

Phytogeographical Distribution of *butea monosperma* in Shekhawati Region, Rajasthan

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Abstract- The present paper discusses the potentiality of natural vegetation i.e. *Butea monosperma*. The area under investigation i.e. Shekhawati region, popularly known as historical heritage, geographical and cultural zone in Jaipur division of Rajasthan state, India. Besides this zone has unique combination of beautiful ecosystems viz; riverine ecosystem, sandy plain ecosystem, sand dunes ecosystem and stony and rocky ecosystem. In these ecosystem, the sand dunes is the heart of Churu. The Shekhawati zone has a great variety of climates (semi-arid and arid) biotic and edafic conditions, physiography and diversity of natural vegetations which has on a wide range of natural ecosystem.

I INTRODUCTION

Actually, there is no plant species on this planet which may be termed as useless indeed, whether it is another matter that mankind have acquire knowledge of the uses or applications of the particular plant species. One can visualize very well the uncountable uses at the part of applied aspect of plant kingdom which left no activity of daily life of human beings requirements without any sort of their impact of usefulness by quantitative or qualitative point of view. The green cover on the earth surface whatever in the form of vegetation or forest wealth is an essential component as well as part and portion of the surrounding complex of the nature of which man is an important biological elements. Hence, generally the plant species whose uses are known to the human beings in applied sense for the mankind welfare as well as for

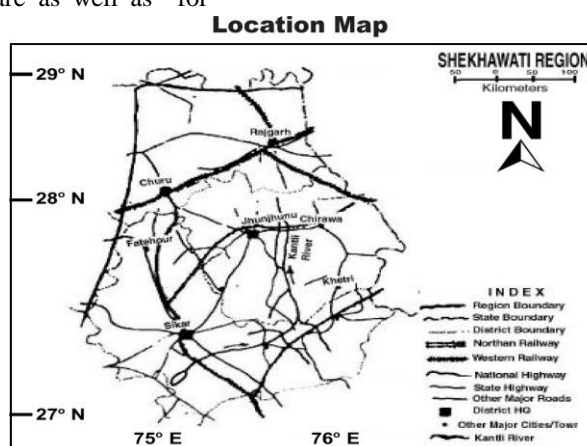
domestic animals are termed as useful plant species - at the part of his knowledge.

By thus, one can visualize Multi-purpose Medicinal Plant Species (MPMPS) i.e. *Butea monosperma* has their varied applied values in the cure of different kind of diseases for the welfare of human beings which naturally show their importance that MPMPS is really may be termed as "Medicinal Plant Wealth" of Shekhawati Region, Rajasthan.

II INTRODUCTION OF THE RESEARCH AREA

Shekhawati region is located in the north-eastern part of Rajasthan state and the region has geographical extension from 26°26' to 29°20' north latitude and 74° 44' to 76°34' east longitude on the map of Rajasthan.

The area under study covers fully or partly three districts, namely Churu, Jhunjhunu and Sikar. Churu district's out of 7, only 3 tehsils fall under Shekhawati region (Churu, Rajgarh and Taranagar) whereas Jhunjhunu district as a whole with its six tehsils (Buhana, Chirawa, Khetri, Jhunjhunu, Nawalgarh and Udaipurwati) in which Buhana tehsil emerged out as a new tehsil on the map of Jhunjhunu district (2001), it was no more existence in the year of 1991 and Sikar district also covered fully with it's six tehsils (Data Ramgarh, Fatehpur, Laxmangarh, Neem ka Thana, Sikar and Shri Madhopur).



The region has 23 Panchayat Samitis in all. Thus, the region under study has 15 tehsils in total with its total 15343 sq. km. geographical area which makes 5.6% of the state's total. At the part of district-wise contribution by area point of view in Shekhawati region it is observed that part and portion of Churu district contributes 29%, Jhunjhunu district contributes 31% and Sikar by 40%, respectively. Among these tehsils area point of view, the tehsil of Churu is largest one and Buhana smallest, respectively. District-wise area point of view Sikar stands at first position which is followed by Jhunjhunu and lowest contribution is made by Churu i.e. 1683 sq. km. only.

