

Methyl Bromide for Sterilizing Small Quantities of Soil

A. W. Dimock
Dept. of Plant Pathology, Cornell University
Ithaca, N.Y.

The following simple method of sterilizing small quantities of soil with methyl bromide materials (Dowfume G and Iscobrome) was developed by Professors Newhall, Lear, and Tyler of Cornell's Department of Plant Pathology.

Gas-tight containers, such as garbage cans or metal drums, are used to hold the soil. We use garbage cans of about 22 gallons capacity, since these hold 3 cubic feet of soil and have tight lids. The Dowfume G or Iscobrome is used at the rate of 50 cubic centimeters or 1 2/3 fluid ounces (2 tablespoonfuls plus 2 teaspoonfuls) per cubic foot of soil. One cubic foot of soil is equal to 7.3 gallons; hence a 50 gallon drum would hold 50 ÷ 7.3 or approximately 7 cubic feet. 7 x 1 2/3 or approximately 12 fluid ounces (1 1/2 cupfuls) would be needed for this amount of soil, and 3 x 1 2/3 or 5 fluid ounces (1/2 cupful plus 2 tablespoonfuls) for the 3 cubic foot garbage can.

The soil should be fully prepared for seed flats or potting and should be of moderate moisture content. Weed seed and fungus control are usually better if the soil is kept moist for a few days before treatment. The 3 cubic foot garbage can is filled about 1/3 full and 1/3 of the total amount of Dowfume G or Iscobrome sprinkled on top; then soil is added until the can is about 2/3 full and another third of the fumigant added; then the rest of the soil is added and the remaining fumigant sprinkled on top. Now a few layers of moist newspapers are placed on top, and the cover put on and jammed down. If larger drums are being used, add about a cubic foot of soil at a time and sprinkle on the proportionate amount of the total fumigant needed. A gas-tight seal for the container is required. Gas-proof plastics are available or Sisalkraft paper, tightly bound down over the top, may be used.

The drums should remain sealed for at least 6 hours - better overnight - at a temperature above 50°F. before removing the covers. The higher the temperature, up to 85-90°F., the better the treatment. Keep the sealed drums in the headhouse or boiler room. Seed flats may then be prepared with the treated soil and sown about 48 hours after treatment. A shorter time interval has been used successfully, but preliminary tests with your own soil and seed should be run if you want to cut the time. For potting soil we suggest treating several days in advance and dumping the soil out onto a sterilized surface to air out before using.

General Comments

Sterilization may be valueless if the soil becomes recontaminated - every step possible should be taken to avoid this risk. Small tools could be sterilized by placing on top of the soil in the drums before sealing. Larger tools could be flamed or soaked briefly in a sterilizing solution (1 to 50 formaldehyde, 1 to 25 copper sulfate). Pots should be new or, if old, cleaned and soaked in one of the above solutions. Flats should be new or, if old, cleaned out and painted with Cuprinol or dipped in one of the above solutions. Seed flats should be supported out of contact with the bench cinders by placing on inverted pots, or the benches and cinders should be sterilized. Cleaned pots of sterilized soil should never be placed on dirty cinders or benches. The benches should be cleaned out and swabbed with one of the above solutions and the cinders should be changed or soaked with one of the sterilizing solutions.

If bins are being used to store potting soil, they should be thoroughly scrubbed out and swabbed with formaldehyde or copper sulfate before filling.

Formaldehyde solution: use 1 part by volume of commercial formalin to 50 parts water. This material produces very disagreeable toxic fumes and should not be used in a house where plants are growing. It is good for dipping flats, pots or tools in containers outdoors in the summer or for swabbing down benches when the houses are empty and can be kept open.

Copper sulfate solution: made by dissolving about 1 pound of granulated copper sulfate (blue vitriol) in 25 gallons of water. No fumes produced but corrosive to metal. If used for swabbing benches or soaking the cinders, better flush out after a few hours with clear water. Use wooden barrels for mixing or storing.

* * * * *

Your Editor,

Kenneth Post