

# Phytogeographical Distribution of *Capparis decidua* of Churu District, Rajasthan

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## ABSTRACT

As we know that the area under district ie. Churu district belongs to the State of Rajasthan, the State of Rajasthan is located in north-western India. From geographical spread point of view has extension from 27°24' to 29° north latitudes and 73°40' to 75°41' east longitudes. It is bounded by Hanumangarh in north, Bikaner in west, Nagaur in south and Sikar, Jhunjhunu districts and boundaries of Haryana State in the east.

The plant species- *Capparis decidua* belongs to the family-Capparaceae and it is a muchbranched straggling, glabrous shrub. It is leafless, except in young shoots only and these fall down at very early stage. In arid zone Churu district above 80 percent of the total plants are observed as in the form-shrub but below 20 percent are found as in the stage of tree in different habitats where it reached to height from 3 to 10 m.

Both take placed in the period of March to June months. The rhythm of flowering and fruiting of the species is biannual, ie. first flowering period remains from April to May followed by first fruiting period from May to June where as second flowering period runs from September to October which is followed by the second fruiting period from October to November.

It belongs to the vegetation group of shrub. Plant belongs to the class of 'leafless' and spiny as well as thorny under the xerophytic-categorisation for the flora of desert, and also from leaf-classes point o view. Due to more shrubby by nature it falls under the group of 'nanophanerophyte' but sometimes it comes under the group of micro-phanerophytes when it attained the size as well as shape of a tree

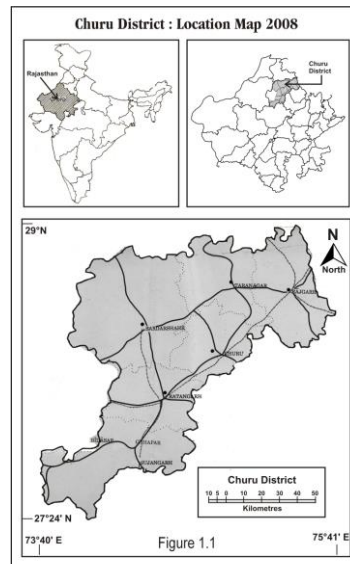
The observations over the study sites scattered throughout the Semi-arid area of Churu district in different habitats show the nature of its distribution. This is a common plant as found throughout the area under study. Thus, by nature of its plant growth as well as for survival this shrub species is characterised by polyclimax tendency of succession. Due to its drought resistant character its development coincides in most of the habitats with the prevailing desertic conditions.

It is a multipurpose economic shrub species and therefore out of five it covers four categories of applications or rather to say uses, which are; fuel, medicinal, edible, and commercial.

It covers the Afro-Asian region which falls under the tropical belt of the globe. The country sites which fall in this westward extension are; tropical African countries specially north-east Africa, Arabia, Upper Egypt, Iraq, South Iran, Baluchistan and Pakistan, and western India but has no eastward extension in India. In India, the areas which fall under distribution are Punjab, Haryana, U.P., M.P., Gujarat, Rajasthan and some southern parts of Decan plateau.

## 1. STUDY AREA

As we know that the area under district ie. Churu district belongs to the State of Rajasthan, the State of Rajasthan is located in north-western India. The district of Churu lies in the north-east of Rajasthan State at an altitude of 286.207 metres above the mean sea level. From geographical spread point of view has extension from 27°24' to 29° north latitudes and 73°40' to 75°41' east longitudes. It is bounded by Hanumangarh in north, Bikaner in west, Nagaur in south and Sikar, Jhunjhunu districts and boundaries of Haryana State in the east. It covers six tehsils namely:



**Figure1. Taranagar, Rajgarh, Churu, Sardarshahr, Ratangarh and Sujangarh**

## 2. REVIEW OF LITERATURE

The area under research work was studied by following botanists and time to time viz; first of all the Sekhawati region was touched from vegetational study point of view by Mulay and Ratnam (1950), Bikaner and pilani neighbourhood areas by joshi (1956 and 1958), vegetation of chirawa by Nair (1956), again Nair and Joshi for Pilani and neighbourhood areas (1957), vegetation of harsh nath in aravalli's hills was studied by Nair and Nathawat (1957), vegetation of Jhunjhunu, Manderella and neighbourhood by Nair (1961), vegetation of ajit sagar dam by Nair and Kanodia (1959); Nair, Kandodia and Thomas (1961) studied the vegetation of Khetri town and neighbourhood areas and vegetation of Lohargal and it's neighbourhood areas of Sikar district by Nair and Malhotra (1961). After the work of Nair and Malhotra (1961), ie. four decades ago. the area was again left for any sort of further research work in the field of applied Botany.

A significant, very authentic taxonomic work was contributed in the field of botany by Bhandari with the publication of a book *Flora of the Indian desert* (1990). From the field of applied phytogeography point of view. Charan gave a valuable contribution with a publication of a book on *Plant Geography* (1992). Bhattacharjee (2000) gave a very valuable autheontic contribution through the publication of a book on *Handbook of Medicinal Plants* in which he presented the medicinal plants of Indian Sub-continental background with their coloured photographs also and Sharma (2007) gave a very valuable autheontic contribution through the publication of a book on *Medical Plant Geography*.

