of the leaves, soon changing to larger brown spots with light

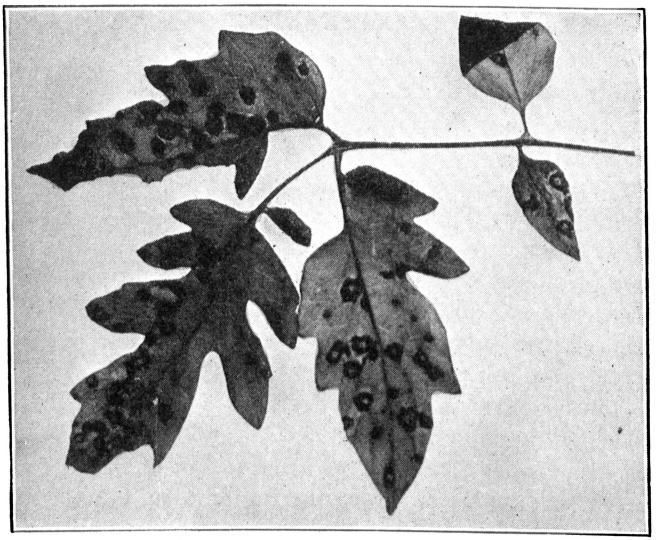


Fig. 17.—Leaf spot of tomato. (From U. S. Dept. of Agriculture)

centers and dark edges and with the leaves turning yellow and drying up and dropping off. It is very common in Missouri and wet seasons does much damage. All plants that show this disease should be burned when they are removed from the plant bed. Spraying with bordeaux mixture made as described on page 9, will usually control this disease. The mixture must always be used fresh, and the plants thoroughly covered with a fine spray. The first spray should be 2-2-50 bordeaux and put on just before the plants are taken from the bed. As soon as the first disease spots appear spray again and every 10 days or two weeks thereafter for about 3 sprays, using the 4-4-50 bordeaux. A 3-gallon pressure sprayer is a good one to use on small patches while a wheelbarrow sprayer is better for large patches.

Early Blight also spots the leaves and causes them to wither and die. In addition to this it causes spots on the stems and appears on the ripening fruit as Nail Head Spot. These are small sunken brown spots usually with light brown centers. The same methods of control should be used for the Early Blight as for Leaf Spot. The plant bed spray is especially important.

INSECT ENEMIES

Fruit Worms may cause considerable damage and their control is difficult. Picking all the wormy tomatoes early in the season and destroying them will greatly reduce later injury. Planting sweet corn as a trap crop is helpful if the ears of corn are removed

Fig. 18.—Spraying tomato plants with bordeaux mixture. The 3-gallon pressure sprayer is a good type for the average sized garden.

before they mature in order to kill the worms. Spraying with arsenate of lead also reduces injury, using 1½ pounds of the dry form to 50 gallons of bordeaux mixture.

Grasshoppers and Cutworms are best controlled by spreading poisoned bait made by mixing 1 ounce paris green or white arsenic and 1 pound wheat bran and adding another mixture consisting of 1 pint water, ¼ pint molasses and the juice of half a lemon or orange. Water can be added to make a stiff mash and the material

scattered lightly on the ground around the plants, in the evening and early morning.

Horned Tobacco Worms can be controlled by spraying with arsenate of lead or by hand picking. If they are very troublesome it will be much easier to kill them by the spraying. Arsenate of lead can be added to the bordeaux mixture or can be mixed with water and sprayed on alone. For this purpose 1½ pounds of the powdered form should be used for each 50 gallons of water. This is about one tablespoonful, rounded slightly to each gallon of water or spray. Arsenate of lead should be stirred into a paste with a small amount of water and then poured into the water or bordeaux mixture. It should be sprayed on the plants while worms are small.

Flea Beetles and Leaf Hoppers if troublesome can be repelled and many of them killed by spraying with bordeaux mixture and arsenate of lead together.

