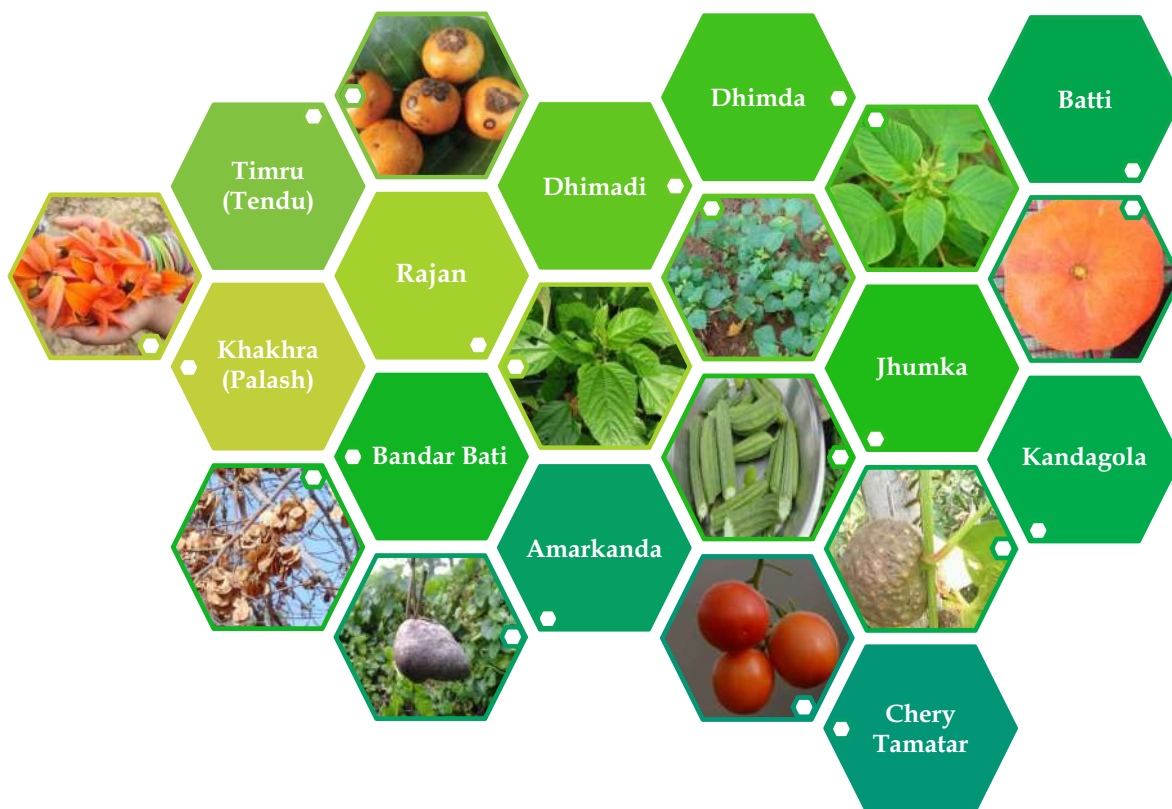




Food Treasure of Tribal Community

Banswara District, Rajasthan, India



INTRODUCTION

The global community is increasingly looking towards finding means of sustainable nutrition for the growing population. The emphasis is on identifying low-resource strategies acceptable to communities that do not put an unnecessary burden on the environment (Food and Agriculture Organization 1993). Adoption of an ecosystem approach in agricultural management with an emphasis on traditional and indigenous could be good coping strategies.

They predominantly depend on agriculture for their livelihood along with some contribution from forestry, and labor with minor contribution from diverse occupations. Studies have reported sub-optimal nutritional status of children and adults of this community

The tribal farmers of Banswara district in Rajasthan face several issues like hunger, starvation deaths, drought, and distress migration and so on. Since there is very little employment in the region, these farmers migrate elsewhere and work as labor on farms and perform other odd jobs. To help these communities to get back to farming and achieve food security, VAAGDHARA, a local NGO, has been promoting family and community based agro-ecological models of food production to help restore the crop biodiversity in the region and help women gain recognition in agriculture. The official idea of

'food security' is embedded in the supply of entitled quantities of rice/wheat from 'central pool' warehouses or provision of state-defined meals, which is based on the wheat and rice model, has never benefited the tribal farmers. By 2010, the diversity of indigenous crops by Bhil tribe in Banswara district had been reduced to 12-13 varieties. Farmers in this region decided that any alternative would have to be significantly different, and based on different ideas about food security and sovereignty, then those adopted by the PDS. With declining crop diversity, the average per capita intake of vital nutrients also declined.

Until a couple of decades ago, the indigenous Bhil community of Banswara district in the state of Rajasthan cultivated at least 25-30 different types of crops on the same piece of land. Things however changed with the advent of green revolution. With massive government promotion of the green revolution technologies through subsidies, monocultures of high yielding varieties replaced the indigenous mixed farming systems. In addition, the family also collects uncultivated food from trees around farm boundaries and forest area such as wild tubers, flowers, nuts, edible leaves and fruits. Owing to forest degradation, fragmentation of holdings, erratic rainfall patterns the area under cultivation has increased and diversity among crops has decreased resulting in decline in household agriculture

productivity and loss of the indigenous seed varieties.

With LANSAs intervention, 600 farmer families resumed started focusing on crop and seed diversity. During this study food sovereignty march, focus group discussions (FGDs), key informant interviews - KII, youth interview, and elder farmer's interviews were used to assess the range of available foods and the contribution of indigenous wild foods to the regular diets of the Bhil community. Once rally was completed, the research team developed a participatory learning and action frame-work which started with a tool called "what we eat: what we produce" This helped explore different issues pertaining to seasonal availability and access to different local foods. The participants identified indigenous or "desi" foods gathered from the local environment and classified

Tree based farm boundaries,
bunds, or gardens

Vadi or kitchen garden

Cultivated

The foods identified were categorized under various food groups based on their edible parts. A list of commonly consumed indigenous food items was compiled (including cereals, legumes, vegetables, leafy vegetables, seeds, fruits, and animal foods).

