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# Phytogeography of Domesticated Plant Species in Khetri Region, Rajasthan

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**Abstract:** ***Applied categorisation of domesticated plant species would be carried out into their main applied categories may be done accordingly i.e. plants for fuel purpose, plants for fodder purpose, plant species for medicinal use, plants for edible purpose, and plant species of commercial values.***

**Keywords:** Plants, Domestic Plants, medicinal use

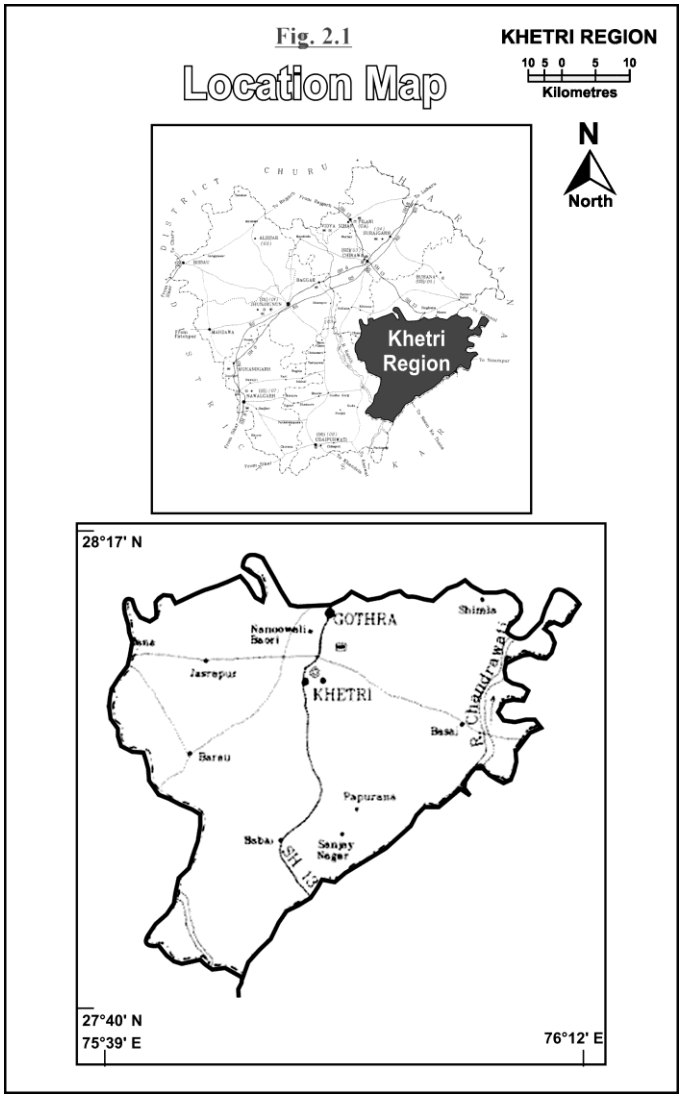
## 1. Study Area

Khetri Region is located in south-eastern part of Jhunjhunu district, Rajasthan state with it's geographical extension in between 27° 40' to 28° 17' north latitude and 75° 39' to 76° 12' east longitude**.** From geographical area point of view, which is 11.31 sq.km. Khetri Region itself is shown in Figure: 2.1 with more details which includes its interval physical as well as cultural features. In north of Khetri area copper town is located at 8 km. distance whereas in south the village Papurna is located at 10 km. distance, thus Khetri has location on the state highway route i.e. Neemkathana to Copper town. Further in this context this route in north it is linked with Jhunjhunu and New Delhi whereas in south the state highway linked to the city Jaipur.

The Khetri Region obtains second place after Jhunjhunu tehsil in Jhunjhunu district, Rajasthan by percentage contribution in the total population percentage of the district i.e. 24 percent (2001) which is 0.20 percent higher than that of (1991) i.e. 3.57 percent. At the part of total geographical area, the Khetri Region is placed at second. position by obtaining 27 percent only of the district's total. From total area under forest point of view, the Khetri Region stands at second position by keeping 14 percent of the district's total.

The Khetri Region presents some places of real interest from tourism point of view. Baghor hills, Mansamata temple, Fort of Khetri and Ajit Sagar dam these all places are located in forest area. Last but not least Mission of Swami Vivekananda (Khetri town) and copper mines plant in Khetri nagar.

