

WATER REQUIREMENTS AND CONTROLS,
SOIL FUMIGATION AND ROTATION

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WATER

Let's think about water in relation to our nursery soil. Water is fine in the right place, at the right time, and in specified amounts. In fact, what we need to be is a "water manager.'

To maintain a nursery soil by managing the water, certain steps must be taken. First, lay out relief waterways to control water when not needed. Next, regulate flow by having not more than 1 percent gradual slope and one-half of 1 percent side fall. Have no seedling beds longer than 500 feet.

Next, have some system or method of applying water when needed. I prefer a deep well with good water and a permanent sprinkler-type irrigation system.

Along with this, records must be kept. How much rainfall, how much irrigation, and when was it done? Numerous recording devices--such as gauges, tensiometers, and bridges--are available and all are reliable. A crop of suitable seedlings reveals to the nurseryman exactly how much moisture is required to produce that crop. No soils are the same; consequently, the moisture amount varies with soil type. The water manager then has control of the amount needed, regulates excess, and knows how much the crop requires.

SOIL FUMIGATION

Soil fumigation is the second topic I want to discuss. To me, a good soil fumigant is three things--a nematicide, herbicide, and fungicide. All of us have run the gamut of chemicals. Ethylene dibromide, Shell DD, Vapam, Mylone, Telone (to name a few) are all good fumigants and work for what they were designed. However, nurserymen don't seem to be satisfied with these and other chemicals. Of late, I notice a lot of nurserymen are going back to the old reliable soil sterilant, methyl bromide. It's being applied in different ways and at different formulations; but this seems to be the chemical a lot of us consistently depend upon. These new methods of application influence cost, so we have to keep abreast of them to justify the price with our seedling sales.

One of the new methods is the gelled formulation, such as products called zytox (for light soils) and rotox (for heavy soils). They are mixtures of methyl bromide and ethylene dibromide in a gelled solution. They are chiselled into finely worked, moist soil at a depth of about 8 inches and then followed with a drag for sealing purposes so no tarp is required. There is then a 7-day waiting period before planting.

Another method is with foam. Inject the methyl bromide and cover the treated area with foam. The foam holds for 24 to 48 hours before dissipating and, again, replaces the tarp.

Fumigation rules

1. Know the chemical. Get as much information as possible about the material being used. How it affects the crop on which

it will be used, safety in application, and its range of control. Herbicide? Fungicide? Nematicide?

2. Apply as directed. All materials have safety precautions and directions for applying. These were given for protective measures to the operator. See that they are followed explicitly.

3. Keep records. Where, how much, and when it was applied. How much rainfall and irrigation did it receive? In other words, know what happened and be able to refer to it.

4. Experiment first--a new chemical should always be tested before using. Set aside a small area (my rule-of-thumb is about 2 percent of the planting) for testing purposes. If the material proves satisfactory, then let experience build confidence and expand accordingly.

5. Always have a check plot. Now, what would have been had no material been used in a similar area? Have a method of weighing the test against a non-treated area for proof of results.

CROP ROTATION

The final topic I want to discuss is crop rotation. The Louisiana State Nurseries at present use a 2:2 rotation. Two years in cover crop and 2 years in seedling production. This is done to get maximum utilization from the soil building program.

Nutrient requirements are added during the cover crop years, along with 24 tons of organic matter per acre. During these organic breakdown years, nitrate is added and cover crops are grown to speed the process. Crotalaria spectabilis and Sesbania macrocarpa are the two nitrogenous plants now being utilized. Both are noted for their rank growth and high tonnage yields.

The area is then rotated to seedling production and used for the next 2-year period. No fertilizers other than nitrate are added, and we hope the soil is in optimum condition for this seedling production time.