During the whole process of research, gradually with time food items continue joining the list. By this time community identified;

LEAFY VEGETABLES	GREEN VEGETABLES	FRUITS	PADDY	TUBERS
Dhimda Dhimdi Rajan Lunkiya Imali Cowpea Poi Methi Palak Dandi Rati Bhindi Ambadi	Jhumka-tori Serial-tori Ghia-tori Tindori Chichari Chibadi Marela Pumpkin Okra Bhata	Timru Ber/Jhad Ber Khajur Rayan Imali Aam Ramfal Guava Sitafal Jamun Keekar Banana Papita	Pathariya Kalikamod Jeera Colama Dhana-har Danger Desi-basmati Bijali Mal kamod	Arabi Ratalu Garadu Hakariyo Haladi(turmeric) Adu (Ginger) Ambahaldi (White-turmeric)
CHICKEN	MILLETS	CEREALS	WEEDS	LEGUMES
Kadagnath Desi Buter Teetar	Bavta/Mal (Finger Millet) Kang (Fox- tailmillet) Hamlai (Little millets) Cheena (Porso millet) Kuri Kodra	Sathi-makka Gangadi- makka Pohata-makka Wheat Barley Jwar	Vanajua Lunkiya Puwariya Satadi Garmela Gonda	Valore Jalar Black Gram Green Gram Cow-pea Pigeon-pea
NUTS	BULBILS			FLOWERS
Bandar Bati Ber	Kanda Gola Amar Kanda			Palash Gulmohar Mahua Kachnar

Some of them have been tested for their nutritive values, local names, identification characteristics, mostly scientific names, choices, tolerance, seasonality and methods of use.

ACTED

This documentation process enriched us in understanding the nature, environment, food and related culture of the Bhil tribe, but for the community it resulted in improved diet diversity. In the beginning, it was more at a knowledge level. During rainy season, couple of tubers and leafy vegetables and during summer, some fruits were included in the diet. Women could recall some of the recipes and practices that were almost forgotten.

Preservation activities like drying of leaves, Badi made from dried leaves and wet grinded pulses etc., appreciated and included back in the diet. Based on these experiences, a capacity building module (Participatory Learning and Action PLA) module was developed focusing on nutrition sensitive farming system (NSFS) and tested with 30 groups of average 20 women each.

Along with ex-situ preservation, initiatives were taken up for propagation of identified diverse crops for Monsoon, winter and summer three crop seasons. For example, plantation of local varieties of ramfal, mango, guava, jackfruit etc. were taken up in the homestead, cultivation of bavta, kang, and air potatoes was revived in 30 villages



LEAFY VEGETABLES

Leaf vegetables, also called potherbs, greens, vegetable greens, leafy greens, or salad greens, are plant leaves eaten as vegetables, sometimes accompanied by tender petioles and shoots. Although they come from a very wide variety of plants, most share a great deal with other leaf vegetables in nutrition and cooking methods of cooking. Nearly one thousand species of plants of edible leaves are known, but hardly few of them are in use in a specific region. Leaf vegetables most often come from short-lived herbaceous plants such as amaranth, spinach, coriander etc. Leaves of woody plants are also eaten as vegetables such as drumstick, kachnar etc.

Communities have used leaves as food since time immemorial. Different types of leaves, depending from the place and the season, were part of the

human diet since prehistoric times. With the passing of the centuries many of those traditional leaf vegetables have been replaced by leaves that are more tender, have a more neutral taste or that are considered more refined. The leaves that were part of ancient traditional diets are still to be found in the wild, sometimes at the edge of cultivated fields, or homesteads. Tribal regions like Banswara are places where one can find such trees and plants still around and communities using them as vegetables more frequently than other regions.

Unfortunately, many of such plants are also called weed, as per standard definition a weed is a plant considered undesirable in a situation, or "a plant in the wrong place and a very appropriate example for this is dandelion, a common plant found all over

world especially Asia, Europe and America, many a place it is considered as a weed in some context like grass lawn, but in other contexts it is used as a leaf vegetable or herbal medicine.

Besides cultivated, nurtured and collected food items from agriculture field, pastures, and kitchen garden, there are a good number of plants which are used by tribal community in the area as food items. Study team also came across many families, who are involved in drying and processing many leafy and other vegetables, during monsoon months and store them for dry summer months to supplement micro nutrient requirements of those periods.

Goddess Parvati - Aparna (One Who Lived On Leaves)

Tribal and other communities in India worships goddess Parvati, who is wife of the Hindu god Shiva - the protector, the destroyer and regenerator of universe and all life. One of her name is Aparna, the one who lived her life on leaves only. There is one ancient story associated with her life, indicating that once she observed continued fasting for longer duration and during those days she consumed leaves and only leaves. This ancient story also reiterates that leaves can play important role in nutrition, as it had done for Parvati giving her name "Aparna".

This section brings out some of the commonly found leafy vegetables of tribal Banswara, as listed in Table-1.



