

**SPIDERS DIVERSITY IN THE AGRICULTURAL FIELDS FROM BHATKULI TAHSIL, DISTRICT AMRAVATI (MAHARASHTRA STATE)****A.B. Vairale**

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**ABSTRACT**

*Spiders are insectivorous predators on earth. They feed on insects and consume large number of preys without damaging the crops. Spiders are eight eyes and eight legs small creature. Spiders, are the most common creature on land, constitute an essential portion of the predatory arthropods in several ecosystems. Spiders play an important role in insect pest control without any harm to ecosystem. Recently in agricultural fields reduced pesticide use and ecological sustainability have led to increased interest in spiders as potential biological pest control agents. Regularly use of pesticides in agricultural fields which decreases the spider populations. Spiders are among the most abundant insectivorous predators of Terrestrial ecosystem. Spider species abundance in agro-ecosystem can be high as uninterrupted natural ecosystem. Spiders act as pest control creature, which feeds on crop destructive insects. A survey of Spiders was carried out in Bhatkuli Tahsil of Amravati District during November 2015 – January 2017. This article presents a study on the Diversity and distribution of spider families in Bhatkuli of Amravati District. During the present survey, I have reported 112 species of Spiders belonging to 12 Families and 31 genera. Spiders of Families Araneidae, Clubionidae, Eresidae, Gnaphosidae, Lycosidae, Oxyopidae, Salticidae, Sparassidae, Tetragnathidae, Theridiidae, Thomisidae, and Uloboridae were recorded during the investigation. It is updated checklist of different agro-ecosystems from Bhatkuli Tahsil, District Amravati.*

**Keywords:** Spiders, Diversity, Bhatkuli.

**Introduction**

Spiders belong to order Araneae, class Arachnida and are members of phylum Arthropoda, the largest assemblage of animal with jointed legs and hard exoskeleton. They are the largest group of arachnids comprising more than 30,000 species distributed over 60 families over worldwide. They have unique habitat and they live in almost all the environments. Spiders are one of the dominant predatory groups found in ecosystems in India. They have special adaptations towards a predatory way of life. They have an exceeding high resistance to starvation, which enables them to survive and maintain normal reproduction during periods of low prey availability. Spiders are the most common creature on land, constitute an essential portion of the predatory arthropods in several ecosystems. Spiders are known to occupying most of the terrestrial habitats. They are generalist predator, which can act against a broader range of insect pests. Sunderland K. and Samu F.(2000).

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predator, which can act against a broader range of insect pests. Spiders are considered to be of economic value to farmers as they play valuable role in pest management by consuming large number of prey in the agriculture fields without any damage to crops. In spite of their importance as generalist predator, the role of spiders in ecosystems is usually ignored, mainly because spiders do not fit the conventional profile of biological control agents. Spiders are among the most abundant insectivorous predators of Terrestrial ecosystem. The current global list of spider fauna is approximately 44,057 belonging to 3928 genera and 110 families Platnick N. I. (2019).

Spiders are an important but generally poorly studied group of arthropods that play a significant role in the regulation of insect pests and other invertebrate populations in most ecosystems. Spiders act as natural biological control agent in ecosystem. Some recent workers on Indian spiders include Majumdar and Tikader (1991), Reddy and Patel (1992), Biswas and Biswas (1992), Sadana and Goel (1995), Biswas et al. (1996), Gajbe, U. A.

(1999), Biswas and Majumdar (2000), Biswas B. and K. Biswas (2003). A survey of Spiders was carried out in Agro ecosystem of Bhatkuli, District Amravati during Nov. 2015 – Jan. 2017.

## Materials and Methods

### Study Area

Bhatkuli is the most diversity rich agro-ecosystem in Amravati District. This place is situated in Amravati, Maharashtra, India. It is situated at the westernmost border of Vidarbha region of Maharashtra and is 760 km from the state capital, Mumbai. Bhatkuli is situated in the Vidarbha Regions of Maharashtra. Bhatkuli is the nearest municipal council to the district place Amravati, approximately 20 km only.

Bhatkuli is located between N20° 54' 0" and E77° 36' 0" with an elevation on 610 meters. Cool climate in the city when compared to Vidarbha region. Summer is also not so hot as compared to other Vidarbha regions. The annual rainfall averages 760 mm. Total area under forest is 60 sq km. It is dry deciduous type and mixed type of forest with some grassland forest. The area receives rainfall during southwest monsoon. Average temperature of the district ranges from minimum of 13°C in winter to a maximum of 45°C in summer with the relative humidity varying from 10-14% to 60-85%.

