



Floristic diversity of climbers in agro-ecosystems of Pandharpur Tehsil, Solapur district, Maharashtra

Bhosale H S, Naiknaware B B

Department of Botany, Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur, Pandharpur, Maharashtra, India

Abstract

Climbing plants constitute an important component of floristic diversity in agro-ecosystems, contributing to structural complexity, ecological balance, and livelihood support for rural communities. The present study aims to document and analyze the floristic diversity of climbers occurring in agro-ecosystems of Pandharpur Tehsil, Solapur District, and Maharashtra. Extensive field surveys were carried out during different locations. Climber plant specimens were collected, identified using standard floras, and categorized based on their family, genus and species. The study recorded a rich diversity of climbers belonging to several angiosperm families, with dicotyledons showing dominance over monocotyledons. Families such as Fabaceae, Convolvulaceae, and Cucurbitaceae, were prominently represented. Many species were found to possess medicinal, edible, fodder, and ornamental values, highlighting their socio-economic importance. The present study provides baseline data on climber diversity in the region and emphasizes the need for sustainable agricultural management and conservation strategies to preserve this valuable floristic component.

Keywords: Climbers, floristic diversity, agro-ecosystem, ecosystems, Maharashtra

Introduction

Climbing plants or climbers represent a unique and ecologically significant group of angiosperms. Climbing plants provide multiple ecosystem services, including soil conservation, microclimate regulation, nitrogen fixation, and habitat for pollinators and other beneficial organisms.

Pandharpur Tehsil, located in Solapur District of Maharashtra, is characterized by a semi-arid climate, black cotton soils, and an agriculture-dominated economy. The region supports diverse cropping systems such as sugarcane, sorghum, wheat, pulses, and oilseeds, along with seasonal and perennial irrigation practices. These conditions create varied microhabitats that favor the growth of a wide range of climber species. However, increasing agricultural intensification, excessive use of agro-chemicals, and habitat alteration have resulted in a gradual decline of native plant diversity, including climbers.

Documentation of such climbing plant groups is essential for understanding regional biodiversity, assessing conservation status. Therefore, the present study aims to explore and document the floristic diversity of climbers in the agro-ecosystems of Pandharpur Tehsil, Solapur District, Maharashtra, with emphasis on their taxonomic composition, climbing mechanisms, and ecological significance.

Materials and Methods

The selected sites were surveyed periodically for the collection of weeds. The specimens were collected from within as well as the edges of crop fields. Local people were interviewed to obtain the common or vernacular names of weeds.

Collection of weeds

To explore the climber diversity of the selected area, the study was

conducted during the 2024 from June to November. Standard procedures for the collection, preservation, and herbarium preparation of plant specimens were followed as per the guidelines of Jain & Rao (1977) ^[1]. Small herbaceous plants were collected in their entirety comprising roots, stems, leaves, flowers, and fruits whereas larger shrubs were sampled as twigs, ensuring inclusion of stems, leaves, flowers, and fruits.

Herbarium preparation

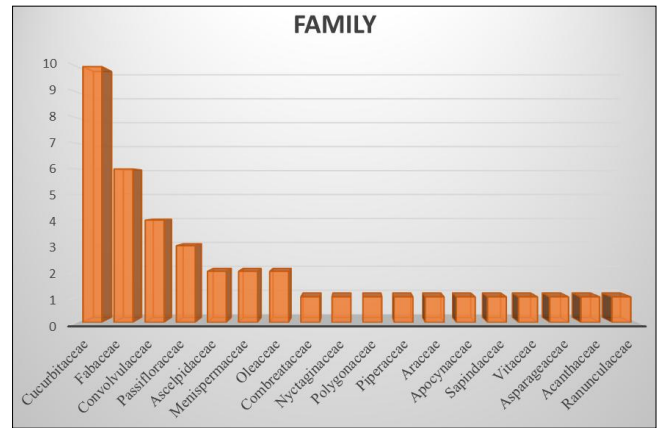
After collection, the plant samples were first dried using blotting paper and then pressed with the help of an herbarium press. The blotters were replaced at regular intervals to ensure effective drying. Once thoroughly dried and pressed, the specimens were attached to herbarium sheets for documentation. To safeguard them from insect and fungal damage, the sheets were treated with a saturated solution of mercuric chloride in ethyl alcohol. Additionally, naphthalene balls were placed alongside the specimens to prevent insect infestation.

Identification

The collected climber plant specimens were identified with the help of relevant botanical references, including the works of Bentham and Hooker (1876), Cooke (1967) ^[3], Yadav and Sardesai (2002) ^[4], along with information from various online resources. Once identified, the specimens were systematically classified according to Bentham and Hooker's (1876) taxonomic system. These authenticated herbarium samples were then organized accordingly and deposited in the Herbarium of the Department of Botany at Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur, District Solapur, and Maharashtra, India.

