



**CONSERVATION STATUS AND DISTRIBUTION
PATTERNS OF *TRIBULUS RAJASTHANENSIS*
BHANDARI *ET* SHARMA, A CRITICALLY
ENDANGERED MEDICINAL PLANT OF
THE INDIAN THAR DESERT**

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Tribulus rajasthanensis (family Zygophyllaceae), a critically endangered plant of the Indian Thar desert is known for its medicinal properties. The present article deals with its distribution, utility, taxonomy, causes of decline in population and conservation measures being undertaken to protect this plant.

Key words: Critically endangered, conservation, utility, *Tribulus rajasthanensis*, Indian Thar desert

Tribulus rajasthanensis, commonly known as 'Gokshur' was reported and described by Bhandari and Sharma (1977). Its few populations were found growing on rocky habitats of Jodhpur and Jaisalmer Districts, Rajasthan. It is commonly used by local people for different ailments including hyperglycemia. It is common ingredient in auyurvedic preparations. The species has many medicinal utilities such as its fruits are diuretic, aphrodisiac and useful in kidney diseases, calculus affections, gout disease, etc. Leaf paste of the plant is known to cure bladder stones (Kasera and Mohammed 2007). The plant was also located from the rocky and gravelly habitats of Machia Park and Mandalnath, Jodhpur (11 km away from the University Campus, Jodhpur). It propagates mainly through seeds and also from underground rootstock. It appears in natural habitat during June-July after receiving of 2-3 showers.

Taxonomy

It is a perennial rarely annual, diffusely prostrate herb (Plate 1). Stem arises from a woody rootstock during rainy season. Leaves opposite or sometimes alternate in the lower region, always unequal at the node; leaflets oblong-ovate or lanceolate-ovate. Flower

bright yellow; sepals linear lanceolate, petals broadly obovate-cuneate; stamens 8-10, anthers ovate-oblong, subequal; ovary with bulbous-based bristly hairs directed upwards; style elongate, cylindrical; stigma pyramidal (Bhandari 1990). Fruit breaking up into 5 cocci, 1.0-1.3 cm diameter at maturity; cocci 0.60-0.80 cm, each with two, 0.50-0.60 cm long, divergent spines inserted almost centrally (Plate 2). Flowering and fruiting starts during June - July. Fruit formation and maturation take place during August to October along with their dispersals.

Distribution and Causes of Decline in Population

The plant is endemic to western Rajasthan but extends from southwards to Gujarat and westwards to Pakistan. All the reported localities of this plant lie along the western Rajasthan, especially in Jodhpur. These localities are under high anthropogenic pressure due to the large scale development activities in the tourist and urban sectors. Changes in land pattern and habitat due to over-grazing, harvesting of biomass for medicinal utility, industrialization, etc. are some of the major reasons for its population decline from the Indian Thar desert. Further, the species possesses hard seed coat dormancy and thus



Plate 1: The populations of *T. rajasthanensis* growing in natural habitat,



Plate 2: Twig with flowers and fruits.

requires a subsequent rainfall at fortnightly intervals for its germination. Lack of adequate rainfall also seems to be important reason for its declining populations in the natural habitats. UNDP (United Nations Development Programme) (2008) have already listed this as a 'Critically Endangered' species and has been given the status of CR A2cd (CR-Critically Endangered; A2-Population reduction $\geq 80\%$ over the last 10 years or three generations; c-Population estimates to < 250 mature individuals; and d- < 50 mature individuals). According to Jain and Sikarvar (2004) the habitat loss is the major cause of its threat. The narrow distributional range and unprotected areas of occurrence have pushed this species to brink of extinction.

Conservation Measures

For conservation of *T. rajasthanensis* some measures needs to be taken which include its regular survey and management from the areas of natural occurrence. There should be some extra incentives for maintaining natural habitats of this species to protect a large area in different localities. Priority should be given for *in-situ* conservation of this species. Government-recognized medicinal garden should be established at Jodhpur for *in-situ* and *ex-situ* conservations. Unscientific and unregulated exploitation of the species should be avoided. Appropriate agro techniques for

multiplication should be developed.

CONCLUSION

During our fieldwork we have observed that this species is under higher risk than what was stated by UNDP (2008). Germination of *T. rajasthanensis* is poor due to its hard seed coat. Thus micropropagation through tissue culture can be undertaken to protect this plant. Hence, urgent steps need to be taken to conserve this critically endangered species.

The authors are thankful to the University Grants Commission, New Delhi for financial support and to the Professor & Head, Department of Botany, J. N. Vyas University, Jodhpur for providing necessary facilities.

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