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COLLEGE OF AGRICULTURE

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CIRCULAR NO. 126

(Revised)

Tomato Project

Junior 4-H Clubs

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OBJECT OF THE PROJECT

1. To teach club members the best methods of tomato culture for market and for home canning.

2. To teach club members how to keep an accurate record of a farm enterprise.

REQUIREMENTS

1. Both boys and girls between 10 and 18 years of age, inclusive, may enter the tomato project.

2. Members working on the project shall make a special study of tomatoes and tomato culture.

3. Each member shall raise 1/10 acre or more.

4. The county agent or two disinterested persons designated by him must attest the measurement of the land and the yield and sign the record book.

5. The members shall prepare the ground, raise the plants and set them, cultivate and harvest the crop, and select the tomatoes for their exhibits.

6. Each member must keep an accurate record of all items of expense, receipts, etc., in a record book provided by the Agricultural Extension Division of the College of Agriculture.

7. Each member should make an exhibit of a plate of five tomatoes at his county or district fair, or at a local club show.

8. Each member must write a short story of his or her project; subject, "How I Grew My Tomatoes."

9. At the close of the project the record book and story must be forwarded to the County or Home Demonstration Agent.

10. Basis of award:

Largest yield on 1/10 acre	30 points
Greatest net return	30 points
Best exhibit	20 points
Best story and record book	20 points
	100 points

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BY A. J. OLNEY

The tomato is one of the leading vegetables of the home and market garden and is grown extensively for the canning industry in Kentucky. It is called a "warm season" crop because it requires warm temperatures for successful culture. The consumption of tomatoes has increased in recent years because they have been found to contain vitamins and food elements essential to health. The details of tomato culture outlined in this circular are designed to give the club member experience which will enable him to grow tomatoes successfully.

GROWING THE PLANTS

The seed used by all members of a club should be of the same strain of the variety to be grown. Bonny Best, Marglobe, and June Pink are suggested for early varieties, and Stone, Greater Baltimore and Norton, for late varieties. If previous crops grown in the community have been affected with tomato wilt the Marglobe or Norton varieties should be used. The Club Leader should buy enough seed in the beginning for all the members of his club, to insure its uniformity.

The date for sowing tomato seed depends on the purpose of the crop. If the intention is to sell the crop on the market as fresh fruit, the seed should be sown about March 10th. This is necessary because large, stocky plants should be ready to set in the field about May 1st, in order to ripen fruit before the low prices of August. If the crop is to be used for the home table or canning, the seed may be sown in late March or early April.

A hotbed provides one of the best means for starting seedlings and caring for them until they are ready to be set in the field.

Preparation of a Hotbed. A two-sash hotbed may be large enough to grow the required number of plants, provided there are no mishaps, but it will be much safer to grow a number of extra plants and use only the best; therefore a three-sash hotbed is advised. Select a sunny place, protected from strong winds if possible, and convenient for watering and caring for the plants. Lay out the boundaries of the hotbed, 6 feet wide and 9 feet long for a three-sash hotbed, the long way running east and west, and dig out the soil to a depth of 18 inches. A frame is then built around the pit thus formed with the north side extending about 12 inches above the ground and the south side about 6 inches and boarded across the ends. The sash when laid on the top will slope to the south. Standard sash are 3x6 feet and may be purchased thru your hardware or lumber dealer.