PLANS FOR ACHIEVEMENT DAY

In order to have a good exhibit and an interesting program for Achievement Day, club members should make their plans early and have everything ready before the day set so that the program will pass off smoothly and there will be no undue rush and uncertainty at the last moment. An interesting story of the organization of the club and what it has done would make one good number for the program. Some demonstration well done should be another number. Club songs always help to put spirit into the work.

Prizes.—At this meeting the club should decide by vote what prizes and ribbons will be offered and how these shall be paid for. A list of items for which prizes may be awarded is suggested on page 16 under Awarding Prizes and Ribbons.

RECORD BOOK

You will find in the Record Book a space for recording the date, kind, and the depth of cultivation. If you pruned your tomatoes tell how you did it. If you staked them give the number of stakes and cost of doing it.

Probably you have had some trouble from insects or diseases, if so tell all about it and what remedy you applied. How many times did you spray the plants. What spray mixture did you use? Why did you use this kind? How did you estimate your yield of tomatoes? What was the value of the crop? What value per pound? How much profit did you make?

V. Tour of Tomato Fields

This meeting takes the form of a visit to all club member's tomato fields and, offering each member an excellent opportunity to compare his own field with every other one. This will give each a chance by comparison to discover his own weak and strong points, and to suggest improvements that could be made for another year's work.

Some of the things that should be looked for on this trip and pointed out by the Club Leader or members as they are noticed are as follows: habits of growth of different varieties; size of leaves; spread of vines; shape, color and earliness of ripe tomatoes; as well as the results of fertilizer or spraying demonstrations. Take pictures of good demonstration fields when convenient to do so.

Be sure to notice all diseases and insects that are injuring tomatoes.

JUDGING THE FIELDS

On this tour there should be someone who will judge the different fields. This may be the County Agent, Club Leader, an impartial grower or the Truck Crops Specialist from the Agricultural Extension Service.

Points to consider in judging the fields are methods used in growing the crop, freedom from weeds, freedom from insects and diseases, and general appearance of the field.

RECORD BOOK

This record should include a short account of each field visited describing the best point of each member's crop.

VI. Exhibit and Achievement Day

By this time your crop has been harvested, your Record Book almost completed, and the exhibit ready. Your exhibit should be arranged most attractively and it would add to your Record Book to have one or more photographs of the exhibit, your tomato patch, or a group of members giving a demonstration. Be sure to make this last club meeting one to be long remembered because of the benefits you have received and of its importance to the community.

EXHIBIT

Each club member should select a "plate" of five of the best tomatoes of each variety in his field for the Exhibit. It may be well to first select twice this many and choose the ones to be exhibited from these. Look over the score card carefully and select tomatoes which will score the highest, paying particular attention to uniformity, condition, size, shape and color.

JUDGING CONTEST

Before the decision of the judge is announced each club member should judge or place the exhibits in the order which he thinks they belong according to the score card. Each member should then give his reasons for the placing before the whole club. This judging contest is important and the results will help to determine the championship.

AWARDING PRIZES OR RIBBONS

In awarding championship prizes or ribbons the following points should be given equal weight; that is, on a basis of 100, each of these four items should be allowed 25 points if they deserve a perfect score:

Care of Field and Plants.
Story of the Club Work for the Year.
Record Book.
Exhibit and Judging.

In addition to championship prizes there may be ribbons or prizes for any one or for all four of the items listed or there may be a prize for the winners of the judging contest or for the best exhibits. This should be decided by a vote of the club at some previous meeting.

EXPLANATION OF SCORE CARD

Score Card

Name of Variety _____
Scored by _____ Date _____
Size and shape, correct for variety _____20
Color, correct for variety and uniform _____15
Condition (ripeness, solidity, freedom from injury and blemishes) _____30
Uniformity _____35

Size and Shape. Both size and shape vary considerably with the variety and this should be considered in scoring. Some varieties tend to be small and others large while some produce flat and others globe-shaped tomatoes. Smoothness is desirable and the exhibit should be scored off for any rough, irregular specimens. The scoring on this point should be less severe on such large irregular varieties as Ponderosa. Extremely large or very small tomatoes are not desirable for an exhibit.

