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SCLEROTINIA ROT OF VEGETABLES

By S. C. CHAMBERS, Plant Pathologist, and M. HARDIE, Vegetable Instructor

SCLEROTINIA ROT, caused by the fungus Sclerotinia sclerotiorum, is now one of the most serious vegetable diseases in metropolitan market gardens. Over the past decade it has been steadily increasing in prevalence and if present trends continue, many growers may be forced to abandon certain crops. Although most vegetables are susceptible, the greatest losses are occurring in the autumn planting of beans, cauliflowers and lettuce and in the production of cauliflower seed.

SYMPTOMS

Infection by the fungus may occur at any point on the above parts of the host plant, and is quickly followed by a soft, brownish rot. The affected tissue becomes covered with a whitish mould (Fig. 1) and as the disease progresses, black pebble-like bodies (sclerotia) are formed in this white growth. (Fig. 2.)

With cauliflowers and lettuce, infection usually occurs through injuries to the bases of stems or to the lower leaves. As the rot progresses, the leaves wilt in rapid succession until the plant has collapsed completely. Because of the typical way in which these plants collapse, the disease is often called “drop” (Fig. 3 and 4.)

In the case of cauliflowers grown for seed, the fungus frequently attacks flower stalks causing the flowers to wilt and die, so preventing seed formation.

Autumn bean crops appear to be most susceptible to this disease in the post-flowering stage, infection often occurring through petals which have fallen on to healthy leaves and stems. When the fungus invades portion of a stem, the vine beyond the point of entry quickly wilts and dies (Fig. 5). These effects can be very serious if stems are attacked near ground level.

Fig. 1.—Bean pods (left) covered with whitish mould growth of S. Sclerotiorum
Healthy bean for comparison (right)
CARRY OVER AND SPREAD

The disease is carried over in the soil from one favourable crop period to the next by means of the black sclerotia. Those within 3 inches of the surface, germinate during the cool moist conditions of early May and form small mushroom-like structures which emerge from the soil (Fig. 6). Sclerotia buried at depths of more than 3 inches fail to produce these structures.

The "mushrooms" produce thousands of tiny fungal seeds called spores, which are dispersed by the wind and spread the disease throughout the crop.

The disease is also perpetuated by means of its many alternate hosts. In Western Australia it has been recorded on beans, Brussel sprouts, cabbage, cauliflower, celery, lettuce, potato, red beet and tomato, as well as on certain weeds, ornamentals and pasture plants.

REASONS FOR PREVALENCE

The increased incidence of Sclerotinia rot in recent years has been attributed to certain changes in market garden practice,* particularly—

(1) The abandonment of manual deep trenching due to labour costs.

* W. P. Cass Smith. Private Communication
(2) Superseding of the plough by rotary hoe type implements which incorporate diseased residues in the surface soil.

(3) The system of marketing cauliflower curds and lettuce hearts without the outer leaves. This favours a rapid build-up of Sclerotinia rot in leaf residues.

(4) The shorter rotations, which have followed the general use of D-D fumigant for root knot control.

RECOMMENDATIONS FOR CONTROL

1. Deep burial of sclerotia. A modified method of trenching is being employed by some gardeners who claim it can be carried out for approximately £60 per acre. This method involves first opening a 17 inch furrow. The top 12 inches of one wall is then ploughed in and covered with 5 inches of soil from the bottom of the new furrow. The covering is dug by hand and represents a depth of one spade.

It is considered the benefits, resulting from reduction in weed growth and disease incidence, more than compensate for any temporary loss in fertility.

2. Wider spacing of plants and rows. This will allow greater circulation of air and so create environmental conditions less favourable to the disease.

3. Dusting with Penta-chloro-nitrobenzene (P.C.N.B.) at the rate of 30 lb. of active ingredient per acre may help to reduce the incidence of Sclerotinia. This should be applied at intervals of 14 days, the first application being made when the disease just becomes evident in the crop.

Fig. 6.—Small mushroom like structure (apothecium) arising from a Sclerotium of *S. Sclerotiorum*

Sorghum Almum

Sorghum almum, sometimes known as Columbus grass, has been given considerable publicity in the rural Press, but farmers are warned to exercise caution in using this plant.

Sorghum almum is a perennial plant described as being suitable for grazing but, in the opinion of Department of Agriculture officers, it is unlikely that its productivity will be greater than that of the summer fodder crops already used in this State.

Like other sorghums, it is reputed to cause prussic acid poisoning of stock under certain conditions and its toxicity rating places it in a similar range to Johnson grass which has been a prohibited plant in this State for many years.

Sorghum almum is a hybrid with Johnson grass as one of the parents and the seed cannot readily be distinguished from that of Johnson grass. It is feared that uncontrolled importation of the seed could result in Johnson grass becoming established here. Apart from its toxicity, Johnson grass is a perennial which spread by underground rhizomes, and farmers in the Eastern States have experienced great difficulty in eradicating this plant from their farms.

The sale of Sorghum almum seed in Queensland is banned and a prohibition was placed on the sale of seed in New South Wales. This was later lifted when it was found that many farmers had already sold seed privately to others.

As an inspection of seed imported into this State would not reveal whether it was the seed of Sorghum almum or Johnson grass, a ban on the importation of all but certified seed has been imposed, to ensure that only true-to-type seed will be made available to farmers.

Department of Agriculture officers have been instructed to make detailed surveys of areas sown to Sorghum almum in this State in order to collate as much information as possible concerning the growth of the plant in Western Australia.
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