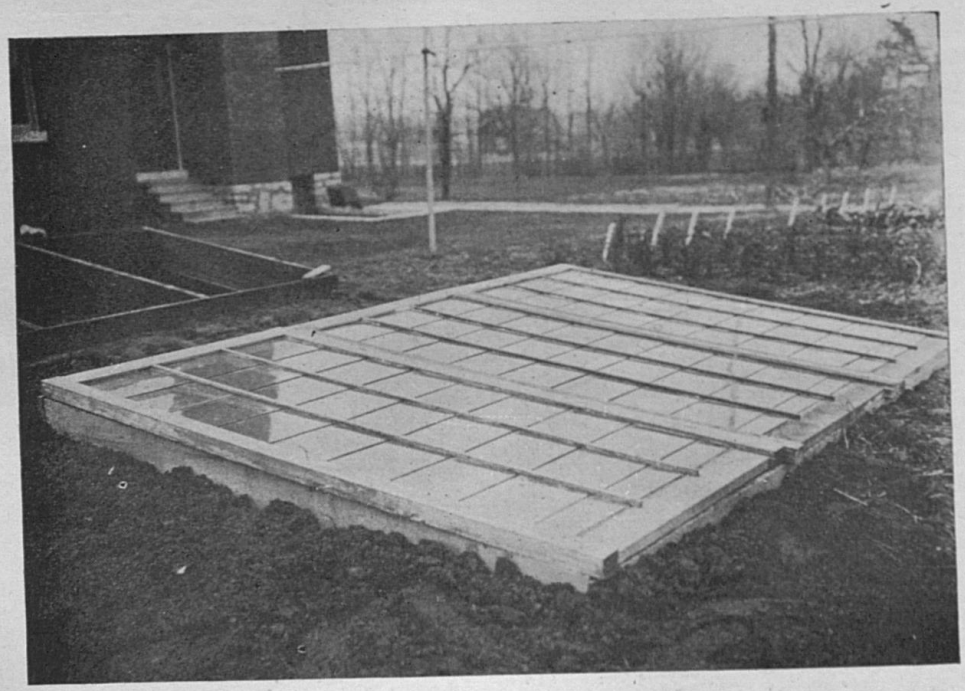

Figure 1. A three-sash hotbed.

Horse manure is the best heating material for the hotbed. It is desirable to have a moderate amount of straw in the manure. Manure mixed with shavings, used as bedding material, is not satisfactory. The manure is taken fresh from the stable and

