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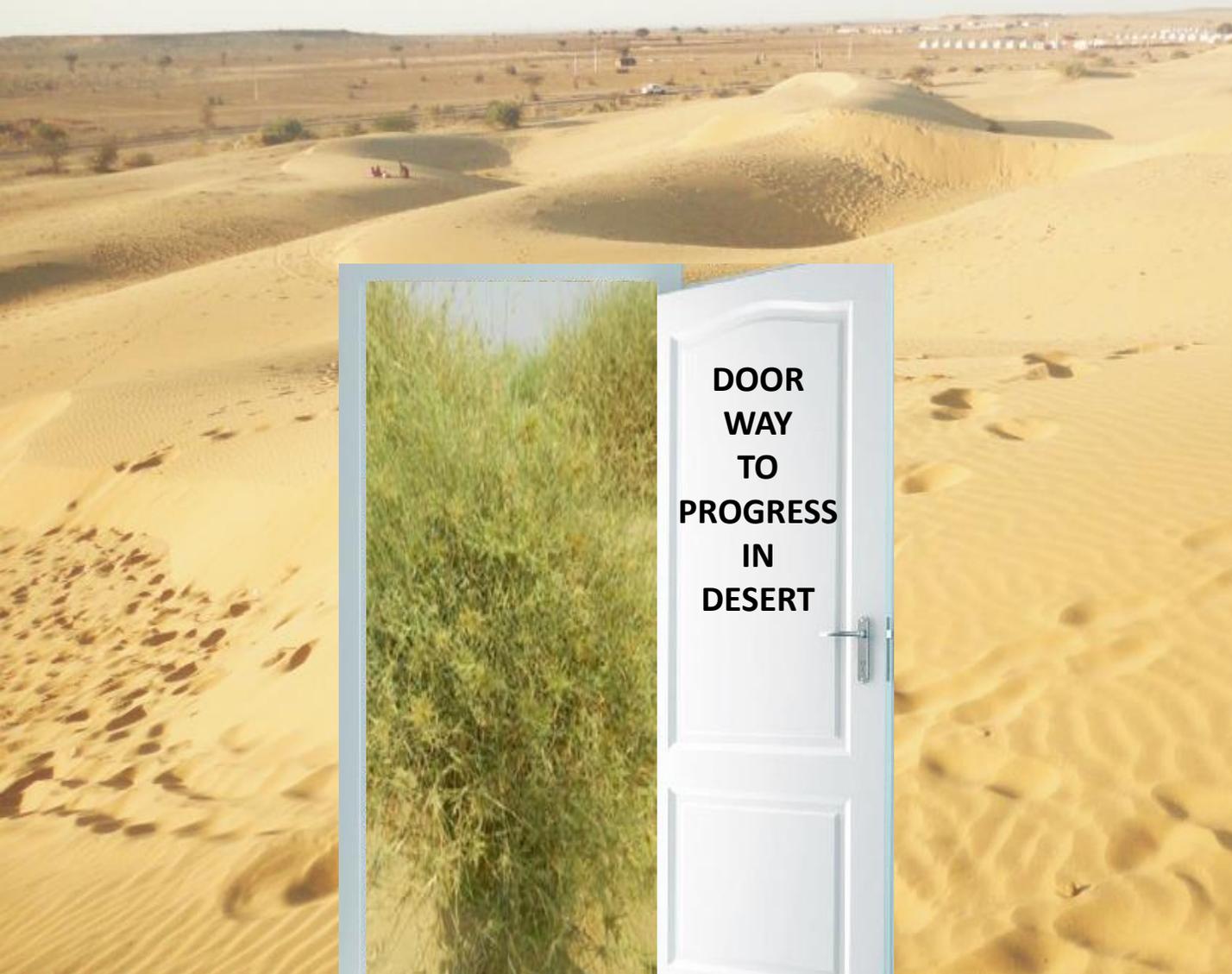
DESERT ENVIRONMENT NEWSLETTER

EIACP RP on Combating Desertification

ICAR-CAZRI

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ENVIS CENTRE
on Combating Desertification

