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# Floristic survey of ethnobotanical plants in Chirawa, Rajasthan

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**Abstract**
The knowledge of flora of any region is significant for the study of biodiversity and understanding of the prevailing environment. In the present study, a floristic survey was conducted in Chirawa, Rajasthan. Due to presence of diverse topographic features and microhabitats, the selected study area has a great potential for flourishing a rich plant biodiversity. In the present study, a list of total 65 plants were identified in the study area. 25 plants were tree, 3 were shrub, 4 were undershrub, 29 were herbs while 4 plant was recorded as climber. From the results of the present investigation, it can be concluded that the study area Chirwa is rich in floral diversity. In the area, various ethnobotanical plants have been reported which can be sued for various purposes.

**Keywords:** Flora, Chirawa, diversity etc.

## Introduction

Floristic composition reflects the diversity of vegetation of an area and can be affected by many factors such as overgrazing, soil deterioration, deforestation and dependence of local people/pastoralists on plants. The identification of local plants along with description of an area is essential as it can provide particular species of the local area, growing season, species hardness, any new species establishing in the area and the effect of climatic conditions like over-grazing and drought on vegetation there (Ali, 2008) [3]. The knowledge of floristic composition is essential to understand the ecosystem of the area. Floristic diversity reflects the variety of vegetation of a specified geographical location, which provides a platform for proper identification and sustainable utilization of plants (Rafay *et al*., 2013) [11].

The knowledge of flora of any region is significant for the study of biodiversity and understanding of the prevailing environment (Thakur *et al*., 2014) [14]. Such studies are not only a good source of botanical information of a geographic region but may also provide a suitable starting point for further comprehensive studies. Hence, floristic inventory is a taxonomic study of a major division of flora in a specified area (Panda *et al*., 2014). The diversity and ecological characteristics of the plants of a particular area depend upon environmental conditions, including altitude and climate. Thus, ecological characteristics, such as life form, leaf spectra and phenological pattern, can be used as indicators of prevailing environmental conditions. Flora refers to all plant life occurring in any particular geographic region at a specific geological period and includes the number of species.

In contrast the concept of life form was first introduced by Humboldt with the term vegetative form. It ranked next to floristic composition in ecological studies and is the outcome of the adaptation of plants to certain climatic conditions. The life form of a plant reflects the climate of the area and is also useful in comparing the geographical distribution of plant communities. Traditionally it was used in the description of vegetation structure at the community level. The most compact and consistent classification of life form is that of Raunkiaer, which is based on the degree of presence and protection of perennating buds (Amjad *et al*.,2017) [4]. Ethnobotany is the science, which studies the relationship between a given society and its environment, particularly the plant world. Indigenous knowledge is as old as human civilization but the term ethnobotany was first coined by an American Botanist Harshburge, for the study of plants used by primitive and aboriginal people. Later scientists redefined ethnobotany by using modern ecological terms, and ethnobotany was described as "The study of direct interaction between human and plant population through its culture; each human population develops attitudes and beliefs and learns the use of plants, while human behaviour has a direct impact on the plant communities with which they interact; the plant themselves also impose limitations on humans; these mixture interaction are the Hocking concluded in his work of 1950 that 84% of Pakistan's population was dependent on traditional medicines for all or most of their medicinal needs. Ethnomedicinal studies are of significant value to discover contemporary drugs from indigenous medicinal plant resources. There are appropriate sources of information about useful medicinal plant species, which can be targeted for management and domestication. The documentation of traditional knowledge of native plant species has contributed a number of vital drugs. Currently, 25% of herbal drugs in modern pharmacopeia are plant based and several synthetic drugs are manufactured by using chemical substances isolated from plants. The fundamental role of natural products in the development of new drugs has been reported. In recent era, the role of medicinal plant species in traditional health practice has diverted the attention of researchers towards ethno-medicines (Qureshi *et al*., 2008) [10]. No work has been done on floristic diversity and uses of medicinal plants from educational institutional previously from Pakistan. This study is aimed to analyze the floristic diversity and traditional knowledge of most commonly used medicinal plants of unique to study area.

Jhunjhunu district lies in the north-eastern part of Rajasthan between 27°38' to 28°31' North latitudes and 75°02' to 76°06' East longitude, with geographical area of 5926 $Km^2$. The falls within Shekhawati region and is bounded on the North East and East by Haryana state, on the Southeast, South and Southwest by Sikar district and North West and North by Churu district. Most part of the district is semi-arid type of climate. December and January are the coldest months of winter and temperature range from 1-15°C. in summer temperature lies between 32-47°C. the southwest monsoon sets in the middle of June and extends till the end of September. The region has a semi-arid climate and is basically plain. Summertime temperatures can reach up to 48 degrees Celsius, while wintertime extremes are below freezing. Rainfall totals range between 300 and 400 mm annually. Rainfall is heaviest during the monsoon season (July to September). The forest is rich in medicinal, uncommon, endemic, and threatened plants after rains, and it is thick with greenery. Rich vegetation, wildlife, birds, the surrounding natural beauty, and Baba Khetanath Aashram are all well-known features of the region. Behind the ashram is a lovely pond that serves as a stop for migratory birds to feed (Chaudhary and Shringi, 2017).

