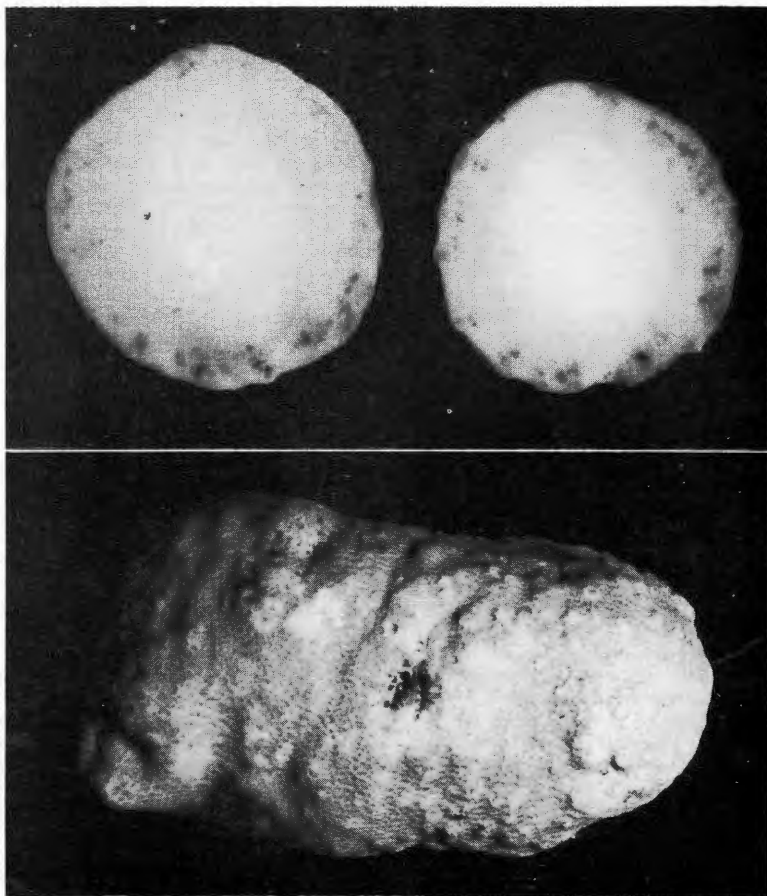


The Eelworm¹ Disease of Potatoes

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Cross section and surface views of infected tubers

The eelworm disease of potatoes has been known in Washington for many years. Tubers affected by this disease were sent to the State College from North Yakima by Mr. F. E. DeSelle in 1916. It has been found in both eastern and western Washington several times since 1916 and was present in damaging amounts in 1941 in the Yakima Valley. Surveys of the 1944 crop in storage indicate that it is present in sufficiently large amounts so that if it spreads it may become a serious threat to potato production in our irrigated areas.

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This disease is usually considered peculiar to warm climates, but it is known to cause damage also in the Northern States. It has caused very serious loss in several Pacific Coast areas and is said to be the most serious disease of potatoes in one of these. There are no varieties of potato resistant to the disease so it becomes doubly important that the growers become acquainted with the trouble and take steps to prevent its spread.

Symptoms

There are no characteristic symptoms of the disease on the vines although stunting occurs in severe cases. Clear symptoms appear only in roots and tubers and must be recognized there because it is by means of infected tubers that it is spread from one area to another.

Badly infected tubers are pimply over a part or all of the surface. These pimples, or raised areas, are usually not over $\frac{1}{8}$ inch to $\frac{1}{4}$ inch high. If the tuber is cut across, particularly after some time in storage, watery yellow to light brown spots, each about $\frac{1}{16}$ inch across, are found about $\frac{1}{8}$ inch beneath the skin. The amount of discoloration depends upon the number of eelworms in the tuber. Affected tubers are not acceptable on the market.

The Eelworm

The cause of this disease is a microscopic round worm, or eelworm, too small to be seen with the unaided eye except at the time the female is full of eggs. It remains alive in moist soil for long periods and attacks the roots of practically all of our crops except grain and grasses. It enters roots near the tips and imbeds itself there to feed. On most plants it causes swellings or knots on roots and is called the root knot nematode. If large numbers of eelworms attack, the plant may be stunted or even killed. On potatoes the eelworm enters young tubers, and feeds about $\frac{1}{8}$ inch beneath the skin where it causes slight swellings to appear on the surface and yellow to brown spots in the outer flesh. Each female eelworm produces large numbers of eggs inside the tuber. The eggs can live over cold or dry periods of several weeks even after the tuber has decayed.

What to Do About It

Since the eelworm lives for many years in moist soil, it is necessary to grow grasses or grains on infested soil for several years before again growing potatoes on it. This applies also to tomatoes, celery, and in fact, all of our common vegetables.

Infected potatoes should be cooked before feeding them to livestock. If they are simply dumped, the dump should be in some dry place away from cultivated land. If the infected potatoes decay and are washed out onto cultivated lands by rains or irrigation, the infestation will be spread. Care in disposing of culls is very important.

When possible, an infested field should be given clean fallow and be plowed deeply when fairly dry. No water should be applied. It should be plowed or disked deeply at intervals of about one month so that the soil may be completely dry for as much of a season as possible. Since most of the eelworms are in the upper 9 or 10 inches of soil, this procedure will reduce the population although it probably will not eliminate it. Following this treatment, grass or grain should be grown on the soil for a few years. If other crops are grown on it, the eelworm population is likely to increase again. Machinery should be cleaned carefully to avoid carrying soil from an infested field to a clean one.

Chemicals such as chloropicrin, or a mixture of dichloropropylene and dichloropropane, can be used effectively to reduce the population of eelworms and, in some cases, the chemicals will destroy it entirely. These chemicals are expensive and require special machinery for their application. At the present stage in the development of their use, they can not be recommended for large scale application, except for land on which a very high value crop is grown.

It is very important that Yakima Valley growers keep the eelworm from spreading and becoming any more serious. This can be done by recognizing the disease, practicing sanitation with respect to infected crops and soil and using long rotations of grasses or grains on fields known to be infested. The dry fallow treatment should be given fields known to be badly infested.