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Pod Fly, *Melanagromyza Obtusa* (Agromyzidae: Diptera) -A Silent Pod Killer in Pigeon Pea

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INTRODCUTION

Pulses are considered as essential source of nutrients and are also recognized as poor man's meat. The year 2016 celebrated the International Year of Pulses (IYP) by the Food and Agriculture Organization. To focus global attention on this important group of crops, their role in human and animal nutrition, their current and potential productivity, and their contribution to sustainable agriculture (FAO, 2016). Pigeonpea is one of the potential pulse crop of the tropics and subtropics grow in approximately 50 countries in Asia, Africa and America. Major constraints in the cultivation of pigeonpea is the damage caused by insect pests. In India, nearly three hundred species of insect-pests are known to infest pigeonpea at various growth stages (Lal and Singh, 1998). Among those, pod fly is the important pest of pigeonpea (Lal and Katti, 1998). Pod fly is a hidden pest of pigeonpea, causing the yield loss of 60 to 80 per cent (Durairaj, 2006). The infested immature pods do not show external evidence of damage until the fully-grown larvae make an exit hole in the pod walls; it complicates their management (Sharma *et al.*, 2010). Hence, continuous monitoring and special management practices were required to overcome this problem.

Distribution: Africa, Asia, North America, Oceania and South America

Life stages of pod fly:

- **Egg**: Females lays single eggs per locule furthest from the developing seed and may be less likely to be crushed. Freshly laid eggs reflected white, with smooth tapering posteriorly and broad base and projecting into the pod cavity. The fly lays about 60-80 eggs. The incubation period is 2-4 days.
- **Larvae:** The freshly hatched maggots were translucent, reflecting white and later turned to creamy white. The larval period is about 5-18 days.
- **Pupa:** Freshly formed pupae were yellowish-brown in colour, but later turned into dark brown or brownish-black. The pupae were cylindrical and broadly rounded at the two ends and the pupal period varies from 7-10 days.
- **Adult:** The adult fly was a small, shinning and metallic blue. The longevity of the adult pod fly was varied from 6.0 to 11.0 days. The total life cycle of fly has completed in 31-35 days.

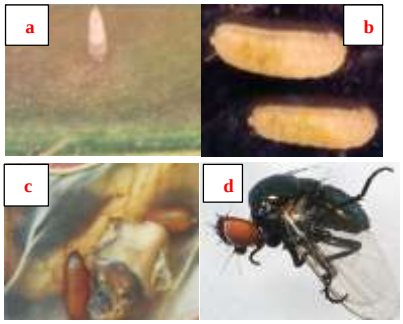

Plate1: Different Life stages of Pod fly
a: Egg, b: Larvae, c: Pupa, d: Adult

Nature of Damage:

The adult fly lays eggs in developing grains using its sharp ovipositor and larvae feed on developing seeds by making a tunnel. Larva consumes its starchy portion and embryo, damaged embryo became unable to germinate, and grains become shrivel. They excrete a trail of excreta, lead to the development of saprophytic fungus, which renders the seed inedible.

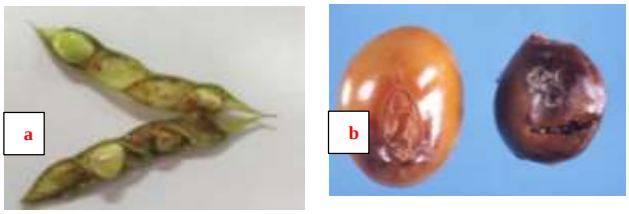

Plate 2:Pod fly damage in pigeonpea, a: pod, b: seed

Why pod fly is called silent pod killer?

In pigeonpea crop, so many lepidopteran pod borer pests were infected, but all these insects were easily identified in the field based on symptoms, and control measures were initiated to control the borer pests. But the pod fly inserts its eggs in immature pods without any external signs of damage. The infested immature pods do not show external evidence of damage until the fully-grown larvae chew exit holes in the pod walls at the time of maturity. During that time yield loss was severe, and no any control measure was work, and adult flies were also very minute it's complicated to monitor in the field. Hence, Pod fly is called a silent pod killer in pigeonpea.

Integrated pest management of pod fly in pigeon pea:
Cultural:

- Sowing of crop early in the season to avoid the outbreak of pod fly
- maintenance of good field sanitation and removing of weeds regularly
- Intercropping with sorghum and maize to reduce the insect population
- Crop rotation with non-host crops
- Avoid growing of a mixture of cultivars of different duration in one area

Mechanical:

- Regular monitoring of pigeonpea field for signs of the pest and use sticky traps to catch the adult flies

Biological

- Conserve the natural enemies of pod flies like, *Euderus lividus, Eurytoma* sp., *Euderus agromyzae*
- Spraying of neem seed kernel extract 5% at flowering stage and then again repeat the spray at 10-15 days interval
- Spraying of neem-based insecticides @ 2ml/litre of water

Chemical control

- Spraying of insecticides like Lambda-cyhalothrin 5 EC @ 1 ml/litre or Acephate 75 SP @ 1 g/litre at flowering stage or
- Thiamethoxam 25 WG @ 0.5 gram per litre or Imidacloprid 17.8 SL @ 0.3 ml/litre of water.
- During spraying the addition of 10 grams of jaggery in one litre of water for effective attraction of flies
- If necessary repeat the spray at 15 days interval.
- To prevent resistance development to insecticides, use insecticides in rotation, having different modes of action.

CONCLUSION

In pigeon pea, pod fly causes severe loss to the farmers throughout India. The adult fly is very minute, and damage symptoms were not noticed up to the crop's maturity. Hence, for the effective management of this pest, continuous monitoring and special attention is required. Always consider the integrated approach with preventive measures for the effective management of this pest.

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