Color.—Color also varies with the variety and with the stage of ripeness. There are varieties producing yellow tomatoes, others yellowish red, bright red and some of the purplish red. This should be considered in showing. The color should be the same over the entire tomato and for all tomatoes of each individual exhibit.

Condition.—The score under this item depends on the care in selecting perfect tomatoes of just the right stage of ripeness, free from all blemish, scars or other injury, and especially on the careful handling of the tomatoes. If it is necessary to select them several days before the exhibition day it is best to save those which are not fully ripe and to wrap them separately with paper and store in a cool dark place.

Uniformity.—The secret in selecting a winning exhibit lies first in choosing the correct type and then in getting each plate as nearly uniform as it is possible to do so. They should be uniform in size, shape, color, condition and in general appearance. This is the most important single item to consider in judging and the hardest one to satisfy in selecting an exhibit, and it should be very carefully considered.

RECORD BOOK

In the Record Book should be a copy of the Achievement Day Program and the awards given to the different exhibitors. Tell how your tomatoes scored and give a full account of the meeting, including the number of visitors, the names of any who made talks or helped to make the Achievement Day a success.

SUGGESTIONS FOR ROLL CALL

1. Tools used in growing tomatoes.
2. Steps in growing tomato crop.
3. Kind of fertilizer used on your tomatoes.
4. A variety of early tomatoes, grown in Missouri; next member tell color of fruits.
5. A variety of late tomatoes, grown in Missouri; next member tell color of fruits.
6. An insect or disease enemy of tomato; next member give method of control.

SUGGESTIONS FOR DEMONSTRATIONS

1. Making a hotbed.
2. Sowing seed.
3. Transplanting.
4. Making bordeaux mixture.
5. Applying fertilizer.
6. Spraying in plant bed or field.
7. Staking and pruning.
8. Judging tomatoes.

FIELD DEMONSTRATIONS

1. Compare parts of field fertilized and unfertilized, or where different kinds of fertilizer were used.
2. Compare sprayed and unsprayed parts of field.

INDEX

RECORD BOOK

Tomato Growing Project

BOYS' AND GIRLS' 4-H CLUBS

Name of Member_____Age_____

County_____P. O._____R. F. D._____

Name of Community_____

Name of Local Club _____

Name of Local Leader_____

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATE DEPARTMENT OF AGRICULTURE COOPERATING

A. J. MEYER, Director, Agricultural Extension Service

Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914.

MEETING I

1. What variety of tomato did you select?_____

_____

2. Where did you obtain seed or plants?_____

_____

3. How deep did you plant the seed?_____

4. On what date did you plant the seed?_____

5. How long before the seed sprouted?_____

_____

6. What method of plant growing did you follow?_____

_____

MEETING II

1. How would you describe the location of your tomato field?_____

_____

2. What kind of soil in the field?_____

3. How large is the field?_____

4. How did you prepare the soil?_____

_____

5. What implements did you use?_____

_____

6. Did you use manure?_____How much?_____

7. Did you use commercial fertilizer?_____

8. What kind?_____How much?_____

9. How many poounds per acre is this?_____

MEETING III

1. When were your plants transplanted?_____
2. What was the distance between the plants?_____
3. How did you set the plants?_____

_____

4. What did you do to "harden" the plants? _____

_____

5. Did you spray the plants with bordeaux mixture while they were in the plant bed?_____
6. How many times did you spray?_____
7. Are you going to stake and prune your plants?_____

_____

MEETING IV

1. What kinds of cultivation did you use? (Give dates.)_____

_____

_____

2. Have any diseases or insects appeared? _____ What are they? _____
3. When did they appear? _____
4. What did you do to overcome them? _____

