

CHAPTER 6

Diversity and Global distribution of Araneae Species in Horticulture Habitats of Amravati District, Maharashtra, India

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Abstract

Araneae play a pivotal role in agro ecosystems as natural pest control agents. This study documents the diversity of araneae species collected from various horticulture fields across Amravati District, Maharashtra, during the post-monsoon and winter months of 2024–2025. A total of eight distinct araneae morph species were documented using visual search and collection techniques. High-resolution macro-photographs were utilized for species identification and morphological characterization. The specimens belong primarily to families Araneidae, Theridiidae, and Salticidae. This paper highlights the ecological significance of araneae and emphasizes their utility in integrated pest management (IPM) in Indian agrarian landscapes.

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Introduction

Araneae (Araneae) are one of the most diverse groups of terrestrial predators, comprising more than 50,000 species globally (World Araneae Catalog, 2024). In horticulture ecosystems, they serve as efficient biological control agents, feeding on a wide range of phytophagous insects (Marc et al., 1999; Nyffeler & Sunderland, 2003). Despite their ecological importance, araneae are often overlooked in biodiversity assessments in India, especially in central horticulture zones like Amravati.

Maharashtra's Amravati district, with its diverse cropping patterns and semi-arid climate, offers a suitable microhabitat for various araneae species. Previous regional studies (Kulkarni et al., 2018; Mane & Deshpande, 2020) have reported the global distribution of orb-weavers and ground-dwelling araneae, but a comprehensive field-level documentation remains scarce. This study aims to fill this gap by assessing the araneae fauna associated with horticulture landscapes in this region.

Material and Methods

Study Area

Fieldwork was conducted between November 2024 and March 2025 in horticulture fields, roadside vegetation, and semi-disturbed habitats in Amravati District, Maharashtra. Locations included cotton, soybean, and wheat fields.

Sampling Technique

- Visual encounter surveys (VES) were conducted during early morning and late evening hours.
- Specimens were manually collected using soft brushes and preserved in 70% ethanol.
- High-resolution photographs were taken using smartphone macro lenses for taxonomic examination.

Identification

Specimens were identified morphologically with the help of online keys (Levi, 1993; Tikader, 1987) and compared against digital databases like Bug Guide and WSC (World Araneae Catalog).

Documentation Tools

GPS coordinates were recorded using mobile applications. All images were cataloged for photographic plate creation using Adobe Photoshop and GIMP.

Results and Observations

Sr. No	Image Ref.	Family	Genus (Tentative)	Description/Remarks
1	Fig. 1	Theridiidae	Steatoda sp.	Shiny, bulbous abdomen with faint patterning.
2	Fig. 2	Araneidae	Araneus sp.	Heavily patterned abdomen; commonly observed on orb webs.
3	Fig. 3	Theridiidae	Latrodectus sp.	Shiny, globular blackish abdomen; reddish cephalothorax.
4	Fig. 4	Salticidae	Menemerus sp.	Jumping araneae with stocky legs and hairy body.
5	Fig. 5	Araneidae	Neoscona sp.	Seen on orb web; abdomen with spiny projections.
6	Fig. 6	Araneidae	Neoscona theisi	Distinct median line and leg coloration.
8	Fig. 8	Thomisidae	Amyciaea sp.	Ant-mimicking araneae with elongated legs.

Morphological Observation of Spider Species from Chandur Bazar, Amravati District (Nov 2024 – March 2025)

