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Research Article

Diversity of Angiospermic Climbers in the Adi-Badri Region of Bilaspur Block, District YamunaNagar, Haryana (India)

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Abstract

Climbers are considered the most neglected group of angiosperms. The present study focuses on the documentation of angiospermic climbers from the Bilaspur region of YamunaNagar district during the period 2019-2022.The study enumerated 43 climbers belonging to 14 families. The dominant family is Convolvulaceae which is closely followed by Fabaceae, Apocynaceae and then Dioscoreaceae.

Keywords: *Climbers, Deciduous, herbaceous.*

Introduction

Angiosperms are undoubtedly the most dominant group of plants on the planet Earth and display varied habits such as the trees, shrubs, herbs, climbers and the ground vegetation. The climbers among the flowering plants are the most interesting but neglected group.Owing to their weak stem, they attach themselves to any possible support and climb up for receiving optimumsunlight. The climbers exhibit great variation in their climbing methods and hence are further classified as *hookclimbers*, *twiners, tendrillar climbers, leaf climbers*, etc.

Climbers play an important role in maintaining diversity, promoting competition, resource utilization and mineral recycling in a forest. They also form easy pathways for arboreal animals to climb the canopy of huge trees, therefore helpful tosmall animalsto havebetter food accessibility. In addition, a great number of climbers are grown as ornamentals in homes and gardens because of their aesthetic value. Climbers also have huge medicinal and ethnobotanical value.

The significance of assessing knowledge about the local angiospermic climbers has lately been recognized and worked upon by several researchers such as Bandyopadhyay and Mukherjee, (2010); Patel, *et al*., (2013); Gianoli, (2015); Kensa, *et al*., (2015); Sarvalingam and Rajendran (2015); Subramanian *et al.* (2020).

Bor and Raizada, (1954) published a treatise 'Some beautiful Indian climbers and shrubs'. Ghosh and Mukherjee, (2006) had enumerated 149 herbaceous climbers and 79 lianas from Andaman Islands covering 55 families.

A number of taxonomists have claimed that climbers play an important role in forest regeneration, soil erosion control and leaf biomass contribution and ecosystem-level processes such as transpiration and carbon sequestration, Putz described in detail the effect of lianas on tree growth (1984). Impact of lianas on forest regeneration was also studied (Ogawa, *et al*., 1965; Klinge and Rodriguez, 1973; Putz, 1983).

Climbers occur in all woody ecosystems of the world, although a high abundance is considered to be characteristic of tropical and subtropical forests (Bongers. *et al*., 2005). Ghosh, (2013) examined the floristic diversity, dominance, abundance and IVI of climbers

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and lianas species in the tropical littoral vegetation of North Andaman forest.Saini, *et al*., (2021) enumerated 118 species of climbers in district Saharanpur, Uttar Pradesh. Similar studies in the forests of Haryana are however lacking. The present paper has documented the diversity of climbers in the Bilaspur block of YamunaNagar, Haryana.

Study Area

Adi-Badriregion lies in Bilaspur block of district Yamunanagar. Bilaspur has an area of 301. 22 sq.km. It receives an average annual rainfall of 1130 mm which is highest in the state of Haryana.It has hilly topography and contains large stretches of silt, sand and pebbles in the beds of seasonal streams. River Sombcriss-crosses the area and merges into the Yamuna later.In the north, Block Bilaspur is bounded by Siwalik foothills of Sirmaur District of Himachal Pradesh and Eastern boundary touches with block Chhachhrauli, southern side is enclosed by block Jagadhri. The western boundary of study region is surrounded by block Sadhaura. Adi Badri (30^0 27′ N: 77^0 27′ E) lies in the foothills of Siwalik Range.

