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Short Communications

Efficacy of seed treatment with botanicals in the management of thrips under nursery condition

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Keywords

Botanicals, thrips, seed treatment, DAE

A B S T R A C T

A nursery experiment was conducted to evaluate the efficacy of seed treatments with botanical oils at different doses, spray application of botanicals and recommended insecticide for protection of early stage of thrips infesting tomato. The seed treatment with karanj oil at both doses @20 and 10 ml/kg seed emerged to be the most effective treatments in controlling thrip population at 25, 30 and 35 DAE, followed by the treatment with neem based material.The treatment with recommended insecticide endosulfn 0.05% show desirable effect against this pest. The treatment with seed treatment and spray application of other botanicals also exerted good impact against thrip.

Introduction

Tomato (*Lycopersicon esculentum* Mill) is one of the most popular and remunerative crops grown round the year in several parts of the world for its delicious fruits. It's wide adaptability and profitability gains great importance and occupy the prime position among vegetables. For production of higher yield and good quality fruits, the use of healthy and disease free viable seedlings are indispensable for transplanting in main field. This crop is vulnerable to pest attacks from the time plants first emerge to harvest. These are main implement to successful nursery production. Amongst, Thrips (*Frankliniella schulterzi* Trybon) is a serious pest of tomato, which damage the crop by suking the cell sap constantly and there by arresting the growth of the crop. Pest control, as practiced today is mainly depending on the use of synthetic insecticides. Uses of synthetic chemicals are imposing several deleterious effects on the ecosystem. The recent advances in research are directed towards use of botanicals antifeedent, repellent of natural origin which are less toxic besides being easily biodegradable in nature (Rajasekharean and Kumar swami, 1985). By observing all the above facts, the present investigations were therefore, undertaken to suggest the safer and compatible alternative method of pest control in order to save the crop from diastors pests and at the same time to ensure ecosafety to the enviorment and to safeguard

the consumers by integrated approaches utilizing botanicals.

Materials and Methods

A nursery experiment was conducted at the Experimental Farm of Department of Entomology, Dr.Panjabrao Deshmukh Krishi Vidyapeeth, Akola during *Kharif* season of two consequent year i.e. 2005-06 and 2006-07. In nursery trial, thirteen treatments (Table-1) including an untreated control was laid out in Randomized Block Design (RBD) and replicated thrice. The healthy Pusa Ruby seeds of 1000 in number were used for each treatment by dibbing uniformly at 1 cm distance in 10 rows on each prepared raised seed bed. The seeds were dibbed at a depth of 2 cm and they were covered with a thin layer of fine soil. The seed treatment with botanicals oils as per different treatment doses for one kilogram tomato seeds was done before seed sowing. Thrips population was recorded at 15,20,25,30 and 35 days after seed emergence on five randomly selected seedlings from each treatment plot. From each seedling, three leaves each one at top, middle and bottom layer were selected for recording the population of thrips.

Result and Discussion

From the pooled data it was observed that no incidence of thrips was noticed up to 20 DAE, however, its presence was seen at 25 DAE onwards. The seed treatment with karaj oil at 20ml/kg seed exhibited thrips incidence to the tune of 1.15, 0.54 and 0.13 /3 leaves on 25, 30 and 35 DAE, respectively. Whereas, its lower dose at10 ml/kg seed accounted thrip incidence to the extent of 0.26,0.52 and 1.05 thrips /3 leaves on 25,30 and 30 DAE, respectively. From this it is observed that the seed treatment with karanj oil at both doses appeared to be quite effective in protecting tomato seedlings against thrips incidence. The results on the positive impact of seed treatment with karanj oil could not be compared with other researches on tomato crop. However, Chouke (2004) reported that the seed treatment with karanj oil did not perform well against thrips incidence on brinjal crop contradicting results obtained in the present investigations.

The treatment with neem based material i.e. the seed treatment with neem oil at both dosages of 10 and 20 ml/kg seed and spray application of neem seed extract 5% exerted good response against this pest by keeping thrips incidence at almost minimum level on respective days.

These findings of present investigations as regard to the influencing effect of seed treatment with neem oil against thrips on tomato could not be corroborated with other workers for want of published literature, however, Ukey *et al.* (2000) and Chouke, (2004) reported that seed treatment with neem oil did not exhibit much influence against thrips on chilli and brinjal crop respectively, contradicting the results of the present investigations.

The seed treatment with mahua oil at both doses at10 ml and 20 ml/kg seed exerted comparatively good impact than those of remaining botanicals i.e. seed treatment with eucalyptus oil at both the doses of 10ml and 20ml/kg seed, spray application of garadi leaf extract 2.5 percent and nirgudi leaf extract 5% on respective days.