Kachnar Lear



Chandloi



Sahajan



Luniya



Karinjada



Ariv Patta

NO.	Name of Food Item	Species	Genus	English	Season
1	Channa leaves	Cicer	Arietinum	Saag	Rabi
2	Chiel	Chenopodium	Album	Bathua	Rabi
3	Dhimda	Amaranthus	Viridis	Amranth	Annual
4	Rajan				Annual
5	Imali flower	Tamarindus	India	Tamarind	Perennial
6	Garmela (Mor)	Celosia	Argentia	Silver cocks	Kharif
7	Garmela (fleaf)	Celosia	Argentia	Silver cocks	Kharif
8	Gunda (Mor)			Cordia	Perennial
9	Punwariya	Cassia	Tora	Cassia	Multiple
10	Bokna				Kharif
11	Ambadi-Lal	Hibiscus	Cannabinus	Sorel	Kharif
12	Ambadi-Hara	Hibiscus	Cannabinus	Sorel	Kharif
13	Vanajua				Rabi
14	Kachnar	Bauhinia	Verigata	Kachnar	Perennial
15	Tindorei ke dere	Trianthema	Monogyna		Annual
16	Chavle ke dere	Vigna	Unguiculata	Cow-pea	Annual
17	Pyaj ke patte	Allium	Cepa	Onion	Annual
18	Lahsun ke patte	Allium	Sativum	Garlic	Rabi
19	Ghuiya Patte	Colocasia	Anti-quorum	Colocasia	Kharif
20	Malan Bathua				Rabi
21	Karinjada				Annual
22	Sarso ka Saag	Brassica	Juncea	Mustard	Rabi
23	Sahajan	Moringa	Olifera	Drumstick	Rabi
24	Sathadi	trianthema	Monogyna	Punarnava	Annual
25	Sathadi	Bauhinia	Purpurea	Punarnava	Annual
26	Dhimdi	Amaranthus	Gangeticus	Amranth	Annual
27	Luniya	Portulaca	Olerecea	Purselane	Annual
28	Sakar kand saag	Ipomea	Reptans	Sweet potato	Kharif
29	Palak	Spinacia	Oleracea	Spinach	Rabi
30	Methi	Trigonella	Foenum	Fenugreek	Rabi
31	Muli Patta	Raphanus	Sativus	Radish pods	Rabi
32	Sarso			Mustard	Rabi



Punwariya



Sakarkand-Red



Hakariya



Spin-Dhimda



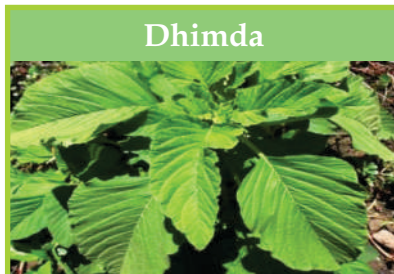
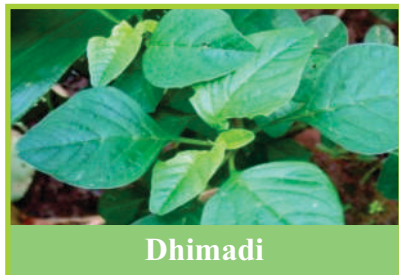
Satadi-red



Chiel Bathua

Dhimadi, Dhimda & Rajan - Most commonly used leafy vegetable

These are locally found green leafy vegetables commonly consumed by majority of tribal family's fresh particularly during monsoon months and dried for off-season. Normally they are not cultivated rather collected from commons around homestead lands, but continued interaction during the study made good number of farmers to start growing them as part of kitchen garden.



It grown as an uncultivated leafy vegetable found in southern Rajasthan. Normally plant height is about 2 to 3 feet and radius of a full-grown plant will be around 1 to 1.5 feet. It produces good number of seeds which are black color highly shining. Considering the popularity of these two-leafy vegetable, among tribal families, particularly tribal dominated blocks of Kushalgarh, Sajjangarh, Gagad talai, Ghatol and Anandpuri.

Nutritional benefits

VAAGDHARA undertook nutrition analysis and compared them with common spinach as given in table 2 and results show astonishingly higher quantity of different minerals and vitamins. Normally cooking is carried out by boiling in water and discarding water to remove oxalate and pungent smell it carries. Both these leafy vegetables are member of renowned family of "Amaranthus", which is known as miracle food. Our research found out that it is called *A. viridis* is an annual herb with an upright, light green stem that grows to about 60–80 cm in height. Numerous branches emerge from the base, and the leaves are ovate, 3–6 cm long, 2–4 cm wide, with long petioles of about 5 cm. The plant has terminal panicles with few branches, and small green flowers. There occur other lesser used varieties of similar leafy vegetables with minor variations.

Table-2

Nutrients	Dheemdi	Spinach
Carbohydrate	62gm	3.6gm
Dietary Fiber	14gm	2.2gm
Sugar	3gm	0.4gm
Protein	13gm	2.9gms
Sodium	221mg	79mg
Potassium	3680.52mg	558mg
Vitamin C	47%	34%
Thiamine (B1)	0.32mg	0.078mg
Riboflavin (B2)	0.21mg	0.189mg
Vitamin B12	2.06mcg	0
Calcium	28%	10%
Zink	5.72mg	0.53mg
Magnesium	1572.84mg	79mg
Phosphorus	80.90mg	49mg





GREEN VEGETABLES

During the whole research program team came across many green vegetables, grown in the area. Some uncommon vegetables which are not marketed and consumed mainly by tribal families are listed in table-3.

NO.	Name of Food Item	Genus	Species	English name	Part consumed	Season
1	Kikoda	Momordica	dioicia		Fruit	Kharif
2	Valore	Dolichos	Lablab	Field beans	Fruit	Rabi
3	Chhodi valore	Dolichos	Lablab	Broad beans	Fruit	Rabi
4	Mooli phal			Radish pods	Root	Rabi
5	Barbatti	Vigna	Sesquipedalis	Cowpea pods	Fruit	Kharif
6	Kandagola	Dioscorea	Bulbifera	Tubers	Tuber	Kharif
7	Ratalu	Dioscorea	Spp	Tubers	Tuber	Kharif
8	Garadu	Dioscorea	Spp	Tubers	Tuber	Kharif
9	Amar Kanda	Dioscorea	Bulbifera	Spring	Fruit	Kharif
10	Bandar Bati	Holoptelea	integrifolia	Kind of fruit	Fruit	Perennial
11	Safed-Kaddu	Cucurbita	Maxima	Pumpkin	Fruit	Kharif
12	Bada Kaddu	Cucurbita	Maxima	Pumpkin	Fruit	Kharif
13	Lal batti	Cucurbita	Maxima	Pumpkin	Fruit	Kharif
14	Chir boti - Makoi	Solanum	nigrum	Kind of fruit	Field	Kharif
15	Umbar	Ficus		figs	Fruit	Perennial
16	Ber	Zizyphus	Jujube	Zizyphus	Fruit	Perennial
17	Timru	Diospyros	Melanoxylon	Kind of fruit	Fruit	Perennial
18	Mahua	Madhuca	Latifolia	Mahua, ripe	Fruit	Perennial
19	Karounda	Carissa	Carandas	Kind of fruit	Fruit	Perennial
20	Dori tel	Madhuca	latifolia	Mahua oil	seed-oil	Perennial
21	Mahua	Madhuca	latifolia	Alcohol	Mahua	Perennial
22	Alu	Solanum	tuberosum	Potato	Stem	Annual
23	Marela - round	Momordica	dioicia	Bitter gourd	Fruit	Kharif
24	Karela Long	Momordica	dioicia	Bitter gourd	Fruit	Kharif
25	Changeri	Oxalis	corniculata		Leaves	Annual
26	Til	Sesamum	indicum	Sesamme	Grain	Kharif
27	Keekar	pithecellobium	dulce	Tamra-Manila	Fruit	Spring
28	Amba Haldi	Curcuma	aambaa	whiteTurmeric	Tuber	Kharif





