

## ETHNO BOTAN YOF MUKUNDARAS—WEATHER INDICATING PLANTS

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Mukundara ranges, a continuation of "Vindhyan series", bifurcate from Malwa region of Madhya Pradesh and enter in Hadoti region of S. E. Rajasthan through Jhalawar district. These are favourite shelters for the tribals of the area viz 'Bhils' and 'Moghiyas' who utilize the plants growing around them for diversified purposes. Here 0 plant species are mentioned which are used as weather indicators by them. Possible reasons for their utility as weather indicators have been discussed along with a mention about concurrence as well as difference of opinion amongst various tribals of Rajasthan about the weather indicating quality of *Diospyros melanoxylon*.

Keywords : Ethno botany; Weather indicator plants; Tribals.

### Introduction

The Mukundara hills which derive their name from famous 'Dara' pass of Kota districts (S. E. Rajasthan) are the continuation of 'Vindhyan series' which bifurcate from Malwa region of Madhya Pradesh and enter in Rajasthan through Jhalawar district at the border of Aklera and Bakani. However main range passes northwards to Jhalrapatan and its subsidiary ranges proceed eastwards along the northern boundries of Manohar-thana. Main ranges leave the district Jhalawar and enter in Kota district near village Khokanda on the 'Ahu' river. These hills are favourite shelters of some tribal societies of the

state viz. *Bhils* and *Moghiyas*, and are characterized by dry deciduous vegetation pattern.

The tribal populations may be termed as true protoges of the environment as they are brought up in close association of forests and wild life. It was just possible that they might be aware of countless mysterious aspects of nature, which may be useful even for modern society.

To determine forthcoming rains and other weather conditions, phenology of some plants and peculiar behaviours of certain animals were probably the main tools of the tribals.

These signals proceeded to some specific weather events, and most probably this phenomenon was discovered just by chance. The consistent observations about the utility of signals for weather conditions, inspired them to formulate meaningful weather proverbs and folk lores which were remembered and inherited from one to another generation. We are well acquainted with numerous plants and their various phenomenon correlated with changes in weather conditions. Examples of such plants and their impact on human economy are also mentioned in ancient Indian literature as pointed out by Majumdar (1927) who postulated that in "*Brihat Samhita*" several plant indicators have been described. Joshi (1985) also enumerated some weather indicating plants utilized by tribals of

"Aravalli" ranges.

### Materials and Methods

In the present course of study besides personal observations, first hand data on the role of plants in folklores, folksongs and proverbs, prevailing amongst tribals were collected during ethnobotanical investigations carried out by the author since 1985. Numerous species were studied and collected during these investigations, out of them 10 species were sorted out which were having weather indicating properties. These species were duly identified and deposited in the Herbarium Botany Department, University of Rajasthan, Jaipur (RUBL). A brief account of the botany of plants discussed along with notes of their utility in the tribal life is also appended.

### Enumeration

#### I. Plant indicating weather conditions well in advance :

*Diospyros melanoxylon* Roxb. (Ebenaceae) "*Tendu*"; Small to medium sized dioecious tree with coriaceous leaves, which are shedded off in winter/season. Male flowers small whitish and in axillary cymes. Female ones are larger and solitary. Berries are ovoid yellow and sweet in taste when ripe, green and astringent when raw. Flowering : March-April. Fruiting : April-June.

*Uses* : Lvs. are widely used for bidi making. Fruits are sweet hence edible. Seed kernel is used in dysentery (Joshi, 1982).

*Signal* : Trees with scanty, Unripened, and small fruits, if found in abundance in the area, according to Bhils of Manoharthana region of Jhalawar district, is a signal for good rains. While the profuse flowering and fruiting is an indication for famine coming ahead.

## II. Plants indicating slightly before onset of weather conditions :

1. *Arisaema tortuosum* Schott. (Araceae) "Nagdaman" : A tuberous herb, lvs. pedipartite with long petioles, Leaflets ovate-lanceolate; spathe purple-pale green.

*Uses* : Fresh tubers are said to be useful for a cure of snakebite, provided patient is given 50-100 gms pure ghee orally before the treatment, also used as insecticide.

*Signal* : Sprouting of leaves from tuber is an indication of the Monsoon arrival.

2. *Arum trilobatum* L (Araceae) "Chawlya Kand" : A tuberous herb. Leaf radical, trilobed coming up after the flowers, peltate divided to the base into 5-10 acuminate segments. Petiole long. Spathe green at the base.

*Uses* : Seeds are cooked and eaten. Tubers are used as insecticide.

*Signal* : Sprouting of leaves is an indication of onset of rains.

3. *Dioscorea bulbifera* L. (Dioscoreaceae) "Jatashankari" : A twining perennial with globose tubers; Lvs. cordate; male flowers pinkish white; female flowers white; capsules oblong. Flowering and fruiting : August-December.

*Uses* : Aerial bulils or tubers produced in Leaf axils are fleshy and succulent. Tubers are eaten after detoxication.

