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Management of spot and strip beetle (*Acalymma vittatum* F.) on sesame (*Sesamum indicum* L.)

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Abstract
A Field studies were conducted on the management of strip beetle at Rainfed organic agriculture research farm Narayan Bagh Jhansi (UP) from kharif seasons 2021. Different bio-pesticides *viz*: cow urine, Neem oil, Bacillus thuriengiensis (5% WP), Phyllanthus, *Verticillium lecanii* (2x108 cfu), Neem Seed Kernel Extract (Crude extract), Cow urine + Neem oil. Experimental results revealed that the plant treated with bio-pesticides registered a significant difference of strip beetle over the treatment of untreated control. Among them, the treatment of Bacillus thuriengiensis (4.61 larvae/5 plant) was found in significantly more effective against the pest as compared to other bio-pesticides Cow urine +Neem oil, NSKE, Neem oil, and *Verticillium lecanii* were found moderately effective and proved significantly superior over Cow urine, Neem oil and Phyllanthus proved significantly less effective among the bio-pesticides evaluated against strip beetle.

Keywords: Bio-pesticide, strip beetle (*Acalymma vittatum* F.)

Introduction
Sesame (*Sesamum indicum* L.) known as the "queen of oil seeds" is one of the most ancient oilseed crops of the world. In India, it is grown in the entire crop growing seasons. The main reasons of low productivity of sesame are its rain fed cultivation in marginal and sub marginal lands under poor management practices. The crop is mature during a wide selection of setting. Extending from semi–arid tropics and subtropics to temperate regions. Consequently, the crop encompasses a giant diversity in cultivars and cultural systems. The crop is attacked by 29 species of insect pest in different stages of its plant growth. Among these, strip beetle, leaf roller and capsule borer (*Antigastra catalaunalis* Dup.) are major insect pest in all sesame growing areas in India. It damages the crop at all three stages *viz*., vegetative, flowering and maturity. Asian nation could be a larger producer of *Sesamum indicum* within the world. It conjointly ranks initial within the world in term of Sesamum indicum growing space (24%). Sesamum indicum productivity will increase concerning two for Yaltopya and Asian nation and a couple of 8% for China within the amount of 1990 to 2007 (FAO, 2008).
The yield increase is due to both development and use of improved varieties and improved agronomy practices and crop protection. The potential yield of sesame stills much higher than actual yield, as still much damage occurs by pests and diseases, insufficient weed control, to high levels of mono cropping, lack of mechanization (Amongst other causing seed shattering when not enough labor is available during harvest) and unrealized genetic potential yields are probably high as 2000 kg/ha.

Material and Methods
A Field study carried at the Rainfed Organic Agriculture Research farm, Narayan Bagh, Department of Entomology, Institute of Agricultural Sciences, Bundelkhand University Jhansi. To know the effect of different bio-pesticides on the *strip beetle* from July to November 2021. The sesame plant was observed at weekly intervals for the infestations of strip beetle and there upon different products were applied directly as sprays on the plant by using a knapsack sprayer with a flat fan nozzle (Total plot 24, spacing- 30 cm x 15 cm, Number of spray-2). Various bio-pesticides used were Cow urine, Neem oil (5% EC), *Bacillus thuriengiensis* var. Kurstaki (5% WP), Phyllanthus, *Verticillium lecanii* (2x108 cfu), Neem Seed Kernel Extract (Crude extract), *Cow* urine *+Neem oil.* Was evaluated based on the population of spot and strip beetle. The observations were recorded before spraying and 3, 7 and 14 days after spray.

The data obtained from various treatments were subjected to convenient variation and statistically analyzed.

Result and Discussion

First Spray

Three Days after (First spray)

All the treatments were found significantly effective than untreated control (13.60 beetle/5 plants). The significantly lower population (8.05 beetle /5 plants) was observed in *Bacillus thuringiensis* than the other treatments, except *Cow urine + Neem oil* (9.00 beetle/5 plants) and *Verticillium lecanii* (12.10 beetle /5 plants).

Seven Days after (First spray)

All the treatments were found significantly effective than untreated control (13.85 beetle/5 plants). Among the different treatments, *Bacillus thuriengiensis* (7.74 beetle/5 plants) were significantly superior over all the treatments. Followed by *Cow urine + Neem oil* (8.76 beetle/5 plants) and NSKE (9.21 beetle /5 plants).

