

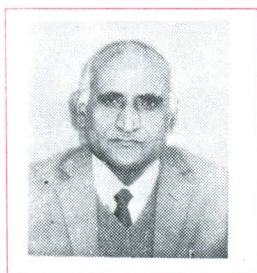
# DEN NEWS

(Desert Environment News)  
Central Arid Zone Research Institute, Jodhpur

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## CONGRATULATIONS : DR. FARODA

Dr. Amar Singh Faroda was born on 18th Nov 1939 in Katyasni village of Nagaur district in Rajasthan. After completing primary education from Merta City, he graduated himself (B.Sc., Agriculture) from Dayanand College, Ajmer and M.Sc. (Agronomy) from Rajasthan Agricultural College, M.L. Sukhadia University, Udaipur.

Dr. Faroda started his scientific career in 1964 as Research Assistant from Govt. Farm, Kota. For a period of two years (1965-67), he did teaching in Agricultural College, Jobner. Later in 1967 he joined Central Sheep and Wool Research Institute, Avikanagar (Rajasthan) as Junior Assistant and continued till December 1974. During this period he completed his Ph.D. (1973) from Haryana Agriculture University (HAU), Hissar.

For a period of 21 years (1974-95) he worked as Head of Division (Agronomy), Director (Extension) in HAU. Considering his long experience and expertisness, he was asked to establish a National Agricultural Project (NARP) as a Chairman of the project.

Dr. Faroda is a renowned personality in the field of Agronomy and achieved many new goals in the field of agriculture. He has worked on various crops, particularly on 'fodder crops', 'Legumes' and other crops in relation to farming and management and developed various new varieties and brought basic changes in the existing system. He contributed more than 200 research papers, books, monographs, bulletins etc.

From Sept. 1995 to Nov. 1999, Dr. Faroda worked as Director, Central Arid Zone Research Institute, Jodhpur and during this

period CAZRI progressed in many fields and set new goals. He is the most popular personality among scientists because of his caliber and scientific attitude, with farmers because of his depth in the subject, technical know how, simplicity and mixing nature, and among employees for his welfare attitude.

It is a matter of pleasure and proud that Dr. Faroda has been selected as first Vice-Chancellor of the Agricultural University, Udaipur

**D.C. Ojha**  
P.I. / Editor

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**Effect of Cow Milk on Leaf Curl Virus of Chilli**

Arun Kumar and N.L. Vyas

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Chilli (*Capsicum annuum*) is an important vegetable and spice crop, grown all over India. Jodhpur, Ajmer, Tonk, Pali and Bhilwara districts in Rajasthan are major chilli growing areas. Jodhpur region is especially famous for its local cultivars (Mathania red and Haripur-Raipur) having large inflated, thick and fleshy green chillies used mainly as vegetable and for pickles. The dried brilliant red coloured fruits are valued chiefly for their shining red coloured powder with mild pungency as spice. During 1997-98, in Jodhpur region alone the crop is grown on around 17000 ha with a production of 28400 tonnes. Last four years, several diseases of chilli have posed a serious threat in Jodhpur, so much so that even the famous Mathania Mirch faces the danger of becoming obsolete. The leaf curl virus (LCV), in particular, has caused considerable loss in yields.

The whitefly (*Bemisia tabaci* Gem.) transmitted geminivirus is the casual organism of this disease. Geminiviruses in chilli are difficult and expensive to manage.

The only strategies available are to spray insecticides or use virus resistant crop varieties. However, under some circumstances, when there is a large source of viruliferous whiteflies near by, insecticides have been less successful. Recently the hybrid 'CH-1' developed by PAU, Ludhiana is reported to have resistance to LCV but this is not available to the local farmers. At the same time, the farmers are also not inclined to adopt such cultivars which lack the qualities of their choicest cultivars.

In present scenario when the environmental awareness has increased resulting in a shift towards search for viable alternatives of disease control. In view of the LCV management problem in chilli in this region we looked for the practices which were ecologically non-disruptive and stable. As sustainability is a new paradigm for modern agriculture and answering this challenge took the form of a dialectic between our understanding of available practices and our expanding knowledge of ecological relationships in agroecosystems. This is a case wherein we took a reported practice of farmers seriously, and then embarked on experimentation. Rigorous 'on farm' trials were initiated in Mathania and Tinwri villages from nursery to fruit harvesting stage during 1997-98 and 1998-99.

