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Biodiversity conservation and ecological assessments of arid zone plants in Thar Desert of India

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Among the world's twelve mega-diversity nations, India is an important nation comprising almost all the climatic conditions and ecological zones found in different parts of the world. The Rajasthan desert, i.e. Thar Desert is among the ecologically important regions of India in the diversity of its biological species. The western Indian Thar desert represents a characteristic environment where plants have adapted to arid hostile conditions. Scanty water with erratic rainfall and high temperature has marked effects on the vegetation, but still several plant species are found here, which thrive well despite the inhospitable conditions. The different plant species, which are common in arid environs includes: *Aerva persica*, *Achyranthes aspera*, *Cleome viscosa*, *Corchorus depressus*, *C. tridens*, *Crotalaria burhia*, *Heliotropium* spp., *Leptadenia pyrotechnica*, *Tephrosia purpurea*, *Erianthus munja*, *Prosopis cineraria*, *Calotropis procera*, *Tecomella undulata*, *Ziziphus* spp., *Citrullus colocynthis*, *Capparis decidua*, *Balanites aegytiaca*, *Maytenus emarginata*, *Opuntia dillenii*, *Parkinsonia aculeate*, *Salvadora oleoides*, *S. persica*, *Tamarix* spp. *Clerodendrum phlomidis*, *Farsetia hamiltonii*, *Lycium barbarum*, etc. Among grasses, *Aristida funiculata*, *Bracharia ramosa*, *Cenchrus* spp., *Chloris virgata*, *Cynodon dactylon*, *Dactyloctenium* spp., *Desmostachya bipinnata*, *Dicanthium annulatum*, *Digitaria ascendense*, *Eleusine compressa*, *Eragrostis* spp., *Panicum* spp., *Tetrapogon tenela*, *Tragus racemosus*, etc. During rainy season a large number of weeds also make their appearance through seeds/underground vegetative parts. Exotic plants like *Verbesina encelioidis* and *Parthenium hysterophorus* are very much disturbing the natural biodiversity of Indian desert. Typical desert plants produce different seeds generally after spring season as well as in summer months. As the climate of Indian desert is hostile to plant life, those possessing special adaptations are sustained.

In Indian arid zone, water is the master-limiting factor in determining the vegetation pattern of this region. The growth and development of the plants are handicapped by prolonged rainless periods, which threaten plant life with desiccation and complete destruction. Yet, this region sustains large plant diversity. In context of the Indian desert the conservation of biodiversity is essential not only to maintain the most fragile ecological processes and life-support system but also to ensure the sustainable utilization of the species as well as the ecosystem.

Due to over-exploitation, a good number of taxa have vanished from the arid zone and many have dwindled in number. *Tecomella undulata*, popularly known as the desert teak due to its hard wood, was once the climax tree, but at present only a few are found in free state. It has totally been wiped out and used in the manufacture of carved furniture. A highly aridity-adapted shrub, *Calligonum polygonoides* grows on the sand dunes and due to its very long surface running roots, it acts as an excellent sand binder. Digging of this shrub along with its extensive root system is a regular vocation. All the nutritious perennial grasses (*Lasiurus sindicus* & *Panicum turgidum*) have been over-grazed since centuries and they are being replaced by short-lived annuals, which are poor in quality.

Biography

Sher Mohammed was Head of Botany Department at the Govt. Post-Graduate College, Churu, Rajasthan, who has experience of 28 years of research, born on June 02, 1963 at Ratangarh, Dist. Churu of Rajasthan, India. He passed his MSc with specialization of Arid Zone Plant Ecology & Environmental Biology and earned Ph. D. degree in Botany on "Comparative studies of saline and nonsaline vegetation in Indian arid zone" under the supervision of Prof. David N. Sen at the J.N. Vyas University, Jodhpur, India in 1989. His research work on Ecology and Biology of Saline Plants of Arid Zone has been acclaimed as the finest study ever done on this group. He has successfully completed two minor UGC research projects on Biodiversity and Ecological Assessments of Arid Zone Plants. He was one of the Editors of Indian Review of Life Sciences (1990-1994). In collaboration with Prof. David N. Sen, he edited a book entitled: *Marvels of Seed* (Jodhpur Univ. Press, Jodhpur, India, 1991) and published nearly 147 research papers/abstracts in national & international scientific journals, books, symposium proceedings & abstract volumes and reviewed two books. He also published popular Hindi articles on environment in News papers. He received the consolation prize of Prof. K.M. Gupta Memorial Gold Medal (1988) for significant research. He stood 1st in order of merit by Rajasthan Public Service Commission, Ajmer, India in selection of Lecturer in Botany (1995). He has teaching experience of both UG (24 years) and PG (18 years) classes. Currently he is working on Biodiversity and Medicinal plants of Arid Zone. At present, three scholars are working with him for their PhD degree and one is awarded.

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