SHORT COMMUNICATION

COLORED PAN TRAPS FOR INSECT POLLINATORS/VISITORS DIVERSITY IN MUSTARD ECOSYSTEM IN AMBIKAPUR OF CHHATTISGARH

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Abstract: A field experiment was undertaken at Rajmohini Devi College of Agriculture and Research Station, Ambikapur Surguja (Chhattisgarh) during 2017-18 to study the insect pollinators diversity in mustard ecosystem using different fluorescent colored pan trap *i.e.* White, blue and yellow at onset of bloom, full bloom and end of bloom of mustard crop in two different habitats. In habitat-I various insect visitors i.e. *Apis dorsata, A. indica, A. florea*, syrphid fly, house fly, black pants and small ants were recorded. In the colored pan traps maximum population was noticed in yellow pan trap (14.31 insect/tarp) followed by blue trap (13.99 insect/trap) and minimum in white (6.3 insect/trap) at onset of bloom. However, at the full bloom highest population was recorded in yellow pan trap (24.65 insect/trap) followed by blue pan trap (20.98 insects/trap) and lowest in white trap (20.65 insects/trap). Similarly at the end of bloom higher population was recorded in yellow pan trap (14.32 insects/trap) followed by blue pan trap (13.99 insects/trap) and the lowest in white pan trap (5.99 insects/trap) .Habitat-II During the onset of bloom higher population was recorded in yellow pan trap (21.66 insect/trap) followed by in blue trap (21.65 insect/trap) and lower population was recorded in white pan trap (8.32 insect/trap). At the full bloom period maximum population was noticed in blue pan trap (18.65 insect/trap) followed by in yellow pan trap (16.65 insect/trap) however the lowest population was recorded in white colored pan trap (9.98 insect /trap).Similarly, at the end of bloom higher population was recorded in yellow pan trap (24.99 insect/trap) followed by blue pan trap (24.98 insect/trap) and the lower population was noticed in white colored pan trap (8.65 insect/trap).

Keywords: Diversity, Colored pan trap, Habitat, Pollinators, Mustard ecosystem

INTRODUCTION

Insects are considered as a pollinators they are an important visitors of different flowers. They transfer the pollen from one flower to another and benefit the farming community by means of pollination process. Pollination is depends on various orders of insects i.e. Diptera, Hymenoptera, Coleoptera, Thysanoptera and Neuropterans etc. Due to pollination process yield is enhanced about 15-17 per cent in cross pollinated crop. Honeybees, beetles, bugs, birds and winds are as pollinator's agents. Among the pollinators honey Bees are the most efficient pollinators which pollinate the crop for obtain the good yield.

MATERIALS AND METHODS

A field experiment was undertaken at Rajmohini Devi College of Agriculture and Research Station, Ambikapur Surguja (Chhattisgarh) during 2017-18 to study the insect pollinator's diversity in mustard ecosystem using different fluorescent colored pan traps *i.e.* White, blue and yellow were placed at onset of bloom, full bloom and end of bloom on mustard crop. Diversity of insect visitors was recorded during the flowering period of mustard (October to November). During the study various fluorescent colored pan traps *viz* white, yellow and blue were used and were placed before 0900h in the morning and picked up after 1500h in the afternoon and the population of insect pollinators/visitors in each traps were recorded at three stages of flowering period i.e. onset of bloom, full bloom and at the end of bloom at the GPS location of mustard ecosystem N 23.141752^{0} and ^{E} 83.1804720.

RESULT AND DISCUSSION

The result shows in table 1a of habitat-I and habitat-II table 1b, the average population of insect visitors/pollinators were recorded maximum population in yellow colored pan trap at full bloom period in mustard crop however the low population of insect visitors/pollinators was recorded at onset of bloom and end of bloom at Ambikapur, Surguja of Chhattisgarh, India.

