

Effects Of Asetap, Monosil and Profenofos on Assemblage of Spiders (Araneae) From Cotton Agroecosystems of Village Dongarkharda, Dist. Yavatmal, India

Dr. P.W. Chaudhari

Department of Zoology Shri Vitthal Rukhmini Mahavidyalaya Sawana , Tq. Mahagaon Dist. Yavatmal

The present work was carried out to know the effects of pesticides on the assemblage of spiders concerning for their diversity in Cotton agro-ecosystems from outskirts areas of Dongarkharda Village located in Kalamb Taluka of Yavatmal District. The survey was conducted in 3 different acres from same cotton farm for the diversity of spiders from September to December 2021, every weekend in the day time from 8 am to 6 pm. The spider fauna was collected mostly from Cotton trees, a ground of farm, beneath stones and in curled and dry leaves along with fencing of farms. In the Current study, we recorded the effect of locally used Pesticides Monosil, Asetap, and profenofos on the mortality, escaping behavior, feeding habits and activity of Acetylcholine esterase and Carboxyl esterase in two different spider's species namely *Neoscona theisi* and *Plexipus paykulli*. Utmost casualty (85%) in *Neoscona theisi* was reported against Profenofos, While Monosil was found to be least toxic. Spider Spent less time on insecticides or herbicide applied farm surfaces. Insecticides treated *Neoscona theisi* feed on less prey than naturally control spiders. Similarly, when *Neoscona theisi* were allow consumed insecticide treated prey, they feed considerably less. The outcome of the study revealed that Profenofos is more harmful to spiders as compared to Monosil and Asetap. It is recommended that the effect of all pesticides used in agro-ecosystem on beneficial arthropods must be evaluated before using them in the fields.

Key Words: - Asetap, Insecticide, Monosil, Pesticides, Profenofos.

I) Introduction:

Since the last few years, farmers in the Yavatmal region of Maharashtra have been challenged by pests like the pink bollworm on cotton which is assuming menacing proportions, and this year too farmers have noticed with alarm, an early onset of the pest. The dangerous chemical cocktail of pesticides used by farmers in the area has resulted in rampant pesticide poisoning.

Spiders are recognized as a Parasitoids predator which can feed on a diversity of arthropod families, are found among the arthropods including Odonata, Orthoptera, Homoptera, Lepidoptera, Diptera, Hymenoptera and other Araneae (Jackson and Macnab, 1989; Wise, 1993; Holland et al., 2004 and Tahir and Butt, 2009). Therefore, 48374 species of spider belonging to 4152 Genera and 120 Families (World Spider Catalogue, 2019) play an important role in agro-ecosystem by limiting the growth of insect pests (Chatterjee et al., 2009; Venturino et al., 2008).

This injudicious and indiscriminate application of pesticides is reported to affect adversely not only to human health and environment but also on the population of natural enemies viz., spiders (Hanna and Hanna, 2013 and Albin, et al., 2014), lady bird beetles (Ba M'hamed and Chemseddine, 2002 and Ahmad et al., 2011) and lacewings (Giolo et al., 2009, Cole et al., 2010, Fernandes et al., 2010, Marko et al., 2009 and Evans et al., 2010) described that extensive use of pesticides affect either by direct contact or spray drift. As spiders are found to be more susceptible to insecticides than other insect predators (Toft and Jensen, 1998), use of pesticides tend to decrease the population of spiders in the fields (Dinter and Poehling, 1995).

II) Material & Methodology:

A) Study Area:

A trial was conducted in Cotton Agroecosystem from Dongerkharda Villeg in 3 different acres from same cotton farm for efficacy of different insecticides and bio pesticide against cotton pest as well as on diversity and assemblage of Spiders every weekend in the day time from 8 am to 6 pm. during September to December 2021.

B) Method:

The Assemblage and diversity of spider population was sampled using visual and active searching methods. Record was reported 24 hours before and 24 hours after the spraying of pesticide in the cotton fields. The pesticides used in these fields during trial were Acetap ,Monocil And Profanofos.

Monocil:

Broad spectrum insecticide having action on sucking, chewing and boring insects. It also has good acaricidal action against large number of mite species. It has long residual action.

Acetap:

A systemic insecticide with a contact, used to control a wide range of insects which affect vegetables and fruits. Properties: Acetop 20 SL: A systemic insecticide with a contact, used to control a wide range of insects such as Aphids, Leaf Miners, Codling Moth, White Fly, Thrips.

Profanofos:

Profenofos is a neurotoxin acting as a cholonesterase inhibitor in insect nervous system. The separate optical isomer, due to the chiral phosphorus atom, shops different types of insecticidal activity and ability to inhibit acetyl cholinesterase. Being broad spectrum it affords control over all sucking pests and foliar feeding larvae.It is basically used as an acaricide giving excellent control of mites on a variety of crops.It exhibits ovicide cum adulticide actions.Fast knock down action with long lasting residual activity.Less waiting period between last spray and harvest.

