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THE BEANFLY

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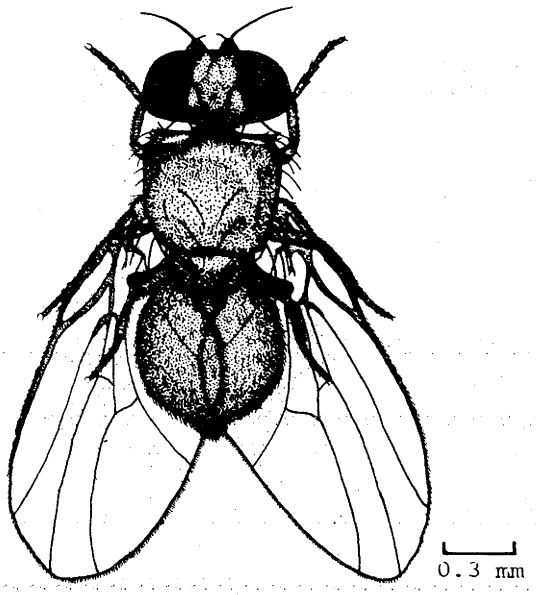
INTRODUCTION

The beanfly, *Ophiomyia phaseoli*, is sometimes a serious pest of beans and other legumes in Papua New Guinea. It can cause severe losses of seedlings and damage to older plants. When present in large numbers it can cause economic damage requiring control measures.



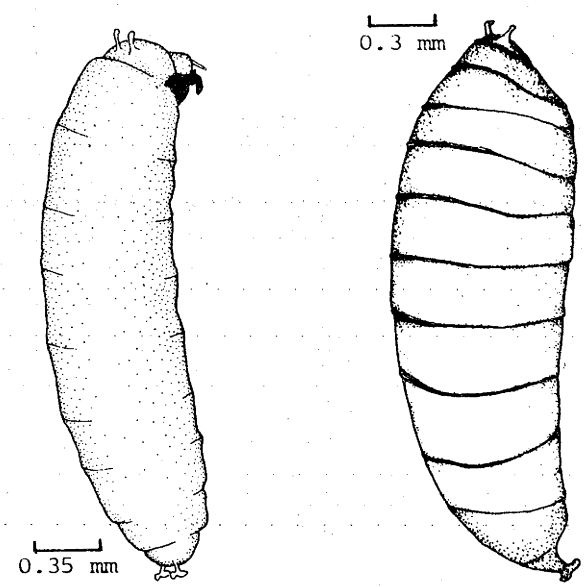
An adult beanfly

DESCRIPTION AND BIOLOGY

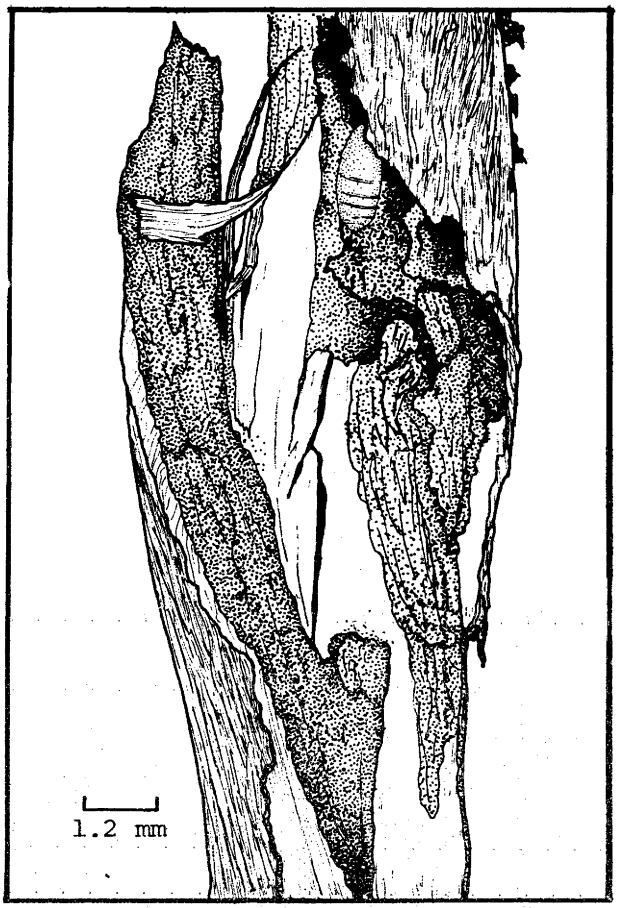
The adult beanfly is a small shiny black fly, with brownish legs and antennae (feelers). Females are about 3 mm long and are larger than the males which are about 2 mm long.