*Signal* : Sprouting of fresh and wiry branches with shining delicate leaves indicate monsoon arrival.

4. *Dioscorea globosa*. Roxb. (Dioscoreaceae) "Ratalu" : A climbing perennial shrub with angular stem and large tubers. Leaves cordate to deltoid, flowers unisexual arranged in spikes, fruits capsule. Flowering and fruiting : September-January.

*Uses* : Tubers are commonly used as vegetable.

*Signal* : Sprouting of new leaves indicate onset of rains.

5. *Dioscorea pentaphylla* L. (Dioscoreaceae) "Kantaloo" : A perennial slender twining, glabrous, prickly shrub with very long tubers. Leaves alternate

tri-pentafoliate glabrous, petiolate. Leaflets elliptic—lancoelate, Flowers unisexual. Flowering and fruiting : July-December.

*Uses* : Tubers are edible.

*Signals* : Sprouting of fresh leaves and branches is a certain sign of rains.

6. *Kickxia ramosissima* (Wall.) Janchen. (Scrophulariaceae) “*Baramtoomari*” : A small herb with Creeping roots; leaves sessile linear oblong; Flowers yellow; capsules sub globose. Flowering and fruiting : October-December.

*Uses* : Pulp of the fresh leaves is utilized for the cure of swelling abdomen. Also used as remedy for diabetes.

*Signal* : Rejuvenation of Complete plant before outset of rains.

7. *Tinospora cordifolia* (Willd.) Miers. (Menispermaceae) “*Giloe*” : A glabrous woody climber; Leaves cordate, Roundish, Flowers small unisexual. Flowering and Fruiting : April-September.

*Uses* : Decoction of stem and leaves is given in Malaria and general fevers.

*Signal* : Appearance of fresh leaves is a striking indication for rains within few days.

### III. Plants indicating weather conditions prevailing at a time :

1. *Cucumis melo* L. var. *agrestis* Naud (Cucurbitaceae) “*Kachri*” “*Phoot*” : An annual creeping tendrillar herb., with smooth ovoid, oblong, ellipsoid or turbinate fruit with pale green longitudinal stripes and yellow or brick red when ripe. Flowering and fruiting : July-September.

*Uses* : The fruit is edible—raw or cooked as vegetable.

*Signal* : Abundant fruit yield is a striking sign of prevailing famine conditions in that particular year.

2. *Ziziphus nummularia* (Burm. f.) wt. & Arn. (Rhamnaceae) “*Jhadbor*” : A perennial spinny bush, common in the area. Flowering and fruiting : July-December.

*Uses* : Ripe fruits are edible in fresh or dry condition.

*Signal* : Luxuriant and abundant fruiting *bor* plant provides a characteristic indication for good weather and sufficient rainfall in that particular year.

## Discussion

As the tribal societies have been evolved away and still isolated from modern civilization hence it is quite possible that they are totally unknown of the events which are going on in the modern world. Because of their lifelong association with nature and their thorough knowledge of forest plants, even today, they depend on traditional and inherited methods for predetermination and forecast of weather conditions.

After thorough investigations in tribal localities about choice of indicators, it was revealed that their selection was based on the following facts :

1. Those plant species which were extensively used by them for various purposes, were very well known to them. Hence even minor changes in their physiognomy were easily noticed. Later on their repeated correlation with forthcoming weather conditions were noted and the same was transferred to future generations
2. Frequent occurrence of weather indicating species near tribal localities and surroundings.
3. Phenological expressions in response to climatic changes were more conspicuous in such species.

Moreover, rejuvenation of tuberous and other vegetatively propagated species e.g. *Dioscorea bulbifera*, *Arisaema tortuosum* and *Tinospora cordifolia* just before onset of rains may be attributed to a particular optimum temperature, low atmospheric pressure and slightly higher relative humidity, which cause their rejuvenation, and all these conditions must be ideal precursors for rains. Therefore, further scientific investigation is a must to reveal their perfect utility.

On verification it was found that besides Mukundaras, the weather indicating utility of *Cucumis melo* and *Ziziphus nummularia* is also well known in Aravallis and Mewar (Joshi, 1978; Joshi, 1985) with the same interpretation.

The *Bhils* and *Garasias* of Aravallis presume that nature and almighty god is quite merciful to them that's there is an abundance of 'Phoot' and 'Kachri' to tide over harsh famine conditions (Joshi, 1985). However, in case of *Diospyros melanoxylon* there is marked difference in opinion among tribals of other localities, e.g. *Bhils* of Mewar correlate abundant fruiting of "Tendu" with famine conditions, as predicted by *Bhils* of Mukundara also. On the other hand *Garasias* of Sirohi emphatically correlate luxuriant fruiting in "Tendu" with sufficient rains. However, similarity of the opinion in the *Bhils* of "Muku-

ndaras" and "Aravallis" about weather indicating ability of "*Tendu*" may be attributed to the possibility of a common source of their traditional knowledge which was orally conveyed to later generations. Moreover difference of opinion amongst different tribes requires further investigations and thorough screening.

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