Name	Active ingredients	Manufacturer	Type	Concentration tested
Acetap	Acetamiprid	Sharda Crop Chem Ltd.	Type 4	70% EC
Monocil	Mnocrotophos	Brand Iil Pesticides	Type 4	36% SL
Profanofos	S- Propyl Phosphorothioate	Prahar Agrotech Ltd.	Type 3	50% EC

Table 1: - Insecticides used During Trial in Cotton Agroecosystem

Common Pest of cotton found in Study area

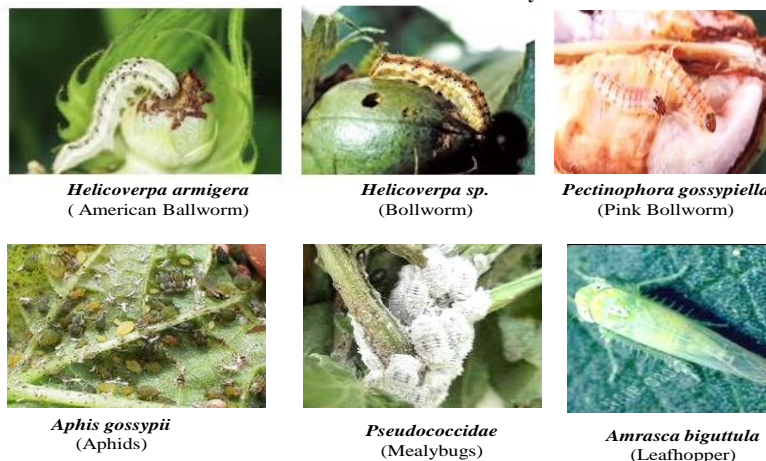


Plate I:- Cotton Crop Pest Studied During Trial

Species	Family
<i>Phidippus punjabensis</i>	Saitisidae
<i>Phintella vittata</i>	
<i>Plexippus insulanus</i>	
<i>Plexippus paykulli</i>	
<i>Thomisus shivajiensis</i>	Thomisidae
<i>Thomisus pugilis</i>	
<i>Thomisus sp.</i>	
<i>Xysticus sp.</i>	
<i>Clubiona filicate</i>	Clubionidae
<i>Clubiona drassodes</i>	
<i>Cheiracanthium melanostomum</i>	
<i>Oxyopes shweta</i>	Oxyopidae
<i>Oxyopes pankaji</i> (Male)	
<i>Peucetia latikae</i> (Female)	
<i>Hippasa sp</i>	Lycocidae
<i>Hippasa holmere</i>	
<i>Acantholycosa lignaria</i>	
<i>Pardosa sumatrana</i>	
<i>Pardosa birmanica</i>	
<i>Neoscona muckerjei</i>	Aranidae
<i>Neoscona theis</i>	
<i>Neoscona bengalensis</i>	
<i>Neoscona bengalensis</i>	
<i>Neoscona crucifera</i>	
<i>Araneus mitificus</i>	

Table 2: - spider species in cotton agro-ecosystem which resist to all Insecticides

III) Discussion:

The spray of pesticide controls the population of insect pests but affects the population of spiders in the cotton fields which otherwise would have controlled the insect pest population by feeding on them. Some broad-spectrum organophosphates are highly toxic to spiders. Pekar in 2013 also believed that pesticide applications in agro-ecosystems heavily affect the occurrence of spiders. During Active searching spiders belonging to families Aranidae, Clubionidae, Lycocidae, Salticidae and Thomisidae were observed to cover themselves under the leaves to minimize their contact from residues of pesticide spray. In case of web constructor belonging to families Araneidae, and Tetragnathidae it was found that the droplets of the pesticides spray remains on the web which forces the spiders like *Neoscona bengalensis* and *Aaneus*

mitificus, *Neoscona theis* (Araneidae) to leave the web. Spiders like *Pardosa* sp. (Lycosiade), prefer moving towards the field margins to avoid the effect of pesticide.

IV) Conclusion:

Integrated Pest Management (IPM)

Acetap and Profenofos can be effectively utilized in IPM programs. Acetap has been shown to leave substantial populations of many beneficial insects and spiders after use. The lower rates allow for maximum beneficial survival and faster rebound of beneficial populations.

Recommendations for Resistance Management:

For resistance management, Acetap, Monocil and Pofenofos are Group 3 and 4 insecticide. Any insect population contains individuals with natural resistant to grup 3 and other Group 4 insecticides. The resistant individuals may dominate the insect population if this group of insecticides are used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist for these appropriate resistance management strategies should be followed for Sustainable Development in all tpes Agro ecosystems

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