Improve the Oregon Potato Crop -- Avoid Diseased Seed

¶ These Germ Diseases are communicated through *the seed* and *the soil.* They are threatening Oregon's potato crop and potato market.

¶ Healthy Seed, planted on Clean Soil, will help to drive them out. Do your part to make Oregon a Seed-Potato State.

1. Common Scab

2. Powdery Scab

3. Silver Scurf

4. Rhizoctonia

1. COMMON SCAB. More serious in heavil manured or alkaline soils. Use clean seed or apply treatments 1 or 2, and then plant on land that has had no opportunity to become infested with the scab fungus.

2. POWDERY SCAB. This disease has been known in this country only since 1913, but has already found its way to Oregon. The illustration shows only the early stage. As soil becomes infected the recurring crops are attacked earlier and tubers may be so badly cankered as to be useless.

Seed treatment probably will not kill this fungus and should not be relied upon. This disease is considered of sufficient importance to warrant quarantine of all infected districts by the Federal Horticultural Board; consequently it is highly important that all growers and dealers cooperate with authorities to keep the trouble from becoming established.

3. SILVER SCURF. The fungus causing this disease works only in the very outer layers, so that in itself it does no damage other than to mottle the surface. The damage comes in storage, as tubers that have been attacked lose moisture and shrivel more rapidly than normal ones do.

The seed treatments are not effective against this trouble; therefore it becomes necessary to use seed that is free from it.

4. RHIZOCTONIA. The wintering or resting stage of this disease is shown in illustration. Note the irregular dark particles; these will be found firmly attached to the surface, although they can be scraped off with the finger nail. This disease attacks the young sprouts and later the crown and tuber stems of the plant. Such attacks may kill young plants but more frequently result in rosetted tops and hills of many small potatoes.

Use treatment 2. Formaldehyde will not control the trouble. Heavy soils and excessive moisture should be avoided.

5. INTERNAL BROWN SPOT. This is a physiological trouble and no certain method of control has ever been found. It is more prevalent in high altitudes, although it sometimes occurs in the Willamette and other low sections. There is seasonal variation apparently, and indication that soil and climatic conditions are important factors. Depth-of-planting tests have shown less trouble in tubers well buried than in those near the surface.

6. LATE BLIGHT. There is no practical way to treat tubers, such as those shown in illustration, so that they can be used for seed. A poor stand would certainly result and the fungus would remain alive ready to start new attacks under favorable weather conditions. This disease also blights the tops and is frequently responsible for heavy losses in districts west of the Cascades. It can be successfully controlled by spraying with Bordeaux Mixture. Three or four applications at intervals of ten days or two weeks as soon as there is danger of wet weather will control blight.

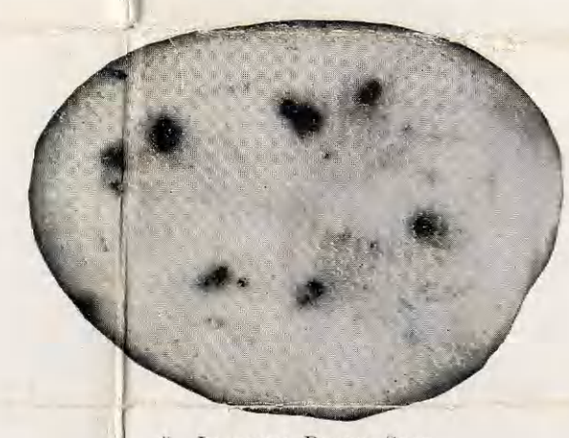
7. FUSARIUM DRY ROT. This is a common form of storage decay that often causes heavy losses here. It is more serious when the potatoes are dug and stored during wet weather or when they go into storage in an immature or badly bruised condition. The storage conditions are frequently bad also. Some system of ventilation whereby the tubers are not massed together is helpful.

When such tubers are used whole for seed, or even when the sound portions only are used, a poor stand will generally result.

8. VERTICILLIUM WILT. This trouble is shown in the left-hand portion of the picture where the dark spots are small and form a ring about equidistant from the surface. This ring extends inward from the stem; in order to detect this disease a thin slice should always be cut across the stem end. Tubers that show the discoloration must not be used for seed. The injury to tubers is slight, but in the field the plants wilt and die prematurely, resulting in reduced size and yield.

Fusarium wilt presents similar symptoms and should be dealt with in the same way. Seed treatment is not effective against these troubles, and when once they are established a long period of rotation is necessary to rid the soil of them.

The illustration shows what is often the case with wilt infected tubers; that is, that a dry rot fungus has followed and is spreading out from the vessels. (See right-hand side of illustration.)



5. Internal Brown Spot

6A. Late Blight (Surface View)

6B. Late Blight (Section showing rot)

7. Fusarium Dry Rot

8. Verticillium Wilt Followed by Storage Rot on Right

FOR SEED TREATMENT USE EITHER

(1) Formaldehyde, 1 pint in 30 gals. of water. Soak seed and containers for two hours, then dry and cut. Care should be taken not to expose them to contamination again. This treatment controls 1 and helps against 2, 3, 4, 8.

(2) Mercuric Chloride or corrosive sublimate in about 1 to 1000 strength is a very satisfactory solution to use. This may be made by dissolving 2 ozs. of the crystals in a small quantity of hot water and then diluting to make 15 gallons. This is a poisonous substance and must be handled in either wooden or porcelain containers, since it reacts with metals. Treat as in (1) but soak seed only 1 1-2 hrs. Controls 1 and 4 and helps against 2, 3, 8.

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For further information refer to the department of Botany and Plant Pathology, Oregon Agricultural Experiment Station, Corvallis.

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