## 3. OBJECTIVES

As the nature of the research work, it becomes the prime most duty of a phytogeographer to trace out to identify the plants and than their geographic interpretation from their origin point of view, their cartographic presentation from spatial distribution point of view and lastly also to prepare their layout planning map for on going plantation programme at least for the applied plant species for the area under study. The study will cover also the change detection aspect in the green coverage of the area under study.

## 4. HYPOTHESIS

Naturally, the present study will cover the present position of phytogeographic pattern of spatial distribution of applied plant species, so a phytogeographer can propose their allocation of sites of coinciding habitats from their conservation point of view for the welfare of future generation of the area under study.

We can conserve those plant species which have their applied values for the welfare of human beings inhabiting in that particular area or the area under study. For this purpose, a phytogeographer has to give an account of the layout maps of that area under study which covers the allocation of the sites with favourable habitats according to the nature of the existing applied plant species for the area under investigation.

## 5. METHODOLOGY

Applied categorization of those listed applied plant species will be carried out into their main applied categories, viz; plants for fuel purpose, plants for fodder purpose, plant species for medicinal use, plants for edible purpose, and plant species for commercial values.

To illustrate the frequency of distribution of particular plant species the prescribed method of Raunkier's will be exercised to show whether the particular plant species is rare, frequent, common or abundant for the area under investigation. The nature of habitats and the eco-climatic conditions will be dealt as a part and portion of the study to support the phyto-climatic account of the research problem for the area under study.

From phytogeographic study point of view, a cartographic interpretation of the multi-purpose plant species will be dealt at two levels i.e. at macro-level and at microlevel, basically it may be dealt phytogeographic sense.

## 6. PHYTO-GEOGRAPHY OF CAPPARIS DECIDUA

1. Name of the Specimen:  
CAPPARIS DECIDUA
2. Local Name:  
Ker, Kair, Kerdo, Teent
3. Botanical Name:  
Capparis decidua
4. Family:  
Capparaceae
5. Morphology:

The plant species belongs to the family-Capparaceae and it is a muchbranched straggling, glabrous shrub. It is leafless, except in young shoots only and these fall down at very early stage. The twigs are smooth, green with nearly straight paired spines which serve as organ of defence and also reduced the rate of transpiration, it is observed in the form of shrub of 1 to 2.5 m height but many times it attained the form and shape of a medium sized tree when protected properly. Also, it is the a tree which have efficiency to grow on very deep soils on the gravel plains and may attain the full growth in the areas of good rainfall and moisture holding soils. In arid zone Churu district above 80 percent of the total plants are observed as in the form-shrub but below 20 percent are found as in the stage of tree in different habitats where it reached to height from 3 to 10 m (Plate: 1.1).

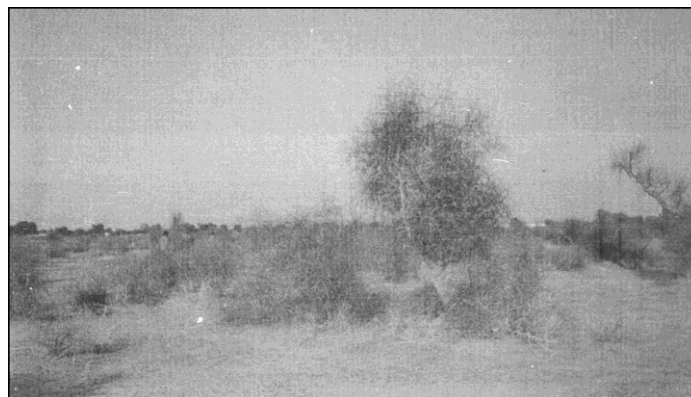


Figure 2.

## 6. Flowering and Fruiting:

Both take place in the period of March to June months. The rhythm of flowering and fruiting of the species is biannual, i.e. first flowering period remains from April to May followed by first fruiting period from May to June where as second flowering period runs from September to October which is followed by the second fruiting period from October to November. The unripe raw fruits are green but the ripe matured fruits are known as berry and locally called 'Dhallu' usually brick red or pinkish red in colour, ovoid to subglobose by shape and its average size lies in between 7 to 1.5 cm. in diameter.

## 7. Vegetation Group:

It belongs to the vegetation group of shrub. Plant belongs to the class of 'leafless' and spiny as well as thorny under the xerophytic-categorisation for the flora of desert, and also from leaf-classes point of view. Due to more shrubby by nature it falls under the group of 'nanophanerophyte' but sometimes it comes under the group of micro-phanerophytes when it attained the size as well as shape of a tree.

## 8. Eco-climatic Conditions and Habitat:

The plant species generally (about 80 percent) is observed at the stage of shrub (below 3 m) but at some places it reaches to the height as well as in the form of a tree (above 3 m). It is also observed that *Capparis decidua* as a tree found on very deep soils on the alluvial plains and may attain a full growth on the areas of good rainfall and moisture holding soils. The percentage of soil moisture increased from pre to post - monsoonal period at different depths i.e. 0.03-0.06 to 0.11- 1.43 at surface, 0.52-1.81 to 1.50-4.22 at 20 cm and 1.81-2.82 to 3.91-6.21 at 50 cm. Thus, it revealed that soil moisture which plays an important role in younger stage of the plant and increase approximately 15 times at surface, 2.5 times at 20 to 50 cm. depths.