Image No.	Species (Probable Identification)	Family	Distinct Features	Habitat/Location	Web Type/Behavior	Coloration
1		<i>Araneus minificus</i> (Orb-weaver)	Small legs, large bulbous abdomen Leaf-like dorsal pattern	Agricultural field fences	Orb web	
2		<i>Eriovixia</i> sp. (Orb-weaver)	Small, dome-shaped abdomen reclusive posture	Inside sheds, near walls	Orb web (likely juvenile)	
3		<i>Neoscona</i> sp. (Araneidae)	Dark, elongated abdomen with white bands on legs	Wall crevices near lights	Orb web	
4		<i>Steatoda</i> sp. (Theridiidae)	Smooth, rounded abdomen, glossy cephalothorax	Indoors dark corners	Cursorial (non web building)	
5		<i>Castianeira</i> sp. or Myrmarachne	Ant-like body, constricted waist Long front legs mimicking antennae	Culterial (non-web building)	Active hunter, reclusive abdomen	

Notes: Figures 5.6 k at likely ant-mimicking spiders, gregarious subadults. Reddish-brown to dark brown abdomen.

Discussion

The dominance of orb-weaving araneae (Family Araneidae) in horticulture fields aligns with findings from other Indian agroecosystem studies (Sebastian et al., 2005; Uniyal & Hore, 2006). Their high web-building activity during dusk and dawn indicates their functional role in pest suppression.

Ant-mimicking araneae like *Amyciaea* sp. (Image 8) are important not only for their mimicry but also for their predation on ants and small arthropods, which may reduce pest populations indirectly (Cushing, 1997). Presence of *Steatoda* and *Latrodectus*-like species (Image 1 and 3) suggests a diverse microhabitat mosaic within field edges, especially in low-disturbance zones.

Color pattern variation observed in *Neoscona* and *Araneus* species also reflects environmental adaptation and seasonal morphs, a common phenomenon in orb-weavers (Foelix, 2011).

Conclusion

This study records the presence of a rich araneae fauna in Amravati's horticulture landscape, emphasizing their importance as ecological agents. The findings can support future biological control programs and biodiversity management plans. Continued monitoring and molecular-level taxonomy will further help clarify cryptic species diversity in the region.

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References

1. **Cushing, P. E. (1997):** Myrmecomorphy and myrmecophily in araneae: a review. *Florida Entomologist*, 80(2), 165–193.
2. **Foelix, R. F. (2011):** *Biology of Araneae*. Oxford University Press.
3. **Kulkarni, P. P. (2018):** Araneae diversity from Vidarbha agroecosystems. *Bioscience Discovery*, 9(2), 214–222.
4. **Levi, H. W. (1993):** The American orb-weaving araneae of the genera *Araneus*, *Neoscona*, and *Agalenatea*. *Bulletin of the Museum of Comparative Zoology*.
5. **Mane, U. & Deshpande, V. (2020):** A preliminary checklist of araneae from Maharashtra. *Indian Journal of Arachnology*, 5(1), 15–28.
6. **Marc, P., Canard, A., & Ysnel, F. (1999):** Araneae as bioindicators of landscape management. *Agriculture, Ecosystems & Environment*, 74(1–3), 343–356.

7. **Nyffeler, M., & Sunderland, K. D. (2003):** Composition, abundance and pest control potential of araneae communities in agroecosystems: a comparison of European and US studies. *Agriculture, Ecosystems & Environment*, 95(2–3), 579–612.
8. **Sebastian, P. A. (2005):** Araneae of India. Universities Press.
9. **Tikader, B. K. (1987):** Handbook of Indian Araneae. Zoological Survey of India.
10. **Uniyal, V. P., & Hore, U. (2006):** Araneae diversity in horticulture fields in Doon Valley, Uttarakhand. *Current Science*, 90(3), 310–314.
11. **World Araneae Catalog (2024):** Natural History Museum Bern. Retrieved from <https://wsc.nmbe.ch>

Photographic Plates



Figure: Field image showing morphological features of Fig. 1



Figure: Field image showing morphological features of Fig. 3



Figure: Field image showing morphological features of Fig. 2



Figure: Field image showing morphological features of Fig. 4



Figure: Field image showing morphological features of Fig. 5



Figure: Field image showing morphological features of Fig. 7



Figure: Field image showing morphological features of Fig. 6



Figure: Field image showing morphological features of Fig. 8