From the desk of chairman

Dear Readers,

Pastoralism is an integral and vital component of farming systems in hot and cold arid regions. It manifests itself as an adaptation strategy to cope with high uncertainty of crop production. Agri-pastoral communities in these regions have developed several Indigenous Traditional Knowledge (ITK) systems to make the livestock rearing more viable and sustainable. These ITKs pertain to breeding of superior milch and draught animals, processing of milk and milk products to enhance their shelf life and quality, knowledge on local biodiversity including fodder species, healthcare and natural resource

management in pasturelands. The rotational and restricted grazing of livestock in *Gauchars* and *Orans* in Rajasthan aimed at management of scarce and fragile natural resources for the benefit of the whole farming community. Likewise, in the Union Territory of Ladakh, pastoralists migrate their livestock to high summer grazing settlements, which are called *Doksa* mainly during early part of summer season. The pastoralists in Banni grassland in Kachchh district of Gujarat have developed a traditional water harvesting system, known as *Virda* to conserve the rain water and keep it sweet despite the high salinity of land. *Virdas* were the only source of drinking water for migratory pastoralists and their livestock during drought years.

I am happy that this issue of DEN has briefly discussed these aspects.



O.P. Yadav

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Know Your Desert

Traditional Knowledge Prevalent among the Pastoralists in Arid regions of Gujarat, Rajasthan and Union Territory of Ladakh

Arid regions in India are known for harsh climatic conditions such as low and erratic rainfall, successive droughts, extreme temperatures and consequently, low biomass production and productivity. To cope up with these challenges, the farming communities have developed their own Indigenous Traditional Knowledge (ITK) systems to enhance the sustainability of the natural resources and the farming systems. The primary goal of these ITKs is to offset/ reduce the impact of climate vagaries and improve the livelihood sustainability. Livestock rearing is an integral and vital component of farming systems and it is in itself an adaptation strategy to cope with high uncertainty of crop production in the arid regions. Animal husbandry is more resilient during drought years. Pastoralists and livestock keepers in arid regions have developed several ITKs to make it viable and sustainable. These ITKs pertain to breeding of superior milch and draught animals, processing of milk and milk products to enhance their shelf life and quality, knowledge on local biodiversity including grasses, feeding and healthcare and natural resource management in pasturelands. Three case studies on traditional knowledge from diverse arid regions in India have been dealt in the present article.

(I) Traditional Water Harvesting System of Maldharis in Banni Grassland

Banni grassland in Kachchh district of Gujarat is home to pastoralists, known as Maldharis, practicing migratory pastoralism for more than 500 years. They are landless and dependent on *Gauchars* (village commons) for their livestock rearing. Banni/Kundi buffaloes, Kankrej cattle, Pathanwadi and Duma/Marwari sheep, Kachchhi goat, Kachchhi and Tari camel and Sindhi horse are the domesticated animals. The region experiences arid climate with average annual rainfall of 317 mm with CV of 65% indicating 2-3 drought/low rainfall years in a period of every five years. Hence availability and access of drinking water for human beings and livestock during drought years is a critical factor affecting the survival and sustainability of pastoralist system. In response to this recurring challenge of drought, the Maldharis have developed their own traditional water harvesting system to conserve the rain water and keep it sweet despite the high salinity of land. They dig shallow wells in the ground called *Virda*. The depressions in the land are identified by the flow of rain water, as the topography of Banni is flat and has few depressions in it. In those depressions, after rainwater accumulates, the temporary wells, or *Virdas* are dug, which serve as the source of drinking water for the people of Banni. These are owned by the community and all men of the village participate in the activity of digging a *Virda*. Another method used to identify the potential source of water beneath the ground is to look for grasses which require more water such as *Dhaab (Desmostachya bipinnata)*.

In a *Virda*, the sand is removed up to a depth of up to one meter in the land, till the muddy water appears. This muddy water is removed till fresh water comes up. The inside walls of *Virda* are made of wood and perennial grasses. Wood/sticks are arranged in a criss-cross manner against the inside walls of the well and grasses are placed in between the wall of well and sticks. Wood help the *Virda* stay intact and grasses act as natural filters and help in purifying the water. Of late, the number of *Virdas* and their use has declined on account of government's efforts to connect these villages with drinking water. However, certain old and abandoned *Virdas*

have been modified using modern-day technologies. Cement rings (concrete pre-cast well rings) of approximately 5 feet diameter and 2-3 feet height are used to construct wells in the place of old *Viridas*. A gap of half to one inch is maintained between each ring (especially lower rings) by placing stones and gravels to allow seepage of water into the well from the adjoining areas.