**Table 1: Bio-efficacy of RCM for the control of LCV in chilli : 1998-99**

Treatment	Disease incidence (%)	Disease control (%)
T1 - TSP seed treatment and (TSP + Monocrotophos) spray	29.7	27.9
T2 - RCM (1:1) used for S.T. and root dip for 10 mins.; 15% RCM spray	23.3	43.4
T3 - RCM (1:1) used for S.T. and root dip for 10 mins.; 25% RCM spray	33.1	19.6
T4 - Control (Farmer's field and practices;	41.2	-

S.T. = Seed Treatment

**Table 2: Chilli yield Parameters: 1988-99**

Treatment	No. of fruits/plant	Fruit		Average fruit yield (after 3rd picking) (kg)
		Length (cm)	Breadth (cm)	
T1	10.6	6.6	4.3	2.5
T2	21.0	9.0	4.6	4.3
T3	14.6	8.6	4.3	3.8
T4	15.3	7.0	4.6	2.0



This was in fact a farmer-led scientific research with farmers participation. Only interested farmers were selected and it was made clear to them that most inputs would be borne by them. Farmer inputs included land and labour (i.e. spraying of milk). CAZRI's institutional inputs included chilli seeds treated with Raw Cow Milk (RCM) and logistical support. All the treatments were implemented in our presence.

The experiments were conducted during early Kharif season of 1998-99 in Randomized Block Design (RBD) with three replications using cultivar 'Haripur-Raipur', more popular with farmers due to more weight resulting in high returns.

In the nursery seed treated with RCM (1:1) for 24 hrs were sown along with Trisodium Phosphate (TSP) seed treatment. Farmers practice was treated as control. The roots of nursery raised RCM treated seedlings were dipped in RCM (1:1) for 20 minutes before transplantation. Twenty days after transplanting, RCM 15% and 25% was sprayed four times at an

interval of 20 days. The experimental beds were treated with carbofuran @10g/m<sup>2</sup> to take care of soil borne viruses that may enter through root knot nematodes.

The results indicated that the treatment of seeds with RCM (1:1) and 15% dilution spray reduced the incidence of LCV to 23.3% in comparison to 41.2% in farmers practice with a disease control of 43.4% (Table-1). In addition average number of fruits per plant was also higher (21.0) when compared with farmers practice (15.3). A similar pattern hold true for average fruit yield by weight (Table-2). This implies that the cheaper treatment of RCM with 15% dilution proved more effective, a welcome result for all the chilli growers. We attempted to convey the benefits of this low cost, simple but effective technology to all interested farmers by organizing a 'Mirch Divas' (Chilli Day) in Mathania village in June 1999. Farmers seem very keen to adopt the use of RCM for treating LCV because cow milk is a household resource and has no health or environmental risks.

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### An indigenous microirrigation subsurface system for establishment of trees in hyper desertic conditions

I.C. Gupta

Head, Division of Natural Resources and Environment  
Central Arid Zone Research Institute, Jodhpur 342 003

Due to accelerating population and concomitant industrialization in contrast to shrinking water resources and decelerating forests the world over, global warming is becoming a serious menace to the environment. To combat this problem for the survival of the mankind, large scale tree plantation has to be resorted on the top priority. Establishment of trees in hyperdesertic conditions is a most stupendous task. Microirrigation system like drip has been widely advocated for such conditions. However, due to several constraints viz., high cost, requirement of power and technical skill, maintenance and operational difficulties, loss of water due to surface evaporation, drip irrigation has not been effective at all, to change the face of desert perceptibly.

An indigenous micro-irrigation sub-surface system of irrigation has been invented. It checks excess water evaporation, percolation and seepage for acclimatising a sapling in a new environment. This is an inexpensive device requiring no energy to operate by maximum utilization of every drop of water. It is potentially useful for hyperdesertic regions where there is high evaporation and sandy soils with very low moisture retentivity. Regulated supply of moisture ensures faster growth of plants.

