

## PHYTODIVERSITY AROUND DHOR, URANIUM MINERALIZATION SITE OF JHAZPUR BASIN (RAJASTHAN)

B.L. JAGTIYA, S. KOTHARI and A. SONI

Laboratory of Plant Physiology & Biotechnology, Department of Botany, M.L.V. Government College, Bhilwara - 311 001 (Raj.), India.

E-mail: lppb\_2002@yahoo.com

India is a mega biodiversity nation. Phytodiversity is defined as the variability among plant species. Phytodiversity differs from place to place because of environmental conditions of the area as well as the range of tolerance of the species occurring in that area. Soil forms and water quality change due to natural metal mineralization also exert the selective pressure on phytodiversity. Although many metals are essential but all metals are toxic at higher concentrations as they cause oxidative stress by formation of free radicals. Hence, every mineralization site has its specific phytodiversity. The relationships between phytodiversity and metal mineralization have been the focus of numerous research studies for several years. Very little review is available on phytodiversity around uranium mineralization areas in India, in general and Dhor, Jahazpur of Rajasthan, in particular. The aim of this work was to evaluate the general phytodiversity around Dhor, uranium mineralization site of Jahazpur Basin. This work was conducted during the year 2010. The position of Dhor on topographic sheet lies at 25° 33' North Latitude and 75° 19' East Longitude. A total 106 plant species belonging to 46 families have been reported in the area. The dominant family is Poaceae (12 species) followed by Asteraceae (11 species) and Fabaceae (11 species).

**Keywords:** Mineralization; Navaratan Sagar; Phytodiversity; Uranium.

### Introduction

Phytodiversity means plant diversity present on earth. India is a vast country with a rich diversity of biotic resources<sup>1</sup>. The rich biodiversity is largely due to a varied physical environment, latitude, longitude, altitude, geology and climate<sup>2</sup>. Soil forms and water quality change due to natural metal mineralization also affects the plant diversity<sup>3</sup>. Plants play important role in maintenance of ecosystem. They provide wide range of useful products relied on by people not only in different parts of the country but all over the world<sup>4</sup>. The immense diversity of plant of India not only provide ecological security of the nation but also contributes towards the economic benefits as important source of timber, medicine, food, vegetable oils, gums, fodder, insecticides and pesticides<sup>5-7</sup>.

Dhor is a gram panchayat of Jahazpur tehsil of Bhilwara District (Rajasthan). In Jahazpur Basin, Dhor is the main site of uranium occurrence. The position of Dhor on the topographic sheet lies at 25°33' North latitude and 75°19' East longitude.

Uranium is a ubiquitous element<sup>8</sup>. It is the heaviest metal in nature. The environmental transport of uranium is strongly influenced by its chemical form. It is

generally one of the more mobile radioactive metals and can move down through soil with percolating water to underlying ground water<sup>9</sup>. Uranium may bio-concentrate in certain food crops and in terrestrial and aquatic organism<sup>10</sup>. Very little work has been carried out on phytodiversity around Uranium mineralization areas in India, in general and Dhor, Jahazpur of Rajasthan, in particular<sup>11</sup>. Floristic list of a particular area also gives reliable background information about the species diversity in a community as each plant species has its own specific ecological amplitude and the same indicates the ecological nature of the habitat. In present study, an attempt has been made to investigate the phytodiversity of Dhor, uranium mineralization site of Jahazpur Basin. Moreover, the present study is the first attempt to document the phytodiversity of Dhor, Jahazpur Basin.

### Material and Method

The present work was based on critical observation of plant species of Navaratan Sagar site of Dhor, Jahazpur Basin (Fig. 1). Plants were collected during the study period from January, 2010 to December, 2010. During trips observation on morphological characters were recorded. Plants were brought to the laboratory of Plant

Table 1. List of plant species recorded from Dhor uranium mineralization site of Jahazpur Basin.