The spider inventory studies were conducted from November 2015 to January 2017 in the five different Agroecosystems of Bhatkuli, district Amravati from Maharashtra state. I have selected five microhabitats for observations in the study area Viz; agricultural land.

### Sampling methods

Spider Inventory work was conducted at the ecosystems by different groups of workers. Surveys were conducted per season at all study

sites. Five 25 x 25 m quadrates were taken for extensive surveys.

1. Sweep net: Spiders from herbaceous-shrub-small tree vegetation were collected using standardized insect-collecting net. This method is used to collect the foliage spider by this method from herbs and shrubs.
2. Beating sheets: Spiders from trees and woody shrubs were dislodged and collected on a sheet by beating trees and shrubs with a standard stick. 10 beats per tree or shrub were employed in each quadrat.
3. Active searching and hand picking: Spiders from all three layers were collected using this method. In this method spider specimens were actively searched for 30 minutes per quadrat for searching under rocks, logs, ground debris, and loose dead barks of trees etc.
4. Litter Sampling: Litter i.e. deciduate from the ground was collected by hand and was put in big tray. Litter sampling involved sorting of spiders from litter collection tray.

Collected spiders were photographed in life and later preserved in 70% ethyl alcohol. Identification: Spiders were observed using stereo zoom microscopes for studying identification keys. All specimens were initially separated from other material and identified to the family level. Spiders were identified upto species level using the standard monographs, Majumder S.C. and Tikader B. K. (1991).

## Result

During the present study I have reported 112 species of Spiders belonging to 12 Families and 31 genera. Spiders of Families ARANEIDAE, CLUBIONIDAE, ERESIDAE, GNAPHOSIDAE, LYCOSIDAE, OXYOPIDAE, SALTICIDAE, SPARASSIDAE, TETRAGNATHIDAE, THERIDIIDAE, THOMISIDAE and ULOBORIDAE were recorded during the investigation.

Table No. 1 Checklist of Spider Species from Agro-ecosystems of Bhatkuli, district Amravati, Maharashtra State

Sr. No.	Family	Genera	Species
1	ARANEIDAE	07	33
2	CLUBIONIDAE	01	03
3	ERESIDAE	01	02
4	GNAPHOSIDAE	04	08
5	LYCOSIDAE	03	20
6	OXYOPIDAE	02	09
7	SALTICIDAE	06	14
8	SPARASSIDAE	01	02
9	TETRAGNATHIDAE	01	03
10	THERIDIIDAE	01	03
11	THOMISIDAE	03	12
12	ULOBORIDAE	01	03
<b>Total</b>		<b>31</b>	<b>112</b>

### Discussion

In the present study, 112 species of spiders belonging to 31 genera of 12 families in Bhatkuli, district Amravati. These spiders were belonging to the family Araneidae, Clubionidae, Eresidae, Gnaphosidae, Lycosidae, Oxyopidae, Salticidae, Sparassidae, Tetragnathidae, Theridiidae, Thomisidae and Uloboridae. In this study two species of spiders were observed, one is web weaver and another one is non web weaver.

Spiders are considered as the favorable biological control agents in the Agro ecosystem. In my investigation i have seen that the abundance of Five Family Spiders species were more. The abundance of Spider families is represented as:

ARANEIDAE 33 > LYCOSIDAE 20 >  
SALTICIDAE 14 > THOMISIDAE 12 >  
OXYOPIDAE 09.

Major Five Families i. e. Araneidae, Lycosidae, Salticidae, Thomisidae and Oxyopidae having occupying maximum percentage area in agro-ecosystems.

### Conclusion

During investigation I have studied 112 species belonging to 31 genera of 12 spider Families. On the above result and discussion it is clear that the Spiders are very much important creature. Species abundance of spider in agro ecosystem can be high. Spiders are beneficial bio-control agent of insect pest in the Agro ecosystem.

Spider's predatory capacity can have an effect in decreasing densities of insect pests, when they are used to balance the effect of insecticides and Pesticides. Some spiders are among the most effective predators of leafhoppers, caterpillars, and other pests.

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