International Journal of Chemical Studies

P-ISSN: 2349–8528
E-ISSN: 2321–4902
IJCS 2018; 6(5): 269-271

Received: 01-07-2018
Accepted: 05-08-2018

HN Markad
Department of Plant Pathology, College of Agriculture, Latur, VNMKV, Parbhani, Maharashtra, India

SJ Magar
Department of Plant Pathology, College of Agriculture, Latur, VNMKV, Parbhani, Maharashtra, India

MD Navale
Department of Plant Pathology, College of Agriculture, Latur, VNMKV, Parbhani, Maharashtra, India

SS Dhawan
Department of Plant Pathology, College of Agriculture, Latur, VNMKV, Parbhani, Maharashtra, India

Correspondence
HN Markad
Department of Plant Pathology, College of Agriculture, Latur, VNMKV, Parbhani, Maharashtra, India

Efficacy of insecticides, oils and antibiotics against management of Sesamum phyllody

HN Markad, SJ Magar, MD Navale and SS Dhawan

Abstract
Sesamum (*Sesamum indicum* L.) is one of the oldest oilseed crops and has been cultivated in ancients times. Phyllody of sesamum is one of the most important disease which can causes more economic yield losses. Phyllody of sesamum produced various types of disease symptoms and transmitted by insect, grafting and dodder. Present investigation carried out in Kharif, 2017 for management of sesamum phyllody under field condition. For the management of sesamum phyllody disease insecticides, oils and antibiotics were used among this all antibiotic were recorded as effective for management of sesamum phyllody followed by insecticides and oils. The effect of integrated management on sesamum phyllody disease can be controlled by seed treatment with insecticide i.e. imidacloprid and spraying of antibiotic tetracycline. Seed treatment with insecticide imidacloprid and spraying thiomethoxam effectively control the vector leaf hopper and thereby reduce the incidence of phyllody disease. In antibiotic, seed treatment imidacloprid and spraying tetracycline were found effective followed by seed treatment imidacloprid and spraying thiomethoxam. The highest disease incidence was recorded in spraying of monocrotophos.

Keywords: sesamum phyllody, management, insecticides, oils and antibiotics

Introduction
Sesamum is cultivated in different part of country which used as a important oilseed crop in world. Sesamum is oldest indigenous oilseed crops, which has largest history in India. Sesamum is very important crop due to its qualities and nutritive values. Sesamum seeds are rich source of oil and protein. Its oil content generally varies from 46 to 52 per cent and protein about 20 per cent. Sesame oil is mainly used for edible purposes (70%) viz. cooking and salad while for non-edible purposes like domestic and toilet and margarine production accounts 14 and 16 per cent, respectively (Anonymous, 2008) [3]. Phyllody is a very serious disease in most sesamum growing regions and it is responsible for decrease in sesamum yield, especially in warm region. (Manjunath, 2012) [9].
Yield losses up to 34 per cent or even 100 per cent, in case of severe incidence (Sarwar and Haq, 2006) [11]. It has been observed that, 1 per cent increase in disease incidence reduced yield by 8.36 kg/ha (Maiti *et al.* 2008) [8]. Phytoplasma are micro organism which, do not have cell wall are obligate parasite found in sieve elements of plants. Phytoplasma are generally present in the sap of a small number of phloem sieve tube.
Sesamum crop cultivation is increasing day by day in India especially, in Maharashtra State. In Maharashtra state, it is serious problem in all varieties considering economic importance of disease and very few information available on management of disease therefore the present investigation carried out for management of sesamum phyllody disease.

Material and Methodology
The experiment was conducted during Kharif -2017 on the experimental farm of the Department of Plant Pathology, College of Agriculture, Latur. The field experiment was laid out by applying randomized block design (RBD) with ten treatments and three replications. The sesamum variety JLT-408, susceptible to phyllody was used during present experiment. Recommended doses of fertilizers were applied with light irrigation for better seedling germination. Intercultural operations were performed as and when required. Three spraying of insecticide, oil and antibiotics were given. First spraying will be done after first appearance of disease and subsequently two at 15 days interval. Observations on phyllody were done from appearance of the disease and subsequent at 10 days interval up to the harvest of crop and disease incidence was calculated.