S. No.	Family	Botanical name
1.	Menispermaceae	<i>Tinospora cordifolia</i> (Willd.) Miers
2.	Papaveraceae	<i>Argemone mexicana</i> L.
3.	Capparaceae	<i>Cleome gynandra</i> L., <i>Capparis decidua</i> (Forsk.) Edgew. <i>Capparis sepiaria</i> L.
4.	Caryophyllaceae	<i>Esprgula arvensis</i> Sensus Bhandari
5.	Malvaceae	<i>Abutilon indicum</i> L., <i>Sida cordifolia</i> L.
6.	Teliaceae	<i>Corchorus depressus</i> (L.) Christensen
7.	Zygophyllaceae	<i>Fagonia cretica</i> auct non L. <i>Tribulus terrestris</i> L. <i>Oxalis corniculata</i> L.
8.	Oxalidaceae	<i>Feronia limonia</i> (L.) Swingle
9.	Rutaceae	<i>Balanites aegyptiaca</i> (L.) Delile
10.	Simaroubaceae	<i>Azadirachta indica</i> A Juss.
11.	Meliaceae	<i>Ziziphus nummularia</i> (Burm.f.) W. & A. <i>Ziziphus mauritiana</i> Lamk.
12.	Rhamnaceae	<i>Dodonaea viscosa</i> auct. non. Jacq. <i>Rhus mysurensis</i> G. Don. <i>Abrus precatorius</i> L. <i>Butea monosperma</i> (Lamk.) Taub. <i>Crotalaria medicaginea</i> Lamk. <i>Dalbergia sissoo</i> Roxb. <i>Indigofera linifolia</i> (L.f.) Retz. <i>Indigofera L. aei</i> Ali <i>Indigofera oblongifolia</i> Forsk. <i>Indigofera cordifolia</i> Heyne <i>Indigofera tinctoria</i> L. <i>Mucuna prurita</i> Hook. <i>Melilotus indica</i> All. <i>Cassia occidentalis</i> L. <i>Parkinsonia aculeata</i> L.
13.	Sapindaceae	
14.	Anacardiaceae	
15.	Fabaceae	
16.	Caesalpiniaceae	
17.	Mimosaceae	<i>Acacia nilotica</i> (L.) Willd. ex Del. <i>Pithecellobium dulce</i> (Roxb.) Benth. <i>Prosopis juliflora</i> (Sw.) DC. <i>Potentilla supina</i> L. <i>Anogeissus pendula</i> Edgew. <i>Opuntia dillenii</i> (Ker-Gawler) Haw. <i>Trianthema portulacastrum</i> L. <i>Echinops echinatus</i> Roxb. <i>Parthenium hysterophorus</i> L. <i>Sonchus asper</i> (L.) Hill. <i>Xanthium strumarium</i> L. <i>Blumea laciniata</i> (Roxb.) DC. <i>Blumea mollis</i> (D. Don.) Merr. <i>Launaea resedefolia</i> L. Druce <i>Launaea asplenifolia</i> (Roxb.) Hook. f. <i>Pulicaria crispa</i> (Cass.) Benth & Hook. f. <i>Sphaeranthus senegalensis</i> DC. <i>Vernonia albicans</i> L.
18.	Rosaceae	
19.	Combretaceae	
20.	Cactaceae	
21.	Aizoaceae	
22.	Asteraceae	
23.	Ebenaceae	<i>Diospyros melanoxylon</i> Roxb.
24.	Oleaceae	<i>Nyctanthes arbor-tristis</i> L.
25.	Salvadoraceae	<i>Salvadora persica</i> L.