According V.C. Mishra (1967), the area under study falls in semi-arid region of Rajasthan while according Prof. R.L. Singh (1971) the Khetri Region is covered by western Sikar-Jhunjhunu plains in banger region of Rajasthan.



## 2. Introduction

Plants are the precious natural heritage of the earth, a valuable gift of the God on the earth surface in the form of green coverage. Actually, every plant or its community is useful on the earth surface, in other words to say whatever and wherevser the plant on this planet has its applied value, it is another matter whether that we are not aware or known by its uses or the mankind yet has unable to find out or trace out its unseen factor of usefulness. At the part of applied aspect of the plants, it cover several in other words to say uncountable multi-dimensional importance, broadly example from environmental, ornamental, folklore in society culture, religious appraisal, biological sense, its food and fodder values, its medicinal purpose etc. The uses of plants for different purposes are earlier or perhaps as old as mankind existence. In India, since the 'vedic period', information on the utility of plants in medicine finds place in different ancient scriptures. About, a few thousand years ago the utility of plants as medicinal aspect has been dealt in a holly hindu grantha -"Ram Charitmanas".

From an ancient booklet in hindi entitled "pustak sandesh" about two centuries ago, large number of common plants have been enumerated for traditional uses in which Ficus religiosa was considered as a climate purifier as it liberates considerable amount of oxygen than many other species. It is also mentioned that Lotus fruits are used as a good tonic etc. The study of plants in service of mankind remained as a part of human civilisation. Information on the economic aspect of plants have been passed from one generation to the next generation without any published records, in other words to say in some or certain cases these informations are on going heritage from one generation to another. It is in this light, a new branch of Botany has emerged, termed as ethnobotany and the scientists of world are keen to examine the practical uses of all plants reported or unreported.

Ethnobotany in other words to say a synomonus of an inter disciplinary branch of geography here termed as - applied phytogeography. There are large number of examples from archaeological remains, among them a few can be mentioned. "kalpa-vraksha" in stone sculptures denotes. Adansonia digitata basically a semi arid zone species. They grow in semi-dry areas where there is scanty vegetation. This plant has augmented the vegetable component besides ensured additional income to villagers derived from its fruit whose water is tonic and nutritive. The stem fibre is used as cordage. Branches and leaves are considered as a good cattle feed as fodder and flowers are used in medicine. It has been estimated that each tree can fetch about rupees 2000 per year and its span of life is more than few hundred years. Hence it is called 'kalp vraksha' in ancient literature.

The chapter of the Book deals with the different aspects of plants and their uses in medicine, as food plants, in socio - religions ceremonies, in abatement of environmental pollution, as an material in industry for extracting dyes, fibre, tannins, oils, fats, gum, latex, narcotics etc. are discussed in this chapter which is followed by different plants names and their uses. The plant names are given in hindi, english, local name and with their botanical names. Thus, it is one of the prime most duty of an applied phyto-geographer or economic botanist to investigates the potentiality of applied values of existing plant resources of a particular region. Further in this context, he must be aware of the traditional wisdom of the native inhabitants which is expressed in their prevailing proverbs and ancient folklore, also in their traditional customs and their believe, and restoring fund of old knowledge from generation after generation about the local trees, shrubs, under-shrubs, herbs, climbers and grasses. These are very important informative sources for obtaining truth of the applied hidden aspect about the uses of the particular plant species viz; fuel, fodder, medicinal, edible and commercial, thus these are major groups or broad categories of applied aspect of plant species.

## 3. Category of Useful Plants :

As far as the 'applied phytogeography in concerned a little work has been done on the exact lines of this aspect. Not exactly on applied phytogeography' but some of the workers have done some sort of work on its allied aspects also that is nearer to the aspect of applied phytogeography which are as mentioned below - Raunkier (1934), Jain (2001) and Sharma (2007).

After collecting the information thoroughly from all of the survey study sites of Khetri Region scattered in the different areas of this study region about the uses as well as application of the plant species which are being used by the local people or native inhabitants from centuries back is that, about 71 percent plant species of existing vegetation Khetri Region are useful. It has been already mentioned earlier that, in nature each and every plant species on the earth surface is useful, although it is another matter whether we are known to the seen or unseen applied importance of the particular plant species, Similarly, here further in this context the author is presenting the interpretation of analytic aspect of the plant species which are reported as useful among the existing vegetation of the area under study. All plants of existing vegetation cover of the study area, are not useful or in other words to say we have not reported or known upto now about their applied importance in the existing vegetation of the study area.