Result and Discussion

Effect of spraying insecticides, oils and antibiotics on incidence of phyllody disease in sesamum at different growth and development stages was studied and results are presented in Table 1 and graphically in Fig. 1. The result reveled that, spraying insecticides, oils and antibiotics viz., T1 (ST with imidacloprid + spraying imidacloprid), T6 (ST with imidacloprid + spraying oxytetracycline), T4 (spraying imidacloprid), T7 (spraying tetracycline), T3 (seed treatment imidaclorprid + spraying neem oil), T8 (spraying karanj oil) and T9 (spraying monocrotophos) significantly reduced disease incidence in all the counts. All the treatments were found more effective in reducing disease incidence over control. Result on effect of spraying insecticides, oils and antibiotics on sesamum phyllody disease at different growth stages presented in Table 1. Result revealed that, in all growth stages from 40 to 80 days after sowing minimum disease incidence was recorded in treatment T5 (seed treatment imidacloprid + spraying tetracycline) followed by T2 (seed treatment imidacloprid + spraying thiomethoxam). The next best treatment was found T1 (ST with imidacloprid + spraying imidacloprid). The data indicated that, disease incidence was observed at 50 days after sowing and it increased in later stage. It indicated that disease occurred at flowering stage (i.e. 50 DAS) of the crop and it increases with increase in age of the crop.

Result from (Table 2) on management of phyllody disease after three spraying reveled that, minimum disease incidence was recorded in T5 (seed treatment imidacloprid + spraying tetracycline) after each spraying, 7.32% after first spraying, 7.53% after second and 7.79% after third spraying, respectively. This was followed by T2 (seed treatment imidacloprid + spraying thiomethoxam) which recorded 8.66%, 9.18% and 10.25% disease incidence after first, second and third spraying, respectively. Maximum disease incidence was observed in T9 (spraying monocrotophos), 11.33% after first spraying, 14.19% after second spraying and 16.71% after third spraying, respectively, this is followed by T1. Result also revealed that, all the treatments significantly reduced the disease incidence over untreated control. The mean disease incidence recorded after third treatment ranged from 6.38 to 12.48 per cent as against 14.34 per cent in untreated control. However all the treatments T5 (seed treatment imidacloprid + spraying tetracycline) recorded least mean disease incidence (6.38%) and this was followed by T2 (seed treatment imidacloprid + spraying thiomethoxam) 7.85%. In oils, the treatment T3 (seed treatment imidacloprid + spraying neem oil) was found more effective in reducing disease incidence (12.16%) and it was found at par with treatment T8 (spraying karanj oil) 12.48%. The spraying with antibiotic in combination with seed treatment with insecticide was found very effective for control phyllody disease than others.

Similar result regarding effectiveness of antibiotics related phyllody disease incidence were reported by Wang (1997) [13]; Akhtar *et al.* (2009a) [2] and Kumhar and Meena (2016) [7] they reported that, for control of phytoplasmal phyllody disease spraying of antibiotics tetracycline was effective.

Similar result regarding effectiveness of insecticides related phyllody disease incidence were reported by Patil *et al.* (1992) [10]; Dey *et al.* (2005) [4]; Gupta *et al.* (2014) [5] and Thangjam and Vastrad (2015) [12] They reported that sesame phyllody vector leaf hopper was successfully managed by spraying insecticides and was effective for management of phyllody disease.

Similar result regarding effectiveness of oils related to phyllody disease incidence were reported by Ahirwar *et al.* (2010) [1] and Kumar *et al.* (2012) [6].

Table 1: Effect of spraying insecticides, oils and antibiotics on incidence of sesasmum phyllody disease at various intervals

