"Potato Seed Treatment"

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Every potato grower should treat his seed every year, regardless of whether it shows any disease or not. Seed treatment is preventive and is also a cure in some instances for certain potato diseases. A word of caution is necessary here, as out of over 100 listed diseases and troubles of potatoes, only three are affected by seed treatment. Even these three are not altogether prevented or cured by seed treatment. If, however, seed treatment is used in connection with an intelligent crop rotation and certain other aids in holding these diseases in check, higher yields, improved quality, and increased returns per acre will result.

The three diseases affected by seed treatment are: Rhizoctonia or black scurf, common scab, and blackleg. These diseases are both seed and soil borne, which fact makes control more difficult, especially when the soil is infected. Blackleg is the easiest of these diseases to hold within reasonable limits. It is a cool season disease which does not develop after warmer weather arrives. At the lower elevations, blackleg occurs so seldom, except in early plantings from infected seed, that growers are not familiar with the disease. At the higher elevations, however, under cooler growing conditions, blackleg is or may become a serious problem. Under some conditions, it makes its appearance in the field throughout the growing season; but in warmer sections the total loss occurs early in the season, as the progress of the disease is checked by warm weather. Missing hills, lower yields from infected plants, and a wet rot of the tubers in field or storage are the losses caused by this disease. The wet slimy rot of infected tubers covering
noninfected ones provides an ideal method of spread. Infection from
the soil and spread by certain insects has also been recently proved.
To control this disease, do not plant too early; plant clean seed;
treat the seed; and do not plant potatoes on the same ground oftener
than once in five years.

Common scab is also seed and soil borne, but in this case, soil
infection is much more important than seed infection. Once a soil
becomes heavily infected, it is almost a hopeless job to try and control
scab on susceptible varieties. In this case the best procedure is to
grow resistant varieties. Of our present varieties Russet Burbank and
Russet Rural show a high degree of resistance, and our present national
breeding program promises to produce others, even with smooth skins,
which are resistant. Severe scab occurs at present in certain local-
ities where the soil reaction is proper for the development of the
organism. Changing the soil reaction with sulphur and treating the
soil have given some control in the east, but the Colorado Experiment
Station has not yet found any soil treatment that is practical and
economical enough to use under our conditions. Mild scab and occasional
cases of scab have been found on nearly all farms in the state, and
growers should put forth every effort to hold it in check, since potato
grades are seriously affected by even small amounts of scab. In order
to keep scab from becoming more severe, growers should plant clean seed;
treat the seed; and rotate crops, not planting potatoes on the same
ground oftener than once in five years. Plowing under some green manure
crop may also help. Applying animal manure to potato land may also help
influence the development of scab. On some soils, manure seems to make
little difference, as cases have been observed of potatoes growing in old
seed lots which were nearly pure manure without scab. In other cases
small amounts of manure have resulted in scab. A safe rule to follow
is to apply manure so some other crop than potatoes, and at least one year before potatoes are to occupy that ground.

One of the most common, as well as one of the most damaging diseases in Colorado is Rhizoctonia, Rhizoc, or black scurf. This disease causes missing hills, reduced yields, off shaped tubers, and serious damage to the appearance of the tubers by the numerous black specks on the skin. Like scab, it is both seed and soil borne, but in this case, the seed infection is as important as the soil infection. No effective, practical method of treating the soil has yet been found, but long crop rotations are effective in holding the disease in check. For the control of this disease, clean seed, seed treatment, and crop rotation are recommended. Rhizoc is a cool season disease and does very little damage in the warmer districts. Two other measures are of assistance in bad areas because of the cool temperatures preferred by this disease. These are: later planting, shallow covering, instead of deep covering after planting. Both of these measures use higher soil temperatures and quicker plant emergence for aids in control. Rhizoctonia and worm track are the two worst factors injuring the appearance of Colorado potatoes, and appearance is a major consideration in marketing potatoes today.

Many growers are prejudiced against seed treatment, because old methods were slow and expensive. In the last few years, both these difficulties have been overcome, and seed treatment is quick and not too expensive. Several methods are recommended over the United States, but of these only two need be considered here. The first is known as the acid-mercury treatment and is most effective in Rhizoc control. The materials may be purchased ready mixed under various commercial names or may be purchased separately and mixed at home. Home mixing is not all complicated and can easily be done. Add 6 ounces of mercuric chloride (corrosive sublimate) to 1 quart of commercial hydrochloric (muriatic),
and add this carefully to 25 gallons of water in a wooden container. Care should be taken with the concentrated acid, but the diluted solution will not injure the skin. No metal should come in contact with the solution, as it corrodes metal. Also, remember that the solution is poison, so livestock must be kept away. Dip the potatoes into the solution in picking baskets, painted with asphaltum paint, or in wooden crates. The solution will destroy sacks, and sacks weaken the solution. Three minutes soaking is recommended, but even 20 or 30 minutes will not damage the tubers. For late planting at higher temperatures, reduce the amount of mercuric chloride to 4 or 5 ounces, instead of 6, as the material is more active at higher temperatures, and injury may result. Seed must be treated before cutting and thoroughly dried if not planted immediately.

The second method is known as the organic mercury dip. These compounds are put out under several trade names and are widely advertised. They generally come in powdered form, and when mixed with water, are ready for use. They do not corrode metal and are instantaneous dips. A thorough wetting of the seed is all that is necessary. Seed may be treated before or after cutting but must be planted immediately or carefully dried. In such places as the San Luis Valley where cut seed has produced poor stands, treatment after cutting has given excellent results.

Summarizing briefly, seed treatment is not effective against all potato diseases. It is effective against Rhizoo, scab, and blackleg, but even here, it is only an aid and must be used in connection with good seed, crop rotation, and other cultural practices to obtain good control. If you are fortunate enough to have a soil free of these diseases, treat your seed every year to prevent infection of the seed.

If your soil is infected, adopt a long rotation, and treat your seed to prevent an increase in infection; or in some cases the infection may be reduced.