A well-known tehsil in Jhunjhunu district in Shekhawati Rajasthan is Chirawa town (The study area), which is located between Jhunjhunu, Khetri, and Pilani. Due to its connections to the Birlas, Dalamias, Khaitans, Poddars, Piramals, Singhanias, Goenkas, and other wealthy Indian business conglomerates, this town has a unique identity. Northern Rajasthan's Chirawa is home to a significant municipality, a significant transit station, and the Jhunjhunu district. One of the oldest communities in the region, it is home to few numbers of tile and stone manufacturing companies. The town is renowned for its old historic mansions, where a number of well-known historical figures used to reside. This tehsil is situated in the Jhunjhunu district's northeastern region. This tehsil has 1923.27 square kilometers area. This tehsil experiences hot, dry summers. Sandstorms are a defining feature of this tehsil in the summer. The temperature ranges from 0°C to 48°C, with a mean of 26°C. Due to the plain and sandy terrain of Chirawa Tehsil, irrigation and agriculture are dependent on ground water. Ground water is used for irrigation and agriculture in the North-East of this tehsil. However, fluoride and other characteristics have a significant impact on this tehsil's ground water. These contaminated groundwater sources are exploited by people in various ways. As a result, the human population was troubled by numerous water-borne illnesses, including fluorosis, arthritis, dental caries in youngsters, and knee difficulties in men and women as well as adults**.** The current study was done in order to document the floristic diversity of the Chirawa region in Jhunjhunu, Rajasthan.

## Materials and methods

During field survey some materials was used; Field notebook, pencil, plant presser, polythene bags, newspaper, knife, trowel, gloves, twig cutter, digital camera, tags, cutter, questionnaire and herbarium sheet. The data collection done by simple field survey method which was conducted in flowering season Moon soon spring seasons of 2021-2022 for collection of diverse plant species. At the flowering stage the plants were collected. The students, teachers and local community from suburb of the study area were interviewed for ethnomedicinal information of plants by using different questionnaires. The plants were arranged into life and leaf spectra classes after following Runkiaer (1934) and Hussain (1989).

## Results and discussions

Floristic composition is a good floristic marker, because any kind of changing floristic compositions indifferent endogenous milieu show the existence of different ecological factors; leads to inter-and intra-specific diversity (Safidkon *et al*., 2003) [12]. Floristic study of any given area helps to evaluate the plant wealth and its potential values The local plants identification and introduction of an area is very important to introduce the specific species of local area and their occurrence, growing seasons, finding new species and also the effect of climatic conditions like over-grazing, drought and temperature etc. on vegetation (Ali, 2008; Ahmad *et al*., 2008) [2]. Many workers have contributed comprehensive floristic checklists of local flora in different regions (Baig *et al*., 1998 [5]; Qureshi & Bhatti, 2008 [10]; Abdullahi *et al*., 2009 [1]; Jabeen *et al*., 2009 [7]; Shaheen & Qureshi, 2011 [13]; Udayakumar *et al*., 2011 [15]; Qin *et al*., 2012 [9]; Youcef *et al*., 2012) [16].

Due to presence of diverse topographic features and microhabitats, the selected study area has a great potential for flourishing a rich plant biodiversity.

In the present study, a list of total 65 plants were identified in the study area. 25 plants were tree, 3 were shrub, 4 were undershrub, 29 were herbs while 4 plant was recorded as climber. The details of the plants are given in table 1.

**Table 1:** List of plants surveyed in Chirawa, Rajasthan.

| S. No. | Plant name | Local name | Family | Habit |
|---|---|---|---|---|
| 1. | *Acacia nilotica* | Desi babul | Mimosaceae | Tree |
| 2. | *Acacia senegal* | Kumat | Mimosaceae | Tree |
| 3. | *Argemone maxicana* | Satyanashi | Papaveraceae | Herb |
| 4. | *Abutilon bidentatum* | Kanghi | Malvaceae | Undershrub |
| 5. | *Abutilon indicum* | Kanghi | Malvaceae | Undershrub |
| 6. | *Aegle marmelos* | Bel | Rutaceae | Tree |
| 7. | *Ailanthus excelsa* | Ardu | Simaroubaceae | Tree |
| 8. | *Azadiracta indica* | Nemm | Meliaceae | Tree |
| 9. | *Abrus precatorius* | Chirmi | Fabaceae | Climber |
| 10. | *Acacia catechu* | Kahir | Fabaceae | Tree |
| 11. | *Albizia lebbeck* | Siris | Fabaceae | Tree |
| 12. | *Albizia procera* | White siris | Fabaceae | Tree |
| 13. | *Alysicarpus vaginalis* | Neel | Fabaceae | Herb |
| 14. | *Acanthospermum hispidum* | Kanti | Asteraceae | Herb |