The insecticides endosulfan 0.05percent had shown the positive impact against thrips recording 1.76, 2.39 and 3.36 thrips/3 leaves on 25, 30 and 35 DAE, respectively. The present findings as regard to the influence of endosulfan against thrips are supported with the views of Chouke (2004) on brinjal crop.

Table.1 Effect of seed treatments on population of thrips/leaf at 25,30 and 35 DAE

Tr No.	Treatments	No. of thrips / leaf at 25 DAE			No. of thrips / leaf at 30 DAE			No. of thrips / leaf at 35 DAE		
		2005-06	2006-07	Pooled mean	2005-06	2006-07	Pooled mean	2005-06	2006-07	Pooled mean
T_1	Seed treatment with neem oil at10ml/kg seed	0.92 (1.19)	0.03 (0.73)	048 (0.96)	0.85 (1.16)	0.94 (1.20)	0.90 (1.18)	0.71 (1.10)	2.70 (1.79)	1.71 (1.45)
T_2	Seed treatment with neem oil at20ml/kg seed	0.06 (0.75)	0.08 (0.76)	0.07 (0.75)	1.78 (1.51)	0.06 (0.75)	0.92 (1.13)	1.84 (1.53)	0.71 (1.10)	1.28 (1.32)
T_3	Seed treatment with karanj oil at10ml/kg seed	0.11 (0.78)	0.40 (0.95)	0.26 (0.87)	0.11 (0.78)	0.92 (1.19)	0.52 (0.98)	0.99 (1.22)	1.11 (1.27)	1.05 (1.25)
T_4	Seed treatment with karanj oil at20ml/kg seed	1.57 (1.44)	0.73 (1.11)	1.15 (1.28)	1.06 (1.25)	0.03 (0.73)	0.54 (0.99)	0.12 (0.79)	0.14 (0.80)	0.13 (0.80)
T_5	Seed treatment with mahua oil at10ml/kg seed	3.26 (1.94)	2.12 (1.62)	2.69 (1.78)	3.54 (2.01)	2.19 (1.64)	2.87 (1.83)	2.81 (1.82)	5.60 (2.47)	4.21 (2.14)
T_6	Seed treatment with mahua oil at20ml/kg seed	4.08 (2.14)	2.70 (1.79)	3.39 (1.96)	3.26 (1.94)	2.32 (1.68)	2.79 (1.81)	2.78 (1.81)	4.25 (2.18)	3.52 (2.00)
sT_7	Seed treatment with eucalyptus oil at10ml/kg seed	2.96 (1.86)	3.87 (2.09)	3.42 (1.98)	2.92 (1.85)	4.12 (2.15)	3.52 (2.00)	6.10 (2.57)	7.34 (2.80)	6.72 (2.68)
T_8	Seed treatment with eucalyptus oil at20ml/kg seed	3.30 (1.95)	3.00 (1.87)	3.15 (1.91)	4.21 (2.17)	3.58 (2.02)	3.90 (2.09)	4.70 (2.28)	5.12 (2.37)	4.91 (2.33)
T_9	Spray of garadi leaf extract 2.5 %	5.12 (2.37)	4.79 (2.30)	4.96 (2.34)	6.16 (2.58)	6.84 (2.71)	6.50 (2.65)	8.08 (2.93)	6.84 (2.71)	7.46 (2.82)
T_{10}	Spray of nirgudi leaf extract 5 %	4.93 (2.33)	3.22 (1.93)	4.08 (2.13)	4.93 (2.33)	5.75 (2.50)	5.34 (2.41)	7.12 (2.76)	5.75 (2.50)	6.44 (2.63)
T_{11}	Spray of neem seed extract 5 %	1.75 (1.50)	0.75 (1.12)	1.25 (1.31)	2.92 (1.85)	1.93 (1.56)	2.43 (1.71)	1.66 (1.47)	2.63 (1.77)	2.15 (1.62)
T_{12}	Spray of endosulfan 0.05 %	2.53 (1.74)	0.99 (1.22)	1.76 (1.48)	2.81 (1.82)	1.96 (1.57)	2.39 (1.70)	2.81 (1.82)	3.91 (2.10)	3.63 (1.96)
T_{13}	Untreated (control)	5.21 (2.39)	6.26 (2.60)	5.74 (2.49)	9.55 (3.17)	6.95 (2.73)	8.25 (2.95)	10.99 (3.39)	8.56 (3.01)	9.78 (3.20)
'F' test		Sig	Sig	Sig	Sig	Sig	Sig	Sig	Sig	Sig
SE (m) $\pm$		0.13	0.16	0.10	0.11	0.11	0.08	0.14	0.14	0.11
CD at 5 %		0.37	0.46	0.30	0.32	0.35	0.24	0.41	0.42	0.32

Figures in parenthesis are $\sqrt{x}$ +0.5 transformed value DAE = Days after emergence

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