

TWO FUNGAL DISEASES OF THE BLUE LUPIN.

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DURING the present season two fungal diseases have been found in blue lupin (*Lupinus angustifolius*). This plant is cultivated for seed in various places in the Nelson District in order to supply the demand for the cover-cropping of orchards. Although most of these areas under cultivation are small and widely separated from one another, both diseases are usually present in them. The main factor governing the distribution and virulence of the diseases in a field is the presence of moisture, both in the soil and in the air immediately above it. As a rule the plants grow sufficiently close together for their tops when mature to form an unbroken, interlacing mass of branches and foliage, shutting off from the region of relatively still air round the stalks both sunlight and drying air-currents. When the soil is moist, after rain or through lack of drainage, the air in this enclosed region becomes charged with moisture, and spores of fungi there find conditions ideal for germination and infection.

Although the two diseases usually occur together, as a rule one predominates, the commoner of the two being that caused by the fungus *Botrytis cinerea* Pers. Both diseases are typically stem troubles, but occasionally one or more of the branches becomes infected, while the stem may remain healthy. When the lesion occurs on the stem the symptoms of disease are striking, and are exhibited by the whole of the upper portion of the plant; but when a branch only is diseased the symptoms are shown locally, and under casual inspection may escape notice.

The two diseases will now be treated separately in detail.

I. LUPIN-WILT CAUSED BY *BOTRYTIS CINEREA* PERS.

This disease is economically the more important of the two, as it attacks particularly cultivated, as compared with self-sown, lupin. When a severe attack takes place on the stem the upper portion of the plant gradually wilts, and the leaves lose their green colour, become yellow, and eventually fall, leaving the crown of the plant bare. If the plant is of vigorous growth when attacked the upright habit of the stem is usually maintained till death, but in weak, self-sown plants the stem may bend at the point of infection and the plant fall.

When the branch is the part infected the wilt and fall of the leaves take place as a rule only on the branch concerned, as might be expected, since the derangement of the supply of nutritive substances is only local. The lesions on the stem are usually to be found at soil-level, but they may occur up the stem to a height of about 2 ft. (Fig. 1). They vary in length from $\frac{1}{2}$ in. to 9 in., according to the virulence of the attack and the time the fungus has been at work. Shortly after infection takes place the epidermal cells of the plant become brown in colour, and the diseased area assumes a slightly transparent appearance. The edge of the resulting diseased area shows at times an abrupt