Altitudinally, the plant is found between 150 to 500 m MSL in Churu district. Its occurrence is divided mainly into three physiographic formations; Gravel and compact soil plains which cover about 76 percent of the distribution, Small isolated undulating hilly patches surrounded by the above mentioned physiographic formation which occupy approximately 17 percent area, and Seasonal depressions, gullies, rivulets, and natural water tanks which cover approximately 7 percent area of the total. The soil of the plant occurrence habitat shows an average value of 8.3 to 8.5 for pH and electrical conductivity 0.1 to 0.8 mmhos. Gravel and compact soil formation is one of the most suitable habitats for its growth as well as development, has soluble salt contents ranging from 200 to 2000 ppm.

## 9. Applied Uses:

It is a multipurpose economic shrub species and therefore out of five it covers four categories of applications or rather to say uses, which are; fuel, medicinal, edible, and commercial.

## a. Fuel Purpose:

It is used as firewood but its quality as a fuel is of inferior category for the reason that it burns quickly, so its durability in burning as a fuel is very low.

## b. Medicinal Purpose:

Its wood is tough but light, bitter in taste hence not eaten even by the white ants. So, its tender shoots give relief from toothache and protect from pyorea. Its one of the most useful character is that unripe but dried raw green fruits from the plant are consumed against increasing fats and flesh in body, thus it is treated as anti-doses to control and avoid the unwanted increasing flesh and weight of human body. Hence, it is said to be protective against rheumatism.

## c. Edible Purpose:

The unripe raw green fruits locally known as 'Ker' are consumed as vegetables and preserved as pickles. The unripe fruits are kept in salt for some days, then washed thoroughly and made into pickles, sometimes also mixed with raw fruits of *Mangifera indica* and *Cordia myxa*. The flower buds are looked as pot herb and the honey from the flowers is sucked by native children.

## d. Commercial Purpose:

Due to multipurpose applications the plant as fuel, edible, medicinal, etc. it has a good commercial value at local market level. Unripe raw dried fruits from which pickle is prepared are sold at the rate of Rs. 80 to 120 per kg. Its twigs also make an item of raw material for the preparation of 'Kaccha houses' known as huts and 'Sall' by the villagers due to its better characteristic of tough, light and bitter taste of

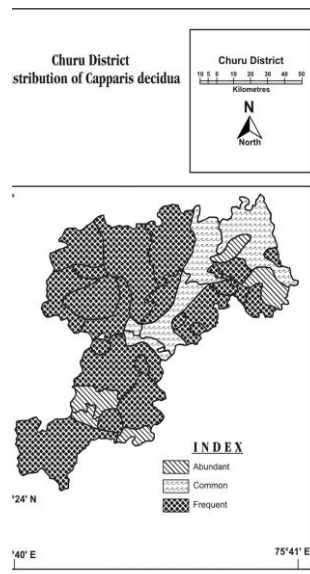
the wood.

#### 10. Phyto-geographical Distribution:

It covers the Afro-Asian region which falls under the tropical belt of the globe. The country sites which fall in this westward extension are; tropical African countries specially north-east Africa, Arabia, Upper Egypt, Iraq, South Iran, Baluchistan and Pakistan, and western India but has no eastward extension in India. In India, the areas which fall under distribution are Punjab, Haryana, U.P., M.P., Gujarat, Rajasthan and some southern parts of Decan plateau.

This a very common plant as observed through out the district of Churu and found on different habitats viz; sandy plains, gravel and compact soil formation, hilly patches also. It gives the picture of different landscape when it occurs as a shrub or at tree in sand dunes topography. Most of the areas of Churu district, the shrub has

Frequent occurrence but only at four place i.e. two locality in Sujangarh tehsil and two locality in Rajgarh tehsil it's community is found in abundant category from phytogeographic pattern of distribution point of view. The locality has 80 percent plants in the form of shrubs whereas 20 percent in the form of tree. The shrub shows common occurrence in eastern part of Ratangarh tehsil, western and middle part of Churu tehsil, north-eastern part of Taranagar tehsil and north-west and north-eastern part of Rajgarh tehsil phytogeographical distributional pattern area under study. Besides these, Remaining areas of the district fall under it's frequest category of occurrence it covers each and every habitat of the area under study except the steep slope and tops of the hilly patches, respectively. Rarely it may not be seen in any area of Churu district.



**Figure 3.**

## 7. CONCLUSION

The observations over the study sites scattered throughout the Semi-arid area of Churu district in different habitats show the nature of its distribution. This is a common plant as found throughout the area under study. Thus, by nature of its plant growth as well as for survival this shrub species is characterised by polyclimax tendency of succession. Due to its drought resistant character its development coincides in most of the habitats with the prevailing desartic conditions.

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