According earlier studies, the author has done the 'applied categorisation' of such useful plant species into their five applied categories, further in this context in other word to say the observation revealed that such useful plant can obviously be divided under five major groups or broad categories which are here known as or termed as "applied categories." There are total 122 useful plant species Table : 4.1. which are being reported from Khetri Region, Rajasthan, based on collection of informations from several survey spots scattered through the area under study. The applied categorisation analysis of

**Table :4.1**
**Khetri Region : Applied categorization of plant species (FU-Fuel,FO-Fodder,ED-Edible,MD-Medicinal and CO-Commercial)**

| S.No. | Name of the Plant Species/ Vegetation Group | Local Name | Applied Category |
|---|---|---|---|
| **A.** | **TREES :** | | |
| 1 | Adhatoda vasica | Arusa, Ardu | MD, CO |
| 2 | Acacia senegal | Kheri | MD, CO,ED |
| 3 | Acacia nilotica | Desi Babool | MD, CO |
| 4 | Azadirachta indica | Neem, Neemdo | MD, CO,ED |
| 5 | Albezia lebbeck | siris | MD, CO |
| 6 | Anogeissus pendula | Dhau | FO,FU |
| 7 | Boswellia serrata | Salar, Salaran | MD, CO |
| 8 | Butea monosperma | Palas, Tendu | MD, |

| | | | |
|---|---|---|---|
| | | | CO,ED |
| 9 | Balanites aegyptica | Hingota | FU, CO |
| 10 | Cordia gharaf | Gundi | MD, CO,ED |
| 11 | Cassia fistula | Amaltas | MD, CO |
| 12 | Dalbergia sissoo | Sisham | MD, CO |
| 13 | Ficus bengalensis | Bargad | MD, CO,ED |
| 14 | Ficus religiosa | Pipal | MD, CO,ED |
| 15 | Mangifera indica | Aam | MD, CO,ED |
| 16 | Moringa oleifera | Sahjana | MD, CO,ED |
| 17 | Maytenus emerginat | Kenkero | FU, FO |
| 18 | Phoenix acaulis | Khajur | MD, CO,ED |
| 19 | Prosopis cineraria | Jhanti | FU, FO |
| 20 | Salvadora oleoides | Pilu, Jal | MD, CO |
| 21 | Saraca asoca | Ashok | MD, CO |
| 22 | Tamarindus indica | Imli | FU, FO |
| 23 | Tecomella undulata | Rohida | FU, FO |
| 24 | Zizyphus nummularia | Borti | FU, FO,ED |
| **B.** | **SHRUBS :** | | |
| 25 | Calligonum polygonoides | Phog | MD, CO |
| 26 | Calotropis procera | Aak, Aakdo | MD, CO |
| 27 | Capparis decidua | Ker, Kerdo, Teent | MD, CO,ED |
| 28 | Commiphora mukul | Gugal | MD, CO |
| 29 | Caesalpinia pulchirrima | Morpushp, | MD, CO |
| 30 | Coccinia indica | Gol, Golan | MD, CO |
| 31 | Clerodendrum indicum | Bharangi | MD, CO |
| 32 | Lycium barbatum | Morali, Murali | MD, CO |
| 33 | Mimosa hamata | Jinjari | MD, CO,ED |
| 34 | Opuntia elator | Thor, Hatha Thor | MD, CO |
| 35 | Rhus mysorensies | Dansar | MD, CO,ED |
| 36 | Rhus coriara | Mahee Buti | MD, CO |
| 37 | Surcostemma acidum | Khir-Khimp | MD, CO |
| 38 | Withana somnifera | Asgandh, Aswagandh | MD, CO,ED |
| **C.** | **UNDER-SHRUBS :** | | |
| 39 | Aloe vera | Gawarpatha | MD, CO |
| 40 | Aerva persica | Bui, Buvado | MD, CO |
| 41 | Alysicarpus vaginalis | Leel, Leelro | MD, CO |
| 42 | Asparagus racemosus | Satawar | MD, CO,ED |
| 43 | Abutilon indicum | Kangni | MD, CO |
| 44 | Abutilon fruticosa | Imarti | FU, FO,ED |
| 45 | Crotolaria burhia | Shinio, Shinia | MD, CO |
| 46 | Cassia acutifolia | Sarana | MD, CO |
| 47 | Cassia angustifolia | Sanai Mukhi | MD, CO |
| 48 | Echinops echinatus | Looth, Gokaru | MD, CO |
| 49 | Euphorbia caducifolia | Thor, Danda Thor | MD, CO |
| 50 | Grewia villosa | Gangeti | MD, CO |
| 51 | Leucas aspera | Panihari | MD, CO |
| 52 | Leucas urticaefolia | Panihari | MD, CO |
| 53 | Malva rotundifolia | Vilayati Kangni | MD, CO,ED |
| 54 | Ocimum americanum | Bantulsi, Bapji | MD, CO |
| 55 | Peristrophe bivalvis | Kangner | MD, CO |
| 56 | Pulicaria crispa | Sonali | MD, CO |
| 57 | Sida alba | Bala, Kharenti | MD, CO,ED |
| 58 | Sida acuta | Kala Beej Bandh | MD, CO,ED |