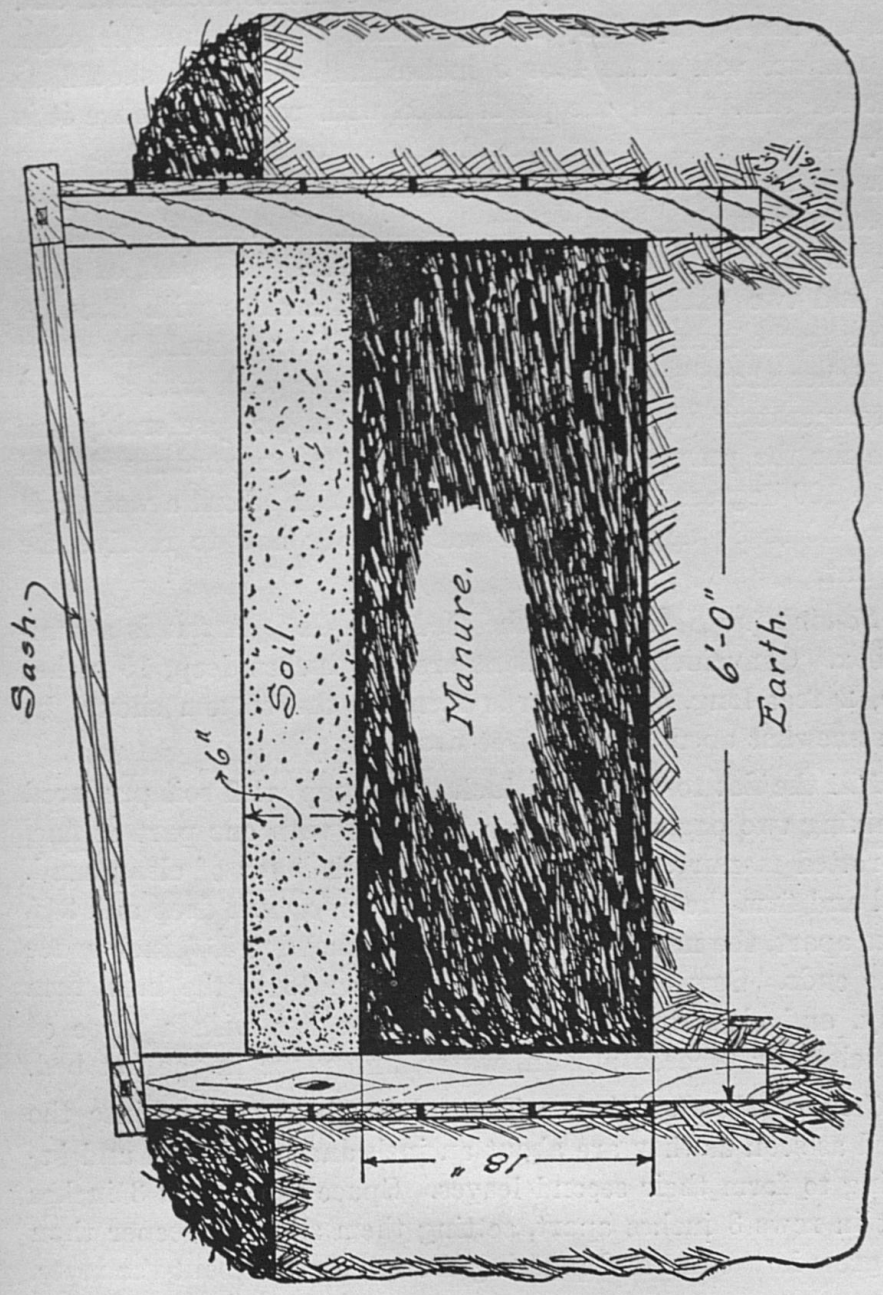

Figure 2. Cross section of a hotbed.

placed in a flat-topped pile. If it is dry at the time of piling it should be moistened so that fermentation will start at once. Repile the manure in 3 or 4 days to insure uniform heating of the entire mass. In about 10 days the manure is ready to put into the pit. Successive layers of 5 or 6 inches are spread and tramped firmly, especially in the corners and around the edge. The manure will settle 4 or 5 inches and allowance should be made for this. After the pit is filled with packed manure it is ready for the soil. First spread a layer of soil, 3 inches deep made by mixing equal parts of rather fine, unsifted compost (rotted manure) and good garden loam. Cover this with an inch and a half layer of soil made by sifting one part of compost and two parts of garden loam thru a sieve with about 4 meshes to the inch. The surface of the soil now should be about two inches above the ground surface. Cover with sash and test the temperature of the bed with a thermometer, preferably one made for the purpose. In a short time the temperature should rise to 100 degrees Fahrenheit or over, but in about a week will fall to 80 or 85 degrees. The bed is ready now to receive the seed flat.

Sowing the Seed. Sow the seed in a flat. A flat is a shallow box. Convenient dimensions are 2½ inches deep, 15 inches wide, 2 feet long. The boards forming the bottom should be left somewhat open to allow free drainage.

Fill the flat to within an inch of the top with soil prepared by mixing two parts of good garden loam with one part of fine, well-rotted manure. Then add a half inch layer of clean sand. Level and firm the soil and lay off furrows ¼ inch deep and 2½ inches apart, the narrow way of the flat, allowing 1½ inch space at the ends. Sow the seeds, not to exceed 10 to the inch, firm gently, and close the furrow. Cover the flat with a piece of cheesecloth or tobacco muslin, water, and place in the hot bed.

Care of the Seedlings. Transplant the seedlings into the hotbed as soon as they are about an inch and a half tall and beginning to form their second leaves. Space the plants 3 inches apart in rows 3 inches apart, setting them slightly deeper than they grew in the flat and pressing the soil firmly about the roots.

Tomatoes grow best at a temperature of about 70 degrees Fahrenheit during the day and preferably not lower than 60 degrees during the night. It may be necessary to cover the hotbed during cold weather to maintain this temperature.

Watering the young plants and ventilation require even more careful attention than the temperature. Overwatering will result in weak or diseased plants. If allowed to become too dry the plants soon become stunted. While the plants are small they should be watered only in the mornings of bright, sunny days, so that the foliage will become dry before night. If the plants are wet at nightfall, the conditions for "damping-off" are favorable and may result in considerable loss. Never water during cloudy weather unless absolutely necessary. Whenever water is applied it should be used liberally and then withheld until it is needed again. After watering, it is desirable to ventilate as much as possible without chilling the plants or causing a direct draft upon them. The outside air should be admitted cautiously, at first, while the seedlings are tender, but ventilation should be increased each day, if possible, until the sash finally is removed entirely during warm weather. This process will "harden off" the plants by the time they are to be set in the field.