The cement rings have replaced the wood and grass to convert shallow *Viridas* into wells of approximately 10-15 feet. It is a clear illustration of the fact that farmers not only have developed indigenous solutions to problems affecting their livelihood, but have reinvented these ITKs to suit the needs of present day demands by integrating modern technologies.



Digging of *Virida* under process



A well made of cement concrete rings in the place of old and abandoned *Virida*

(II) Rotational and restricted grazing of livestock in Community Property Resources in western Rajasthan

Gauchars: Western part of Rajasthan experiences arid climate and livestock rearing is an integral part of farming systems in this region since centuries. Traditionally, each village in western Rajasthan had community property resources (CPRs), mainly in the form of *Gauchars* or *Orans*. *Gauchar* is a community grazing land reserved exclusively for livestock grazing and was accessible to all communities. *Gauchars* were the rich source of biodiversity especially grasses, browse shrubs and fodder trees. These were also the source of feed and fodder for the livestock herd of the entire village for four to five months during normal rainfall year (from onset of rainfall upto late October). Harvesting and collection of feed and fodder in limited quantities for domestic use was allowed. Visit to several *Gauchars* in Jodhpur and Bikaner districts and discussions with the local farming/livestock rearing communities revealed that these CPRs are facing several threats leading to their degradation. Invasion of Vilayati babool (*Prosopis juliflora*) in the *Gauchars* and common lands, loss of biodiversity including palatable grasses and fodder trees, utilization for developmental activities, encroachment and poor or no management of these lands have all contributed to the severe degradation. Traditionally, the land holdings of individual farmers in western Rajasthan was large enough that part of their land holdings was left fallow/ uncultivated for want of adequate rain/irrigation or for grazing of their own livestock. However, with increase in population and fragmentation of land holdings, commercial agriculture has slowly replaced the traditional livestock based farming system. Consequently, the dependence of livestock keepers on these CPRs has reduced.

Orans: They are sacred groves, which are rich in biodiversity and usually include a water body. Communities in Rajasthan have been conserving these *Orans* for centuries. The lives and

livelihoods of the farming communities are intricately linked with these *Orans*. They are rich in faunal diversity also. These are managed by the temple trust committees, mostly belonging to particular community in the village. However, *Orans* are accessible to all communities in the village. They are still in better conditions as compared to *Gauchars* because of strong belief systems associated with local deities. Generally livestock grazing is allowed in *Orans* but harvesting/cutting of grass and trees for feed and fodder are strictly prohibited and villagers adhere to these practices till date. Visit to *Orans* in Bikaner district and discussion with farmers revealed that sheep and goats were allowed to graze in only a fraction of the *Orans* from July to end of October, whereas as large ruminants (cattle, buffaloes and camel) are allowed throughout the Oran area. This practice is mainly followed to prevent new/sprouting grasses to be eaten away completely by the small ruminants after the onset of rainfall. Rotational grazing is also in practice in several *Gauchars* and *Orans* to prevent their overgrazing and degradation by restricting their few portions for a season/year for all kinds of livestock. The concepts of *Gauchars* and *Orans* were basically aimed at management of scarce and fragile natural resources for the benefit of the entire villages/farming communities. Certain practices such as cutting of trees are a taboo and were linked to religious belief systems for strong compliance and enforcement.

