

Studies on Efficacy of Certain Eco-friendly Pesticides and Botanicals on Pest Complex of Betelvine (*Piper betel* L.)

Key words : Betelvine, Botanicals, Pesticides.

Betelvine (*Piper betel* L.) is an important cash crop of India. Cultivation of this crop is greatly affected by a number of insect pests and diseases. In Betelvine plant protection chemicals are used in larger scale because the crop is susceptible to insect pests like mites (Guha, 2006) and tobacco caterpillar. Since Betelvine leaves are consumed by humans in the form of betel application of pesticides is discouraged (Raut and Bhattacharya, 1999). Enough care is needed to give ample interval between the application of chemicals and picking of leaves to reduce the chemical residue below the toxic level. By keeping the above factors in view attempts were made to know the efficacy of ecofriendly pesticides like malathian and dichlorovos and botanicals like neem kernel extract 5%, tobacco decoction 2% and wettable sulphur 0.3% on pests like mites, tobacco caterpillar and sesbania stem borer.

The experiment was conducted for two years (2001-02 and 2002-03) at three different locations viz., Machavaram (Guntur Dist.), Inamadugu (PSR Nellore Dist.) and Kothapatnam (Prakasam District). The variety Local Kapoori was used for application of all treatments. The experiment was laid in randomized block design with seven treatments and four replications. Each plot was raised in 3 rows of 12 meters length. The treatments are T₁-Neem kernel extract 5%; T₂-Tobacco decoction 2%, T₃- wettable sulphur 0.3%, T₄-neem oil 0.5%, T₅-malathian 0.05%, T₆-dichorovos 0.05% and T₇-untreated check. Data was recorded on % leaves damaged by tobacco caterpillar, % leaves damaged by mites, % plants damaged by sesbania stem borer and Leaf yield in lakhs/ha during the period of pest infestation. Data was analysed statistically as per standard statistical procedures (Singh and Choudhary 1977).

Table 1. Efficacy of eco friendly pesticides and botanicals on pest complex of Betelvine and leaf yield during pest damage period (Mean data of 3 locations over 2years).

S.No	Treatments	% leaves damaged by tobacco caterpillar	% leaves damaged by mites	% plants damaged by sesbania stem borer	Leaf yield in lakhs/ha during the period of pest infestation.
1	T ₁ -Neem kernel extract 5%	2.1 (7.9)*	16.4 (23.6)	15.4 (23.1)	9.86
2	T ₂ -Tobacco decoction 2%	8.6 (17.0)	19.5 (25.9)	17.7 (24.8)	9.61
3	T ₃ - Wettable sulphur 0.3%	12.8(20.9)	10.4 (18.4)	21.7 (27.7)	9.56
4	T ₄ -Neem oil 0.5%	4.5(12.2)	16.4 (23.6)	14.5 (22.3)	10.03
5	T ₅ -Malathian 0.05%	1.4 (6.6)	11.9 (19.9)	11.3 (19.6)	10.82
6	T ₆ -Dichorovos 0.05%	1.7 (7.5)	13.4 (21.2)	10.9 (19.2)	10.33
7	T ₇ -Untreated check	16.6 (24.0)	32.0 (34.0)	22.1 (28.0)	8.31
	SEm±	0.68	1.27	0.54	0.14
	C.D. (p=0.05)	2.1	3.9	1.6	0.42
	C.V	5.6	10.4	15.03	11.08

* Values in parenthesis are transformed values

The results of the pooled data from three centres over two years (table 1) revealed that all the treatments tried were found significantly superior to check plots (T₇) in reducing the incidence of pest damage. Spraying of neem kernel extract 5% two times at an interval of 15 days was found to be as effective as toxic insecticides (malathion and dichlorovos) which recorded 1.4% leaf damage by tobacco caterpillar as against 16.6% leaf damage in untreated plots. Application of wettable sulphur 0.3% two times at 15 days interval effectively controlled the mites which recorded 10.4% leaf damage where the check plots recorded 32.0 leaf damage. The efficacy of neem products was found to be intermediary in reducing the incidence of sesbania stem borer.

All the treatments tried significantly recorded higher leaf yield when compared to check plots (T₇). Maximum leaf yield of 10.82 lakhs/ha was recorded in the plots treated with malathion 0.05% followed by dichlorovos 0.05% spray (10.33 lakh/ha). Spraying of neem oil 0.5% was found to be equally effective in recording higher leaf yield (10.03 lakhs/ha) during the period of pest infestation when compared to toxic insecticides.

Based on the results it is concluded that the neem kernel extract 5% solution and tobacco decoction showed reduced infestation of tobacco caterpillar which may be due to the repellent and antifeedant activity. Regarding mites infestation, wettable sulphur applied plot recorded reduced mites infestation which may be due to miticidal activity of the same component.

LITERATURE CITED

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(Received on 13.02.2012 and revised on 18.04.2012)