Jhumka Tori(ridge gourd)



Bhanwar lat (Fava beans)



Kachari



Batti Kaddu- Pumpkin



Lattu Tori (Sponge Gourd)



Bel Tamatar(Cherry Tomato)



Desi Bhindi (Local Okra)



Valen Kakari (Cucumber)



Kaddu- Pumpkin



Marela - (Bitter Gourd)



Kikoda



Radish



Tori (Ridge gourd)



Hara Kaddu (Green Pumpkin)



Petha (Bhura Kola)

CEREALS AND PULSES


In vagad people used to say "genhu chhor makka khana, vagad chhor kahi nahi jana" meaning we will maize instead of wheat but will not go from this place. This tag line has its roots in food system of Banswara which was synonymous with general food habit where maize was the main constituent of diet. But during study, exercise on what family ate within last three days, situation has changed and wheat has become major consumed food grains, thanks to public distribution system. Majority of other food grains which were part and partial of human food culture also moved from plate and reached to list of fodder (Table-4).

NO.	Name of the food item	Genus	Species	English name	Season
1	Pathariya (75 days)	Oryza	Sativa	Rice varieties	Kharif
2	Kolamba (90-100 days)				Kharif
3	Kali Kamod (120 days)				Kharif
4	Dimani (dhan) (90 days)				Kharif
5	Desi Basmati (105 day)				Kharif
6	Mal Kamod (75 days)				Kharif
7	Jeera (105 days)				Kharif
8	Dhana har (90 days)				Kharif
9	Sathi-White (60-70 days)	Zea	Mays	Makka (Maize)	Kharif
10	Gangadi-Safad (90 days)				Kharif
11	Pohata - mix color(75days)				Kharif
12	Pili makka				Kharif
13	Jwar -lal	Sorghum	aurdinacium	Sorghum	Kharif
14	Jwar-Safed	Sorghum	aurdinacium		Kharif
15	Kuri	Panicum	sumatrense	Little millet	Kharif
16	Kodra	Paspalum	scrobiculatum	Kodo millet	Kharif
17	Cheena	Panicum	miliacium	Porso millet	Multiple
18	Kang	Setaria	italica	Fox tail millet	Kharif
19	Bavta	Eleusine	Coracana	Finger millet	Multiple
20	Samali- small	Panicum	Miliare	Little millet	Kharif
21	Sama - Large Size			Little millet	Kharif
22	Gehu- Lokwan	Triticum	sativum	Wheat	Rabi
23	Gehu-Vajiya(un irrigated)	Triticum	sativum	Wheat	Rabi
24	Gehu-Vajiya	Triticum	sativum	Wheat	Rabi
25	Jau	horduem	vulgare	Barley	Rabi
26	Jai (fodder)	Avena	sativa	Oats	Rabi
27	Tuar - lal	Cajanus	Cajan	Pigeon pea	Kharif
28	Tuar - Safed	Cajanus	Cajan	Pigeon pea	Kharif
29	Jalar			Field beans	Kharif
30	Chana -Kala Bada	Cicer	arietinum	Gram	Rabi
31	Chana - Chhota	Cicer	arietinum	Gram	Rabi
32	Urad - Kale	Vigna	Munga	Black gram	Kharif
33	Mung-Khotadiya & creeper	Vigna	Radiata	Green gram	Multiple
34	Masoor- chhota	Lens	culinaris	Green gram	Rabi
35	Batli & Matar	Pisum	sativum	Pea	Rabi
36	Barbatti	Vigna	Sesquipedalis	Cow-pea	Kharif
37	Safed Chavla	Vigna	unguiculata	Cow-pea	Kharif

MAIZE OF BANSWARA

In the agriculture map of India, tribal region of Banswara is known as producer of maize and green gram. It is also known for maize diversity. During the study, we came across four varieties of maize, depending upon color, plant height and crop duration. There are local variations, but need in-depth genetic diversity mapping, which was beyond the scope of this study. Table-5 gives general information about these varieties.

Table 5 commonly found variation os local maize varieties in the Banswara area.

Features	Sathi	Yellow	Pohata - Mixed	Gagandi (White)
Photos			No photo available	
Plant Height	2 to 3 feet	6-7 feet	3-4 feet	5-7 feet
Water Demand				
Cropping Period	60-70 days	120 days	90-100 days	90 days
Grain Type	Thick	Slim	Slim	Broad
Grain Color	White & Yellow both	Yellow with red grains	White and yellow	White

Among tribal communities of Banswara consumption of maize itself has huge diversity Maize consumption among the tribal. It starts from eating soft grains of fresh corn; roasted corns, steamed corn, different varieties of bread (paratha, bati, bafra, roti, paniya), porridge, sweets (laddu, kheer, jajriya), vegetables (grated corn, corn grains), ghat and rab (a preparation of curd and maize flour - based on fermentation) to name some, again there are local variation. In the life, livelihood and food culture of tribal maize has a special place.



