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APPLYING FORMALDEHYDE TO VEGETABLE GREENHOUSE SOILS

by

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Many small greenhouses in Oregon used for growing tomatoes and cucumbers to maturity or young vegetable plants, have no facilities for sterilizing the soil with steam to counteract soil-borne diseases. As a substitute for steam, a solution of formaldehyde can be used as a soil drench, which will serve to hold very largely in check, if not entirely rid the soil of some injurious plant diseases. This circular discusses means of applying formaldehyde so that it may be uniformly and efficiently distributed to the soil.

Materials.

Formaldehyde, one gallon container, one 50-gallon barrel, one platform 7 to 8 feet high, 2 hose bibs, 2 lines of 5/8", $\frac{3}{4}$", or inch garden house, 1 sprinkler or coarse rose.

Methods.

The soil should be spaded thoroughly so that it is well pulverized and free from coarse clods. Two spadings and a level raking should put the soil in good condition for applying the formaldehyde, for it must be level and smooth so that the liquid may be evenly distributed. The soil should be damp but not wet. If the formaldehyde is poured on hard, dry soil, it will not penetrate deeply enough to be of any value. Likewise, if it is applied to soil that is more or less saturated with moisture, the formaldehyde will be diluted to such an extent that it will not be of very great benefit.

In order to provide sufficient pressure by which the formaldehyde may be applied by gravity, construct the platform above mentioned. It should be wide enough to hold the 50-gallon barrel, and stout enough to sustain a weight of 400 pounds or so. On the platform, place the 50-gallon barrel. The latter will then be about 8 feet or so from the ground level, or sufficiently high to provide gravity so that the formaldehyde may be satisfactorily distributed through the hose.

Previous to filling the barrel with formaldehyde and water, a hose bib should be inserted so that the diluted solution can be readily drawn off through the hose attachment. If the formaldehyde comes in a small barrel, 12 to 15 gallons or so, a hose bib should also be inserted so that it can be drawn off readily in the gallon container. The barrel may be filled rapidly by attaching one of the lines of hose to the water supply, and to the 50 gallons of water in the barrel should be added 1 gallon of formaldehyde.

The area of the bed or bench should be divided into such sections that there are approximately fifty to one hundred square feet in a section, to which can be applied one barrel of the diluted formaldehyde, using the hose bid and hose attachment connected with the barrel as well as the coarse rose or sprinkler at the end of the hose. The sprinkler will enable one to put on the formaldehyde more evenly than otherwise.

Time consumed in applying 50 gallons of the formaldehyde solution varies from 20 to 30 minutes, depending upon the pressure and the size of hose. In some cases where it is desired to give the soil a thorough drenching, one gallon of the diluted material may be applied to each square foot. A 50-gallon barrel of formaldehyde solution would then be sufficient to cover 50 square feet. Soils in a bench of normal depth can usually be well drenched by applying $\frac{1}{2}$ gallon to a square foot, but in a ground bed 1 gallon per square foot may often be more desirable. A narrow 1" x 6" plank put across the soil bed will enable the operator to apply the formaldehyde without walking on the bed, and making the soil uneven for distribution of the liquid.

Following the application of the formaldehyde, the soil should be covered with burlap sacks, old carpeting, or heavy paper. This should be done immediately after a section of the bed or bench has been treated. The covering can be removed after a few days, and when the soil is dry enough to spade, it should be stirred up occasionally so as to assist in dissipating the formaldehyde through it. Ordinarily, the soil will be in such condition that the formaldehyde will have been entirely dissipated in 10 to 14 days, and the ground can then be finally prepared for seeding or the transplanting of plants.

Cost

Formaldehyde, $1.00 to $1.50 per gallon, depending upon amount purchased. Amount needed, for example, for bed 15 feet wide and 30 feet long would be approximately five gallons, presuming that $\frac{1}{2}$ gallon of the diluted mixture is used to each square foot. This amount would be doubled if a gallon were applied per square foot.

Labor cost treating a bed of 450 square feet is approximately $1.20 to $1.50, based on four hours' labor at wage rate of 30 to 35¢ per hour.

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