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Potato Seed Treatment and Scab Control

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POTATO SEED TREATMENT AND SCAB CONTROL

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POTATO SEED TREATMENTS

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Treating seed potatoes before planting is recommended for two reasons: to kill the disease organisms on the surface of the tubers causing scab, rhizoctonia, blackleg, and silver scurf; and to prevent the decay of the seed-pieces after they are planted. Seed treatment alone will not guarantee a scab-free crop if the soil is already infested with the organism that causes it. Treating cut seed with a suitable disinfectant will improve the stand of plants, particularly when emergence is slow due to weather conditions.

CAUTION: All fungicides used for seed treatment are more or less poisonous to humans and livestock. Care should be taken in disposing of surplus treated seed and treating solutions.

Application and Merits Of Several Seed Treatments

SEMENSAN BEL, an organic mercury compound, is the only material that can be recommended at the present time for treating cut seed. Freshly cut seed-pieces are dipped until thoroughly wet in a mixture containing 1 pound of Semensan Bel to 7½ gallons of water. Allow seed to drain so that the excess solution runs back into the treating tank, then plant immediately or allow to dry. The solution does not lose strength with use, does not injure potato sprouts or skin, and will not retard emergence.

ACID MERCURIC CHLORIDE (corrosive sublimate) should only be used for treating whole tubers. It can be purchased as a concentrated solution or prepared by dissolving 6 ounces of mercuric chloride crystals in 1 quart of commercial hydrochloric (muriatic) acid. Mix this into 30 gallons of water in a wooden or concrete (not metal) tank. Soak potatoes for 5 to 10 minutes, then cut and plant immediately or

dry them as soon as possible. The acid mercury solution will lose strength with use and should be discarded after treating 40 to 50 bushels of seed. This treatment will not prevent seed-piece decay since it can not be used on cut seed. It may injure the sprouts, skin, and cut surfaces of tubers, especially if they are not dried quickly after treatment, and it may retard emergence.

FORMALDEHYDE is probably the most effective treatment for scab, but it does not control rhizoctonia as well as Semesan Bel or acid mercury. It can not be used on cut seed or tubers with sprouts longer than 3/4 inch. For cold treatment add 1 pint of commercial formalin to 30 gallons of water and soak tubers for two hours. For hot treatment use 2 pints to 30 gallons, keep the temperature between 122° and 125°F., and treat for 3 to 4 minutes. The time and temperature must be controlled accurately. Drain the tubers, cover with wet sacks for 1 hour, then allow to dry. If potatoes are treated in late winter or early spring, excessive sprouting in storage can be checked. They must be treated not later than 4 to 6 weeks before planting however, or emergence will be slow.

NEW MATERIALS for seed treatment that have given favorable results in limited trials include Spergon, Zerlate, Dithane, Parzate, Phygon, and Zinc Oxide. Further tests need to be made before specific recommendations can be made for the application of these materials.

POTATO SCAB AND ITS CONTROL

Common scab is caused by a miscroscopic fungus or mold that lives in the soil and infects potatoes, certain other vegetables, and probably several weeds. The scab organism may be found living in the soil on most farms even in the absence of potatoes or other plants that it can infect. Soils may be classified according to the amount of scab organisms present as follows:

1. Soils so unfavorable to the scab organism that even though scabby seed is planted a clean crop may be harvested.
2. Soils so favorable to scab that even clean treated seed will produce a scabby crop.
3. Soils slightly or moderately favorable to scab; in these soils clean treated seed will likely produce a clean crop, and scabby seed a scabby crop.

Unfortunately there is no practical test to determine before planting the degree to which a field is infested with the scab organism.

The amount of scab present in the soil is influenced by many factors and may be increased or decreased by certain farming practices. For example, an increase in scab is favored by repeated crops of potatoes on the same land, by alkaline conditions, and by the presence of unrotted plant material as found in straw and fresh manure. Soils can in time be made less favorable to scab by crop rotation, increasing the acid condition of the soil, and by cover crops such as clover, alfalfa, or rye turned under as green manure.

Recommendations for Scab Control

With the above information in mind the following procedures are recommended as a scab control program. No single procedure will solve a scab problem, but none should be overlooked. One cannot expect to eliminate scab from a heavily infested soil in a single season, but a gradual improvement from season to season can be achieved by applying these control measures:

1. Plant scab-free seed.
2. Treat seed before planting to kill disease organisms, including scab infection, on the surface of the tubers.
3. Use a 3- to 4-year crop rotation.
4. Lime or fresh manure should not be applied directly to the potato crop but to some previous crop in the rotation.
5. Commercial fertilizers that do not contain lime are recommended for use on potato land.
6. It is a good practice to plant potatoes on land that has had clover, alfalfa, rye, or soy beans plowed under as green manure the previous season.
7. In disposing of cull potatoes it should be remembered that the scab organism is not destroyed by freezing or by feeding them raw to livestock. Cull potatoes or contaminated manure should not be put onto land intended for growing potatoes.

The ideal solution to the scab problem would be the production of a resistant variety. Experiments are in progress and prospects of developing one adapted to South Dakota conditions appear promising.

For further information on potato diseases write to:

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