treatment with *P.fluorescens* 10 g / kg or TNAU NO 60 EC (C) 20 ml / kg or No 20 ml / kg to manage the aphids and leafhoppers on bhendi.

References

Jotwani, M.G. and Srivastava, K.P. (1981). Insecticide of the future II. Protection against field pests. *Pesticides,* **15(1**1): 40-47.

Patel, M.C. and Patel, J.R. (1996). Effect of botanicals on behavioral response and on growth of the jassid, *Amrasca biguttula biguttula* Ishida. *Indian J. Plant Prot.,* **2(112):** 28-32.

Pawar, A.D. and Prasad, J. (1988). Evaluation of some parasites in biocontrol of cotton bollworms in Haryana. *Indian J. Plant Prot.,* **13(l):** 21-24.

Madras Agric. J., 95 (1-6): 229-232 January-June 2008
https://doi.org/10.29321/MAJ.10.100572

Research Notes

Efficacy of Neem Products And Insecticides Against Cotton Stem Weevil, *Pempherulus afflnis* Faust in Coimbatore

B. RATNA KUMARI AND S. CHANDRASEKARAN
Department of Agricultural Entomology, Tamil Nadu Agricultural University,Coimbatore-641003, Tamil Nadu

In India, cotton crop is damaged by over 160 different species of insects from the time of sowing to harvest and thus stability of cotton production has been frequently threatened by the outbreak of insect pests. Cotton stem weevil has been reported as a major pest of cotton next to boll worms in South India (Fletcher, 1914; Ayyar, 1918; Parameswaran, 1983). There was 65.8 per cent mortality, 72.0 per cent reduction in boll production and 78.9 per cent reduction of seed cotton yield when cotton plants are infested by this pest (Parameswaran and Chelliah, 1984). The young grub feeds on medulla and cambial regions of the plant leading to gall formation and wilting of plant. Further, high speed winds cause breakage of plant. Hence, study was conducted to know effective product among neem products and insecticides for the control of the pest.

A field experiment was conducted with MCU 5 cotton variety at farm, TNAU, Coimbatore during summer, 2003 to evaluate efficacy of different insecticides along with neem cake and neem oil. The experiment was laid in randomized block design with 20m^2 plots and all the treatments were replicated thrice. Normal cultural practices were followed (Crop Production Guide, 1999). Neem cake @ 500 kg ha^{-1} was given as basal application. Drenching of other treatments was followed commencing from 15 days after sowing (DAS) at 10 days interval for three times at 100

Table 1. Efficacy of neem products and insecticides against cotton stem weevil, *P. affinis* and the cost benefit ratio in summer, 2003

Treatments	Dose	Per cent infestation (DAS) 30	60	90	120	Yield (q ha^{-1})	Additional yield over control	Additional income (Rs.)	Cost of treatment (Rs.)	CBR
Neem cake	500 kg ha^{-1}	5.01 (12.62)^{bc}	6.68 (14.90)^{d}	7.79 (16.19)^{c}	8.91 (17.35)^{cd}	11.40	3.40	8,330.0	4,000.0	1:1.83
Neem oil 0.03%	4 ml l^{-1}	3.34 (10.30)^{abc}	3.90 (11.33)^{bcd}	5.01 (12.81)^{bc}	6.12 (14.10)^{bcd}	12.65	4.65	1,1392.5	4,140.0	1:2.75
Carbaryl 50 WP	4g l^{-1}	2.23 (8.46)^{abc}	2.78 (9.50)^{bc}	3.90 (11.33)^{bc}	4.45 (12.13)^{bc}	12.80	4.80	11,760.0	9,180.0	1:1.28
Carbofuran 3 G	30 kg ha^{-1}	2.23 (6.79)^{abc}	5.57 (13.42)^	8.35 (16.57)^{c}	10.02 (18.41)^{d}	10.80	2.80	6,860.0	12,240.0	1:0.56
Profenofos 50 EC	4 ml l^{-1}	0.56 (2.48)^{a}	4.45 (12.13)^{bcd}	6.68 (14.90)^{c}	6.68 (14.90)^{cd}	13.05	5.05	1,2372.5	9,900.0	1:1.24
Lindane 20 EC	3 ml l^{-1}	1.11 (4.95)^{ab}	2.23 (8.46)^{b}	2.23 (8.47)^{ab}	2.78 (9.50)^{ab}	14.35	6.35	15,557.5	3,307.5	1:4.7
Chlorpyriphos 20 EC	5 ml l^{-1}	0.56 (2.48)^{a}	0.56 (2.48)^{a}	1.45 (5.42)^{a}	1.67 (5.99)^{a}	14.60	6.60	16,170.0	5,400.0	1:2.99
Untreated check		5.57 (13.17)^{c}	6.12 (13.97)^{cd}	7.24 (15.29)^{c}	8.35 (16.65)^{cd}					

ml per plant. Infestation was assessed by counting the total number of wilted plants, dead plants and number of plants showing characteristic galls near the collar region on 30, 60, 90 and 120 DAS. Seed cotton yield and expenditure were recorded. The percentage infestation was worked out for each treatment. The data were transformed using angular transformation (Snedecor and Cochran, 1967). Duncan's Multiple Range Test (DMRT) was applied to compare the treatments (Gomez and Gomez, 1976).