List of Climbers with family

Sr. No	Family	Botanical Name
1	Cucurbitaceae	<i>Cucurbita pepo</i>
2	Asclepiadaceae	<i>Cryptostegia grandiflora</i>
3	Cucurbitaceae	<i>Momordica subangulata</i>
4	Menispermaceae	<i>Tinospora cordifolia</i>
5	Cucurbitaceae	<i>Cucumis sativus</i>
6	Cucurbitaceae	<i>Luffa acutangular</i>
7	Fabaceae	<i>Lablab purpureus</i>
8	Fabaceae	<i>Clitoria ternatea</i>
9	Cucurbitaceae	<i>Luffa aegyptiaca</i>
10	Fabaceae	<i>Vigna unguiculata</i>
11	Ranunculaceae	<i>Clematis vitalba</i>
12	Convolvulaceae	<i>Ipomoea cairica</i>
13	Fabaceae	<i>Alysicarpus vaginalis</i>
14	Asclepiadaceae	<i>Pegularia daemia</i>
15	Convolvulaceae	<i>Convolvulus arvensis</i>
16	Polygonaceae	<i>Antigonon leptopus</i>
17	Combretaceae	<i>Quisqualis indica</i>
18	Nyctaginaceae	<i>Bougainvillea spectabilis</i>
19	Passifloraceae	<i>Passiflora foetida</i>
20	Cucurbitaceae	<i>Cocinia grandis</i>
21	Piperaceae	<i>Piper betle</i>
22	Convolvulaceae	<i>Ipomoea quamoclit</i>
23	Fabaceae	<i>Rhynchosia minima</i>
24	Araceae	<i>Epipremnum aureum</i>
25	Apocynaceae	<i>Allamanda cathartica</i>
26	Fabaceae	<i>Phaselous vulgaris</i>
27	Passifloraceae	<i>Passiflora vitifolia</i>
28	Sapindaceae	<i>Cardiospermum halicacabum</i>
29	Vitaceae	<i>Vitis vinifera</i>
30	Asparagaceae	<i>Asparagus racemous</i>
31	Cucurbitaceae	<i>Cucumis madraspatensis</i>
32	Cucurbitaceae	<i>Cucumis melo</i>
33	Cucurbitaceae	<i>Momordica charantia</i>
34	Acanthaceae	<i>Asystasia gangetica</i>
35	Passifloraceae	<i>Passiflora incarnata</i>
36	Cucurbitaceae	<i>Citrullus lanatus</i>
37	Menispermaceae	<i>Cocculus hirsutus</i>
38	Oleaceae	<i>Jasminum auriculatum</i>
39	Oleaceae	<i>Jasminum grandiflorum</i>
40	Convolvulaceae	<i>Ipomea nil</i>



Result and Discussion

From these Study to the Family Cucurbitaceae is represented by 9 species, Fabaceae is represented by 7 species, Convolvulaceae is represented by 4 species, Passifloraceae is represented by 3 species, Asclepiadaceae, Menispermaceae & Oleaceae is represented by 2 species, Combretaceae, Nyctaginaceae, Polygonaceae, Piperaceae, Araceae, Apocynaceae, Sapindaceae, Vitaceae, Asparagaceae, Acanthaceae & Ranunculaceae is represented by 1 species. The study focused on documenting and analyzing the diversity of climbers found in Pandharpur Tehsil, Solapur District, Maharashtra. The results highlight the types, distribution, and morphological significance.

Conclusion

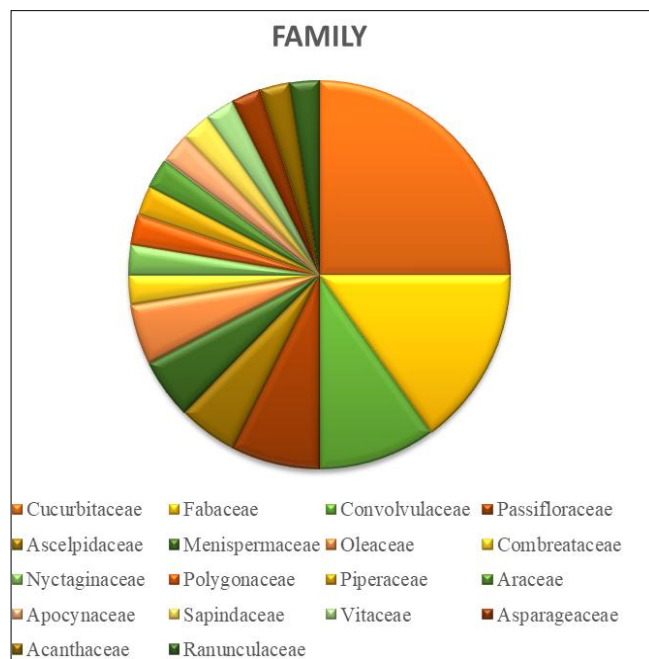
The major families are found to be Cucurbitaceae, Fabaceae & Convolvulaceae & The other families like Combretaceae, Nyctaginaceae, Polygonaceae, Piperaceae, Araceae, Apocynaceae, Sapindaceae, Vitaceae, Asparagaceae, Acanthaceae & Ranunculaceae found to be less no. of species. The study of climbers in Pandharpur Tehsil has provided valuable insights into the diversity, Ornamental roles, and medicinal uses of these plants. In climbers play a vital role in the ecology and economy of Pandharpur Tehsil Proper conservation measures and sustainable utilization can help preserve their benefits for future generations. The study of climbers from Pandharpur Tehsil has provided valuable insights into the traditional practices, challenges, and livelihoods of the communities involved in climbing activities. To ensure the well-being of climbers and the sustainability of their activities.

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