PADDY (RICE) OF BANSWARA

In India, Rajasthan is known as a dry state, a place of desert, but as against the common image of state, the district of Banswara is different because of it receiving highest rainfall in the state. During this short study and limited interaction VAAGDHARA could locate eight varieties of paddy in the district of Banswara, if continues we may come across higher degree of genetic diversity of traditional upland and low land paddy. The most interesting varieties from the area is Dhana-har which has round shaped grains and resembles like seeds of coriander thus named accordingly. Another variety is yellow-rice which yields yellow color when cleaned using water. Kalikamod is named so after its color i.e. black (both out and inner coat). Dhimani is the variety which looks like wheat grains through smaller in size. The analysis of three samples of rice from area is given in table-8 gives interest findings that it carried the carbohydrate, protein, iron, sodium and potassium the important nutrients. In this area rice is consumed as Khiadi (porridge of rice and pulse), Kheer (sweet dish cooked out of rice and milk)

Table 6 Rice varieties from Anandpuri block of Banswara






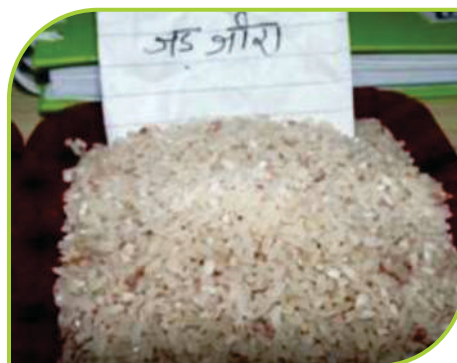
Features	Pathariya	Colamba	Mal kamod	Dhimari
Photo – Paddy			No photo available	
Plant Height	60-75 cm	80-90 cm	80-90 cm	80-90 cm
Period	90 days	120 days	90-100 days	120 days
Outer Coat	Brownish - Black	Brownish Red	Yellow-Brown	Brownish Red
Inner Coat	Red	Maroon Red	Brownish	Maroon Red
Grain Color	White	White	White	White
Grain Size	Thick	Slim	Slim	Oblong

Table 7 Nutritional values as per test carried out during study

100gm	Pathariya	Kali kamod	Columba
Total carbohydrate	79 gm	80 gm	77 gm
Protein	9 gm	8 gm	12 gm
Iron	11%	9%	ND
Sodium	18 mg	14 mg	25 mg
Potassium	31.52 mg	57.46 mg	58.99 mg

Table 8 Rice varieties from Banswara but more common in Bagidora block

Features	Desi basmati	Jeera	Dhana-har	Kali kamod
Photo – Paddy		No photo available		No photo available
Plant Height	60-75 cm	75 -85 cm	80-90 cm	75 -85 cm
Period	90 days	120 days	120 days	120 days
Outer Coat	Brownish - Black	Black	Brownish Red	Black
Inner Coat	Red	Black	Maroon Red	Black
Grain Color	White	Greenish	White	Greenish
Grain Size	Thick	Slim & Small	Round	Slim



MINOR MILLETS

Millets are a group of highly variable small-seeded grasses widely grown around the world as cereal crops or grains for fodder and human food. These crops are hardy and quite resilient to varied agroclimatic adversities and play important role in marginal agriculture more common in hilly and semi-arid regions as important source of food grain as well as highly valued fodder. Many kinds of traditional foods and beverages are made from these grains in different regions and hence have important role in the local food culture. Nutritionally, they have high micronutrient content, particularly calcium and iron, high dietary fibre, higher amount of essential amino acids and low glycemic index and thus play an important role in the food and nutritional security of the poor. However, their presence in the Indian food basket had been declining over the years primarily due to wheat and rice being available at subsidized rates. These species are neglected in research and development and are not receiving the policy support they need and rightly deserve. This neglect is also causing the marginalization of farmers who have been traditionally depending on these crops for their food security and income. However, there is an increasing recognition of their favorable nutrient composition and utility as health food, in the context of increasing life style diseases. Thus, apart from their traditional role as a staple for the poor in the marginal agricultural regions, they are gaining a new role as crops for healthy food and for the urban high income people. The IFAD supported project "Enhancing the Contribution of Nutritious but Neglected Crops to Food Security and to Incomes of the Rural Poor: Asia Component - Nutritious Millets" was a good attempt in this direction. In the Banswara region though millets are known, but grown to limited extent, mostly for fodder purpose except for kang (Fox-tail millet) and Bavta (Finger millet) by few families.

Local Name	Common Millet Name	Purpose
Bavta	Finger	Human
Kaang	Foxtail	Human
Cheena	Porso	Fodder
Hamlai	Little	Fodder
Kuri	Brown top	Fodder
Kodra	Kodo	Fodder

Bavta/Mal (Finger millet)



In other regions, it is also known as some other names like Madua, Ragi, Nagali etc. Its botanical name is: *Eleusine coracana*. It is an annual herbaceous plant widely grown as a cereal crop. It seems finger millet is a crop which binds whole world into one. It is rain fed, although yields often can be significantly improved when irrigation is applied. Heat tolerance of finger millet is high.

Nutritional benefits

It was so because of vitamin-C, B12, calcium, iron, potassium and magnesium. It is especially valuable because of presence of methionine, an amino acid, which is lacking in the diets of hundreds of millions.



The grain is ground and cooked into porridge, bread, papar, sweet, and many other preparations. Sometimes few people used it Kheer (sweet cooked with milk, grain and sugar). The straw from finger millet is used as animal fodder. Some people do make a flavored drink in festivals.



Kang (Foxtail millet)

Botanical name : *Setaria italic*



In some places, they are also called kangdi. It is comparatively more common in tribal land of Banswara, as it is cultivated as mixed crop with maize in some low-grade agriculture fields. It is an annual crop belonging to grass family but grown for human food and animal fodder. It has a slim, vertical, leafy stem which can reach a height of 120-200 cm. It is a warm season crop, typically planted in late spring. Its early maturity and efficient use of available water make it suitable for cultivating in dry areas.



Because nutritional benefits, it is a rich source of vitamins-A, many a people mixes it with white maize as their staple food. Besides it also provides vitamin-C, B1, B9 and B12 (which is rare in plant food).



Cheena (Porso millet)

Botanical name : *Panicummiliaceum*

Cheena is an annual grass whose plants reach an average height of 3 feet. It has a short growing season and low water demand. It is cultivated in rainy and spring season. It can be grown in different soil conditions. In this area, it is mostly grown for the fodder purpose, but human consumption also.