III 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 its neighbourhood areas of Sikar district by Nair and Malhotra (1961). After the work of Nair and Malhotra (1961), i.e. 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 back ground with their coloured photographs also and Sharma (2007) gave a very valuable autheontic contribution through the publication of a book on Medical Plant Geography.

IV 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.

V 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 appled 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 the nature of the existing applied plant species for the area under investigation.

VI METHODOLOGY

The present study has been substantiated by extensive field work. The essential data have been collected from a wide range of sources. The remote sensing available data have been used. Survey of India topo-sheets for the entire region and a bioclimatic map, have been used as base maps. Additionally, data from reports, maps, pamphlets, research papers, books, monographs, soil survey data, forest survey data from published and unpublished materials have been collected from different agencies. After examining the remote sensing and other data related to physical (climate, soil, land forms and water) biological (flora and fauna) and social (population dynamics, economic activities land use and productivity) indicators, a few survey sites were located. The sites were visited during field survey.

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.

VII OBSERVATIONS

BOTANICAL NAME : *Butea monosperma*

LOCAL NAME : Palas, Falas, Dhak (**Photoplate**).

(A) VEGETATIONAL CHARACTERISTICS :

It the world of Forest, it is popular by name 'Flame of the Forest'. The plant belongs to the family - *Leguminosae*. Mostly, it is observed as suitable ecoclimatic conditions and nature of habit, it may be observed as a tall as well as large tree. From life - forms classification point of view, it belongs, to the 'Micro-phanerophyte' group i.e. under the group of 'Trees' from vegetational group point of view. It is deciduous by nature, untidy in growth and ragged in shape, with twisted trunk. Leaves are rough in texture and 10 to 15 cm. long and broad, by thus, from leaf - class classification point of view, the tree falls in the class of 'Macrophylls'. In February - May the tree becomes leafless and in blooming stage, flowers are bright flaming scarlet orange with black calyces. It's fruit's are in the form of pods, ripe pods are light and found scattered far and wide by hot winds in the month of June. It's pods have deep red, thin button shaped seeds, generally of the size 2 cm. in diameter.

(B) ECO-CLIMATIC CONDITIONS AND HABITAT :

Although the tree can be grown in types of soil and also in low rainfall area, it's plants and hardy and frost resistant but in nature for the area under study, the trees are generally observed in stony and rocky areas i.e. hilly habitat, respectively. The tree is reported with stands in frost and drought very well and also does well in saline soils (Bhattacharjee, 2000) but neither I have observed any tree of *Butea monosperma* in saline soil areas of Shekhawati region nor in any other habitat except stony and rocky, respectively. It is also not observed in the drought prone areas of arid climate of Churu district. It requires good rainfall conditions i.e. atleast more than 40 cm. annual average to 150 cm., respectively. The plants propagated by seeds and also by roof suckers. Viability of the seed is poor. The trees are observed in aquatic and riverine areas such places are located within stony and rocky habitat e.g. Ajit Sagar Dam locality in Khetri tehsil (Jhunjhunu district). The association of *Butea spp.* requires at least 30 percent relative humidity in the atmosphere.

(C) PHYTO-CHEMICALS OF APPLIED PARTS AND PORTION :

The tree has it's seeds and secretion products at the name of applied parts and portion. The biologically active

chemicals reported, they are - Glycosides, Butrin, Isobutrin, Coreoposin, Isocoreoposin, Sulphurein; besides this all, the tree has property of contents of monospermoside and Isomonospermoside. The flowers and leaves of *Butea monosperma* have characteristic values due to it's nature of phyto-chemicals which are astringent,

(D) MEDICINAL APPLIED ASPECT :

The tree has good medicinal uses for the cure of some diseases. This is another herbal drug of choice for them for the eradication of intestinal worms and which also improve the function of stomach and intestine. They also use it in other combination to treat sexual impotency. Some of them indicated that it can restore the proper menstrual cycle in women and also prevent pregnancy if taken regularly.