Materials and Methods

Extensive field surveys were carried out during the years 2019-2022 in the above-mentioned region. The climbing plants were collected, photographed and studied in detail. The collected specimens were carefully pressed, dried and preserved using standard herbarium techniques (Jain & Rao, 1977). The plant specimens were identified using regional floras, labelled and deposited in the Department of Botany, JV College, Baraut (Baghpat), Uttar Pradesh.

Table 1: List of Climbers along with their families

S.No.	Botanical name	Family	Climber type
	Cajanus scarabaeoides	Fabaceae	Herbaceous Climber
	Pueraria tuberosa	Fabaceae	Woody Climber
	Abrus precatorius	Fabaceae	Herbaceous Climber
	Phanera vahlii	Fabaceae	Woody Climber
	Lathyrus sphaericus	Fabaceae	Herbaceous Climber
	Vicia hirsuta	Fabaceae	Herbaceous Climber
	Glycine labialis	Fabaceae	Herbaceous Climber
	Caesalpinia bonduc	Fabaceae	Woody Climber
	Indigofera cassioides	Fabaceae	Woody Climber
	Evolvulus glomeratus	Convolvulaceae	Herbaceous Climber
	Cuscutareflexa	Convolvulaceae	Herbaceous(Parasitic) Climber
	Ipomoea cairica	Convolvulaceae	Herbaceous Climber
	Convolvulus arvensis	Convolvulaceae	Herbaceous Climber
	Ipomoea obscura	Convolvulaceae	Herbaceous Climber
	Poranopsis paniculata	Convolvulaceae	Woody Climber
	Ipomoea pestigrisdis	Convolvulaceae	Herbaceous Climber
	Ipomoea barleroides	Convolvulaceae	Herbaceous Climber
	Ipomoea nil	Convolvulaceae	Herbaceous Climber
	Ipomoea quamoclit	Convolvulaceae	Herbaceous Climber
	Dioscorea bulbifera	Dioscoreaceae	Herbaceous Climber
	Dioscorea pentaphylla	Dioscoreaceae	Herbaceous Climber
	Dioscorea alata	Dioscoreaceae	Herbaceous Climber
	Gloriosa superba	Colchicaceae	Herbaceous Climber
	Zizyphus oenoplia	Rhamnaceae	Woody Climber
	Helinus lanceolatus	Rhamnaceae	Climbing Shrub
	Asparagus racemosus	Asparagaceae	Herbaceous Climber

	Vallaris solanacea	Apocynaceae	Woody Climber
	Pergularia daemia	Apocynaceae	Herbaceous Climber
	Ichnocarpus frutescens	Apocynaceae	Woody Climber
	Hemidesmus indicus	Apocynaceae	Woody Climber
	Dilpoclisia glaucescens	Menispermaceae	Woody Climber
	Tinospora cordifolia	Menispermaceae	Woody Climber
	Cocculus hirsutus	Menispermaceae	Herbaceous Climber
	Coccinia indica	Cucurbitaceae	Herbaceous Climber
	Mukia maderaspatana	Cucurbitaceae	Herbaceous Climber
	Aspidopterys wallichi	Malpighiaceae	Climbing Shrub
	Smilax	Smilacaceae	Woody Climber
	Cayratia trifolia	Vitaceae	Woody Climber
	Cissampelos pariera	Vitaceae	Herbaceous Climber
	Ampelocissus latifolia	Vitaceae	Woody Climber
	Cissus rependa	Vitaceae	Woody Climber
	Jasminum multiflorum	Oleaceae	Woody Climber
	Galium aparine	Rubiaceae	Herbaceous Climber

Results and Discussion

A total of 43 climbers belonging to 14 families were observed and documented in the present study. The Family Convolvulaceae exhibited greatest diversity with 10 species followed by Fabaceae with 09 species. Families Apocynaceae and Vitaceae were represented with 4 members each whereas Menispermaceae and Dioscoreaceae had 3 members each in the study area.