THE FIELD

A deep, loamy, well-drained soil is best suited for tomatoes. Good tobacco land is usually satisfactory and a level or slightly rolling site is preferred.

Convenient dimensions for a 1/10 acre plot, are 40 feet by 109 feet. This allows 10 rows of 54 plants each, 4 feet apart, with plants set 2 feet apart in the row.

PREPARATION OF THE SOIL

The proper preparation of the soil is one of the most important steps in successful tomato culture. Apply one ton of stable manure before plowing. The plowing is done preferably in the fall and the ground should be disked frequently in the spring until planting time. Apply 25 pounds of superphosphate to soils deficient in phosphorus before the last disking.

TRANSPLANTING TO THE FIELD

The earliest planting date is about May 1st in most parts of Kentucky, but May 15th generally is safer. Water the plants in the bed thoroly, a few hours before setting so that plenty of soil will cling to the roots. It is desirable to transplant to the field on a cloudy day or late in the afternoon so that the plants may become established somewhat before being subjected to the hot sun.

STAKING AND TRAINING

The plants should be staked soon after planting. A 5-foot stake driven into the ground is satisfactory. Go over each plant occasionally and cut out all suckers, leaving a single stem which is tied to the stake with a heavy cord. About 3 or 4 tyings will be required to hold the stem until it has reached the top of the stake.

Plantings of areas larger than 1/10 acre usually should be grown without stakes and the plants should be set 4 feet by 4 feet for soils of moderate fertility, or 4 feet by 5 feet for strong soils.

CULTIVATION

Shallow cultivation to destroy weeds should begin soon after planting. If the plants are staked, cultivation should be continued thruout the season; if not, cultivation should cease soon after the plants begin to spread over the ground.

INSECTS AND DISEASES

As a rule tomatoes are not affected seriously by insects. If cutworms are troublesome when the plants are small, they may be controlled by using a poisoned bran-mash bait made by mixing 12 pounds of bran with a pound of paris green or a half a pound of white arsenic. This is moistened by stirring in some water containing a little molasses. Mix thoroly. Scatter the bait on the ground a few days before the plants are to be set out and again at setting time. CAUTION. This mash will kill chickens or anything else that may eat it.