The system named as 'Jaltripiti' consists of a double walled earthen pot in which two pots of the same height (30 cm) but different top diameters (25 cm and 15 cm) and base diameters (18 cm and 12 cm) are joined together at the base such that the basal portion of the

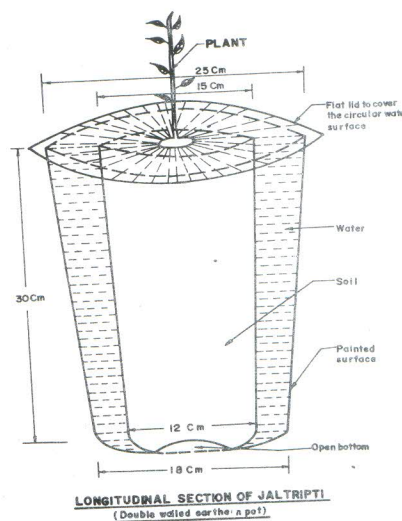
**Table 1. Growth parameters of Ber cv. Seb as affected by different treatments**

Treatment	Water used per plant (L)	Height-(cm)	Diameter of root stock (cm)	Diameter of scion (cm)	No. of leaves
3L in Jaltripti	99	100.6	1.64	1.27	259
3L pit(Conv.)	99	81.5	1.01	1.11	157
6L pit	198	92.0	1.24	1.28	187
9L pit	297	98.4	1.37	1.29	212
12L pit	296	98.7	1.49	1.27	250
SEm+-		9.9	0.03	0.03	4.3
CD at 5%		ns	0.06	0.06	9.3

inner pot is almost open to allow the growing roots to pass through. The outermost wall of the device is made impervious by brushing with coaltar, cement or snowcem, paint etc. A tree sapling alongwith soil ball received from nursery is transplanted in the inner pot. The pot is placed in a pit dug in the soil such that brim of the pot is in line with the surface of soil. The space between the two walls of the pot is filled with water (3-4 litres at a time) and covered with a lid whose centre is open (10 cm diam.). The device called as 'Jaltripti' works on two simple principles viz. (1) soil moisture tension and plant roots create a suction force which draws moisture towards it from the neighbouring high moisture zones, and

(2) inner earthen pot has many micropores in its wall which do not allow water to flow freely but allow seepage in the direction where suction develops.

Field experiments conducted with ber (*Ziziphus nummularia*) and neem (*Azadirachta indica*) at Bikaner (hyperdesertic place in Thar desert of western Rajasthan) has revealed a saving of more than 80 per cent water through sealing of percolation and minimising evaporational losses, and that it is superior to all the conventional treatments such as pond sediment barrier, Jalshakti and bentonite barrier (Table 1 and Table 2).





## RIO'S STEPCCHILD

January 31, 1999 "Down to Earth" - Reproduced

*The UN convention to combat desertification is a non-starter. Administrative and financial matters get the better of any serious attempts to deal with global desertification. Though the desert is expanding, the North is not interested.*

- Anju Sharna, Dakar, Senegal



Desertification threatens 41 per cent of the total land area on the Earth. It will affect 900 million people in 100 countries, most of them in the least developed parts of the world. The industrialised North, which is not really facing this threat, is hardly interested in dealing with the problem, at least when compared to its interest in other global environmental issues such as climate change and biodiversity, which are crucial to its business interests.

The second conference of parties (COP-2) to the United Nations Convention to Combat Desertification (CCD), held in Dakar in early December, was a non-event compared to the frantic politicking at the climate change convention in Buenos Aires in November or the biodiversity convention in Bratislava in May. The three conventions originated from the Rio Earth Summit of 1992.

With no stakes for developed country participants, aggressive industrial lobbyists were missing, and non-governmental organisations (NGOs) from the North were conspicuous by their absence. A survey carried out earlier this year by a German NGO found a marked lack of enthusiasm on part of NGOs from the North in the desertification convention, which was created after heavy lobbying by the South in the face

of the opposition from countries of the North at the Rio Earth Summit.

### **Portents**

Several factors are leading to desertification: population and livestock pressure, poverty, national debts, international trade in cash crops, and poor governance; all of which put direct and indirect pressure on land. The first conference of parties, held in Rome, Italy, in September 1997, dealt mostly with the question of funding activities under the convention as developed countries were unwilling to part with significant funds to fight desertification.