(III) Doksa system among livestock keepers in Leh-Ladakh region

Union Territory of Ladakh experiences cold desert conditions with average precipitation of 250 mm, mostly in the form of winter snowfall. The summer is short and winters are long and harsh. Further, land holdings are small, fragmented and located at different altitudes. Therefore, agriculture is mainly subsistence oriented and livestock is an important component of farming systems and livelihoods in the region. *Doksa* is a seasonal and short-distance migration of the livestock during summer season practiced in Zanskar, Changthang and other regions in the Union Territory of Ladakh. The system involves migrating all domestic farm and bovine animals to a distant pasture land outside the villages during the peak agricultural season. The Zanskar valley agro-ecosystem supports a large livestock population including sheep, goat, cattle, horse and other domestic animals. As the summer season begins (generally second fortnight of May or first week of June), livestock keepers migrate their yak, cattle and horses to a high pasture highland areas for 2-3 months until *Naabsa* (crop harvesting season) starts, either in late August or early September depending on the location and altitude. All the livestock mostly dzo-mo (a cross breed of cow and yak), cow and *Dimo* (female yak) along with horses and donkey are migrated to high summer grazing settlements, which are called *Doksa*. Stone-wall enclosures are maintained inside the *Doksa* permanently and temporary shelters made of local wood/tarpaulin sheets are constructed every year for the stay of the farmers/farm women and livestock. Generally farmers with large herd size (>10 large ruminants) practice this and farmers with few livestock send their livestock with these farmers on pre-agreed contract/ agreement basis.



Livestock grazing at *Doksa* in Zanskar valley, Ladakh

During this temporary migration, women play an important role in managing the herds of livestock. Before sunrise, women do the activities of milking and feeding of young calves to let animals for grazing in the nearby mountains. All the cattle are herded back before the sunset. During the free time, women are involved in processing of the milk and milk products and their packaging for sale or for domestic consumption. The butter and *chhurpey* (dried protein cake) are the main processed products. These products are in high demand in other parts of Ladakh due to purity. These are the important ingredients to prepare *thukpa* and other traditional foods of Ladakh. Also, the products produced in *Doksa* are mainly for domestic consumption only and minimal commercialization. The dung of livestock is also collected to prepare cow dung cakes. These will be used for heating purpose during the harsh winter season and also for cooking purpose.

The *Doksa* are located in the highland areas near the edges of Panzilapass and 15 km before the famous Rangdum monastery from Zanskar end at high altitude. Valley of Lungnak bordering Himachal Pradesh has many suitable areas for *doksa* ranging in between Takkar to Ammu villages. At Sham area of Zanskar sub division, this tradition is practiced in nearby village highland areas where enough grazing land is available depending on availability of lush green pasture land. This system is part of the farming system since centuries in the Zanskar region. However, the practice is slowly vanishing on account of several changes. The wisdom of the farming community in sustainable management of scarce and fragile natural resources (flora, fauna, soil and water) for the benefit of the common good is reflected in *Virda*, *Gauchar*, *Orans*, and *Doksa* systems.

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Traditional Wisdom in Conservation and Utilization of Plant Biodiversity in Western Rajasthan

Introduction

During the last few decades, interest in traditional wisdom in conservation and utilization of plant biodiversity has gained momentum worldwide. Information on what and how local people make use of plants have been traditionally gathered and passed on from generation to generation. In western Rajasthan, desert inhabitants have precious information about utilization of native plant diversity, and they have played vital role in their conservation. Thus, over the years an indigenous knowledge bank was built up by the keen observations and experience. This traditional knowledge bank has a lot of wisdom and relevance that merits in conservation and utilization of native biodiversity and also their incorporation in the modern management practices. It may be helpful in ensuring better management of plant resources and sustained availability of bio resources.

Role of Traditional Systems/Structures

In western Rajasthan, we often find mention of *Orans*, *Gauchars* (community grasslands), Beers (grasslands for hay making), Agor (water catchment areas), Jorh or Tobas (village ponds), Ranns (saline depressions) and Khadins (runoff farming). Use of these structures show a strong traditional base and play a very important role in socio-economic values for sustainability of the hot arid ecosystem.

Orans are a kind of sacred woodland or natural silvi-pastures, which are a result of a complex ethno-scientific thinking of desert inhabitants. These Orans usually represent climax vegetation or near climax vegetation patches particularly the woody perennials preserved by the communities in natural condition. The plant species in the Orans were selected and valued by the local communities for cultural or religious reasons. They perform variety of ecological functions such as conservation of soil, recharge of aquifer and



Oran at Sodakor, Jaisalmer district

nutrient cycling. They are also important for the adjoining villages by providing variety of ecosystem services to the inhabitants.

Gauchars literal meaning is grazing land for cows. They are the community lands under the administrative control of village Panchayat. Most of the villages in western Rajasthan have *Gauchar* land for free grazing of animals without any distinction of caste, religion, or social-economic status. These *Gauchars* also have the provision for *Nadi* (small water body or pond) wherein rain water is harvested for animals.