A large number of angiospermic climbers are known to possess nutraceutical and pharmaceutical properties.With the traditional science of Ayurveda, Siddha and Unani system gaining due faith and popularity among people, the medicinal properties of the climbers are being appreciated everywhere. Bioactive compounds from different parts of these plants have been extracted and used as medicines (Caesar and Cech, 2019). Further research should be undertaken to fruitfully utilize the physico-functional capacity of these wild climbers.

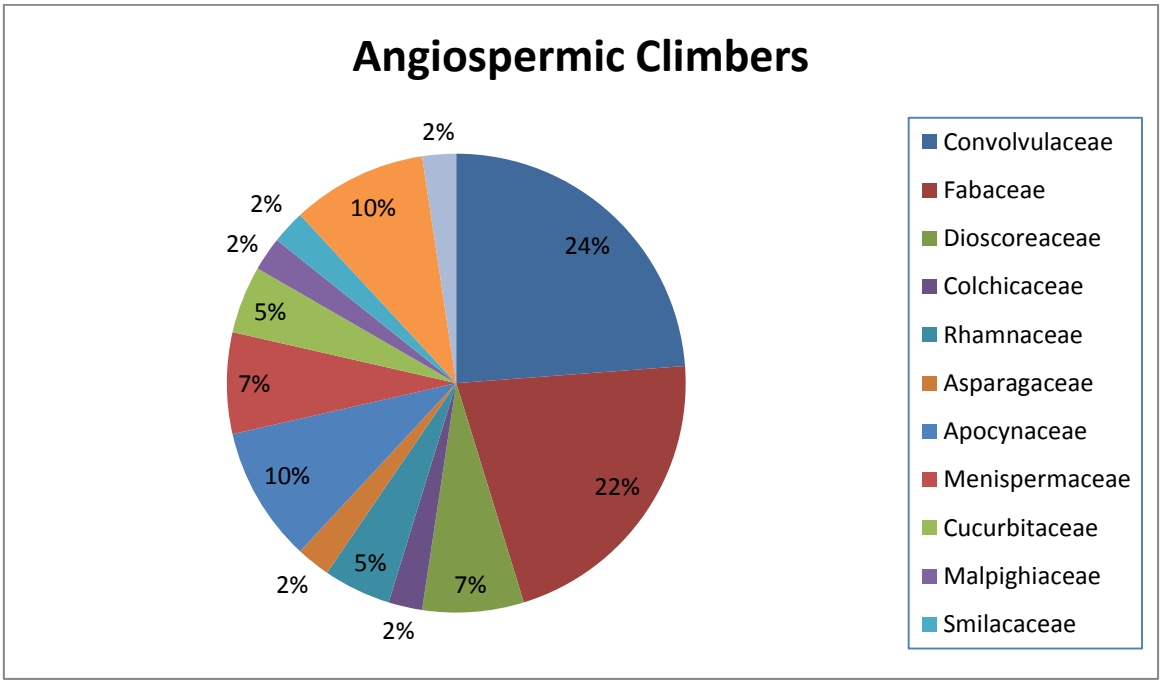

Chart 1: Pie Chart depicting the family wise diversity and proportion of climbers