| | | | |
|---|---|---|---|
| **D.** | **HERBS :** | | |
| 59 | Argemone mexicana | Satyanasi | MD, CO |
| 60 | Achyranthus aspera | Apamarga | MD, CO |
| 61 | Amaranthus spinosus | Chandalio-chatio | MD, CO |
| 62 | Aristolochia bracteolota | Jufa | MD, CO |
| 63 | Adiantum venustum | Hansraj | MD, CO |
| 64 | Barleria prionitis | Bajaradanti | MD, CO |
| 65 | Blumea obliqua | Chotari Jal-Bhangaro | MD, CO |
| 66 | Blepharis sindica | Cinawari, Bhangari | MD, CO |
| 67 | Boerhavia diffusa | Punarnava | MD, CO,ED |
| 68 | Citrullus colocynthis | Tumba, Indrayan | MD, CO |
| 69 | Convolvulus microphyllus | Chantari, Sanari | MD, CO |
| 70 | Convolvulus arvensis | Hiranpagi | MD, CO |
| 71 | Cressa cretica | Rudravanti | MD, CO |
| 72 | Cleome gynandra | Safed Bangro | MD, CO |
| 73 | Crotolaria medicaginea | Rudhani | MD, CO |
| 74 | Corchorus depressus | Chamkas, Kurand | MD, CO,ED |
| 75 | Chenopolium album | Bathuwa | FU, FO,ED |
| 76 | Corollocarpus epigous | Rakas gaddah | FU, FO |
| 77 | Digera muricata | Vajardanti | MD, CO |
| 78 | Dicomo tomentosa | Vajardanti | MD, CO |
| 79 | Eclipta prostrata | Jal-Bhangaro | MD, CO |
| 80 | Fagonia cretica | Dhamasa | FU, FO |
| 81 | Glinus lotoides | Bakado | MD, CO |
| 82 | Glossnema varians | Doodha | FU, FO |
| 83 | Indigofera oblongifolia | Goilia | MD, CO |
| 84 | Launaea residifolia | Phulavalo-untkantalio | MD, CO |
| 85 | Lindenbergia indica | Pindhru | MD, CO |
| 86 | Mollugo cerviana | Chiriyaro-Khet | MD, CO |
| 87 | Mollugo nudicaulis | Ragatio-Khar | MD, CO |
| 88 | Psoralea odorata | Jhill | MD, CO |
| 89 | Phoralea corylifolia | Babchi | MD, CO |
| 90 | Phyllanthus fraternus | Khajario-Khad | MD, CO |
| 91 | Polygala chinensis | Meradu, Uniragu | MD, CO |
| 92 | Portulaca oleraceae | Luni, Lulfo | MD, CO |
| 93 | Polygonum plebium | Kamali | MD, CO |
| 94 | Polycarpaea corymbosa | Jutaniokhad | FU, FO |
| 95 | Solanum albicule | Nhar-kanto | MD, CO |
| 96 | Solanum nigrum | Makoi | MD, CO |
| 97 | Solanum surrattense | Kantakari | MD, CO |
| 98 | Tribulus terrestris | Chhota Gokharu | MD, CO,ED |
| 99 | Tribulus alatus | Gokhru | FU, FO |
| 100 | Viola cinerea | Mus-Korni | MD, CO |
| 101 | Vernonia anthelmintica | Kaliziri | MD, CO |
| 102 | Vernonia cinerea | Sia-Kanto | MD, CO |
| **E.** | **GRASSES :** | | |
| 103 | Aristida adsansionis | Lemp | FU, FO |
| 104 | Cenchrus biflorus | Bhurut | FU, FO |
| 105 | Cyndon dactylon | Dab | FU, FO |
| 106 | Cyperus rotundus | Motho | MD, CO |
| 107 | Cymbopogon flexuasus | Buraro | MD, CO |
| 108 | Dectylotenium aegypticum | Ghantaria | MD, CO |
| 109 | Fimbristylis quinqularis | Chirio -ro- khet | FU, FO |
| 110 | Imperata cylindrica | Dabh | MD, CO |