_____

5. How many times did you spray the plants? _____
6. What spray mixture did you use? _____

_____

7. Why did you use that kind? _____
8. How did you estimate your tomato yield? _____

_____

ACCOUNT OF THE TOUR

Places_____ **Date**_____

SUMMARY

Income

Num. of bushels of tomatoes grown { No. 1 ____ / No. 2 ____ / Culls ____

Value at ____ cents per pound ____

Expense

Cost of seed or plants ____

Cost of fertilizers ____

Cost of spray material ____

Other expenses, stakes, etc. ____

Total expense ____

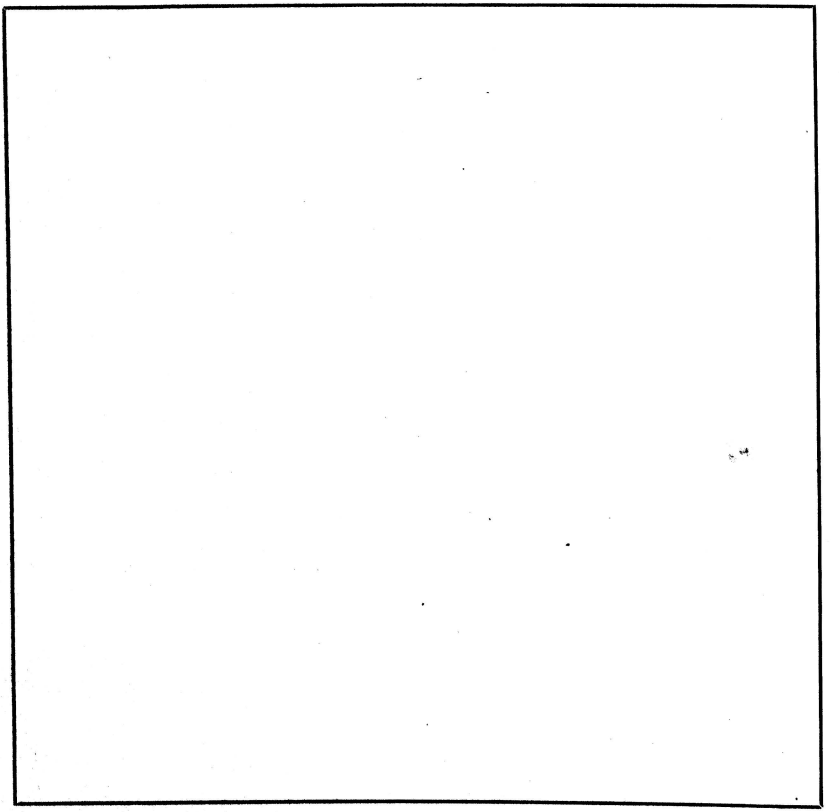
Profit

Total net profit ____

REPORT OF OTHER CLUB ACTIVITIES

1. Did you help anyone in raising tomatoes by suggesting the use of sprays, hotbeds, coldframes, etc? ____
2. Where did you exhibit? ____
3. How many individual demonstrations did you give before the club? ____
4. How many team demonstrations did you help give? ____ Where? ____
5. Where did you judge? ____
6. What awards did you win in club activities?—Money ____ Achievement trips ____ Ribbons ____
7. What special club activities, if any, did you attend, such as a 4-H club camp, State 4-H club Round-Up at the College of Agriculture, County or State Fair, etc? ____
8. What part did you take in club meetings? ____
9. How many club meetings did you attend? ____

Picture or Exhibit



(Story About Picture)

STORY OF CLUB WORK FOR THE YEAR

Date_____

(Signed) _____
Club member

Explanation.—Fill out all the blanks and the summary of club activities; write the story of club work for the year; hand this record book to the local club leader; attend the achievement program; and then your club work will be completed.