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Madras Agric. J., 137-139 March, 1993

<https://doi.org/10.29321/MAJ.10.A01633>

DAMAGE LEVEL AND CONTROL OF POTATO TUBER MOTH IN NILGIRIS DISTRICT.

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ABSTRACT

Potato tuber moth damage was more at lower altitude (1000 - 1850 M) than higher altitude (1900 - 2500 M). Application of either quinalphos 0.05% or diflubenzuron 0.05% registered lesser damage by tuber moth and yield was higher in quinalphos treated plots.

Potato tuber moth (PTM), *Phthorimaea operculella* (Zeller) is one of the most damaging pests of potato (Haines, 1977). Control of potato tuber moth by chemical was reported by Lal and Prasad (1986). In Nilgiris district of Tamil Nadu, studies were made to identify the damage level of PTM at different elevations and to screen chemicals against the potato tuber moth.

MATERIALS AND METHODS

Potato tuber moth damage was assessed during main crop season (April - August) in ten villages of Udthagamandalam block (Table 1). The altitude ranged from 1800 to 2500 meter from MSL. Five fields were

selected in each village and hundred tubers were selected at random at the time of harvest and the per cent damage was arrived at.

A randomised replicated trial was conducted at Horticultural farm, Thummanatty during autumn 89 with a plot size 15m². Eight chemicals (Table 2) were evaluated for the control of PTM on cv. Kufri Jyoti. Carbofuran was applied at the time of sowing. In other treatments, chemicals were applied thrice at 20 days interval commencing from forty days of sowing. The PTM damage was assessed at harvest in two hundred tubers and per cent damage was arrived at.

Table 1. Potato tuber moth damage in different villages.

Villages	Altitude in Meter	Mean per cent damage in tubers (± 1 sd)
Wood House	2500	1.2 \pm 0.91
Udhagamandalam	2250	5.33 \pm 1.88
Nanjanad	2200	4.9 \pm 1.96
M.Pallada	2100	6.4 \pm 2.11
Naduvattam	1900	5.8 \pm 1.81
Kadanad	1850	10.2 \pm 4.02
Dhavani	1850	8.9 \pm 3.14
Anikorai	1850	11.0 \pm 2.90
Kenthorai	1800	12.4 \pm 3.07
Thummanatty	1800	18.7 \pm 2.67

Increase in damage was noticed in villages at lower altitude than in higher altitude.

RESULTS AND DISCUSSION

The damage by PTM in different villages ranged from 1.2 to 18.7 per cent (Table 1).

Similar report of higher damage at lower altitude was reported by Soeriaatmadja (1988).

Thummanatty, Kenthorai and Anikorai villages are in rain shadow regions and the average temperature ranges from 20-25 °C in autumn with warm conditions. Potato tuber moth has been reported as a pest mainly in warmer environment and higher temperature is to favour the rapid multiplication (Haines,

19877). The average temperature at higher altitude falls within 12 to 15 °C range and as reported by Raman (1988) the lesser damage under higher altitude is attributed to this adverse climatic condition.

The tuber damage in different insecticidal treatments ranged from 0.66 to 16 per cent (Table 2.). The order of efficacy in various insecticidal treatments in the ascending order was carbofuran, neem oil, alerate, Bacillue acephate, garlic oil, quinalphos, diflubenzuron. The damage was minimum in diflubenzuron (0.66%) and

Table 2. Effect of insecticides on potato tuber moth damage and yield.

Treatment	Dose (%)	Per cent tuber damage by PTM	Yield t/ha
Fenvalerate (Sumicidin)	0.01	6.33 b	10.33 abc
Quinalphos (Ekalux)	0.05	1.00 a	13.33 a
Acephate (Acetaf)	0.075	4.66 b	12.90 a
Neem Oil (Biosol)	0.4	10.0 c	12.13 ab
Garlic Oil (Allitin)	0.1	4.00 b	10.40 abc
Bacillus thuringiensis (Bactospeine)	0.05	4.66 b	11.10 abc
Diflubenzuron (Dimilin)	0.05	0.66 a	8.40 c
Carbofuran (Furadan)	2.25 kg a.i./ha.	13.00 c	11.13 abc
Control	-	16.00 c	8.8 bc

In a row, means followed by a common letter are not significantly different at 0.05 level (DMRT)

quinalphos (1%) sprayed plots as against 16 per cent in untreated check. The efficacy of quinalphos in minimising PTM damage was earlier documented by Srivastava and Deole (1988). The efficacy of diflubenzuron against PTM was due to its ovicidal and larvicidal effects (Dalebout, 1985).

The yield per hectare ranged from 8.40 to 13.33 tonnes. Quinalphos treated plot registered higher yield (13.33 t/ha) followed by acephate (12.90 t/ha). Though diflubenzuron registered minimum PTM damage, corresponding yield increase was not recorded and it was lesser than control.

From this study, it could be summarised that PTM damaged was more at lower altitudes of Nilgiris district and the pest can be minimised by quinalphos 0.05% spary.

Madras Agric. J., 139-142 March, 1993

EFFECT OF SKIN COATING, 2,4-D AND PREPACKING ON THE SHELF LIFE OF ACIDLIME FRUITS

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ABSTRACT

An experiment to extend the marketable shelf life of acidlime fruits with skin coating, 2,4-D and prepacking either alone or in combinations was conducted at the Horticultural Research Station, Tamil Nadu Agricultural University, Periyakulam. Frutox (Wax emulsion) recorded the lowest physiological loss of weight (6.0 - 6.2 per cent) as against 11.2 percent in the control. The different levels of Frutox (4,8 and 12 per cent) did not vary significantly for physiological loss of weight. Prepacking also recorded low physiological loss of weight (5.6 per cent). A combination of Frutox and prepacking significantly reduced the physiological loss of weight to 0.8 to 1.0 per cent thus revealing cumulative effects. Dipping with 2,4-D 100 ppm did not influence the physiological loss of weight either when used alone or in combination with Frutox or with Frutox and prepacking. Frutox and 2,4-D individually had no effect on the intensity of storage rots as compared to control. Prepacking favoured the incidence of storage rots, while prepacking in combination with Frutox further enhanced the disease intensity. On the other hand, 2,4-D + Frutox + prepacking combination reduced the incidence of storage rot remarkably. Prepacking prolonged the marketable shelf life of acidlime to 17 days as against 5.7 days in the control. Further, extension of shelf life upto 25.3 days.

The rate of transpiration and respiration governing the loss of moisture and nutrients are of special concern in detached fruits since the losses are no longer replaced by the mother tree. The kind and extent of these

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physiological activities determine to a large extent the storage longevity of fruits and hence efforts to keep them at the minimum threshold level is of paramount importance. Acid lime is a commodity of considerable