COP-2 was to finally put to rest teething problems faced by CCD, including its financial mechanism, and clear the coast for further work on the 'bottom up' approach that the convention espouses in the fight against desertification in future meetings. In the 'bottom up' approach, countries are expected to prepare national action plans with the active participation of affected communities and the civil society, taking into account traditional methods. Women's groups and local communities are integral to the action plans.



However, COP-2 was mired in administrative decisions, which even spilled over to the agenda of the next conference of parties. Countries of the South did not come to Dakar with too many expectations. The financial mechanism, which was to be operational from January 1, 1998, was stalled due to lack of funds. They reiterated the demand made at Rome for countries to provide the necessary resources.

It was decided during the early stages of the CCD negotiations that a 'Global Mechanism' will be set up by CCD to encourage and assist donors, recipients, development banks and NGOs to mobilise funds and channelise them where they are needed. This Global Mechanism will be managed by the Rome-based International Fund for Agricultural Development (IFAD).

A memorandum of understanding between IFAD and the CCD secretariat was to be signed at COP-2. But, once again, the decision was postponed to the next meeting, much to the disappointment of developing countries. However, the various parties were asked to function as if it was already operational.

### Disagreements

There was friction while deciding the functions of the CCD secretariat, which will shift to Bonn in Germany and start functioning from February 1999. The secretariat put forward to the parties a medium-term strategy for its functioning. The proposal found support from the Group of 77 nations (G-77) and China, but was opposed by most developed countries. They felt the secretariat should restrict itself to a facilitating and coordinating role for parties, whereas the strategy suggested an operational role, which should be left to the Global Mechanism, the Committee of Science and Technology (CST, set up to advise parties to the convention) and specialised agencies involved in combating desertification. The developing countries saw this as an attempt to reduce the secretariat to its lowest common denominator, which would tend to confirm that CCD was a 'poor relation' of the other Rio conventions.

There were disagreements on the administrative and support arrangements for the secretariat as well. The meeting passed a decision calling on the UN General Assembly to finance the conference servicing costs arising from sessions of the COP and its subsidiary bodies from the UN regular programme budget for the period of their institutional linkage. However, delegates from the US (which is not yet an active member of CCD) said these costs should be borne solely by the country parties on a voluntary basis. The US Congress proposes to withhold its share of conference servicing costs for all conventions funded from the UN regular budget.

Parties were also unable to decide on whether a 'simple majority vote' instead of a 'two-thirds majority vote', should be permitted when consensus is lacking on decisions. While G-77 and China, supported a simple majority vote, Japan, United States, Canada, Australia and New Zealand insisted on consensus decisions, particularly on financial matters. This would enable developed nations to stall any financial decisions disagreeable to them, which would not be possible in the case of a simple majority vote. At COP-2, CST established a panel of ten people from around the world to elaborate links between traditional and modern knowledge in fighting desertification. The panel is to identify and report to the CST successful experiences and conclusions relating to threats and other constraints, including socio-economic impacts confronting traditional knowledge and practices; strategies for integrating traditional and local knowledge with modern knowledge based on specific case histories; and mechanisms for promoting and exchanging successful approaches. Sunita Narain, deputy director of the Centre for Science and Environment, New Delhi, was selected as a member.

A Parliamentary Round Table, attended by 36 parliamentarians from 22 countries, formed part of the conference. It issued the 'Dakar Declaration', which noted the link between desertification and poverty. Parliamentarians from the South called for the equal treatment of the three Rio conventions during the Round Table.

Mobilisation of sufficient funds to make the convention a success continues to haunt the CCD process after COP-2. It is unlikely to go far if it has to continue depending on loans and scraps from the World Bank (WB) and the United Nations Development Programme. The Global Environmental Facility (GEF), set up as the funding mechanism for the biodiversity and climate conventions, funds some desertification projects indirectly when they fall into the general category of 'biodiversity'. WB is now speaking about linking soil projects eligible as Clean Development Mechanism (CDM) projects under the climate convention. This seems to be an attempt to show the G-77 and China another carrot and draw them into participating in what is a very controversial mechanism.