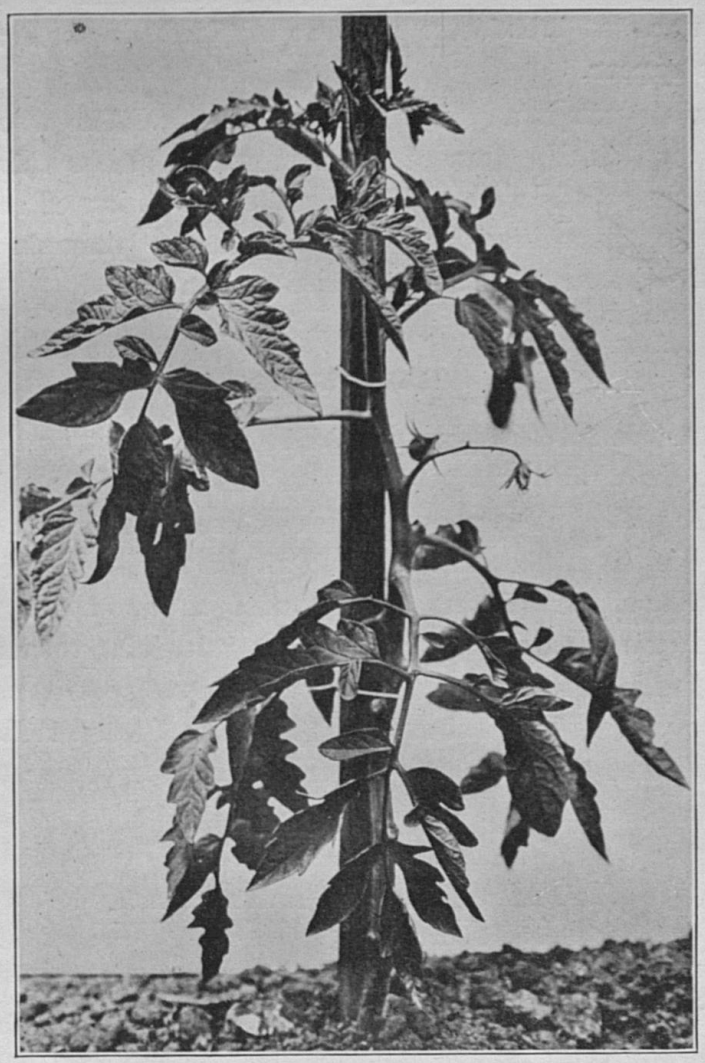

Figure 3. A tomato plant properly trained.

Fleabeetles may be controlled by spraying with Bordeaux mixture.

Wormy tomatoes caused by the corn-ear worm sometimes occur when tomatoes are grown near sweet corn. Spraying with arsenate of lead before the fruits are half grown will aid in control of the worms.

Leaf-spot and leaf-blight may be controlled by frequent applications of Bordeaux mixture applied as soon as these diseases appear.

Tomato wilt is a serious fungous disease. The whole plant yellows and finally dies. The germ which causes this disease lives in the soil as well as in the plant. Rotation of crops and the use of disease-resistant varieties as, for example, Norton and Marglobe, are the only effective preventives.

HARVESTING

Tomatoes for shipping should be picked just as the fruits begin to show pink; for table use, canning or local market they should be picked as soon as they are colored well. Tomato picking, at best, is unpleasant because of the stains on the clothes and hands of the pickers. The stains on the hands may be removed quite readily by applying the juice of a rotten or soft tomato before washing. *All soft or diseased specimens should be removed from the field at every picking.* Picked fruit should not be allowed to stand long in the hot sun. It is best to put it in a cool place as soon as possible.

PREPARATION OF THE EXHIBIT

Some time during the tomato season a county fair or school show will be held. The club boys and girls will exhibit their tomatoes and compete for prizes. Each exhibit shall consist of a plate of five tomatoes. The tomatoes for the exhibit should be ripe specimens but not soft, typical of the variety, well shaped, uniform in size, color and form, of desirable commercial size and free from blemishes.

CLUB SCORE CARD—TOMATOES

Date .....
Number of exhibit .....
Name of variety .....
Name of club member .....

Points	Perfect Score	Judge's Score
Size	15	
Color	20	
Condition (ripeness, solidity, freedom from injury and blemishes)	35	
Uniformity	30	
Total score	100	

Remarks: .....

RECORDS

The only way for a farmer to know whether he is making money or not is to keep records. If one finds by keeping records that any crop is grown repeatedly at a loss, this loss should be prevented by better methods, or the crop should be discontinued.

It is easy to keep records if the items are written down daily. Calculate the expense of each operation as soon as the work is done and write it in the record book; then, when the project is completed there will be no doubt concerning its correctness. The record should include an interesting, true story about the cost of growing the crop of tomatoes and the profit on the undertaking.

THE STORY OF THE PROJECT

Subject. "How I Grew My Tomatoes."

Instructions. The story must be the club member's work. Pen and ink should be used. Everything of interest connected with the project should be told. If the story is interesting and well written, it may be sent to a farm journal for publication.

Suggested Outline for the Story.

1. How I became a club member
2. Object of a tomato project
3. Why I chose a tomato project
4. Growing the plants
5. Character and recent history of the field. Why selected?
6. Preparation of the soil.
7. Fertilizing
8. Transplanting
9. Spraying
10. Staking and Pruning.
11. Gathering and marketing
12. Production week by week with notes on weather and prices
13. Exhibits, prizes won, etc.
14. Give an account of the yield, cost of production and profit
15. What club work has done for me
16. Give anything else of interest. Perhaps a picture of the crop is available