Tr. No.	Treatments	Dosages	Disease incidence (%) days after sowing			
			50	60	70	80
T_1	ST Imidacloprid 70% WG + Spraying Imidacloprid 17.8% SL	ST @ 6gm/kg + FS @ 2ml/10 lts	4.19 (11.81)	9.44 (17.89)	10.03 (18.46)	10.65 (19.04)
T_2	ST Imidacloprid 70%WG + Spraying Thiomethoxam 25% WG	ST @ 6gm/kg + FS @ 2gm/10 lts	3.31 (10.48)	8.66 (17.11)	9.18 (17.63)	10.25 (18.67)
T_3	ST Imidacloprid 70% WG + Spraying Neem oil 300 ppm	ST @ 6gm/kg + FS @ 50ml/10 lts	8.69 (17.14)	10.63 (19.02)	14.32 (22.23)	15.03 (22.81)
T_4	Spraying Imidacloprid 17.8% SL	FS @ 2ml/10 lts	5.14 (13.10)	9.77 (18.21)	11.69 (19.99)	12.33 (20.55)
T_5	ST Imidacloprid 70%WG + Spraying Tetracycline 500 ppm	ST @ 6gm/kg	2.89 (9.78)	7.32 (15.69)	7.53 (15.92)	7.79 (16.20)
T_6	ST Imidacloprid 70%WG + Spraying Oxytetracycline 500 ppm	ST @ 6gm/kg	7.13 (15.48)	7.13 (15.48)	11.18 (19.53)	12.30 (20.53)
T_7	Spraying Tetracycline 500 ppm	----	5.06 (12.99)	12.35 (20.57)	12.47 (20.67)	12.75 (20.92)
T_8	Spraying Karanj oil 1000 ppm	FS @ 50ml/10 lts	5.52 (13.58)	13.32 (21.40)	15.04 (22.81)	15.68 (23.32)
T_9	Spraying Monocrotophos 35% SL	FS @ 12ml/10 lts	5.40 (13.43)	11.33 (19.66)	14.19 (22.12)	16.71 (24.12)
T_{10}	Control	-	6.43 (14.68)	15.06 (22.83)	17.30 (24.57)	18.59 (25.54)
	S.E. +_	-	1.69	1.29	0.52	0.67
	C.D. (P = 0.05)	-	5.03	3.87	1.57	2.01

*= Average of three replications; ST= Seed treatment; FS= Foliar spray;
(Figures on parentheses are arcsine transformed value)

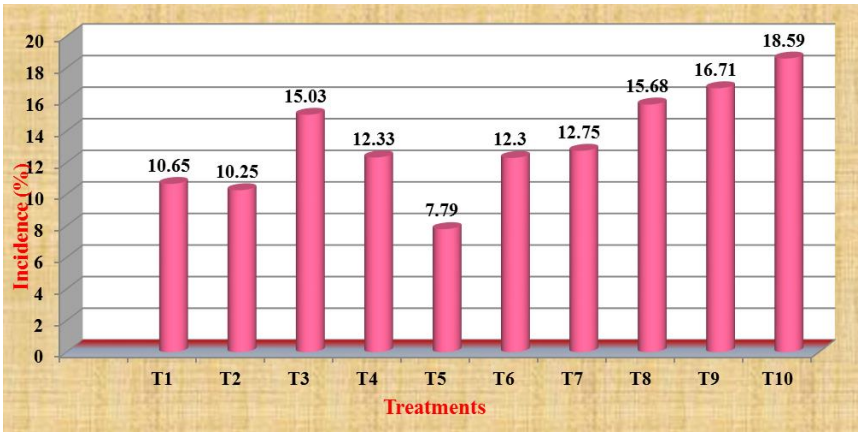

Fig 1: Disease incidence (%) as influenced by spraying insecticides, oils and antibiotics in sesamum

Table 2: Effect of spraying insecticides, oils and antibiotics on incidences of sesamum phyllody disease