Nutritional benefits: Rich in Sodium, Dietary Fiber, Vitamin A, C, B1, B3 and B12. Its USP is in its high content of Iron. In tribal preparation Cheena is cooked into porridge and bread. Sometimes few people used it Kheer (sweet cooked with milk, grain and sugar)

Kuri (Brown top millet)

Botanical name : *Urochoa ramosa*

Kuri is grown by tribal farmers but as fodder crop. It is cultivated on sloping marginal lands with rocky, shallow soils. It is adaptable to almost all upland soil. Grains are cooked as porridge, or bread. But due to low production and laborious processing it is mostly grown as cover crop only.



Nutritional benefits: Rich in Iron (12%), Dietary Fiber (4 g), Calcium (2%), total carbohydrate (36 g), Protein 5 g, and Fat 2 g. it provides 171 calories of 100 grams. In tribal preparation Kuri is cooked into porridge and bread.

Kodra (Kodo millet)

Botanical name : *Paspalum scrobiculatum*

Kodra is grown mainly for the fodder purpose on sloping marginal lands with poor soil thickness because of its drought tolerance.



Kodo is composed of 12.5 grams of protein, 86 grams' carbohydrates and excellent source of fiber (2.2 grams). It contains good value of calcium (14 mg) Fat (2.2grams) and Vitamin C (22%) providing 309 calories of 100 grams

Hamlai (Little millet)

Botanical name : *Panicum sumatrenes*

Hamlai is grown by tribal farmers as dual-purpose crop but as fodder crop on sloping marginal lands with shallow soils. Hamlai composed of 7.9 grams of protein, 69 grams carbohydrates and excellent source of fiber (8.2 grams). It contains good value of calcium (18 mg) and Iron (9.3 mg) providing 207 calories of 100 grams.



Grain are used as a boiled whole grain, porridge, or unleavened bread. It is reported to have good effect on digestions and improve women health.

PULSES AND LEGUMES

The district is also rich in pulses and legumes diversity, as given in table-4 item from serial number 27 to 38 belongs to pulse and legume family. Pigeon-pea is one which is cultivated as intercrop with maize, while cow-pea and broad-beans are cultivated as mixed cropping with it. They are consumed as vegetable, when green and hand processed to produce pulses. Nutritive analysis indicates that it is a rich source of protein.



Green Jalar



Green Barbatti (Cowpea)



Dried Jalar grains

FOOD FROM TREES

Though Banswara district have very small area under designated forest, but there are small patches found spread over in the district. Trees source of uncultivated foods, like edible flowers, fruits, leaves, seeds, mushrooms, bamboo shoots, roots and forest areas also provides tubers, birds, honey etc.

In the district forest and trees provides many items mainly during summer, which are the dry months and many fruits they get before onset of monsoon, and monsoon rains spur creepers and leafy greens. Besides supporting a household's dietary needs, these uncultivated food items can also supplement family income, but in the district, it is not practiced due to limited availability. Thus, tribal food culture had not been limited to agriculture field only, but it includes all the spaces spread over within and around village and the homesteads. In this system food is not only cultivated but nurtured, conserved and collected also.

In the context of climate change, perennial food items could play important adaptation strategy. In this recognizing, the existing and forgotten food items is important. Community listed Ber, Jhad Ber, Khajur, Mango, Ram-fal, Guava, Custard-apple, Jamun, Keekar, Banana, Papita.



Anola



Ramphal



Gunda



Keekar



Rayan



Ber



Papita



Imali

Kehunar/Kachnar

Botanical name : *Phanera variegata*



A popular ornamental tree and widely known for its medicinal preparation called "Kachnar gugulu", an ayurvedic preparation. It is also known in Indian literature referring someone with delicacy. In Banswara tribal people use its leaf and buds as vegetable curry with yogurt, onion and spices. It is considered as delicious and good for health.

It is a small to medium-sized tree growing to 20-40 feet, deciduous in the dry season. Leaves are 2 to 6-inch-long, broad, rounded, and bi-lobed at the base and apex.



Its vegetable is prepared by boiling leaf and /buds for three to four minutes, discarding water. Later it is fried using oil and species as other curries are prepared.

Nutritional benefits:

Rich source of sodium, iron and phosphorus.

Nutrition values per 100 grams

Total fat	2 %
Saturated fat	1 %
Sodium	632mg
Carbohydrate	22 %
Protein	5 %
Vitamin A	2%
Vitamin C	22%
Thiamine (B1)	180gm
Riboflavin	0.04mg
Calcium	4%
Iron	8.9 %
Dietary fibers	3 %
Zinc	8.1 mg
Magnesium	13.5 mg
Phosphorus	537mg
Potassium	312mg
Manganese	1.4 mg

Khakhrafull (Palash)



Palash (Dhak) flower a well-known compulsory ingredient of Holi, the famous festival of color India. It also has a saying "Dhak ke Teen Pat" Palash has three leaves only, which is an indication of situation which never changes. During the food sovereignty march, tribal family at Jalimpura offered a decoction prepared out of palash flower, for many of the non-tribal participants it was first edible encounter with this miracle plant. Encouraged with this VAAGDHARA team tried to understand benefits of this preparation, and elderly women shared that this preparation helps in fighting heat-stroke during extreme summer time.

Its botanical name is *Butea monosperma*, also called flame of forest, due to its color and presence at the time of fall in the forest. It is a medium-sized dry season-deciduous tree, growing to 15 m tall. It is a slow growing tree; young trees have a growth rate of a few feet per year. The flowers are 2.5 cm long, bright orange-red, and produced in racemes up to 15 cm long. Two colors are known in flowers i.e. yellow and orange.

Leaves of this plant were traditionally used as food plates, unfortunately now those biodegradable healthy plates are replaced by non-biodegradable plastic and paper plates. It has many medicinal uses as per Ayurveda like; seed for fighting infestation of worms in intestine and cream made of root oil as crack-cream. Other parts of plant used in many diseases i.e. diarrhea, dysentery, intestinal worms, diabetes, sore throat and in some skin disorders also. Its resin is collected as edible -gum and considered as one of the high nutritive ingredient for food preparation for women after delivery.

