

EFFECT OF IPM COMPONENTS ON CUCURBITACEOUS VEGETABLES

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Cucurbitaceous vegetables *viz.*, bitter gourd, small gourds, cucumber etc. are infested by two species of fruit flies *i.e.* melon fruit fly, *Bactocera cucurbitae* (Coquilleti) and the Ethiopian fruit fly, *Dacus ciliatus* (Loew), which limits the economic returns to the farmers by their damage to the final product *i.e.*, fruits. The female fly insert its eggs in soft tender fruit tissue by piercing fruits with the ovipositor, as a result, a watery fluid oozes from the punctures which on hardening become resinous brown. The maggots emerged from the eggs, start feeding on pulp of the fruit. The secondary infection by microorganisms from site of egg laying cause rotting of the fruits rendered them unfit for the consumption. This reduces the market value of the produce. The infested fruits become distorted and drop. The mature maggots jumped out of the fruits and pupate inside the soil. The extent of loss reported to be varied from 30 to 100 per cent depending upon cucurbits species and the season.

As the maggot being an internal feeder, it is rather difficult to control the maggot. The only option is to manage the adult fruit flies and that too before they mat and female deposit eggs. The chemicals means *i.e.* using insecticides for managing fruit flies is no longer effective.

The melon fruit fly, *B. cucurbitae* can be effectively managed by Male Annihilation Technique by attracting large numbers of males through "Cue Lure", a pheromone of *B. cucurbitae*. But, the other species of fruit fly *i.e.*, *D. ciliatus* cannot be managed by Male Annihilation Technique as no pheromones/ Para pheromones are available. To manage this species, application of

insecticides with baiting technique is useful. Therefore, to manage both the species integrate approach using field sanitation, large scale destruction of males by Male Annihilation Technique and application of insecticidal baits is effective. Recently, Navsari Agricultural University has developed a specialized NAUROJI trap using cue lure. In this trap a ply wood blocks of size 5cm x 5 cm x 1 cm impregnate with cue lure are used.

To popularize the integrated management technique as well as the trap developed by the university, front line demonstrations were given to the farmers of Khadaka chikhali village of Vyara taluka, Dist. Tapi during the year 2007-08 and 2008-09.

The village Khadka Chikhali is situated in Vyara block of Tapi district. It is situated 2 km away from Vyara town, the district place of Tapi and Krishi Vigyan Kendra, Vyara head quarter. Khadka Chikhali is a tribal dominated village with marginal farmers with limited land holdings. Even though, the village is situated in vicinity of Vyara town; no extension agency was catering the need of the farmers. They have to rely on local pesticide dealer for their technical needs.

The main crops of the village are paddy, groundnut, sugarcane and vegetable. Being an advantage of having in vicinity of the town, the farmers with the limited land holdings grow vegetables and sell it to local market. Among different vegetable crops, the farmers mostly depend on cucurbitaceous vegetables like bitter gourd, little gourd and cucumber. In cucurbits, the menace of fruit fly is one of the major constraints in the area. The farmers were



Fig. 1 : Front line demonstration

Table 1: Crop parameters from which impact gain measured					
S. N.	Particulars	Year	Treated	Untreated	% increase/ reduction
1.	Per cent infestation	2007-08	4.8 (3-6%)	18.75 (12-40%)	87.00
		2008-09	2.95 (0-6%)	23.55 (10-40%)	74.40
		Average	3.879	21.15	80.70
2.	Reduce in number of sprays	2007-08	1	5	80
		2008-09	1	5	80
		Average	1	5	80
3.	Yield t/ha	2007-08	10.54	9.62	9.56
		2008-09	10.19	8.31	22.12
		Average	10.365	8.965	15.84
4.	Income of the farmer Rs./ha.	2007-08	94860	86580	8280
		2008-09	101900	83100	18800
		Average	98380	84840	13540
5.	Expenditure /ha.	2007-08	1050	2500	1450
		2008-09	1050	2500	1450
		Average	1050	2500	1450
6.	Net income of farmers	2007-08	93810	84080	9730
		2008-09	100850	80600	20250
		Average	97330	82340	14990

Table 2 : Extension activities carried out in the village Khadka Chikhali			
S. N.	Name of activity	NO.	Beneficiaries
1	Training :On campus	One	20
	: Off campus	Two	37
2.	Visits to farmers	Eleven	97
3.	Field day cum impact study	One	20

Table 3 : Knowledge of fruit fly control in farmers of the village			
S. N.	Particulars	Before FLD	After FLD
1	Knowledge about insect pests of crop	Low	High
2.	Knowledge about fruit fly and its damage	Low	High
3.	Knowledge about fruit fly trap	Nil	High
4.	Knowledge about integrated management of fruit fly	Nil	High

unable to manage the fruit flies with chemical pesticides.

In the year 2008, Krishi Vigyan Kendra, Vyara has decided to demonstrate the technology for integrated management of Fruit fly in the village. The entry point visit was made by the scientists of the KVK, Vyara. Discussing with farmers, it was found that infestation of fruit flies is major limiting factor in production of cucurbitaceous vegetables. Considering the situation and dialogue with the farmers, plant protection specialist suggested implementation of integrated fruit fly management in cucurbitaceous vegetables and training as well as the demonstration was the need of the village. The interested farmers were given training with special emphasis on fruit fly species, their life cycle, nature of damage, and management strategies through power point

presentations. During both the years, 20 farmers each with 0.2 ha land were given demonstrations under Bitter gourd crop. Among different farmers, Kaushikbhai acted as resource person for the village.

The detailed components of IPM *i.e.*:

- Regular collection of damaged and fallen fruits and destruction with deep burying or by burning.
- Installation of "Cue Lure" NAUROJI traps @ 10 per hectare.

Application of bait using fermented water with jaggery and insecticide endosulfan applied as large droplets with broom are demonstrated, constant follow up visits were made and field days were organized.

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