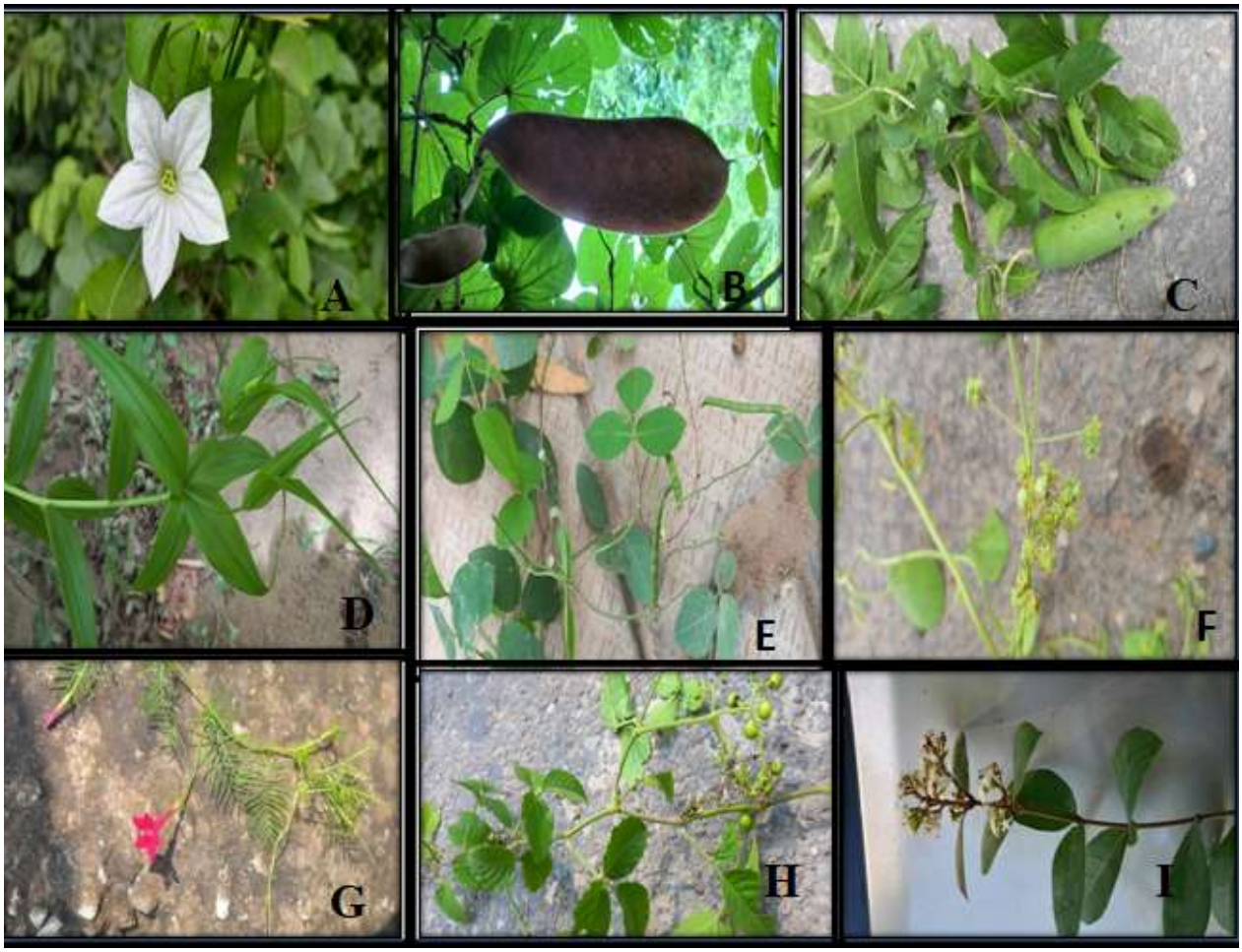

Figure 1.1: A) *Coccinia indica* B)*Phaneravahlii*C) *Vallarissolanacea*D) *Gloriosa superba* E) *Glycine labialis* F) *Cocculus hirsutus*G) *Ipomoea quamoclit*H) *Cayratiatrifolia* I) *Ichnocarpus frutescens.*

