PLANT PATHOLOGY NOTE: NO. 29
EARLY AND LATE LEAFSPOTS OF PEANUT

By D. Tomlinson, Senior Plant Pathologist, Agriculture Branch, D.P.I., Konedobu

INTRODUCTION

Early leafspot and late leafspot are the most serious diseases of peanut in Papua New Guinea and world-wide. The diseases are caused by different but closely related fungi: early leafspot by ***Cercospora arachidicola***, and late leafspot by ***Phaeoisariopsis personata***. Yield losses vary depending on the climatic conditions. In severe cases over half the crop can be lost.

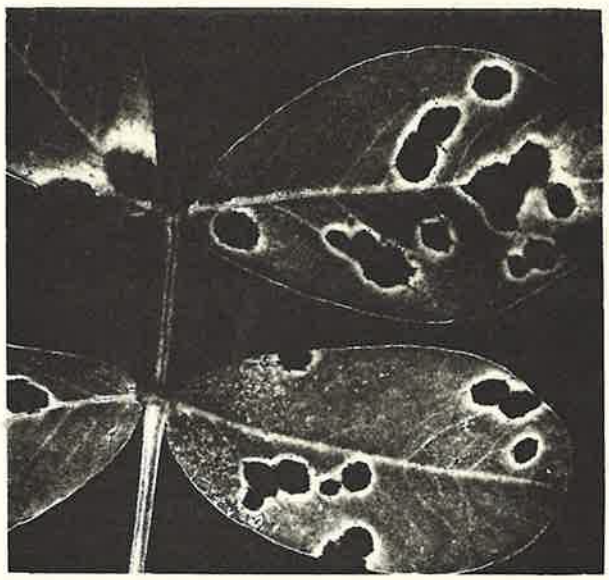
SYMPTOMS

Both early and late leafspots cause similar symptoms, and the two diseases are difficult to tell apart in the field. For both diseases, the first symptoms are small yellowish spots on the leaflets. These appear 3-5 weeks after planting. The spots grow bigger and within 5 or 6 days they become mature, i.e. they produce spores which can infect other leaves and plants.

Spots caused by the early leafspot fungus are slightly oval and can be from 1 to 10 mm long. They are dark brown on the upper leaf surface and lighter brown on the lower surface.

Spots caused by the late leafspot fungus are circular, usually smaller and darker. They are almost black on the lower leaf surface. There may be a yellowish halo (ring) around the spots caused by either disease. This depends on the variety of peanut being grown and the weather conditions.

As well as causing leafspots, both fungi also cause spots on the flower stalks, stems and pegs (the stems which grow down into the soil to form the nuts). These spots are oval or elongated, and have sharper edges. In severe cases, the spots join together and the affected leaves turn yellow and fall off.



Typical symptoms of leafspot in peanut, showing 'haloes' around the spots. Spots caused by both early and late leafspots may have these haloes.

In most peanut growing areas, early leafspot attacks the plants at an earlier stage than late leafspot. This varies in different areas and again depends on the variety of peanut grown and the weather conditions. If both diseases are present on a crop at the same time there may be heavy losses.

This Plant Pathology Note was abstracted from Information Bulletin No. 21, International Crops Research for the Semi-Arid Tropics (ICRISAT), Early and Late Leaf Spots of Groundnut.

These two photographs show leafspots on the underside of peanut leaves. The spots in the left hand photo are caused by the early leafspot fungus and those in the right hand photo by the late leafspot fungus. Notice that the late leafspots are darker and more circular.

SPREAD OF THE DISEASE

Both early and late leafspot are spread via the soil. Plants are affected earlier and more severely when peanuts are grown over several seasons on the same ground, where the disease was present earlier.

Spores which spread the disease are produced in crop debris (rubbish) in the soil after rainfall. Rain splash carries the spores first to the lower older leaves, which become infected. Spores are then carried from mature spots on these leaves to younger leaves and to other plants. The spores are spread by rain splash, wind and insects. Under favourable weather conditions - for example, high humidity and temperatures between 25 and 30° C - the disease may continue throughout the growing season, and the plants may lose most of their leaves.

The fungi can survive from season to season on infected crop debris or volunteer peanut plants (peanuts not planted deliberately). The diseases can be spread long distances by spores carried in the wind, by movement of infected crop debris, or by movement of pods or seeds which show signs of infection. There is no evidence that either disease is carried inside seeds which do not show signs of infection. No alternative host plants are known outside the peanut family.

CONTROL

Cultural control

Because both disease are spread via the soil, rotation with other crops is very important in reducing disease levels. Plant debris should be removed from gardens after harvest and either fed to animals, or buried deep in the ground. Volunteer peanut plants should be removed whenever they are found. Weeds should be controlled because a lot of weeds may help to make conditions more favourable for the disease (for example, by raising the humidity).

Chemical control

The use of fungicides to control the diseases is effective and economic where peanuts are grown on a large scale in developed countries. Where peanuts are grown on a smaller scale, chemical control may be too expensive.

If chemicals are used, they are first applied just after the symptoms of the disease appear. Further applications are ususally made every 10-14 days, until 2-3 weeks before harvest. If it rains more often, fungicide applications must be made more often, making control more expensive.

The following chemicals have been reported

to control early and late leafspot diseases of peanut.

1. Maneb or Mancozeb, applied as described above, at a rate of 3-4 kg per hectare.

2. Copper or sulphur dusts, applied as described as described above, at rates of 20-50 kg per hectare.

(The above chemicals also give some control of leaf rust which may also be a serious problem in peanuts in Papua New Guinea. However, the chemicals will probably be too expensive for conditions in Papua New Guinea.)

3. Benomyl 50% applied at 140 g per ha gives good control of early and late leafspots, but it will not control leaf rust.

Resistant varieties

So far no peanut varieties have been found which are resistant to early and late leafspot diseases

FURTHER INFORMATION

Further information about the diseases described in this note can be obtained from the Chief Plant Pathologist, D.P.I., P.O. Box 417, Konedobu.