

CORTICIUM-DISEASE OF POTATOES.

EXPERIMENTS IN CONTROL.

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CORTICIUM-DISEASE, caused by the fungus *Corticium vagum* Berk. *et* Curt., var. *Solani* Burt, is a widespread disease of the potato, for it has been recorded as occurring wherever the host is grown. During a recent plant-disease survey made by Mr. J. C. Neill, of this Laboratory, through the potato-growing regions of New Zealand it was invariably found to be present; and in the South Island it was found to be abundant in every line of potatoes inspected. Although so widespread, it is a disease that is commonly overlooked, due no doubt to the fact that its effects upon the host are not marked.

When the crop is being lifted the disease may be seen in the form of small black sclerotia scattered over the surface of the tuber (Fig. 1). These sclerotia are resting bodies of the causal organism, capable of remaining in a quiescent condition for an indefinite period. They are firmly attached to the tubers by means of hyphæ, and are not readily removed, consequently they accompany the tubers when the latter are planted. In the presence of moisture, such as is present in the soil, the sclerotia produce hyphæ which ramify through the soil in the vicinity of the tubers, and spread to the potato-shoots as they develop. These hyphæ would appear frequently to damage the growing points of the main shoots, with the result that secondary shoots are produced from below the injured portions. In this manner affected tubers may give rise to bunches of small and spindly shoots, which, being weakened, produce small and stunted plants; these in turn produce few and small tubers. Thus infection, when severe, may tend greatly to reduce the yield.

In the literature dealing with this disease the standard treatment recommended (1, 3, 4, 5, 6, 8),* which has been claimed to give complete control (100 per cent. killing of sclerotia), is the immersion of infected tubers in a solution of mercuric chloride (corrosive sublimate, HgCl_2) in water—1 part in 1,000 parts of water, or 1 part in 2,000—for one and a half or two hours. More recently it has been claimed (2)* that immersion for half an hour is sufficient to ensure death of all sclerotia.

A potato-grower in Otago this season treated the whole of his seed-tubers before sowing by immersion for one hour and a half in 1-1,000 mercuric chloride. After treatment he forwarded samples to this Laboratory to ascertain whether the treatment had been successful. Sclerotia from these tubers were plated out on suitable media, and 30 per cent. were found to be viable. This led to preliminary experiments being carried out in the Laboratory with a view to ascertaining whether the standard solutions recommended were at fault. These experiments were unsatisfactory in that a proportion of sclerotia treated were found to be viable. Therefore an elaborate series of experiments was undertaken with a view to definitely ascertaining the most

* References at end of this article.