The next meeting of parties is scheduled to be held in Recife, Brazil, on November 15-26, 1999. It is expected to consider implementation reports from Africa, modalities and activities of the Global Mechanism, the promotion and strengthening of relationships with other conventions, and arbitration and conciliation procedures.



## Forsaken Forests

June 30, 1999 "Down to Earth" - Reproduced

*Economic growth and development are destroying a unique forest-based religious system, which has prevailed for centuries in Rajasthan.*

- Bhuvanesh Jain, Barmer.



In the vast stretches of shimmering deserts of Rajasthan exist religious traditions deeply rooted in reverence for the environment. The forest-based religious system of Oran is one such tradition which has prevailed for centuries. Unfortunately, this self-reliant culture is fast disappearing as the desert economy tries to catch up with modern market logic.

The system involves selection of a piece of land in the settlement which is then dedicated to a particular god, goddess or legendary hero. Trees are planted and a forest developed on this piece of land which was called 'Oran' or 'Oun'. The word 'Oran' is derived from 'Aranya' which means forest. Another word identified with such forests is 'Aan' which means 'pledged'. The people involved vow not to uproot green plants, shrubs or trees from this piece of land. Punishments awarded to those who damaged such lands range from drawing water from the wells for cows to digging of drains.

'Oran' as a common property resource, provides fodder for cattle, vegetables, timber and firewood. Thus, Oran caters to the village needs and provided sustenance to the rural

population. However, the wood from these forests is rarely used as fuel in deference to the parton deity.

Barmer district of Rajasthan alone has 462 villages where this tradition is an integral part of social life. The Orans in Barmer are dedicated to nearly 60 different gods and goddesses. Gods such as Hanuman and Mahadeo, goddess Jogmaya and heroes like Gogaji and Ramdeoji are popular among the people. Fairs are held and prayers offered for the fulfilment of wishes. Thus the Oran culture has remained closely associated with the material, social, economic, religious and moral needs of the people.

Today, society and even panchayats do not have powers to regulate the mechanism of Oran. The government controls the lands recorded in its registers. In fact, such lands still need to be defined in the land records of the state government. Nearly 1569.18 hectares of land in Barmer was allotted for government work.

In collaboration with the Gandhi Peace Foundation and the district administration, the Nehru Yuva Kendra carried



out a survey and found Oran in 462 villages out of 1,575 villages surveyed in the district of Barmer. Oran land covers 44,645.63 hectares, whereas the protected, unprotected and unclassified area of the forest department is 45,169 hectares. In the district, Orans covering 45,000 hectares have only a quarter of a million trees left from the normal 2.7 million.

Nearly 41 per cent of animal wealth is concentrated in 462 villages which have Oran lands. These lands are home to more than 4.48 lakh people or nearly 40 per cent of the total population of the villages. Orans are especially useful during times of droughts and famines as they are a means of sustenance for the people and provide fodder for the animals.

But the post-independence race for economic growth and development has pushed the Orans into a state of neglect. Another factor responsible for Orans dying out is shrinking water sources. Nearly 90 per cent of Orans have been rendered unproductive due to lack of this vital element. Now, Oran lands sustain only nearly 10 per cent of its potential tree wealth. About 89 villages are almost devoid of trees. Due to a decline in trees and shrubs, Orans have become less significant in supplying herbs of medicinal value. More importantly, herbs of medicinal value have become almost extinct. For example, the herb 'Gangren', which grew abundantly in Chohtan, is now extinct. Gangren was used as medicine for tuberculosis. The lands, once used as centres for religious fairs, are now losing their importance.

The loss of Oran lands mean not only re-location of people from their traditional areas of work (animal husbandry)

but destruction of a rich, eco-friendly heritage as well. Neglect of these lands has also had an adverse impact on the ecosystems of the districts of Barmer. Many species of wildlife which once flourished in the Oran are disappearing. What is needed is a multi-pronged strategy for the protection of Oran lands which covers the following points :

- surveys conducted to identify Oran land in all the districts of Rajasthan;
- traditional sources of water of Oran land be improved and new sources of water identified;
- Oran lands be brought back within the cultural fabric of society and people's participation increased in the development of these lands;
- Oran lands must not be wasted to grow 'Babul' that thrives well even in barren lands;
- herbs need to be planted on Oran land. Growth of herbs can be a source of income for the government;
- the government needs to define Oran land and it must not be allotted for other purposes, even in piecemeal fashion;
- these lands are a model of traditional heritage. The development of Oran land should be given top priority;
- more co-operation is needed to impart training and awareness in the younger generation towards the development of Oran land;
- and finally, Panchayat Raj institutions should be educated on the importance of Oran land