Beers are also the permanent pasture/grasslands for hay making or grazing lands. They had the unique identity in the western Rajasthan as a source of forage resource for livestock for example Jor *Beer* in Bikaner district.

Jorhs or Tobas are the water bodies/ponds that collects rainwater from the catchment areas whereas tanks or *Kunds* were used for storing water to be used during drought.

Ranns are the salt basins/saline depressions or low lying areas located in the hilly and sand dune tracts where local run-off collects. Lanela (*Meetha and Khara Rann*), Kanod and Pokaran in Jaisalmer district; Pachpadra, Thob, Sanwarla in Barmer district; Bap-Malhar in Jodhpur district; Lunkaransar in Bikaner district are some of the examples of *ranns* in western Rajasthan. Some of these *ranns* still preserve the diversity of halophyte species particularly members of family Chenopodiaceae, Poaceae, Tamaricaceae, Convolvulaceae etc.



Rann at Kanod, Jaisalmer district

Khadins are the runoff farming system and the testimony of rich agricultural heritage in Thar Desert particularly in Jaisalmer district. They play a vital role in optimum storage of runoff water during monsoon. We still find the diversity of land races of crops grown in the *Khadins* and also the trees (*Acacia nilotica* subsp. *indica*, *Salvadora oleoides*) on bunds.



Khadin in Jaisalmer district



Rabi crops in Khadin in Jaisalmer district

Agors are the catchment areas which play crucial role for providing the runoff water to *Khadins*. However, the cultivation area of *Khadin* depends on catchment area, its slope and rainfall. The catchment area was found to be ~20 times greater than the cultivated area.

Woody perennials in Traditional Farming Systems

Trees and shrubs play a vital role in production system in arid environment. The constant use of these plant species has resulted in their dwindled populations but the rural societies cannot be blamed for this. In fact, they have used the native vegetation so judiciously and ethically that we still find well-preserved stands of woody perennials inside the farm or at the farm boundary i.e. *Prosopis cineraria* (Khejri), *Tecomella undulata* (Rohida), *Salvadora oleoides* (Meetha jal), *S. persica* (Khara jal), *Cordia gharaf* (Goondi), *Maytenus emarginata* (Kankera), *Capparis decidua* (Kair), *Calligonum*



***Cordia gharaf* stand at farmer's field in Bikaner district**

polygonoides (Phog), *Clerodendrum phlomidis* (Arni), *Grewia tenax* (Gangeran) etc. in different agro-ecological zones. Some of these species are considered sacred and not cut by the desert inhabitants. For example, they never cut or allow others to cut trees of *P. cineraria*. Plant species viz., *M. emarginata*, *Ziziphus nummularia*, *C. decidua*, *C. polygonoides* etc. also have the social and religious significance in the region. As a result, we still possess the diverse gene pool of woody perennials in different habitats/landforms in the region.

Traditional Cropping Systems

In traditional cropping systems, mixtures and rotations were developed by farmers over years of experience to suit specific ecological and socio-economic conditions to attain stability and

in production system. The main objectives of adopting such cropping practices were to reduce the risk of total crop failure due to uncertain monsoon, to have a variety of produce for food requirement of the farmer's family, feeding the livestock and generating additional income. Best example that prevails in the region is mixing the seeds of *Mateera* (watermelon) with kharif crops particularly in Barmer, Bikaner and Jaisalmer districts. Mixed cropping of *Mateera* supports the livelihood of desert farmers in a big way, as seeds offer good remunerative price in the local market. Other cucurbits are also extensively grown in mixed cropping with pearl millet, clusterbean, moth bean, mung bean and sesame during kharif season. The crops are also grown in stands of rangeland shrubs. Farmers of the region reaped more yield of pearl millet, moth bean clusterbean, and '*Mateera*' crops from the land bearing natural stands of *Haloxylon salicornicum* (Lana).