Fourteen days after (First spray)

All the treatments had found significantly lower beetle population than untreated control (14.39 beetle/5 plants). Among the different treatments, *Bacillus thuriengiensis* (7.53 beetle /5 plants) was significantly superior to rest of the treatments except Cow urine + Neem oil (8.12 beetle/5 plants) *and* NSKE (8.71 beetle /5 plants).

Second Spray

Three days after (Second spray)

All the treatments had found significantly lower beetle population than untreated control (14.54 beetle/5 plants). It was seen that after 3 days of application Among the different bio-pesticides, lowest beetle population was observed in the treatments of *Bacillus thuriengiensis* (7.09 beetle/ 5 plants) and Cow urine + Neem oil (7.86 beetle/ 5 plants), followed by NSKE and Cow urine (8.26 and 9.37 beetle / 5 plants) which was the next better treatment

Seven days after (Second spray)

All the treatments had found significantly low beetle population than untreated control (14.64 beetle/5 plants). Among the different bio-pesticides treatments, lowest larval population was recorded in the treatments of *Bacillus thuriengiensis* (5.43 beetle/5 plants) followed by Cow urine + Neem oil (6.46 beetle/5 plants), NSKE and Neem oil (7.07 and 7.83 beetle/5 plants).

Fourteen days after (Second spray)

All the bio-pesticides treatments had found significantly lower beetle population than untreated control (14.78 beetle/5 plants). Among the different bio-pesticides treatments, lowest beetle population was recorded in the treatments of *Bacillus thuringiensis* (4.61 beetle/5 plants) followed by Cow urine + Neem oil (5.53 beetle/5 plants), NSKE and Neem oil (6.14 and 7.02 beetle/5 plants).

Comparison of Two sprays

Three days after spray

All the treatments were found significantly effective than untreated control (14.07 beetle/5 plants). The significantly lower population (6.93 beetle/5 plants) was observed in Cow urine + Neem oil than the other treatments, except *Bacillus thuringiensis* (7.57 beetle/5 plants) and NSKE (8.85 beetle /5 plants).

Seven days after spray

All the treatments were found significantly effective than untreated control (14.24 beetle/5 plants). Among the different treatments, *Bacillus thuriengiensis* (6.58 beetle/5 plants) were significantly superior over all the treatments. Followed by Cow urine + Neem oil (7.61 beetle/5 plants) and NSKE (8.14 beetle/5 plants)

Fourteen days after spray

All the treatments had found significantly lower beetle population than untreated control (14.58 beetle/5 plants). Among the different treatments, *Bacillus thuriengiensis* (6.07 beetle/5 plants) was significantly superior than rest of the treatments except Cow urine + Neem oil (6.82 beetle/5 plants) *and* NSKE (8.55 beetle/5 plants).

Table 1: Efficacy of different treatments against strip beetle (*Acalymma vittatum* F.) first spray

Treatment	Efficiency of different treatments against strip beetle (*Acalymma vittatum* F.) 1st Spray. No. of beetle/5 Plant					
	Before spray	3 DAS	7 DAS	14 DAS	Overall Mean	SQRT
Cow urine	11.56	10.85	9.82	10.14	10.59	3.25
Neem oil	12.62	12.21	12.1	12.9	12.44	3.53
Cow urine + Neem oil	10.86	9	8.76	8.12	9.19	3.03
Phyllanthus	12.17	11.53	11.11	12.14	11.74	3.43
Verticillium lecanii	11.66	12.1	11.99	12.33	12.02	3.47
NSKE	10.82	9.44	9.20	8.70	9.54	3.09
Bacillus thuriengiensis	10.18	8.05	7.73	7.53	8.38	2.89
Water Spray (Control)	12.95	13.60	13.85	14.39	13.70	3.70
C.D.	N/A	1.72	1.61	1.63	1.66	1.29
S.E(m)	0.817	0.564	0.527	0.535	0.61	0.78

Figures in the parentheses are transformed values √x+0.5 value, *DBS-day before spraying DAS-day after spraying

