

MANAGEMENT OF THE MELON FLY USING FOOD BAITS IN HILL CUCURBITS OF GOA



ICAR RESEARCH COMPLEX FOR GOA

ELA, OLD GOA - 403 402 , GOA

INTRODUCTION

Hill cucurbits viz. cucumber, ridge gourd, bitter gourd and snake gourd are cultivated by a specialized group of farmers in Goa called *mollekars*. These cucurbits are cultivated during *kharif* at the foot hills of Western ghats in the Goa region. A patch of 5 to 10 ha is cultivated together by a group of about 10 families who toil on the land collectively by sharing each others work while distinctly maintaining their identity on the piece of land cultivated by an individual family.



A view of hill cucurbits in Goa

The *mollekars* of Goa are progressive farmers who utilize advanced plant protection and production techniques. In the villages of Veling, Priol, Bethoda, Farmagudi etc. around the city of Ponda live some of the most experienced *mollekars* of Goa. A typical *mollo* would consist of about 10 farm families cultivating the land taken on lease from private landlords/ Government for the season. The more industrious

and enterprising start sowing operations before the onset of the monsoon during the month of May. Many transport water through tankers to reach the cultivation sites to ensure an early crop which command premium prices.



Fruit fly IPM farmer with a harvest of ridge gourd

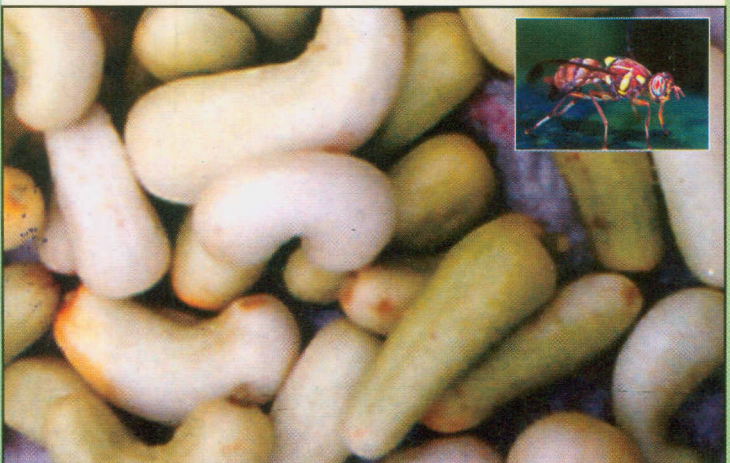
There are no reports on the area under these crops in Goa, however the cultivation of these cucurbits has steadily increased in the state over the years and can be roughly estimated to be around 500 hectares of which cucumber occupies 50 per cent of the area followed by ridge gourd while (30%), bitter gourd (10%) and snake gourd (10%). The melon fly, *Bactrocera cucurbitae* (Diptera: Tephritidae) is distributed widely through out the world damaging 81 host plants. *B. cucurbitae* attacks hill cucurbits of Goa with over 20 per cent infestation being recorded in cucumber. This pest can be successfully managed by application of food baits.

LIFE CYCLE OF *B. CUCURBITAE*

- ✓ Adult female flies lay eggs into developing fruits in clusters which may contain 1-30 eggs.
- ✓ Eggs hatch in 2-4 days.
- ✓ On hatching the larvae bore and damage the fruits. The larval stage lasts for 6-11 days.
- ✓ Often melon fly infested cucumber appears malformed.
- ✓ Mature third instar larvae pupate in the soil. Pupation period ranges from 9-11 days.
- ✓ Adults of the melon fly live for 5-6 months

DAMAGE DUE TO *B. CUCURBITAE*

- ✓ Data available with the ICAR, Old Goa suggests that damage due to *B. cucurbitae* in the above cucurbits cultivated in Goa during *kharif* ranges from about 5 to 20 per cent with cucumber being most susceptible.



Cucumbers infested by *B. cucurbitae* (Inset: melon fly adult)

Often farmers resort to use of harmful insecticides to control this pest which are mostly sourced through pesticide dealers resulting in several drawbacks including accumulation of pesticide residue in the fruit and damage to the fragile environment.

