

## THE EFFECT OF CROP ROTATION IN CONTROLLING CERTAIN POTATO DISEASES

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Small plants known as fungi (molds) and bacteria cause a majority of the plant diseases and many of these small plants live in the soil. For this reason, crop rotation helps to prevent and reduce losses provided these plants can be starved. Most of them are not easily starved because they have a means of surviving in the soil, even during years when adverse conditions are present. Methods of survival must be considered when practicing crop rotation. With some diseases a one-year rotation with a non-susceptible crop would be effective while some other diseases may require a rotation of five years. In some instances, crop rotation may not be of any value.

The effect of crop rotation for some potato diseases present in Washington follows:

### Verticillium Wilt

The fungus causing this disease can produce thousands of small black bodies (sclerotia) on and in the stems of potato plants. These sclerotia live in the soil and infect the potato roots. It is known they can remain viable in the soil for several years. Long crop rotations with legumes, corn, wheat, and other cereals, grasses and sugar beets would be of some benefit, but would not eliminate the fungus from the soil.

### Common Scab

Common scab is caused by a soil-borne fungus that is present in most of the potato-growing areas of the world. Soil types seem to have much effect on the occurrence and survival of this fungus. The fungus can parasitize several kinds of plants, but there are strains that prefer potatoes. Common scab can occur on potatoes planted in soils that have never raised potatoes. Long crop rotations may reduce the incidence of scab, but such a practice is very unlikely to eliminate the fungus from the soil.

### Rhizoctonia

This fungus disease is very common on many kinds of plants. Because of this, it is questionable if crop rotation would be of much value. There are different strains of the fungus which are more parasitic on some crops than others. For this reason, crop rotation may be of some benefit. In the Pacific Northwest, it is advisable not to plant potatoes following potatoes or sugar beets.

### Early Blight

The fungus causing early blight can live over winter in the soil and in old potato vines. Crop rotation would be of more value in controlling this disease than Verticillium wilt, common scab and Rhizoctonia. Since the fungus can live in the soil as a saprophyte, crop rotation would not eliminate it from the soil.

### Powdery Mildew

This fungus overwinters on dead potato vines which were infected the previous season. Since such vines are a source of inoculum the following year, crop

rotation is important. In addition to crop rotation, cultural practices should be followed which prevent large vines.

#### Sclerotinia Rot

This soil-borne fungus can infect many plants, but it is especially bad on vegetables. It forms black resting bodies (sclerotia) which can remain viable in the soil for long periods. In the Columbia Basin it attacks potatoes, peas, beans, tomatoes and other vegetables. It is doubtful if planting nonsusceptible crops would be of much benefit. With respect to potatoes, follow cultural practices which prevent large vines.

#### Leafroll

The virus causing this disease can remain in tubers left in the field. During mild winters the infected tubers may not freeze and volunteer plants grown from them can be a source of infection the following year. Crop rotation is very important following a mild winter.