The per cent infestation of stem weevil was found to be significant among treated plots. Chlorpyriphos @ 5 ml l^{-1} excelled all other treatments in minimizing the infestation (Table 1) with 0.56, 0.56 1.45 and 1.67 per cent infestation on 30, 60, 90 and 120 DAS respectively. It was followed by lindane 20 EC 23 ml l^{-1}, carbaryl 50 WP @ 4g l^{-1}, neem oil 0.03% @ 4ml l^{-1}, Profenophos 50 EC @ 4ml l^{-1} and neem cake @ 500 kg ha^{-1}. However, carbofuran 3G @ 30 kg ha^{-1} treated plots recorded higher damage (2.23-10.02%), even higher than untreated check. Chlorpyriphos treated plots recorded higher yield (14.06 q ha^{-1}) as against 8.0 q ha^{-1} in untreated check. Lindane application recorded high cost benefit ratio (1:4.7).

The efficacy of chlorpyriphos and other chemicals might be due to translaminar movement of the insecticides across the stem and long residual persistence which would have made the plants to deter oviposition and resist the development of the progeny in the stem. The present findings are in conformity to the findings of Mathew *et al.* (1997) who reported that swabbing of chlorpyriphos at 0.05 per cent was very effective in controlling the banana pseudo stem borer *Odoiporus longicollis* when compared to neem seed extract (NSE) 0.5 per cent. Mohan *et al.* (2001) reported that application of neem cake @ 150 kg ha^{-1} followed by one per cent neem oil drenching and earthing up was effective next only to carbofuran 3G @ 1 kg a.i ha^{-1} where as according to present findings, carbofuran was least effective. This might be due to the resistance development in the pest to carbofuran. Charlet *et al.* (1985) reported that carbamate insecticides (aldicarb, carbofuran) were more effective than organophosphate tebufos in reducing Sunflower stem weevil, *Cylindrocopturus adspersus* (Leconte) incidence. The overall comparison of treatments showed that chemical treatments were effective compared to neem products. This falls in line with the findings of Sellamal Murugesan *et al.* (1979), Parameswaran (1983), Parameswaran and Chelliah (1984) and Mohan *et al.* (2001).

References

Ayyar, T.V.R. (1918). Some notes on the habits and life history of the stem weevil attacking Cambodia cotton *(Pempheres affinis* Faust). *Madras Agrl. Dept. Year Book.* Govt. Press, 1-13.

Charlet, L.D, Oseta, C.Y. and Gulya, T.J. (1985). Application of systemic insecticides at planting on sunflower stem weevil (Coleoptera : Curculionidae) on larvae numbers, plant lodging and seed yield in North Dakota. *J. Econ. Entomol.*, **78:** 1347-1349.

Crop Production Guide. (1999). Tamil Nadu Agric. Univ., Coimbatore and Commissioner of Agriculture, Chepauk, Chennai. pp.148-171.

Faust, J. (1898). "Beschreibung neur Coleoptera Von Vorder Und Hinterindien aus der Sammlung des Hm Andrews in London". *Dtsch. Ent., Z.* **42:** 319.

Fletcher, T.B. (1914). *Some South Indian Insects.* Superintendent, Govt. Press, Madras. 565p.

Gomez, K.A. and Gomez, A.A. (1976). *Statistical procedure for agricultural research with emphasis on rice*. International Rice Research Institute, Los Banos, Philippines. 294p.

Mathew, M.P., Nair, S.R. and Sivaraman, S. (1997). Management of pseudostemborer of banana, *Odoiporus logicollis. Indian J. Ent.,* **59(3):** 269-273.

Mohan, S., Chitra, N. and Raveendran, T.S. (2001). Evaluation of different methods of control against cotton stem weevil, *Pempherulus affinis* Faust. *Pestology,* **25(8):** 10-11.

Parameswaran, S. (1983). *Ecology, host resistance and management of the cotton stem weevil, Pempherulus affinis Faust.* Unpub. Ph.D. Thesis, Tamil Nadu Agricultural University, Coimbatore, India. 88p.

Parameswaran, S. and Chelliah, S. (1984). Damage potential and control of cotton stem weevil, *Pempherulus affinis. Trop. Pest Mgmt.,* **30(2):** 121-124.

Sellammal Murugesan, Parameswaran, S. and Balasubramanian, M. (1979). Field evaluation of some insecticidal treatment for the control of cotton stem weevil, *Pempherulus affinis* Fst. *Entomon.,* **4:** 41-44.

Snedecor, G.W and Cochran, W.G. (1967). Statistical methods. Iowa University Press, New York.

Madras Agric. J., 95 (1-6): 232-236 January-June 2008

Research Notes

Field Screening of cotton accessions for resistance to Cotton stem weevil *Pempherulus affinis* Faust

B. RATNA KUMARI AND S. CHANDRASEKARAN

Department of Agricultural Entomology, Tamil Nadu Agricultural University,Coimbatore-641003, Tamil Nadu

Cotton stem weevil has attained some notoriety in South India as a pest of exotic and indigenous cotton and was at one time looked upon us the most serious enemy of the 'raiyat' in cotton growing tracts. Extensive out breaks of *P.affinis* have been initially reported in Bhavanisagar, Gobichettiplalayam areas (Thirumurthi *et al.,* 1974) and Cambodia tracts of Coimbatore district to the extent of 65 per cent The ruling varieties proved susceptible to the pest and no variety has been found to be totally immune so far. Among the many varieties tried for resistance, Nadan in Asiatic cottons and Bourbon, Quebrandinho, Verdao and Moco in American Group were highly resistant (Balasubramanian, 1963). Unfortunately, all the five resistant varieties were perennial, late in habit and in addition the members of the American group were defective in boll dehiscence and susceptible to leaf hoppers. Therefore, a study was conducted to find out resistant varieties among 153 cotton accessions.