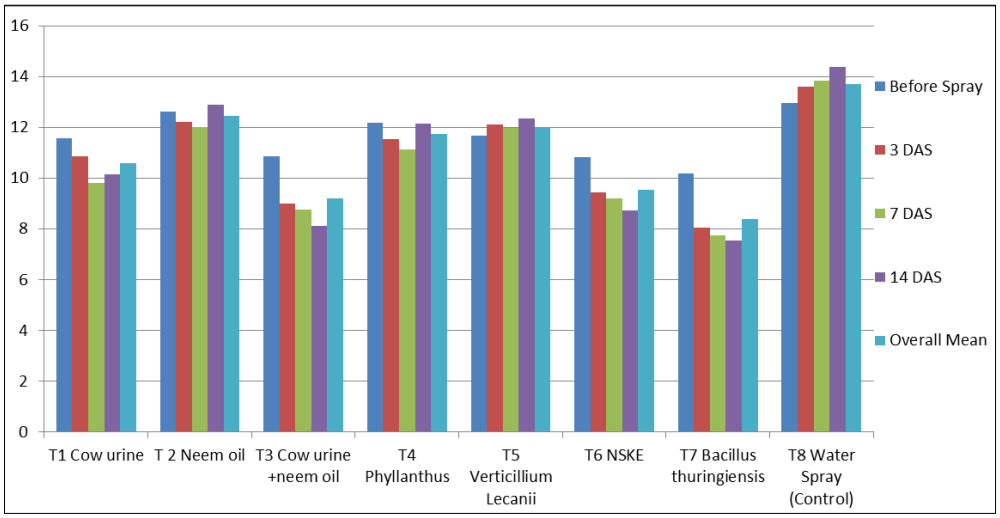

Fig 1: Efficacy of different treatments against strip beetle (*Acalymma vittatum* F.) first spray

Table 2: Efficacy of different treatments against strip beetle (*Acalymma vittatum* F.) Second spray

Treatment	Efficiency of different treatments against strip beetle (*Acalymma vittatum* F.) 2nd Spray. No. of beetle/5 Plant					
	Before spray	3 DAS	7 DAS	14 DAS	Overall Mean	SQRT
Cow urine	10.14	9.37	9.37	7.023	8.98	3.00
Neem oil	12.9	11.47	11.47	9.75	11.40	3.38
Cow urine + Neem oil	8.12	7.86	7.86	5.52	7.34	2.71
Phyllanthus	12.14	10.32	10.32	8.28	10.27	3.20
Verticillium lecanii	12.33	10.99	10.99	9.14	10.86	3.30
NSKE	8.70	8.26	8.26	6.14	7.84	2.80
Bacillus thuriengiensis	7.53	7.09	7.09	4.61	6.58	2.57
Water Spray (Control)	14.39	14.54	14.54	14.78	14.56	3.82
C.D.	1.63	1.22	1.22	1.035	1.28	1.13
SE(m)	0.535	0.401	0.401	0.338	0.42	0.65

Figures in the parentheses are transformed values √x+0.5 value, *DBS-day before spraying *DAS-day after spraying

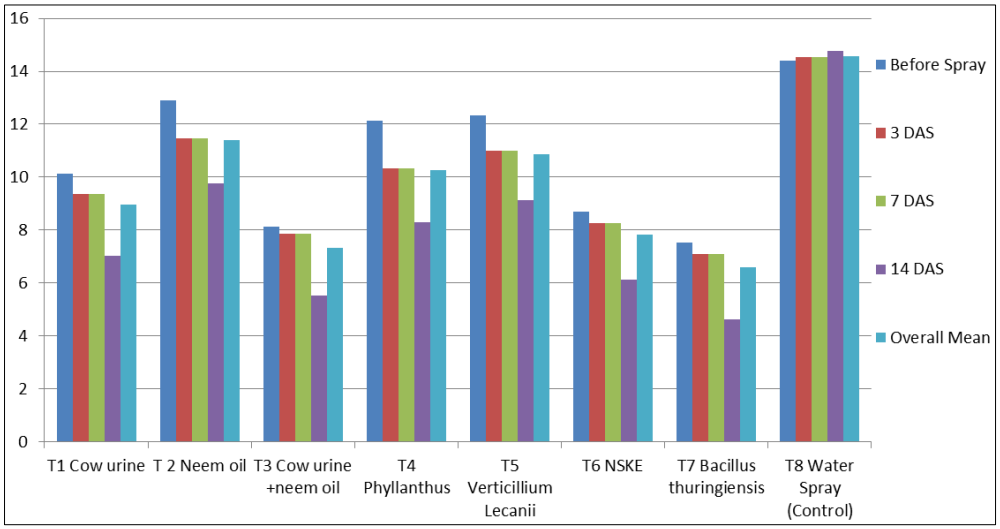

Fig 2: Efficacy of different treatments against strip beetle (*Acalymma vittatum* F.) Second spray

Table 3: Comparison of two sprays at 3, 7 and 14 DAS of bio pesticide against strip beetle