Table 1. Population of insect pollinators/visitors in Mustard ecosystem (average of three observations)

Visitors	Onset of Bloom			Full Bloom			End of Bloom		
	White	Yellow	Blue	White	Yellow	Blue	White	Yellow	Blue
Habitat -I									

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Apis dorsata	0.66	1.66	2.00	7.33	6.33	5.33	2.00	3.66	2.66
Apis indica	1.33	3.33	2.33	4.00	5.00	6.66	1.66	6.33	4.33
Apis florea	0.33	1.66	1.00	3.66	5.66	3.00	1.33	2.33	3.00
Syrphid fly	0.66	1.33	1.00	1.33	2.00	2.33	1.00	2.00	4.00
House fly	0.33	2.00	1.33	4.33	5.66	3.66	0.00	0.00	0.00
Black ant	1.66	2.33	3.00	0.00	0.00	0.00	0.00	0.00	0.00
Small ants	1.33	2.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00
Total	**6.3**	**14.31**	**13.99**	**20.65**	**24.65**	**20.98**	**5.99**	**14.32**	**13.99**

Table 2. Population of insect pollinators/visitors in Mustard ecosystem (average of three observations)

Visitors	**Onset of Bloom**			**Full Bloom**			**End of Bloom**		
	White	Yellow	Blue	White	Yellow	Blue	White	Yellow	Blue
Habitat -II									
Apis dorsata	2.33	6.00	3.33	2.33	4.33	2.66	0.66	2.33	3.00
Apis indica	2.00	5.00	4.33	1.66	3.33	5.00	1.00	3.66	2.33
Apis florea	1.33	3.66	5.66	3.66	4.00	5.33	1.33	3.00	4.00
Syrphid fly	1.66	4.00	6.00	1.33	3.66	3.33	2.00	5.00	4.66
House fly	1.00	3.00	2.33	1.00	1.33	2.33	1.33	4.00	4.33
Black ant	00	00	00	00	00	00	2.33	5.00	3.66
Small ants	00	00	00	00	00	00	1.66	2.00	3.00
Total	**8.32**	**21.66**	**21.65**	**9.98**	**16.65**	**18.65**	**8.65**	**24.99**	**24.98**

Result obtained from the study of different fluorescent colored pan traps were used i.e. white, yellow and blue for attract the different insect pollinators during onset, full bloom and end of bloom in mustard ecosystem. Various colored pan traps i.e. white yellow and blue were installed at onset of bloom, full bloom and end of bloom. Insect pollinators i.e. *Apis dorsata, A. indica, A. florea*, syrphid fly, house fly, black ant and small ant were recorded. Above insect pollinators were recorded higher population in yellow (14.31 insect/trap) fluorescent colored pan trap followed by in blue fluorescent colored pan trap (13.99 insect/trap) . During the full bloom period maximum insect pollinators/visitors were trapped on yellow fluorescent colored pan trap (24.65 insect/trap) followed by in blue pan trap (20.98 insect/trap) and minimum population was recorded in white colored pan trap(20.65 insect/trap). Similarly at the end of bloom maximum population was recorded in yellow fluorescent colored pan trap (14.32 insect/trap) followed by blue fluorescent pan trap (13.99 insect/trap) and lowest in white colored pan trap (5.99 insect/trap).

Similarly in habitat-II same traps were installed to trap the various insect pollinators were trapped. During the onset of bloom higher population was recorded in yellow fluorescent colored pan trap (21.66 insect/trap) followed by in blue trap (21.65 insect/trap) and lower population was recorded in white pan trap (8.32 insect/trap). During the full bloom period maximum population was noticed in blue pan trap (18.65 insect/trap) followed by in yellow pan trap (16.65 insect/trap) however the lowest population was recorded in white colored pan trap (9.98 insect /trap). At the end of bloom higher population was recorded in yellow pan trap (24.99 insect/trap) followed by blue pan trap (24.98 insect/trap) however the lower population was found in white colored pan trap (8.65 insect/trap) Table 1b. Earlier workers Joshua and Hanula (2007) who worked out the efficiency of Malaise traps and colored pan traps for collecting flower visiting insects. Nuttman *et al.* (2011) has been reported the utility of Aerial Pan-Trapping for Assessing insect pollinators, Vrdoljak and Samways (2012) has also reported the optimising coloured pan traps to survey flower visiting insects and Devi *et al*. (2016) impact of Habitat on Insect Pollinator Diversity on Coriander Bloom, Devi *et al*. (2017) has also reported the diversity of Insect Pollinators in Mustard. Painkra (2018) has observed the pollinators diversity in bitter gourd ecosystem using the colored pan trap ie yellow, white and blue for trapping the various insects.

CONCLUSION

Obtained results of this research showed that maximum population of insect visitors were observed during the full bloom period in mustard ecosystem in yellow colored pan trap followed by blue and white colored pan traps.

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