The flowers (popularly called as 'Kesula') and leaves this tree species are used against boils and pimples, and are also prescribed to take internally in flatulent colic, worms and piles. Red coloured gum, root, bark and seeds of the tree also possess medicinal properties. Gum is contains tannins. The flowers and seeds are mixed in a diarrhoea and used as wormicide against tapeworms and ring worms. When several leaves are stiched together, it serves as dinning plates and the leaves are also used in beedi factories. Lack- insects can be reared on the twings. Bark flowers yield a yellow die and are used in textiles. Bark is used for tanning.

(E) PHYTO-GEOGRAPHICAL DISTRIBUTION :

A. At Global Level :

The tree species is native to Indo-Malayan region by including Ceylon. In India it is mostly observed in states of central and western India, it grows as the wild in West Bengal, Bihar and also cultivated in gardens and road side plantation. In Rajasthan, the tree has dominant distribution in Mewar region i.e. in southern Aravallis, and throughout the state but on stony and rocky habitat.

B. At Regional Level :

If we go through the reading of the phytogeographic pattern of spatial distribution for *Butea monosperma* map of Shekhawati Region than it is quite obvious that the tree and it's association with Salar and Kheri is restricted up to south eastern part and portion of the area under study. It is all due to the stony and rocky habitat has it's distribution up to south eastern part, respectively out of 23 survey field spots ten can falls under the distribution of particular tree species. Two third part and portion of northern and western Shekhawati Region is free from it's occurrence which covers thirteen survey spots, respectively.

Out of fifteen tehsils of Shekhawati Region six tehsils of south eastern part of Shekhawati Region is covered by the trees of *Butea monosperma*. **Figure.** shows that there is only one survey spot of Lohargarh has abundant phytogeographic pattern of distribution where as we can find one common locality situated in Udaipurwati tehsil from occurrence point of view. There are three large patches of *Butea monosperma* frequent phytogeographic pattern of spatial distribution in which two are located in Jhunjhunu district and one in Sikar tehsil, Sikar - Danta Ramgarh tehsil, through out one-third part of Shekhawati Region located in south-eastern portion has rare phytogeographic pattern of distribution. It shows frequent to common occurrence in riverine and aquatic habitat which have stony and rocky formation.

VIII RESULTS

Being a phyto-geographer, the best efforts has been made in this research paper to conserve and analyse of decrease of natural vegetation and associated factors in Shekhawati region, Rajasthan. Further in this aspect, one can visualise very well the results of any sort of contribution of the efforts made by Department of Forest and public awareness in this aspect, in enhancement of the land under green coverage through implementation of successful afforestation and plantation programmes.

Natural vegetation i.e. *Butea monosperma* degradation is taking place in shekhawati region through irregular rainfall, public interfere, wind erosion, water erosion, high temperature, storms and soil erosion. These processes have been accelerated by increasing technogenic and human activities it has resulted in the degradation of *Butea monosperma* of the region due to irregular rainfall and wind erosion and high temperature are more serious and widespread. Overgrazing and indiscriminate felling of under shrubs resulted in the degradation of vegetation cover and decrease in biomass production. In case these problems continue uncontrolled, large acreage of forest area will be affected in future.

The results suggest to take up immediate steps to adopt the improved forest management technologies with people's participation to lack of effects of decrease of natural vegetation in the region but it is not possible to conserve completely. Further the results of the study could be fruitfully utilized by the planners bio-scientists, botanists, phytogeographers, naturalists and policy makers to evolve suitable forest management technologies and strategies commensurate to the bio-conditions of the region.

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