

PLANT PATHOLOGY NOTE NO: 33

Bacterial Wilt of Peanut

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INTRODUCTION

Bacterial wilt is a very serious disease of many different crop plants in the warmer parts of the world. It is caused by the bacterial plant pathogen *Pseudomonas solanacearum*. Different strains of this bacterium cause disease in different plant. In Papua New Guinea strains of the bacterium cause bacterial wilt in tomato, capsicum, eggplant and potato. In other countries any of as many as 200 different plants may get the disease. These include such important crops as sweet potato, cassava, banana, tobacco, pepper and peanut.

Until recently it was thought that bacterial wilt of peanut was not present in Papua New Guinea. It has never been reported from the main growing areas of the Markham Valley or until now from any of the numerous small-holdings around the population centres. In 1986 however up to 50% of peanuts in a garden at Konedobu, Port Moresby were killed by the disease. No other gardens in the area appeared to be affected and at the time of writing the disease has not been found elsewhere.

SYMPTOMS

The first sign of infection by this disease is a slight drooping or curling of one or more leaves. In more advanced stages the plants may be bent over at the tip, have a dry appearance and eventually turn brown, wither and die in the ground.

If an infected plant is cut just above ground level and the cut end immersed in a small glass container of water with the edge of the stem close to the side of the container, a milky white fluid may often be seen seeping out. In some plants the inside of the stem may also be discoloured brown. Both the oozing and the browning are however frequently absent and never as clear as that which occurs in tomato. This means that isolation of the bacterium from the stem and culturing it on laboratory media may be the only way the disease can be positively identified.

SPREAD OF THE DISEASE

The bacteria enter the plants through the roots into the water-conducting tissues and usually move up



Peanut plant with early symptoms
of bacterial wilt.

into the lower stem. As the bacterium grows, the water conducting tissues become blocked and water can no longer flow to the leaves causing wilting, drying and eventual death of the plant. Where roots are damaged by insects, nematodes or by growing on stony ground, infection can be much more severe.

The disease is spread from plant to plant by water during rainfall or irrigation or in soil carried on boots or garden tools. There is no direct evidence that the disease can be carried in the seed although the bacterium has occasionally been isolated from the root pegs which eventually develop into seed. Further work on assessing the possibilities of seed transmission is continuing.

It is known that the bacterial wilt organism can survive for long periods in the soil if conditions are suitable. Many factors affect the length of survival in the soil, including the composition of the soil, moisture content, temperature, and the presence of certain weeds or crop plant debris remaining after harvest.

CONTROL

We have very little information on the effects bacterial wilt is having on peanut growing in Papua New Guinea. In the single garden in which the disease caused heavy losses plants were grown from seeds obtained from the local market. The peanut variety or cultivar is not known. However, when normal commercial peanut varieties Spanish White and Spanish Red were artificially infected with the disease very few showed symptoms, suggesting that they are tolerant to the disease. These varieties should be grown when available.

If the varieties Spanish White and Spanish Red are not available good field sanitation must be practiced. Diseased plants should be removed completely as soon as they are seen and destroyed by burning or deep burying at the lower end of the garden.

If the disease does infect the plants in a garden then peanut must not be replanted in the same ground for a long time.

The garden in Port Moresby badly affected by bacterial wilt had been unused for at least two years before planting peanuts. This suggests that *Pseudomonas solanacearum* can survive for at least that long in the soil in the absence of peanut.

If you think you have a peanut disease which may be bacterial wilt contact your local D.A.L. office and ask for advice. Local officers should arrange to send samples to the address given below. We need to know the distribution of this disease in PNG, so if you think it is present in your garden, please let us know.

Further information about this disease can be obtained from the Chief Plant Protection Officer, D.A.L., P.O. Box 2141 Boroko.