Livestock Production Systems

Animal husbandry has been an integrated component of Thar Desert culture and is the major livelihood of the region. For better livestock rearing, various traditional practices were evolved as efficient resource management and utilization strategies. Lopping of *P. cineraria* (Khejri) is practiced in most parts of western Rajasthan and the threshed dried leaves locally known as *Loong* used as nutritive feed. Green/dry *phylloclades* of *C. polygonoides* (Phog) locally known as *Lasu* is one of the important feed resources for camels and considered as potential top feed. Its dry fruits locally called as *Ghintal* are also used as feed. Farmers generally harvest the fruiting tops of *Haloxylon salicornicum* in November-December and store for future use as fodder. It is generally mixed with guar phalgati (clusterbean straw) and '*Lasu*'. Farmers believe that during mineral deficiency, the animals selectively browse *H. salicornicum* shrubs to meet the mineral requirement. Its succulent twigs not only provide fodder but also water to the browsing livestock and wild animals. *Z. nummularia* (Bordi) is traditionally valued as browse shrub and leaf fodder called as Pala is stored and used as feed for livestock. Therefore, it plays an important role in increasing carrying capacity and nutritional status of grazing lands in the hot arid region. *S. oleoides* (Meetha jal) is a multipurpose tree species browsed by small ruminants and camels. Its fruits locally called as *Pilu* are also fed to livestock and supposed to increase the milk production.

Wild legumes like *Indigofera argentea* (Seyyan), *Indigofera cordifolia* (Bekario), *Indigofera sessiliflora* (Bekaria) are collected and stored for stall-feeding during the lean period and fed in mixture with other feeds. Feeding of *I. sessiliflora* to sheep is supposed to increase wool production. Other herbaceous species like *Tribulus pentandrus* (Bakda), *T. terrestris* (Kanti/Chhota-gokhru) are collected, stacked and fed to camel, sheep and goats and also to milch cattle during the lean period. Species like *Corchorus tridens* (Kaga roti) is also collected and fed to goats as stall feeding. *Corchorus depressus* has special feeding significance for goats as it increases the quantity of milk. Among cucurbits, young plants of *Citrullus fistulosus* (Tindsi), *Citrullus lanatus* (Mateera), *Cucumis callosus* (Kachri), *Cucumis melo* var. *momordica* (Kachar), *Momordica dioica* (Kakora), *Momordica balsamina* (Jangli karela) etc. are given to livestock. Other than green foliage, fruits of cucurbits also form the favorite feed of livestock. Boiled fruits of *Citrullus colocynthis* (Tumba) are used as feed for camels, horses and also given to milch animals. The seeds of watermelon are also used as concentrate feed to cattle and buffaloes. Seed cakes of *C. colocynthis* and *C. lanatus* which are rich in protein content also used as animal feed.

Indian Thar Desert region has a strong traditional knowledge base with a variety of systems/structures for sustenance of human as well as livestock population. Animal husbandry is the integral component of the economy of the region. Presently deficit fodder availability with shrinking and degrading grazing lands is a major constraint for sustainable livestock production. Therefore, there is need to promote the traditional fodder conservation practices prevalent in the region. Because these traditional practices were an outcome of wisdom, experience, judicious land use and concern for hostile arid environment. These practices may not sound applicable in intensive cultivation but their importance in remote areas and degraded lands cannot be denied. Further, the land constraint for forage cultivation could be compensated to some extent if traditional forage cultivation practices are re-introduced in food production system. There is desired need to create the awareness amongst the younger generation for the importance and also to maintain the existing traditional systems/structures viz. *Orans, Gauchars, Beers, Jors, Khadins, Agors, Ranns* in their vicinity/area. All of these are the rich cultural heritage for the future generation and are also important for conservation of biodiversity of the hot arid ecosystem.

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Know Your Desert Plant

Murath Grass (*Panicum turgidum* Forsk.): Key Grass Species for Sand Dunes in Western Rajasthan

Perennial grasses are one of the important components of vegetation in arid environment. Other than forage, they have a lot of conservation benefits in reducing soil loss to a great extent. *Cenchrus ciliaris* L., *Cenchrus setigerus* Vahl, *Cymbopogon jwaruncusa* (Jones) Schult., *Lasiurus scindicus* Henr., *Panicum turgidum* Forsk. and *Sporobolus ioclados* (Nees ex Trin.) Nees are some of the key grass species found in different habitats/landforms in western Rajasthan. *Panicum turgidum* which is locally known as Murath grass is characteristic grass species found on sand dunes and also sandy plains. It has a value of being highly drought tolerant and also a very effective sand-binding xerophyte in arid environment. It forms the main grassland type on the sand dunes. Wind-borne sand usually accumulates around the thicket of *P. turgidum* grass forming isolated mounds that gradually enlarge.