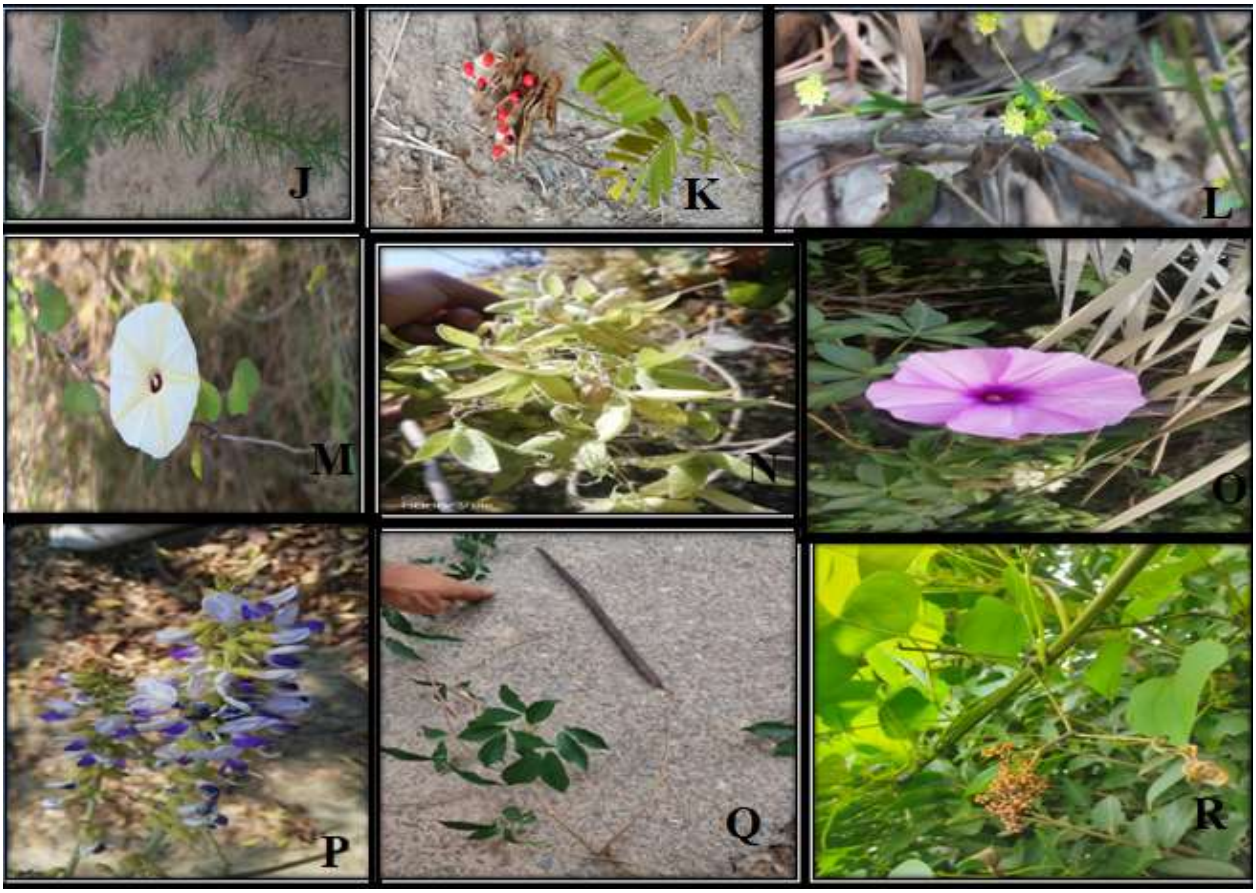

Figure 1.2: J) *Asparagus racemosus*K) *Abrusprecatorius*L) *Helinuslanceolatus*M) *Ipomoea obscura* N) *Poranopsispaniculata* O) *Ipomoea cairica*P) *Pueraria tuberose* Q) *Hemidesmus indicus* R) *Cissus rependa.*

Conclusion

The Present study gives an account of rich diversity of angiospermic climbers in the Bilaspur region of district YamunaNagar. As in the other regions of India, the vegetation of this area is also under constant stress due to various anthropogenic activities .Human induced activities such as habitat destruction, deforestation, over-exploitation and climate change, have put a real threat of extinction on many of these valuable plants. So, steps must be taken to ensure their conservation through scientific means. Also, awareness must be created among the local dwellers about the means of conservation of these plants.

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