Tr. No.	Treatments	Dosages	Disease incidence (%) days after sowing					
			Before 1st spray	After 1st spray	After 2nd spray	After 3rd spray	Mean (%)	Reduction (%) over control
T_1	ST Imidacloprid 70% WG + Spraying Imidacloprid 17.8% SL	ST @ 6gm/kg + FS @ 2ml/10 lts	4.19 (11.81)	9.44 (17.89)	10.03 (18.46)	10.65 (19.04)	8.57 (17.02)	40.23
T_2	ST Imidacloprid 70%WG + Spraying Thiomethoxam 25% WG	ST @ 6gm/kg + FS @ 2gm/10 lts	3.31 (10.48)	8.66 (17.11)	9.18 (17.63)	10.25 (18.67)	7.85 (16.27)	45.25
T_3	ST Imidacloprid 70% WG + Spraying Neem oil 300 ppm	ST @ 6gm/kg + FS @ 50ml/10 lts	8.69 (17.14)	10.63 (19.02)	14.32 (22.23)	15.03 (22.81)	12.16 (20.40)	15.20
T_4	Spraying Imidacloprid 17.8% SL	FS @ 2ml/10 lts	5.14 (13.10)	9.77 (18.21)	11.69 (19.99)	12.33 (20.55)	9.73 (18.17)	32.14
T_5	ST Imidacloprid 70%WG + Spraying Tetracycline 500 ppm	ST @ 6gm/kg	2.89 (9.78)	7.32 (15.69)	7.53 (15.92)	7.79 (16.20)	6.38 (14.63)	55.50
T_6	ST Imidacloprid 70%WG + Spraying Oxytetracycline 500 ppm	ST @ 6gm/kg	7.13 (15.48)	7.13 (15.48)	11.18 (19.53)	12.30 (20.53)	9.43 (17.88)	34.23
T_7	Spraying Tetracycline 500 ppm	----	5.06 (12.99)	12.35 (20.57)	12.47 (20.67)	12.75 (20.92)	10.65 (19.04)	25.73
T_8	Spraying Karanj oil 1000 ppm	FS @ 50ml/10 lts	5.52 (13.58)	13.32 (21.40)	15.04 (22.81)	15.68 (23.32)	12.48 (20.68)	12.97
T_9	Spraying Monocrotophos 35% SL	FS @ 12ml/10 lts	5.40 (13.43)	11.33 (19.66)	14.19 (22.12)	16.71 (24.12)	11.90 (20.17)	17.01
T_{10}	Control	-	6.43 (14.68)	15.06 (22.83)	17.30 (24.57)	18.59 (25.54)	14.34 (22.25)	--
	S.E. +_	-	1.69	1.29	0.52	0.67	-	-
	C.D. (P = 0.05)	-	NS	3.87	1.57	2.01	-	-

*= Average of three replications; ST= Seed treatment; FS = Foliar spray; (Figures on parentheses are arcsine transformed values)

References

1. Ahirwar RM, Gupta MP, Banerjee S. Field efficacy of natural and indigenous products on sucking pests of sesame. Ind. J of Natural Product and Res. 2010; 1(2):221-226.
2. Akhtar KP, Sarwar G, Dickinson M, Ahmad M, Haq MA, Iabal MJ. Sesame phyllody disease: its symptomatology, etiology and transmission in Pakistan. Turk J Agric. 2009a; 33:477-486.
3. Anonymous. Rainfed sesame based production system. All Indi a Coordinated Research Project for Dryland Agriculture, 2008, 1-28.
4. Dey PK, Jana SK, Chakraborty G, Somchoudhury AK. Evaluation of imidacloprid (70 WS and 20 SL) against sucking pest complex of okra, Abelmoschus esculentus. J of Ento. Res. 2005; 29(3):215-218.
5. Gupta KN, Ranganatha ARG, Pandey AK, Sharma S, Panse R. Field efficacy of bio-pesticides and insecticides for management of phyllody disease in sesame. 3rd Internat. Confer. on Agri. & Hort, 2014, 235
6. Kumar R, Ali S, Kumar S. Impact of botanical pesticides for the management of Antigastra catalaunalis Dup. in Sesamum indicum L., Molecul. Ento. 2012; (3):1-3.
7. Kumhar DR, Meena AK. Integrated disease management of phyllody of sesame (*Sesamum indicum* L.). J of Oilseed Res. 2016; 33(3):174-177.
8. Maiti S, Hedge MR, Chattopadhyay. Hand book of annual oilseed crops. Oxford and IBH publishing company, New Delhi, 2008, 325.
9. Manjunatha N, Prameela HA, Rangaswami KT, Palanna KB, Wickrama A. Phyllody phytoplasma infecting sesame (*Sesamum indicum* L.) in South India. Phytopath. Mollicutes. 2012; 2(1):29-32.
10. Patil NM, Ghule BD, Dhumal VS, Deokar AB. Losses in seed yield of sesamum caused by major insect pests. J Maha. Agric. Univ. 1992; 17(3):479.
11. Sarwar G, Haq MA. Evaluation of sesame germplasm for genetic parameters and disease resistance. J Agric. Res. 2006; 44(2):89-95.
12. Thangjam R, Vastrad AS. Evaluation of insecticides for the management of sesame phyllody vector, Orosius albicinctus D., Ind. J of Ento. 2015; 77(3):230-234.
13. Wang K. Molecular detection and identification of phytoplasmas and establishment of phytoplama-free clonal plants. Uni. of Alberta, 1997, 27.