Description: It is a perennial, glabrous, bunchgrass, growing in dense bushes up to 1 m or more tall has thick root stock. The culms are terete, long-jointed, woody, solid and polished, with few leaves. Internode is long, 2.5-3.0 mm diameter in middle. Leaves are basal with 2.5-7.5 cm long. The inflorescence is a terminal panicle up to 4-10 cm long with solitary spikelets of 3-4 mm long. The roots are covered in hairs to which fine sand adheres creating a felted appearance. Flowering and seeding occurs from July to November.

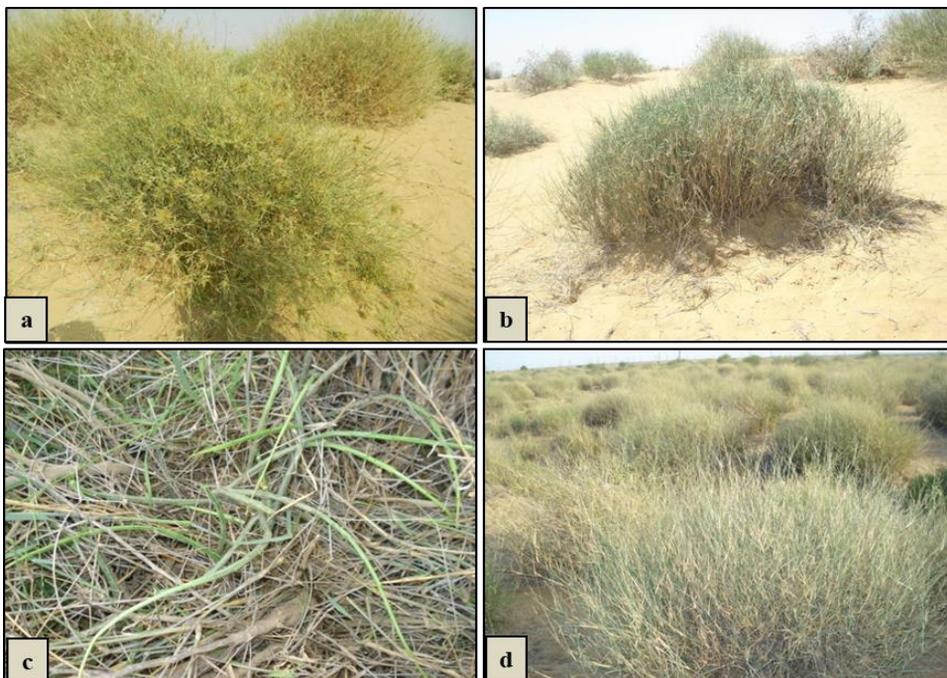
Distribution: It is distributed in Tropical Africa, Egypt, Cyprus, South Palestine, South Persia, Libya, Iraq, Iran, Pakistan and India. In India it occurs in Rajasthan and Gujarat states. In Rajasthan, *P. turgidum* is reported from Barmer, Bikaner Ganganagar, Jaisalmer, Jalor Jodhpur and Sikar districts on the sand dunes/sandy plains areas.

Associated vegetation: In its natural distribution in western Rajasthan, it is commonly associated with arid shrubs like Phog (*Calligonum polygonoides* L.), Bawli (*Acacia jacquemontii* Benth.), Kheep (*Leptadenia pyrotechnica* (Forsk.) Decne.), Bui (*Aerva javanica* (Burm.f.) Juss. ex Scult.), Sinia (*Crotalaria burhia* Buch.-Ham. ex Benth.) etc. in sand dunes and sandy plains.

Ecological Value: *P. turgidum* is a remarkable drought tolerant grass species, survives up to 150 mm of rainfall and is capable of being used in the rehabilitation of degraded ecosystems. It is highly suitable for plantation in checker board in sand dunes for stabilization of sands and prevents the shifting of sand dunes from one place to another. It is one of the effective sand binders and dominant grass on transverse dunes. It plays an important role in colonizing shifting sand dunes, so it much employed in sand dune stabilization program.