VAAGDHARA, undertook nutrition analysis of Palash flowers, which indicated that it is rich source of carbohydrate, protein, dietary fiber, vitamin-C and potassium.

Nutrition values per 100gm

Total fat	2gm
Saturated fat	0gm
Trans fat	0gm
Cholesterol	0mg
Sodium	21mg
Total carbohydrate	74gm
Dietary fibers	11gm
Protein	12gm
Vitamin C	12%
Calcium	6%
Iron	12%
Zinc	2.14mg
Potassium	2392mg
Magnesium	369mg
Phosphorus	211mg
Manganese	1.15mg



Timru fal (Tendu fal)

The movement we question about some local fruit, people will speak about the timru, but when we ask, can we get one? When you ate it last? Reply will be negative, as they are hardly available in market and rarely found in villages too.

Why it is so? Because plant is also known as Tendu and exploited more for its leaves, which are used for making, Bidi, a rolled local model of cigarette. Tender leaves are plucked and used for Bidi business, and over exploitation of the tree for its leaves have resulted in leaving behind its use as fruit. Now it lies in the memory of peoples who are in their fifties and sixties in semi-urban areas. In the Banswara some of the villages still have remains in the form of dying trees like the one which we came across at village Padla-Miyasa and collected 10 kilograms of seeds for propagation. Hope we will be able to revive this for the future generation also.

Encouraged with this VAAGDHARA team tried to understand benefits of this preparation, and elderly women shared that this preparation helps in fighting heat-stroke during extreme summer time

Its botanical name is *Diospyros melanoxylon* which is medium to large dry deciduous tree,



growing to 15 to 25 m tall. It is a slow growing tree; young trees have a growth rate of a few feet per year and takes long time to grow to producing age. The fruits are 1.5 to 2.5 inch in diameter, bright saffron colored. Its leaves are also considered as good nutritive fodder particularly for small ruminants. VAAGDHARA, undertook nutrition analysis of Timru fruits, which indicated that it is rich source of Phosphorus, Sodium, Potassium, Calcium, Magnesium, Vitamin-A and Vitamin-C.

Nutrition values per 100gm

Total fat	0.8g
Saturated fat	0.35g
Trans fat	ND
Cholesterol	ND
Sodium	350mg
Total Cab	30.2g
Dietary fibers	NA
Protein	0.62g
Vitamin C	1.9mg
Calcium	202mg
Iron	1.2 mg
Zinc	8.5 mg
Potassium	262mg
Magnesium	123mg
Phosphorus	418mg
Manganese	4.57mg

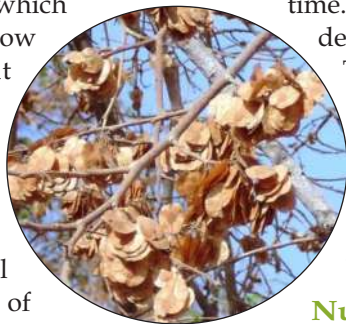
Bandar Bati

Botanical name : *Diospyros melanoxylon*

Bandar Bati (Monkey's Nut) is a nut, which is again part of tribal culture, but now known as children's time pass, (it seems as if children are wiser than adults. Its nuts are little tricky to take out and need passion, therefore people rather prefer to leave this rich food, which monkeys knows better.

Most of the villages in the tribal dominated region including district of Banswara have these plants as part of farm boundary and wasteland. It is hardy and can grow anywhere including stony waste, as in Miyasa village. Hope we will be able to revive this for the future generation also.

Encouraged with this VAAGDHARA team tried to understand benefits of this preparation, and elderly women shared that this preparation helps in fighting heat-stroke during extreme summer



time. It is a medium to large dry season-deciduous tree, growing to 12 to 18 m tall.

The fruits are flat 1 to 1.5 inch in diameter. Its fruit is very much liked by small ruminants as nutritive fodder. Nutrition analysis of nuts, indicated that it is rich source of Fat, Protein, Potassium, magnesium, Vitamin-A and Phosphorus.

Nutritional value per 100gm

Total fat	51.6g	Vitamin A	45 IU
Saturated fat	14.8g	Calcium	178mg
Trans fat	ND	Iron	1.6 mg
Cholesterol	ND	Zinc	64.8mg
Sodium	10.3mg	Potassium	360mg
Total Cab	21.7g	Magnesium	290mg
Dietary fibers	NA	Phosphorus	84.6mg

Mahua

It is a fast-growing tree that grows to approximately 20 meters in height, possesses evergreen or semi-evergreen foliage. The crown is rounded, much branched. The bark is grey, vertically cracked and wrinkled, exfoliating in thin scales. The leaves are alternate clustered at the end of branchlets. The leaf blade is simple, 10-25 cm long x 6-12 cm broad, oblong-shaped, rigid, thick and firm, wooly at the lower face and exudation a milky sap when broken. Young leaves are pinkish, reddish-brown. Flowers are borne on green or pink, furry bunches, each bunch consisting of 12 fragrant cream-coloured flowers. Its leaves, and flowers are very much liked by small ruminants as nutritive fodder.



Mahua flowers, fruits and leaves are edible and used as vegetables. The sweet, fleshy flowers are eaten fresh or dried, powdered and cooked with flour, used as sweetener or fermented to make alcohol. The fleshy outer coat of the fruit is used as a vegetable.

Mahua seeds yield between 35 and 47% oil, which is used as substitute for ghee. Mahua flowers are also used to produce some sweet preparations. The petals of Mahua flowers are collected and sun-dried, they are either ground to flour and used to make various kinds of breads or also fermented for produce local liquor particularly during celebrations. It is inexpensive and the production is largely done in home stills.

Kanda Gola (Air potato)

Botanical name : *Dioscorea bulbifera*

It has various common names air-potato, air yam, bitter yam, cheeky yam, potato yam. The air potato is one of the most widely consumed yam species. The air potato is one of the most widely consumed yam species.