The female beanfly lays its eggs singly into the upper surface of the leaf. The eggs are very small, less than 0.5 mm long. The holes in which the eggs are laid look like dark spots on the leaf's surface.

The eggs hatch and the larva mines (makes a tunnel) into the mid vein of the leaf through the leaf stalk, and in the case of seedlings down to the base of the stem near the ground. The larva feeds as it moves. Most damage is caused in the stem where sap flow is reduced. The affected region becomes swollen and cracks develop in the outer tissue as the stems die. This is usually the most noticeable sign of beanfly attack.



Beanfly larva (left) and pupa (right)



A bean stem split open to show a pupa of the beanfly inside

The mature larva is about 3 mm long, creamy white, pointed at the front and rounded behind. The larval stage lasts 8 to 14 days depending on the climate.

The larva then pupates (enters the resting stage) in the outer tissue of the damaged stem. The pupa is about 2.5 mm long and brown, turning to shiny black. The adult fly emerges a few days later.

The life cycle from egg to a adult takes about 2 to 3 weeks in the lowlands and longer in the highlands.

ECONOMIC IMPORTANCE

The beanfly is a major pest of dwarf beans of the genus *Phaseolus*. The larger traditional varieties of snakebean are less likely to be attacked. The beanfly attacks a large number of food and forage (cover) legumes in Papua New Guinea. The fly is widely distributed in the lowlands and highlands. Seedlings and older plants are attacked.

Young seedlings are most susceptible and can be badly stunted or killed. In some cases more than 90 percent can be killed. In mature plants beanfly attack reduces the number of pods set by the plant as a result of damage caused by the larvae. The plant may wilt, turn yellow and die; especially if it is attacked as a seedling.

CONTROL

Cultural control

Cultivation of types of varieties of bean known to be resistant to beanfly attack in Papua New Guinea is recommended. Some types of bean are known to be very susceptible to beanfly attack and ARE NOT RECOMMENDED for cultivation unless regular chemical control measures are carried out. One of these is the variety Contender.

Chemical control

The recommended insecticides are dimethoate or formothion applied at a rate of 0.03% three days after the seedlings emerge, and thereafter weekly for 3 weeks, or as necessary.

Dimethoate 0.03% is prepared by mixing:

EITHER

10 ml Rogor 30% EC 10 litres water

OR

7.5 ml Perfekthion 40% EC 10 litres water

Formothion 0.03% is prepared by mixing:

12 ml Anthio 10 litres water

Biological control

Two very small wasp parasites of the beanfly have been introduced into Papua New Guinea from Hawaii and released in the Markham Valley and in the Wau Valley. Their effect on beanfly has not yet been fully assessed.

FURTHER READING

Kranz, J., Schmutterer, H. and Koch, W. (1977). *Diseases, Pests and Weeds in Tropical Crops*. Verlag Paul Parey: Berlin and Hamburg. 666 pp.

FURTHER INFORMATION

For further information on the control of beanfly, contact your didiman or the nearest D.P.I. Entomologist. Entomologists are based at:

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Tel: 551377

KIMBE
Dami Oil Palm Research Station
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