Treatment	Mean reduction population beetle/5 plant				
	DBS	3 DAS	7 DAS	14 DAS	Overall mean
Cow Urine	10.85	10.11	8.82	8.58	9.59
Neem oil	12.77	11.84	11.19	11.33	11.78
Cow urine + Neem oil	9.49	6.93	7.61	6.82	7.71
Phyllanthus	12.16	10.93	10.24	10.21	10.89
Verticillium lecanii	12.00	11.54	10.95	10.73	11.31
NSKE	9.77	8.85	8.14	7.42	8.55
Bacillus thuriengiensis	8.86	7.57	6.58	6.07	7.27
Control	13.67	14.07	14.24	14.58	14.14

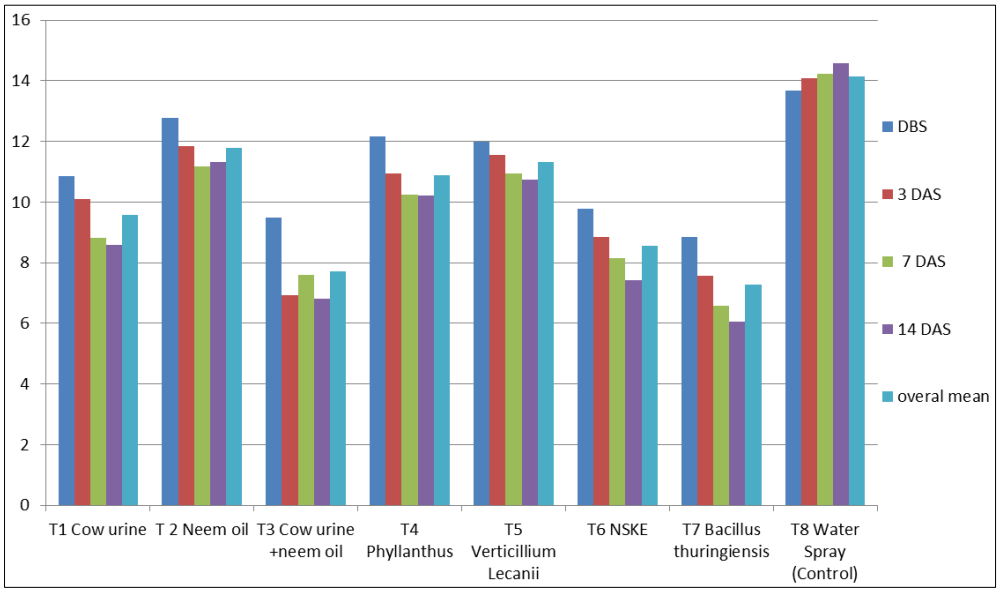

Fig 3: Comparison of two sprays at 3, 7 and 14 DAS of bio pesticide against strip beetle

Reference

1. Bissdorf Jewel K, Carina Weber, Reginald Bruhn. Field guide to non-chemical pest management in sesame production. Pesticide Action Network Germany Hamburg; c2017. p. 1-20.
2. Mamta Devi Choudhary, Kumawat KC, Samota RG, Tejpal Bajaya. Evaluation of Sequences of integrated pest management practice against sesame leaf and capsule Borer. *Antigastra catalaunalis* of pharmacognosy and phyto chemistry; c2017. p. 1440-1444.
3. Mishra Gupta MK, Thakur SR. Seasonal incidence of major insect pest of sesame in Relation to weather parameters in Bundelkhand Zone. Journal of Argo Entomology. 2015;17:263-264
4. Ramkishan Meena, Bacchu Singh, Meena RK. Performance front line Demonstrations on sesame original Research Article. 2018;703:179
5. Abadi Berhane Girmay. Sesame production challenges and opportunities in Ethiopia Agriculture Research & Technology. 2018;15:1-6.
6. Ahirwar RM, Banerjee, Gupta MP. Seasonal incidence of insect pest of sesame in Relation to a biotic factor. Annals of plant protection science. 2009;17:351-356.
7. Imoloame EO, Gworgwor NA, Joshua SD. Sesame (*Sesamum indicum* L.) Weed infestation, yield and yield components as influenced by sowing method and seed rate in a Sudan Savanna agro-ecology of Nigeria. African Journal of Agricultural Research. 2007;2(10):528-533.
8. Chaitra HS, Borad PK, Sushma Deb. Ecofriendly Management of important pests of sesame. Journal of Entomology and Zoology Studies. 2020;8(1):1613-1616.