



Evaluation of CPCRI red weevil pheromone lure in pollachi tract of Tamil Nadu

Key words: CPCRI lure, food attractants, trapping, red weevil

The red weevil *Rhynchophorus ferrugineus* F. (Coleoptera: Curculionidae) is the most destructive pest of coconut palm, oil palm and date palm in India and south East Asia. Grubs of this pest tunnel inside the palm and feed on the soft portions especially the 'heart' resulting in death of the infested palms. The pheromone traps that aid monitoring and pest control is an important component of IPM (Abraham *et al.*, 1989). Effective weevil trapping efficiency can be enhanced by adding suitable food attractants (Abraham *et al.*, 1999). Efficacy of synthetic aggregation pheromone Ferrolure against red palm weevil in Tamilnadu was reported by Rajamanickam *et al.*, (2000). A study was initiated to evaluate the lures available commercially with different food attractants, against red weevil in Pollachi tract of Tamil Nadu.

Field evaluation trial on CPCRI red weevil pheromone lure with different food attractants and a check of commercially available Chemtica Ferrolure in RBD design was conducted during 2004-2005 at Anaimalai in farmer's coconut garden. The pheromone lure (Ferrugineol, 4 methyl - 5 nonanol) liquid in glass capillary dispenser vial containing 0.2ml was evaluated with various food attractants *viz.*, sugarcane molasses, macerated pine apple, macerated cashew apple, toddy, coconut water, fermented butter milk as in the Table 1. The check of commercially available Chemtica Ferrolure trap was also evaluated with sugarcane molasses only as food attractant, since this food lure alone trapped significantly more number of red weevils than other food attractants tried Rajamanickam *et al.* (2000) and compared with CPCRI red weevil pheromone lure. The food attractants were mixed with 5 ml of glacial acetic

Table 1. Treatment details with various food attractants used

Treatment details	Quantity	Supplements
Sugarcane molasses	1000 g	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Macerated banana	250 g/lit water	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Macerated pineapple	250 g/lit water	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Macerated cashew apple	250 g/lit water	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Coconut toddy	1000 ml	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Coconut water	1000 ml	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Butter milk	1000 ml	5 gm yeast +5 ml glacial acetic acid +2gm carbaryl
Control	1lit of water	Carbaryl @ 2gm

acid + 5 grams of yeast granules + 0.3% carbaryl so as to kill the trapped weevils. The trap unit consists of plastic bucket tied to the trunk of the palm to 5 feet above the ground level. The CPCRI pheromone lure (after opening the dispenser lid) and Chemtica Ferrolure (after opening the sachet) were fastened to the bucket lid.

The five litre plastic bucket had four windows (5 x 1.5 cm) cut equidistantly just below the upper rim of the bucket. On the exterior surface of the bucket was covered with jute sack cloth, so as to provide better grip for the attracted weevils, enabling them to crawl into the trap. Pheromone dispenser without food lures was maintained as a control. There were nine treatments with three replications and the experiment was conducted in Randomized Block Design. The buckets were serviced once in 2 weeks. The trapped weevils (both the sexes)

recovered every week, cumulative total for a month was arrived and the data were analysed statistically by DMRT.

Among the treatments tried, Chemtica Ferrolure trap (T8) containing sugarcane molasses trapped significantly the highest mean number of weevils per month upto 24.40 followed by (T1) CPCRI pheromone dispenser + sugarcane molasses 18.98 and (T5) pheromone + toddy treatment (16.41) (Table 2). There was a gradual decline in number of red weevils trapped from 1- 5 months. Very few numbers of weevils alone were captured during the 5th month. The effect of CPCRI and Chemtica Ferrolure pheromone lures were observed upto 5 months when they were suspended under shade. The treatments involving (T2) Pheromone + macerated banana and (T3) Pheromone + macerated pineapple were on par in capturing the red palm weevils up to 10.55 and 9.26 /month respectively. Similarly the treatments

Table 2. Evaluation of CPCRI pheromone lure with various food attractants for trapping red palm weevil

