Management Options

- Cultural practices such a planting date and rotation may influence severity of bean fly infestation. In recent monitoring studies, beans planted late in April exhibited more bean fly injury than beans planted in February or early March.

- Earthing-up (hilling) of bean plants will foster development of adventitious root systems and enable recovery of infested plants. Recent studies have demonstrated 30% yield increases due to use of the cultural earthing-up practice.

- Treatment of bean seed at planting with Endosulfan (a.i. 35 w/v) applied at a rate of 10 ml per 20 Kg of seed will reduce bean fly infestations. Recent studies have demonstrated yield increases ranging from 50 to 200% due to the use of this seed treatment.

- Low to moderate resistance to bean flies has been demonstrated when improved bean cultivars are used.

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Bean Fly

A Primary Pest Problem Limiting Bean Crop Yield



Research Scientists, Extension Officers and Farmers Inspecting An Iganga Bean Field

Uganda IPM/CRSP Project

Makerere University

National Agricultural Research Organization

Ministry of Agriculture, Animal Industry and Forestry

Biology

The adult bean fly is a small, shiny, metallic black fly about 2 mm in length. Adult female bean flies deposit their eggs on or in recently unfolded trifoliate leaves or in the developing stems. Within two to four days the eggs hatch into yellowish white larvae, which tunnels into the leaf tissue. The larvae grow, molt and burrow into the stem of the host plant over a period of 8 to 10 days, and then turn into a barrel-shaped pupae below the stem surface. After 7 to 9 days, the adult fly emerges from the pupae and the cycle is repeated.



Bean Fly Pupae Near Base Of Bean Stem

Note: Small black pupae (inactive stage of bean fly) is located in center of circle.

Economic Importance

Injury to beans by bean flies occur during the seedling stage of host development when larvae of the flies feed and tunnel into stem tissue. As larvae develop and pupate, stems swell and split, the base of the plant may rot, leafs drop prematurely, plant growth becomes stunted, and plant may be killed. Although damage due to bean flies is most severe during the seedling stage, economic damage results when infestation of stem and root system continues to occur.



Bean Seedling With Additional Roots Due to Bean Fly Injury

Monitoring of bean crops in Iganga district found stand infestations to range from 52 to 92% during first rains growing season. Severe infestations of bean fly were associated with bean plantings having significant losses in stand.

Detection & Assessment

Early loss of bean seedlings and a high incidence of stem and root rots in beans indicate a potential bean fly problem. Infested plants often develop additional roots.

Bean plants should be inspected during the early leaf stages to detect presence of bean fly maggots or pupae in the stems.

Making counts of bean plant stand in 2 x 2 meter squares at biweekly intervals will provide an evaluation of stand lost.

If losses in stand and yield are found due to bean fly infestations, then preventive actions using cultural practices or chemical seed treatments should be considered.



Growth of New Root at Base of Stem Due to Bean Fly