LABORATORY EVALUATION OF BAITS

- ✓ Single Killing Point studies carried out in the laboratory to assess the attractiveness of different baits revealed that, banana/jaggery (10% weight: volume) was equally effective as compared to the imported Protein Hydrolysate PH (3% volume: volume) in attracting the melon fly (Fig. 1).

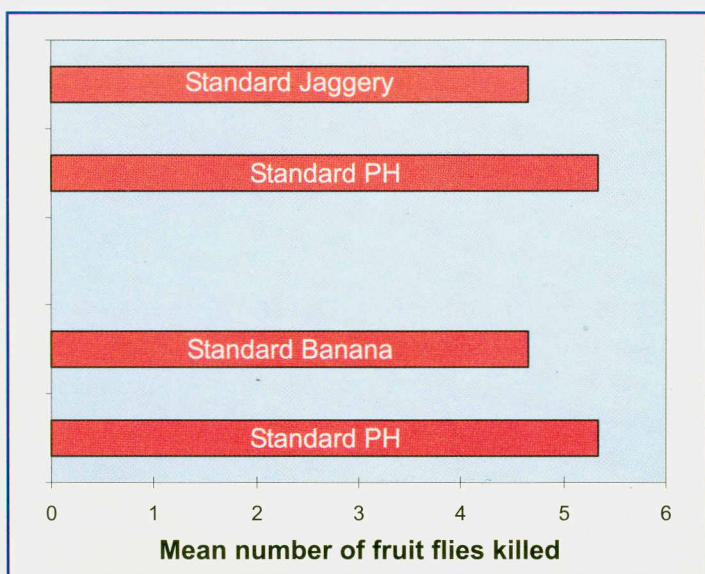


Figure 1. Attraction of the melon fly to food baits.

SUSTAINABLE MANAGEMENT OF *B. CUCURBITAE* USING FOOD BAITS

- ✓ Prepare bait using banana (*velchi*) or jaggery made as 10g banana / jaggery mashed up and liquidized in 1L of water (10% weight: volume)
- ✓ Add 2ml malathion 50EC to the above bait solution
- ✓ Apply this bait by squirting (splashing) 8L /ha @ 200 splashes /ha (each splash of approximately 40ml) roughly equivalent to one splash every 7m in a square grid i.e. after every 10 steps in a square grid.



Squirting of bait in cucumber for the management of *B. cucurbitae*

- ✓ Applications are to be made at weekly intervals, commencing from 30 days after planting up to the end of the commercial fruit production.



Squirting of bait in ridge gourd for the management of *B. cucurbitae*

- ✓ In all, 8-10 applications (squirting) of baits may be required per cropping season.
- ✓ This ensures substantial (90%) reduction in the insecticide load when compared to chemical control, while achieving control comparable with insecticide schedule i.e. < 5 % damage.
- ✓ Wide-area farmer participatory village-level melon fly-IPM programmes conducted among the cucurbit farmers of Goa using food baits, showed that banana + jaggery registered damage levels at par with insecticide. The results clearly demonstrated the usefulness of food baits in managing *B. cucurbitae* on hill cucumber in Goa replacing harmful insecticides and imported PH.



Hill cucurbits being transported to the markets

Bait Application Technique for melon fly management ensures a insecticide residue-free crop, besides saving a substantial loss due to attack by *B. cucurbitae*. In the long run this can augur well for organic production of hill cucurbits to further enhance the economy and welfare of the *mollekars* of Goa.

Published by

Dr. V.S. Korikanthimath
Director,
ICAR Research Complex for Goa
Ela, Old Goa, Goa - 403 402

Material prepared by

Dr. J. R. Faleiro, Principal Scientist (Entomology)

Technical Assistance

Miss Vidhya R. Satarkar (Sr. Research Fellow)
Mr. Sidharth K. Marathe (Technical Officer)

E-mail:

director@icargoa.res.in
jrfaleiro@yahoo.co.in

Website

www.icargoa.res.in

Telephone:

0832-2284678/679, 2285381