Characteristics: It is a creeper which can grow up to 20-25 feet tall. The plant forms bulbils in the leaf axils of the twining stems, and tubers beneath the ground. These bulbils and tubers are like small, oblong potatoes.

Air potato has been used as a folk remedy to treat diarrhea and dysentery as it is rich source of sodium and potassium. It can be used as local medicine in treatment of conjunctivitis.

Through comparing with potato and sweet potato conveys that it contains higher levels of minerals i.e. iron, zinc, sodium, potassium and manganese. Ayurveda also refers about the use of *Dioscorea* as Varahi-kanda, a treatment for impotency.

Nutritional values per 100gm

Total fat	1gm	Calcium	1%
Sodium	235 mg	Iron	67%
Total carbohydrate	27gm	Zinc	6.02mg
Dietary fibers	1gm	Potassium	697.2mg
Protein	1gm	Magnesium	18.2mg
Vitamin A	1%	Phosphorus	116 mg
Vitamin C	2%	Manganese	4.2mg

Amar Kanda (Air Potato)



It is another variety found locally and consumed, but by very few people from Sajjangarh block reported its availability in the area. Some people also reported that there are poisonous varieties in forest area, thus slowly-slowly people have collected edible varieties and planted them along the farm boundaries. The tubers of edible varieties often have a bitter taste, which can be removed by boiling or roasting in wood-ash. They can then be prepared in the same way as other yams, potatoes, and sweet potatoes.

In the area two tubers Ratalu and Garadu are considered as delicacy. They are also member of Dioscorea family which are grown in the area for human consumed. Another tuber is Elephant yam which is normally collected from forest area but not cultivated.

INDIGENOUS FOOD PROCESSING

Banswara district is part and partial of humid to semi-arid agro-climatic conditions consequently during the fall (winter) and dry period (summer) there are times when it is difficult to get food items particularly vegetables and pulses, which provide micronutrients and vitamins.

At times due to more workloads they get less time for cooking, thus they have developed recipes and processing to fulfill these requirements.

Drying and storing: To store abundant production of some items during monsoon months to fulfill demand of green vegetables during summer months traditional tribal families follows this approach which is local called Sukhamani (Drying). Common Sukhamani in the area is that of leafy vegetables and some of the green vegetables are listed here.

Leafy Vegetables	Other vegetables
Chickpea, Rajan, Chiel bathua, Fenugreek, Dhimadi, Rati-bhindi,	Okra, Kachri, Semfali, Pumpkin, Tenda,



Besides drying other method for storing food items for summer months is that of making achar, papad, papadi and badi. These are some of the preparation which are part and partial of their food system.

CONCLUSION

In the context of climate change, uncultivated foods could be important as adaptation. The multiple functions of plant need to be acknowledged such as releasing oxygen, precipitating rain, recharging groundwater, conserving fertile topsoil, buffering against droughts and floods are also about securing food for local communities.

With food security and nutrition high on the agenda, it is crucial to understand the contribution of forests and trees to a food secure and nutrition-sensitive future. 'Uncultivated'

foods are not just about satisfying hunger, but about savoring the people's relationship with their immediate environment.

Many seed and seeding material was exchanged by community within groups but some seeds were procured from adjoining regions also. These crop varieties were revived within one cropping season. Presently, the community-based seed bank is initiated with seeds of 100 types of indigenous plants and crops.

Women farmers have been playing a major role in the revival of indigenous crops, management of

the community-based seed banks and conservation of the indigenous agro-biodiversity. Our study demonstrates a wide diversity of indigenous foods available and consumed from the natural environment of the Bhil tribe. Specifically, many micronutrient rich plant foods were part of their food system. The preferred and commonly consumed food items identified were particularly rich in iron, calcium, vitamin A, vitamin C and folate. The food items which were analyzed in the laboratory as part of the study were also found to be good sources of one or more micro nutrients. The nutrient analysis of Rajan, Dhimda, Dhimdi, saag revealed a high iron and dietary fiber content.

Due to ignorance, by large number of people in communities, these food resources are slowly-slowly at the diminishing trend. Support and advocacy for their increased consumption can be an important strategy to improve nutritional status within this tribal group. Participatory listing and identification of these foods could also be a way of building awareness among

community and helping them in identification of underutilized items and advocating their incorporation into the diet.

In the context of promoting consumption of indigenous foods for improved nutrition, kitchen gardens for cultivating these nutrient rich foods can be effective strategies.

In addition, the promotion of the continued use of these foods in the diet of the whole family rather than shifting to more "modern" diets will prevent the advance of the dual burden of malnutrition through natural means.

Secondly, the propagation of the consumption of these foods provides a buffer against the increasing displacement of traditional dietary patterns by marketed, processed foods. While, we have discussed the nutritional aspects of some of the foods items identified, an effort to take nutritional analysis of many more such items and appraise their true potential for providing improved nutritional security would be a desirable activity.

LOOKING BEYOND

This document is small but critical step towards revival of nutrient rich indigenous foods in this tribal community which could be used for quantification of nutrient intake in this community.

To the best of our knowledge, no previous study has looked at the anthropological, dietary and nutritional aspects of the indigenous foods among tribal of Banswara in an integrated manner.

We would also like to highlight the immense scope of further study in this geographical area. These data could be a repository of information for botanists, agriculturists and nutritional experts alike and form a valuable resource for researchers and for the community to build upon and preserve.

Cultivated and uncultivated foods jointly help in addressing under-nutrition among small and marginal farmers. The effort shave helped initiate thought process in the minds of people.





Decoration made of seeds of indigenous food items of Banswara during 1st seed fair



VAAGDHARA

Contact Us:

E-mail : vaagdhara@gmail.com

Website : www.vaagdhara.org

H.O. :

Village and Post Kupra, District

Banswara, Rajasthan **(India)**

Ph. : +91-9414082643

State Coordination Office :

E-3/145, Shyonarayan Marg,

Behind Shalby Hospital,

Near 200 ft By Pass,

Gandhi Path, Chitrakut, Jaipur, (Raj.)

Field Office:

Ghatol, Banswara

Anandpuri, Banswara

Sajjangarh, Banswara

Gogunda, Udaipur