| | | | |
|---|---|---|---|
| 111 | Panicum antidotale | Murat | MD, CO |
| 112 | Parthenium hysterophorus | Congress Ghas | MD, CO |
| 113 | Sehima nervasum | Seran | MD, CO |
| **F** | **CLIMBERS :** | | |
| 114 | Cocculus pendulus | Pilwani Bel | FU, FO |
| 115 | Cuscuta hyalina | Ghia Bel | FU, FO |
| 116 | Cuscuta chinensis | Amar Bel | MD, CO |
| 117 | Ipomoea hederaceae | Rota ki Bel | MD, CO |
| 118 | Momordica dioica | Ban Karalo | FU, FO |
| 119 | Momordica balsaminia | Jangali karelo | FU, FO |
| 120 | Pentatropis spiralus | Akari Bel | MD, CO |
| 121 | Rivea ornata | Rota ki Bel | MD, CO |
| 122 | Tinospora cordifolia | Gilo, Giloya | MD, CO |

Source - Based on Field survey visits

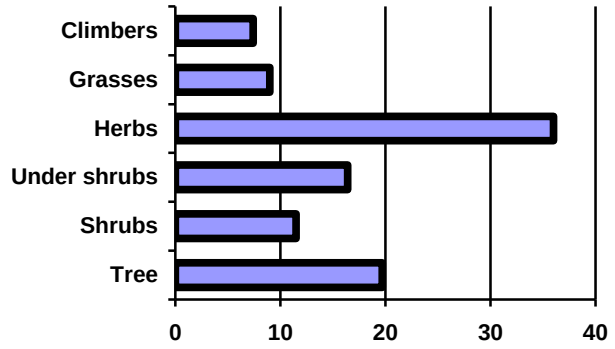
the useful plant species according the nature of their utilisation for the welfare of human beings as well as domestic animals has been carried out under five categories namely - A-Fuel, B-Medicinal, C- Fodder, D-Edible, and E-Commercial. Further in this context, the exercise of analytic aspect of the 'applied aspect or importance of the useful plants' revealed some interesting results that among useful plant 17 percent are of fuel purpose species, 81 percent plants have their medicinal importance, 16 percent plants have their fodder values, 18 percent plants have their edible importance where as 83 percent or one-fifth plant species are important from commercial point of view. Among useful plant species, most of them are common in more than one applied category, such plant species make about 81 percent wealth of the useful plants of Khetri Region's vegetation.

**Table : 4.2**

**Khetri Region : Vegetation Groups of Useful Plants**

| S.No. | Vegetation Groups | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| | Trees | Shrubs | Undershrubs | Herbs | Grasses | Climbers | |
| Number | 24 | 14 | 20 | 44 | 11 | 9 | 122 |
| Percentage | 19.7 | 11.5 | 16.4 | 36 | 9 | 7.4 | 100 |
| Contribution in overall vegetation (in % ) | 80 | 82.3 | 68.9 | 73.3 | 47.8 | 69.2 | 70.9 |

**Figure 4.1 : Contribution of Domesticated Plant Species in Percentage**




From vegetation groups analytic aspect point of view, among 122 known useful plant species for the area under study observations revealed (Table : 4.2) that - 19.7 percent are trees, 11.5 percent shrubs, again 16.4 under-shrubs, 36 percent belong to herbs, 9.0 percent are from grasses group whereas 7.4 percent belong to the group of climber (Figure : 4.1). Further in this context with reference to vegetation groups analytic aspect, if we trace out the contribution of these useful plant species in overall existing vegetation of Khetri Region which has 172 plant species in all, the study revealed some interesting results that among useful plant species 80 percent belong to the group of trees whereas 82.3 percent are shrubs, 68.9 percent belong to the group of under-shrubs whereas 73.3 percent are herbs, 47.8 percent are grasses whereas 69.2 percent percent belong to the group of climbers.

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