No	Treatments	Mean number of Red palm weevil trapped *					Grand mean
T1	CPCRI pheromone	30.25	24.54	18.76	13.20	8.15	18.98
	+ sugarcane molasses	(5.50)	(4.95)	(4.33)	(3.63)	(2.85)	(4.35)b
T2	CPCRI pheromone	14.65	13.18	10.42	9.58	4.90	10.55
	+ Banana (macerated)	(3.82)	(3.63)	(3.22)	(3.10)	(2.21)	(3.24)d
T3	CPCRI pheromone + pineapple (macerated)	12.62	12.34	8.95	8.12	4.24	9.26
		(3.56)	(3.51)	(2.99)	(2.84)	(2.10)	(3.04)d
T4	CPCRI pheromone + cashew apple (macerated)	10.75	9.27	7.98	5.45	3.30	7.35
		(3.28)	(3.04)	(2.82)	(2.33)	(1.82)	(2.71)e
T5	CPCRI pheromone + coconut toddy	26.25	24.44	15.14	10.10	6.12	16.41
		(5.12)	(4.94)	(3.89)	(3.18)	(2.47)	(4.05)c
T6	CPCRI pheromone + coconut water	10.13	9.21	8.12	4.79	3.24	7.10
		(3.18)	(3.03)	(2.84)	(2.18)	(1.80)	(2.66)e
T7	CPCRI pheromone + fermented butter milk	9.15	8.61	6.58	3.66	2.20	6.04
		(3.02)	(2.93)	(2.57)	(1.91)	(1.48)	(2.45)f
T8	Chemtica Ferrolure + sugarcane molasses	42.50	31.75	26.85	14.60	6.30	24.40
		(6.52)	(5.63)	(5.018)	(3.82)	(2.51)	(4.93)a
T9	CPCRI pheromone + alone (control)	8.50	6.25	3.62	2.13	1.22	4.34
		(2.92)	(2.50)	(1.90)	(1.45)	(1.10)	(2.08)g

* Mean of 3 replications.
 Figures in parentheses are transformation values.
 In a column, means followed by the same letter are not statistically different by DMRT

viz., (T4) Pheromone + macerated cashew apple and (T6) pheromone + coconut water were also on par in attracting the red palm weevils up to 7.35 and 7.10 / month respectively. Of course, the treatment (T7) Pheromone + fermented butter milk also has got the efficacy to certain extent in capturing the red palm weevils up to 6.04 numbers. Rajamanickam *et al.*, (1995) and Saritha Nair *et al.*, (2000) reported that in toddy and sugarcane food baits more weevils were trapped. Hence this result of this experiment is found in agreement with findings of the above workers.

It is concluded from this study that even though the commercially available Chemtica Ferrolure trapped maximum number of red weevils, it is highly expensive since cost of the lure was Rs.225/-. Hence, the low cost Rs. 30/- of CPCRI pheromone lure can be exploited along with sugarcane molasses/toddy/banana as food attractants in capturing significantly more number of red weevils. Additions of specific food attractant materials are highly essential for enhancing trapping efficiency of pheromone lures. So for mass trapping of red weevil in endemic areas, keeping food baited low cost CPCRI red weevil pheromone traps will be one of the ideal strategies of IPM Programme.

References

- Abraham, V.A., Abdulla koya K.M and Kurian.C. 1989. Integrated management of red palm weevil *Rhynchoporous ferrugineus* in coconut garden. *J. Plantn. Crops* 16: 159-162.
- Abraham, V.A, Sarita S.Nair and Radhakrishnan Nair C.P. 1999. A comparative study on the efficiency of pheromone lures in trapping red palm weevil in coconut gardens. *Indian Coconut. J.* 30: 1-2.
- Rajamanickam, K., Kennedy F.J.S and Chritopher Lourdraj. A.1995. In: medlin gem_facultiet landbou kundige entogepaste biolotsche wetemchappn university guet. 60 (3a): 803- 805.
- Rajamanickam, K., Ramaraju K., Packiaraj D., Hameed Khan. H and Subaharan, K. 2000. Effect of Ferrolure in the management of red palm weevil in coconut. In: Placrosym XIV. pp. 447- 448.
- Saritha S.Nair, Abraham V.A and Radhakrishnan Nair. C.P. 2000. Efficiency of different food baits in combination with pheromone lure in trapping red palm weevil. *Pestology* 24(6): 3-5.

¹ Coconut Research Station (TNAU), Aliyarnagar

²CPCRI, Regional Station, Kayamkulam

K. Rajamanickam

M. Mayilvaganan

C. P. R. Nair