Agriculture Notes

Chocolate Spot of Faba Bean

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Chocolate spot is the most important disease of faba beans in Victoria and South Australia. This disease can be managed through an integrated approach including careful paddock selection, the use of resistant varieties and strategic use of foliar fungicides.

Symptoms

These are varied, and range from small spots on the leaves to complete blackening of the entire plant. Leaves are the main part of the plant affected, but under favourable conditions for the disease it also spreads to stems, flowers and pods (Figure 1).

Two stages of the disease are usually recognised. First, a non-aggressive phase, when discrete reddish-brown spots are "peppered" over the leaves and stems, and then an aggressive phase, when spots darken in colour and coalesce to form larger grey-brown target spots (Figure 2) that may eventually cover the entire plant. Small black sclerotia may sometimes be found inside the stems of badly diseased plants.

Figure 1. Chocolate spots development on faba bean plant, leaf and pod .

Figure 2. Characteristic chocolate spots on leaf of faba bean plant..

Red-legged earth mite (RLEM) damage can be mistaken for chocolate spot (Figure 3). This starts as silvery patches which become red-brown, similar in colour to chocolate spot but form large irregularly-shaped areas. Red-legged earth mite damage usually occurs during the seedling stage and on the lower leaves.

Figure 3. Red-legged earth mite (RLEM) damage can be mistaken for chocolate spot. Symptoms start as silvery patches which become red-brown. They are similar in colour to chocolate spot but form large irregularly-shaped areas.

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Factors such as phosphorus or potassium deficiency, waterlogging and excessive weed burdens which reduce crop vigour may make plants more susceptible to the development of chocolate spot. Leaves which have been damaged by insect attack or in wheel tracks are also more susceptible.

Economic Importance

Chocolate spot occurs in all areas where faba beans are grown, causing losses ranging from minor to complete failure of a crop. Loss depends on the severity of infection, the time at which infection occurred, and the amount of spring rainfall. In unprotected crops, the disease can reduce yields by at least 30-50% under conditions favourable for disease development. In addition, seed from badly affected plants may have a reddish-brown discolouration, which lowers its market value.

Environmental conditions are the principal factor in determining the disease risk, infection period and disease development. Chocolate spot spreads most aggressively in warm and humid conditions. The optimum conditions are temperatures between 15 and 22°C with at least 90 per cent relatively humidity.

However, infection will develop slowly at lower temperatures. Yield reductions can result from infection of flowers which causes them to abort without forming pods.

Disease Cycle

Chocolate spot, caused by *Botrytis fabae* and *Botrytis cinerea* can survive either as sclerotia in the soil or on crop debris, in infected seed, or on self-sown volunteer plants. In hitherto unaffected areas the disease often becomes established by the sowing of infected seed. In subsequent years, the initial infection usually occurs when spores formed on old bean trash are carried by wind into new crops. These spores may move long distances.

Once the disease becomes established it rapidly spreads within a crop, and within 4-5 days of infection spores can be formed on infected tissue and initiate secondary spread of the disease. The fungus is most aggressive under cool, humid conditions, particularly at flowering time. Aggressive development of stem infection late in the season can cause the crop to lodge.

Management

An integrated approach is the key to successful management of ascochyta blight in faba bean.

Before sowing

Paddock Selection

A break of at least 4 years should be observed between faba bean crops. Aim to separate this year's faba bean crop from last year's faba bean stubble by a distance of 500m. Reduce disease risk by not sowing adjacent to vetch, chickpea or lentil stubble.

Variety selection

Select the variety with the highest level of resistance to the important disease risk in your district

Seed selection

Aim to use the 'cleanest' seed possible with 10% to nil levels of levels of chocolate spot present. Seed should be sourced from the 'cleanest' crops. Old, frosted or damaged seed may have reduced germination and reduced vigor.

At sowing

Sowing rate

Follow the recommended sowing rates for your district; remember that sowing rates may vary between varieties.

Sowing date

Plant to sow within the optimum sowing window for your district.

After sowing

Strategic use of foliar fungicides

A successful fungicide program relies on crop monitoring, correct disease identification and timeliness of spraying with the correct product. Be aware of the critical periods for disease management.

Harvest

Plan to harvest as early as possible to minimize disease infection on seed.

Further Information

More information on faba beans and their diseases can be found at www.dpi.vic.gov.au/notes (click on Crops and Pastures, then select Legume Crops

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