Conservation value: *P. turgidum* grassland in hot arid region particularly in Jaisalmer district is vital resource for protection of Pimpa (*Caralluma edulis* (Edgew.) Benth. & Hook.) plant population which is one of the important threatened species of western Rajasthan. Mostly *C. edulis* occur in the tussocks of *P. turgidum* and utilized as food cum medicinal plant by the desert inhabitants. Therefore, there is need for protection of *P. turgidum* grasslands in the region for conservation of threatened *C. edulis* species.

Economic value: It is one of the excellent fodder grasses in the Thar Desert, eaten by all domestic as well as wild animals when green but when dry only camel and donkeys browse on it. It is also one of the important grass species in rangelands. It is highly palatable up to the pre-flowering to the flowering stages. It produces about 5.0 to 7.5 tha^{-1} of green fodder with 2.0 to 3.0 tha^{-1} dry matter. It contains about 4.9% of crude protein. The grains of *P. turgidum* is also eaten by birds and humans. The dried aerial parts are also used as thatching purpose in making desert shelters, and in making fences around their shelters.



Panicum turgidum growing on sand dune (a & b); Growing of *Caralluma edulis* in the tussock of *P. turgidum* grass (c); *P. turgidum* dominated grassland in Jaisalmer (d)

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EIACP Activities

Hariyali Saptah/Week

Conducted an online poster competition for school students of Class X – XII as a part of celebration of *Hariyali Saptah/Week* by MoEF&CC, New Delhi from July 1-9, 2022 on the topic “*Greening the Environment: Role of Children*”. A circular (poster specially prepared) with detailed schedule was widely circulated to schools on their respective e-mail Ids. and social media platform. 19 students from different schools participated in this competition. E-certificates were sent to the winners as well as certification of participation to all the participants.



Single Use Plastic

Installed the standee regarding Single Use Plastic items banned issued in public interest by MoEF&CC, New Delhi at EIACP lab for wider publicity and to create awareness among the employees of the institute on July 08, 2022






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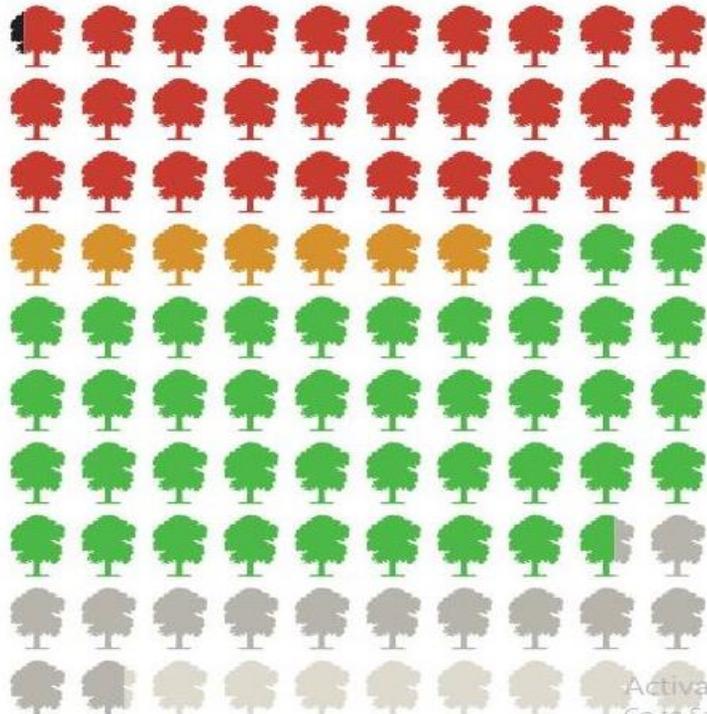


Information Around

THE CONSERVATION STATUS OF THE WORLD'S 58,497 TREE SPECIES

Number of species

	Extinct 142 (0.2%)
	Threatened 17,510 (29.9%)
	Possibly Threatened 4,099 (7.1%)
	Not Threatened 24,255 (41.5%)
	Data Deficient 7,700 (13.2%)
	Not Evaluated 4,790 (8.2%)



Source: <https://www.bgci.org/wp/wp-content/uploads/2021/08/FINAL-GTARReportMedRes-1.pdf>