UNIVERSITY OF IDAHO
College of Agriculture

Control of Root Knot Nematode Of Potatoes by Soil Fumigation

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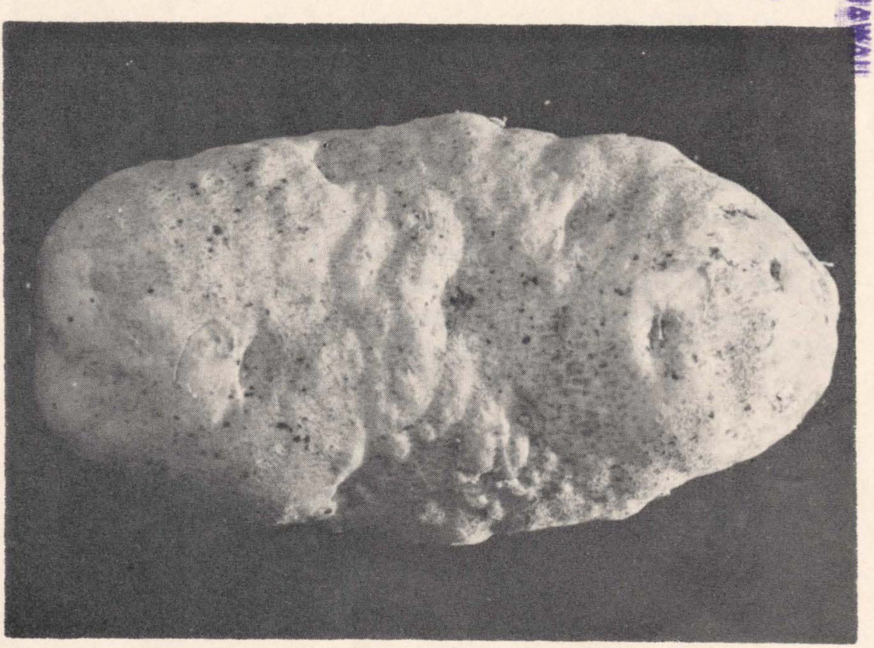

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About The Author

[illegible] is a native of Idaho. He received his B.S. degree in agriculture from Utah State University, his M.S. from the University of Nebraska, and has done post-graduate work in plant pathology at the University of [illegible] and in nematology at Oregon State University. From [illegible] to [illegible] he was employed by the Idaho Pest Control Commission of the Idaho State Department of Agriculture and joined the University's Department of Plant Pathology at the end of his service with the Department of Agriculture. [illegible] is presently doing plant disease research at the University's Aberdeen Branch Experiment Station.

Control of Root Knot Nematode of Potatoes by Soil Fumigation

[illegible]

[illegible]

Symptoms

[illegible]

Control Measures

[illegible]

[illegible]

Requirements for Soil Fumigation

The **soil temperature** should be not lower than 50°F. at a depth of 4 to 6 inches.

The **soil moisture** should be adequate for good plowing [illegible] and [illegible] of seeds.

Time of Application: The best time to fumigate is in the fall when soil temperatures are high and there is sufficient time to do an efficient job. Spring fumigation should be avoided unless soil temperatures are high and there is adequate time for aeration of the soil before planting.

Application: Fumigants must be placed below the surface of the soil [illegible]

[illegible]

Several commercial chisel applicators [illegible] **[illegible]** [illegible] **Chisel applicators should not be used on [illegible]**

Land Preparation: [illegible] **It is impossible to do an adequate job of soil fumigation when plowing under green manure crops, such as alfalfa, clover, or grass.** [illegible]

Fumigation is practical after harvest of a small-grain crop if the land is properly prepared. [illegible]

[illegible]

[illegible]

Chemical: For fall application, ethylene dibromide is recommended at the rate of 72 pounds per acre (6 gallons of Dowfume W-85) when plowing under a small-grain stubble. This may be reduced to 60 pounds (5 gallons of Dowfume W-85) in soil free of plant residues. If these low rates cannot be obtained with equipment available, the chemical may be diluted with equal parts of a good grade fuel oil or kerosene. Do not use ethylene dibromide in the spring; it may reduce net and delay maturity of Russet Burbank potatoes.

For spring application use chemicals containing chlorinated propenes-propanes (Shell D-D, Vidden D, and Telone) at the rate of 25 gallons per acre on trash-free land. ,

Sealing: Rapid escape of the gas is prevented by thorough disking and harrowing immediately behind plow-sole applicators. A harrow should be dragged behind injector-type applicators to fill in furrows made by the shanks.

Within an hour after applying the fumigant, the surface of the soil should be thoroughly compacted by rolling twice, once north and south, once east and west.

Before planting allow 2 to 3 weeks, depending upon soil temperature, for complete fumigation action. Then prepare the seedbed. Tilling after this time lapse will allow rapid escape of the gas which otherwise might be harmful to the plants.

Fertilization: Do not apply manure prior to fumigating. Wait 2 to 3 weeks, depending upon soil temperature, before turning under manure. Where commercial fertilizers are used, those containing ammonium nitrate should be used in preference to ammonium sulfate. Follow recommended fertilizer practice for cropping history and soil fertility.

Precautions in Using Soil Fumigants: Care must be exercised in handling soil fumigants. They can be dangerous to humans as well as to nematodes. They can be handled safely if **all precautions listed on the label** are carefully followed.

Severe burns may result from these chemicals where the fumes are confined to the body by ring bands, watch bands, gloves, shoes, or clothing. While handling fumigants do not wear gloves unless the container label indicates that rubber or plastic gloves should be worn. **Clothing wetted by soil fumigants should be REMOVED IMMEDIATELY.** Shoes which have fumigants spilled on them should be allowed to air and dry for several days until the odor of the fumigant is no longer noticeable before being worn again. Other clothing should be aired, dried, and washed before being worn again.

Wash the hands thoroughly after handling fumigants before proceeding with other operations. Mechanics' waterless soap is excellent for this purpose. ALWAYS have soap and an adequate supply of water available in the field when fumigating. For personal safety, do not be alone when working with soil fumigants in the field.

Pesticide Residues: These recommendations for use are based on the best information currently available for each chemical listed. If followed carefully, residues should not exceed the tolerance established for any particular chemical. To avoid excessive residues, follow recommendations carefully with respect to dosage levels, number of applications, and minimum interval between application and harvest.

The Grower Is Responsible for residues on his crops as well as for problems caused by drift from his property to other properties or crops.

To make the information in this publication most intelligible, we use trade names of some products or equipment. The names of similar products or equipment may be omitted. Mention of any brand name is not to be considered advertising of that product or the University's endorsement of it. Nor is our failure to mention any similar product or equipment to be construed as criticism thereof. The University makes no public evaluation of any product bearing a **trade name.**

It costs no more to do a good job of fumigation than to do a poor job.

HANDLE FUMIGANTS WITH CARE

Follow Recommendations Carefully

READ THE LABELS

Do not work with soil fumigants while alone.