| | | | | |
|---|---|---|---|---|
| 15. | *Artemisisa meritima* | Bana | Asteraceae | Shrub |
| 16. | *Anagalis arvensis* | Neel | Primuliaceae | Herb |
| 17. | *Alstonia scholaris* | Saptparni | Apocynanceae | Tree |
| 18. | *Arnebia hispidissima* | Ram-bui | Boraginaceae | Herb |
| 19. | *Bergia ammannioides* | Jal bhangra | Elatinaceae | Herb |
| 20. | *Bombax ceiba* | Semal | Bombacaceae | Tree |
| 21. | *Balanites aegyptiaca* | Hingoto | Simaroubaceae | Tree |
| 22. | *Bauhinia racemose* | Jhinjha | Febaceae | Tree |
| 23. | *Borreria articularis* | Agio | Asteraceae a | Herb |
| 24. | *Bidens biternate* | Bana | Asteraceae | Herb |
| 25. | *Barleria prioniitis* | Baharadanti | Acanthaceae | Undershrub |
| 26. | *Cocculus pareira* | Patha | Menispermaceae | Climber |
| 27. | *Coronopus didymus* | Pitpapda | Brassicaceae | Herb |
| 28. | *Corchorus trilocularis* | Chamghas | Tiliaceae | herb |
| 29. | *Cassia fistula* | Amaltas | Fabaceae | Tree |
| 30. | *Cassia tora* | Puadia | Fabaceae | Herb |
| 31. | *Clitoria ternatea* | Koyalri | Fabaceae | Climber |
| 32. | *Cucumis prophetarum* | Khat-kachario | Cucurbitaceae | Climber |
| 33. | *Cucumis melo* | Kachari | Cucurbitaceae | Climber |
| 34. | *Cirsium arvense* | Kateli | Asteraceae | Herb |
| 35. | *Dalbergia sisso* | Shisham | Fabaceae | Tree |
| 36. | *Delonix regia* | Gulmohar | Fabaceae | Tree |
| 37. | *Digera muricata* | Lolaru | Amaranthaceae | Tree |
| 38. | *Euphorbia hirta* | Lal dudheli | Amaranthaceae | Herb |
| 39. | *Ficus benghalensis* | Bar | Moraceae | Tree |
| 40. | *Hibiscus rosa-sinensis* | Gudhal | Malvaceae | Shrub |
| 41. | *Heliotropium striagosum* | arkali | Boraginaceae | Herb |
| 42. | *Ipomea cairica* | Panchpatti | Convolvulaceae | climber |
| 43. | *Ipomea nil* | Kaladana | Convolvulaceae | Climber |
| 44. | *Justicia adhatoda* | Adhatoda | Acanthaceae | Shrub |
| 45. | *Jatropha curcas* | Ratanjot | Euphorbiaceae | Shrub |
| 46. | *Juncus bufonius* | Pola | Juncaceae | Herb |
| 47. | *Lasiurus sindicus* | Sewan | Poaceae | Herb |
| ’48. | *Leptadenia reticulata* | Jiwanti | Asclepiadeae | Climber |
| 49. | *Morus alba* | Sehtoot | Moraceae | Tree |
| 50. | *Nothosaerva brachiata* | Bhaji | Amaranthaceae | Herb |
| 51. | *Merremia aegyptia* | Rota bel | Convolvulaceae | Climber |
| 52. | *Mollugo cerviana* | Chirio ghas | Molluginaceae | Herb |
| 53. | *Moringa oleifera* | Sanjana | Moriaceae | Tree |
| 54. | *Mangifera indica* | Aam | Anacardiaceae | Tree |
| 55. | *Murraya koenigii* | Meetha neem | Rutaceae | Tree |
| 56. | *Polygala arvensis* | Jhojhru | Polygalaceae | Herb |
| 57. | *Polycarpaea corymbose* | Jhutanio khad | Caryophyllaceae | Herb |
| 58. | *Sida cordifolia* | Aadiobal | Malvaceae | Herb |
| 59. | *Sida ovata* | Bal | Malvaceae | Undershrub |
| 60. | *Sesbania bispinosa* | Ikad | Fabaceae | Herb |
| 61. | *Trianthema portulacatrum* | Safed santo | Aizoaceae | Herb |
| 62. | *Tridex procumbens* | Sadabahar | Steraceae | Herb |
| 63. | *Verbesina encelioides* | Jangli surajmukhi | Asteraceae | Herb |
| 64. | *Xanthium strumariim* | Bicchhoo buti | Asteraceae | Herb |
| 65. | *Zaleya govindia* | Gudhal io satto | Aizoaceae | Herb |

## Conclusion

From the results of the present investigation, it can be concluded that the study area Chirawa is rich in floral diversity. In the area, various ethnobotanical plants have been reported which can be sued for various purposes.

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