26.	Apocynaceae	<i>Nerium indicum</i> Mill.
27.	Asclepiadaceae	<i>Calotropis procera</i> (Ait.) R. Br. <i>Leptadenia pyrotechnica</i> (Forsk.) Decne.
28.	Ehretiaceae	<i>Cordia dichotoma</i> Forst. f. <i>Cordia gharaf</i> (forsk.) Ehrenb.
29.	Convolvulaceae	<i>Convolvulus microphyllus</i> Sieb. <i>Evolvulus alsinoides</i> (L.) L. <i>Ipomoea aquatica</i> Forsk. <i>Ipomoea cairica</i> (L.) Sweet <i>Ipomoea fistulosa</i> Mart ex choisy
30.	Solanaceae	<i>Datura innoxia</i> Mill. <i>Solanum nigrum</i> L. <i>Solanum surattense</i> Burm. f.
31.	Schrophylariaceae	<i>Lindanbergia indica</i> (L.) O. Ktze.
32.	Bignoniaceae	<i>Jacaranda mimosifolia</i> D. Don.
33.	Acanthaceae	<i>Adhatoda vasica</i> Nees. <i>Barleria acantoides</i> Vahl.
34.	Lamiaceae	<i>Ocimum canum</i> Sims. <i>Ocimum basilicum</i> L. <i>Ocimum sanctum</i> L.
35.	Nyctaginaceae	<i>Boerhavia diffusa</i> L.
36.	Amaranthaceae	<i>Achyranthes aspera</i> L. <i>Amaranthus viridis</i> L. <i>Celosia argentea</i> L. <i>Alternanthera sessilis</i> (L.) R.Br.
37.	Chenopodiaceae	<i>Chenopodium album</i> L.
38.	Polygonaceae	<i>Polygonum plebeium</i> R. Br. var. <i>indica</i> (Roth.) Hook. f. <i>Rumex dentatus</i> sensu Hook. f.
39.	Euphorbiaceae	<i>Euphorbia caudicifolia</i> Haines <i>Euphorbia clarkeana</i> Hook. f. <i>Euphorbia hirta</i> L. <i>Euphorbia elegans</i> Spreng. <i>Jatropha curcas</i> L.
40.	Moraceae	<i>Ficus benghalensis</i> L. <i>Ficus religiosa</i> L.
41.	Liliaceae	<i>Asphodelus tenuifolius</i> Cav.
42.	Commelinaceae	<i>Commelina benghalensis</i> L.
43.	Arecaceae	<i>Phoenix sylvestris</i> (L.) Roxb.
44.	Typhaceae	<i>Typha angustata</i> Bory et chaub.
45.	Cyperaceae	<i>Cyperus bulbosus</i> Vahl. <i>Cyperus compressus</i> L.
46.	Poaceae	<i>Cenchrus biflorus</i> Roxb. <i>Cenchrus ciliaris</i> L. <i>Cenchrus prieurii</i> (Kunth) Maire <i>Cynodon dactylon</i> L. Pers. <i>Desmostachya bipinnata</i> (L.) Stapf <i>Dichanthium annulatum</i> (Forsk.) Stapf <i>Heteropogon contortus</i> L. <i>Saccarum spontaneum</i> L. <i>Aristida adscensionis</i> L. <i>Apluda mutica</i> L. <i>Dactyloctenium aegyptium</i> (L.) Willd. <i>Aragrostis tenella</i> (L.) P. Beauv.

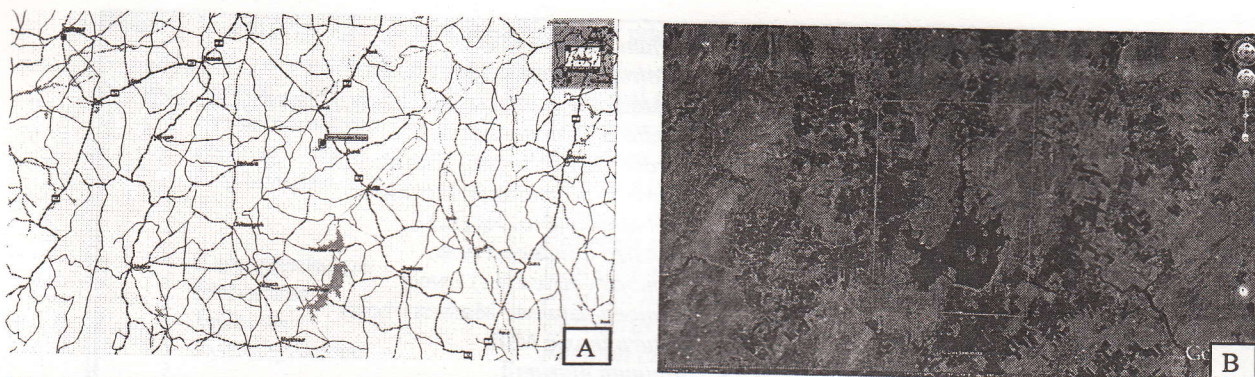


Fig. 1 (A & B): Navratan Sagar site of Dhor uranium mineralization site, Jahazpur Basin.