### New Publications received on Environment and Desertification

Faroda, A.S. & Other (Eds.)	Management of Arid Ecosystem.	Arid Zone Res. Ass. Of India and Scientific Publishers, Jodhpur-342001	(1999)
Kalwar, S.C. (Ed.)	Arid Ecology : Resources, hazards and rural development policies	Point Publishers, Jaipur - 342 003 (Raj.)	(1999)
Somme, Lauritz	Invertebrates in Hot and Cold Arid Environments	Springer Verlag, Berlin	(1995)
Chauhan, T.S.	Global status of land degradation: A study of causative natural & anthropology factors	Print Well, Jaipur (Raj.)	(1998)



### Permanent Services of ENVIS Centre / Dr. Raheja Library

The Central Library of Central Arid Zone Research Institute (CAZRI), Jodhpur was established in 1959 and ENVIS centre on 'Desertification' was started in 1991 to collect and disseminate agricultural research information to its scientists. Apart from providing the services in the form of printed material i.e. Books and Journals, it has extended the digitized services by providing computerized databases to its readers. The Library provides the information retrieval Services using the following databases :-

#### **1. International Information System for the Agricultural Sciences and Technology (AGRIS) CDs**

AGRIS, an international bibliographical database compiled by FAO on agricultural sciences and technology, is available in the form of Compact-Disks (CDs), operated in Windows environment. The multi-lingual database contains above 2 million records and the on-line search is very user-friendly.

#### **2. CAB Abstracts CDs**

The Compact Disks compiled by CAB International contain comprehensive bibliographical database pertaining to agricultural sciences. The database contains cent-percent abstracts through which the references can be obtained using keywords in all possible permutation-combination. The database runs in Windows environment.

#### **3. BIA**

The database contains the references regarding the published and available articles of the institute scientists. The database has been designed using Micro CDS/ISIS software.

#### **4. BOOK**

The reference regarding all the books available in the Library is available in the database. The search can be made on any keyword e.g. Authors, Title, Accession Number, Classification Number, Subjects, keywords etc. The database was created using Micro CDS/ISIS software.

#### **5. CAT**

For the automation of the journals being subscribed by the library, the CAT database was designed using CDS/ISIS software. The references are available for the available journals in the library. The details regarding the incomplete, missing and discontinued journals can also be obtained by the references.

#### **6. NEW**

Information regarding all new books purchased by the Library from 1993 onwards till date is available in this database. The database was created in order to facilitate the scientists about the new as well as indented publications in their respective subjects. Micro CDS/ISIS software was used to design the database.

#### **7. Database on ICAR Institutes and State Agricultural Universities (SAUs)**

A very user-friendly database has been designed using MS-ACCESS software pertaining to ICAR Institutes and SAUs. The search can be made by selecting abbreviated name of the institutes as well as states.

Request for any of the above services can be sent to **Dr. D.C. Ojha, Incharge Library & ENVIS Centre, Dr. Raheja Library, CAZRI, Jodhpur - 342 003.**

Telephone : 0291-740931  
Email : dcojha@cazri.raj.nic.in



**Symposium on "Impact of Human Activities on Thar Desert Environment "**

**( March 7 - 9, 2000 )**

**SYMPOSIUM POST PONED**

**SYMPOSIUM POST PONED**

**Thar Desert Environment :**

During the last three decades, the Thar Desert is facing severe problems regarding changes in land use pattern, desert grasslands, waterlogging, fish farming, livestock pattern and ecological imbalances. The human beings residing in the surrounding areas are facing new diseases and livestock are also no exception. Besides, serious problem of waterlogging has arisen in Indira Gandhi Canal command areas. Newer human health problems are arising.

The symposium will project the impact of various human activities on the desert environment which will function as a "fore-warning" to planners and policy makers in proper utilisation of the natural resources of this unique and the only habitat in Indian Sub-continent.