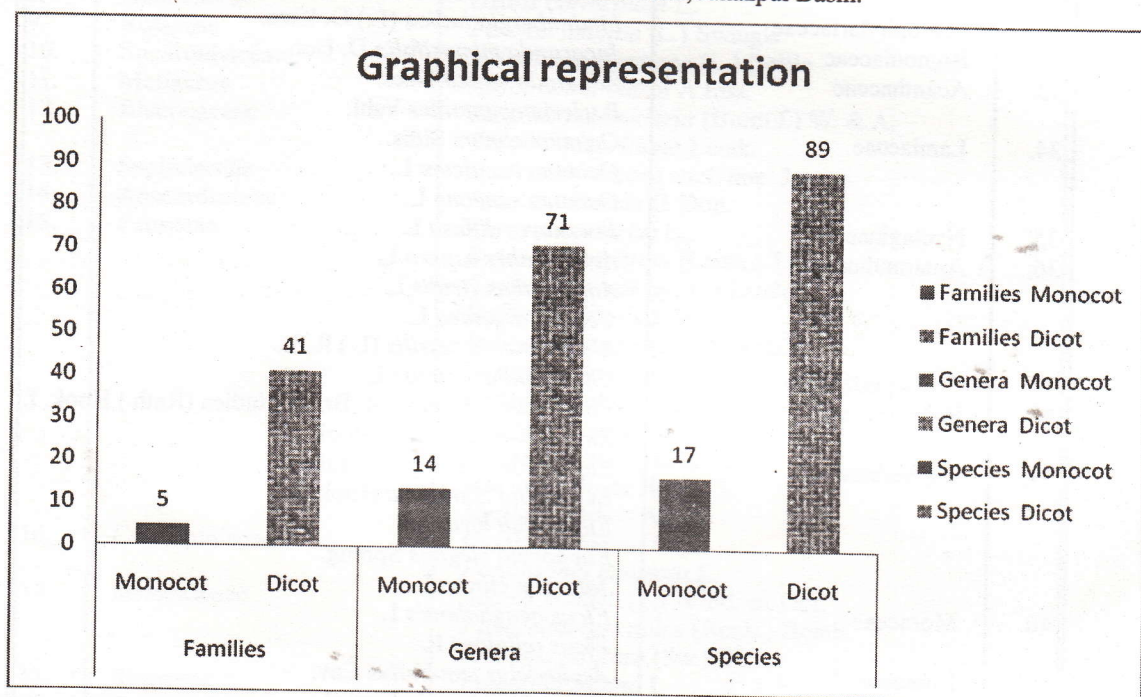


Fig.2. Showing the distribution of families, genera, species around Navratan Sagar site of Dhor uranium mineralization site of Jahazpur Basin.

Physiology and Biotechnology, Department of Botany, M.L.V. Government College Bhilwara, where they were identified with the help of relevant floras<sup>12-15</sup>. The result obtained are presented in Table 1 and Figure 2.

#### Results and Discussion

The present study shows that 106 species belonging to 85 genera and 46 families were represented by plant species in Navratan Sagar site of Dhor, Jahazpur Basin. The dominant family is Poaceae (12 species) followed by Asteraceae (11 species), Fabaceae (11 species), Euphorbiaceae (5 species), Convolvulaceae (5 species), Amaranthaceae (4 species), Solanaceae (3 species), Mimosaceae (3 species), Lamiaceae (3 species) and

Capparaceae (3 species).

#### Acknowledgement

Authors are thankful to Dr. R. K. Sharma, Principal, M.L.V. Government College, Bhilwara for his valuable guidance and providing facilities.

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