**Sub-Theme:**

**Impact of Human Activities on Thar Desert Environment**

1. Climatic Changes in Indian Arid Zone in the recent past.
2. Impact on Land
  - A. Human- induced land degradation in Thar Desert.
  - B. Changing landform patterns in the Indian Thar.
  - C. Changing land use patterns and their impact on Thar environment.
  - D. Anthropogenic pedological changes in the Indian Thar.
3. Impact on Water
  - A. Changing trends in water use and their impact on agricultural productivity in the desert environment.
  - B. Scenario of ground water in last 50 years in the Indian Thar.
  - C. Increase in water pollution and its impact on agriculture and environment.
4. Impact on Biodiversity
  - A. Impact of human activities on floral patterns in arid zone.
  - B. Impact of human activities of faunal patterns in Thar Desert.
5. Environmental Impact analysis of Indira Gandhi Nahar Pariyojana.
6. Changes in Nomadic behaviour, Settlement patterns, and other Socio-Economic aspects in Thar Desert.
7. Changes in Health and Disease patterns due to Environmental Changes.

8. Eco-Tourism in the Thar.

9. Technogenic Degradation of Indian Thar.

10. Meeting Environmental Challenges.

- A. Desert biosphere reserves for conservation of wild resources, range-lands and other living forms.
- B. Rehabilitation of mined wastelands/degraded sites.
- C. Efficient use of conventional and non-conventional energy sources.
- D. Various approaches for simultaneous agricultural growth and conservation of arid environment.
- E. Database design on desertification.
- F. Changes in agricultural policies for conservation of natural resources.
- G. Case Studies.
  - (I) Recent developments in the management of water quality.
  - (II) Improving soil quality using microflora.
  - (III) Managing plant productivity using biopesticides.
  - (IV) People's participation for environmental protection in Thar.

**Submission of Abstracts/Papers**

The authors willing to contribute the paper on above sub-theme may follow the schedule given below :

- Receipt of Abstract / Extended Summary  
- 1st Feb. 2000
- Communication of Acceptance of the abstract/ summary  
- 15th Feb. 2000
- Receipt of full paper  
- 29th Feb. 2000

**Registration**

Participants in the National Symposium should complete the registration form and return it as soon as possible but not later than 15th Feb. 2000. The registration fee of Rs. 1000 per participant is to be paid through A/C payee Demand Draft drawn in favour of Director, CAZRI, Jodhpur - 342 003 (Raj.).

**Hospitality**

Boarding and lodging will be provided to the outstation participants after paying the registration fee from March 7-9, 2000. However, only vegetarian food will be served during symposium period.



### General Information

At the edge of the Thar Desert where camels often stroll along the streets wearing expressions of scorn-stands one of the most beautiful city of Rajasthan- Jodhpur. Jodhpur was the capital of the erstwhile largest princely state of Rajputana. It was also known as Marwar. Jodhpur is located at the eastern margin of the Thar desert and is also the largest city of this region. The town was dominated by the Rajputs of the Rathore clan.

The city is located at 26° 18' N latitude and 73° 18 E longitude. Jodhpur is also known as 'Sun city' where day remains bright with pleasant season. Nights and morning during the month of March is slightly cold and one warm sweater will suffice to meet the climate.

Jodhpur is well connected by rail, road and air. It is

around five hour journey and twelve hour from Delhi and Ahmedabad. The delegates travelling from south and from north and east may travel via Mumbai-Ahmedabad and Delhi-Jaipur respectively.

Outstation participants reaching at Jodhpur Railway Station or Bus stand (Near Raikabagh Railway Station) will be received by volunteers on 6th and 7th March, 2000. Participants by air may be received at aerodrome provided proper intimation/information is received well in advance.

### Excursion

The delegates may like to visit Jaisalmer (Golden City) and Udaipur (Lake city) which are situated at the distance of 285 km and 300 km respectively on different sides from Jodhpur. However a local excursion may be arranged in the afternoon of 7th March on sharable basis.

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## BOOK POST



### ENVIS CENTRE ON DESERTIFICATION

DR. RAHEJA LIBRARY  
CENTRAL ARID ZONE RESEARCH INSTITUTE, JODHPUR - 342 003, INDIA

CAZRI Website : <http://cazri.raj.nic.in>