

First Report of ethnobotanical studies of tehsil Noorpur Thal, District Khushab, Punjab, Pakistan

Zaheer Yousaf

zaheeryousaf56@yahoo.com

Abstract— The study is based on gathering of information by interviewing villagers, herbalists, hakims and farmers, following a preset list of questions followed by analysis of the data collected. Plant samples were gathered and their morphological characteristics described. Their various uses including medicinal uses, where reported were gathered. The present work is a significant contribution to the existing knowledge because ethno botany as a interdisciplinary science understanding of local social dynamics, institutions and different values attributed to resources. These values may be symbolic, religious or political for a given society, while some plant resources may represent only an economic value for our social group. Fuel wood needs are also met by collecting dried fodder branches, by products of crops and dried animal dung. It is recommended that botanical gardens of medicinal plants should be established. Data was analyzed at $P(0.05 -5\%)$.

Keywords— Interviewing Villagers, Medicinal Uses, Ethno botany, Plant Samples, Conservational Reserves, Botanical Garden, Products of Crops and Animal Dung.

I. INTRODUCTION

From ancient Time, plants are being used in various diseases. Many of today's drugs have been derived from plant sources. Pharmacognosy is the study of medicinal and toxic products from natural plant sources. More than six thousand species are used as medicines drives from medicinal plant are \$43 billion. More than 75% of Pakistani population depended on tradition medicines for all are most of its medicinal needs. Ethnopharmacological study not only envisage the possibility of identifying new herbal drug, but also bring on record the hidden knowledge confied to traditional society all over the world (Leporatti 1990) bhattari, 1992 padhye et al 1992 , yang 1992, omino et al, 1993, Gils et al, 1994, bhanday et al, 1997, Verma et al, 1998).

Study Area

The very word Khushab, derived from two Persian words

Khush" and "Aab" meaning good or peasant potable water. District Khushab is one of the four districts of Sargodha Division. The district lies between north latitude 31-33 to 32-43 degree and east longitude 71-35 to 72-37 degrees. The average length of the District from north to south is about 116 Kilometers: while its breadth from east to west is about 56 kilometer. The District comprises an area of 1,627,688 acres or 6,511 sq. Kilometer.

The few trees to be found in the dry and sandy that are chiefly Jund, (*Prosopis cineraria* (L) Druce), which is found in graves protected by the reputation of some departed scunt: stunted kikar, rarely found the round ponds and a grave of beri (*Zizyphus nummularia* Burm.f.) trees found the town of Nurpur, which are specially protected by a clause in the village administration paper. The characteristic bushes of the region are the lana (salaola), akk (*Calotropis pro cera* R. Br.) and harmal (*paganum harmala* L.) which have already been described and the phoy (*Calligonum polygonoidea* Linn.) a good fodder plant, little found except in Rakh Nurpur, but (*Pauderia pilosa*) a low whitish plant with flower heads like catkins, khipp, (*Crotalaria burhia*) some time used for making ropes for temporary use and summa and karturmma (*Citrus colosynthis* (L.) Shrad.) with its trailing stems and beautiful green and yellow orange likes fruit scattered in the profusion over the sandy hills. Their taste is very bitter, but goats eat them and medicine for horses is prepared from them to prevent indigestion.

In the past only cultivation consisted of small patches of cheap millets and pulses, or very inferior watermelons. But it has since been discovered that excellent grass of crops can be raised in an ordinary winter and year by year larger areas are devoted to raising them, the change from pasture to agriculture as the principal means of livelihood is going on apace. The resulting development of land is, of course, over-shadowed by the brilliant success of the lower Jhelum Canal, but is nonetheless remarkable.

In the flooded lands along the rivers lei or pilchi (*Tamarix dioica* Roxb. Ex Royh) springs up considerable thickets and is used for wattling, baskets and roofs. The akk (*Calotropis procera* R. Br.) is very common in sandy soil. It is also useful for snakebite (Ajibade et al., 2005).

II. METHODOLOGY

The survey was conducted from March, 2003 to February 2006. The methodology was based on interviews using checklist and questionnaire of information (Martin, 1995). The interviewees in the villages were chosen at random. Total No of interviewees conducted are 750 consists of 400 males and 350 females. The interviewees were landholders (zamindars), Agriculturists, pansars, Hakims and Farmers, and most of them were mainly graduates and Government employee. In the first step, detailed knowledge about the local and indigenous people was collected. A regional study on the epidemiology tradition medicines and ecology of the people and their environment was prepared. In order to prioritize plant collectors, a number of international data basis were searched to obtain all the relevant ethno-medical, biological and chemical information on the plant known to be used in that region.

Following parameters were adopted for the study:

A. ETHNOMEDICINAL USES

- . Uses of herbal medicinal
- . Parts of the plants used
- . Ailments treated
- . Success of use
- . Source of supply
- . Average annual stock (quantity)
- . Average annual sale (quantity)
- . Types of people treated
- . No. of people treated per day
- . Trend in use of medicinal plants

B. FODDER USES

- i. Fodder priority
- . Fodder effects

. Animal types

. Preferred parts

C. ETHNOBOTANICAL USES

. Vegetables and pot herbs

. Fruit yielding

- Poisonous plants

- Method of use

- Prices per KG.

. Plant grown/cultivated

- Plant material stored

- Quantity sold per year

. Sold in the form (dry/fresh)

- Used in the form (dry/fresh)

. Total number of species traded

- Harvesting season

- Method of preparation (infused/boiled/distilled/fresh juice)

- Details of preparation

. Method of internal application (infusion/decoction/syrup chewed)

. Method of external application (poultice, fixed oil, lotion cream)

. Age groups of people using the species.

. Health maintenance

. Types of livestock treated

Livestock ailment treated

. Use of herbs in combination with other herbs .

. Period of storage of plants/herbs

- Processing Additive used
- Domestic, community-wise and market value Species preferred for sale
- Average price per unit
- Source of fuel for domestic purpose _
- Average consumption of fuel per day for each household
- Variation of fuel requirement in summer and winter seasons
- Dependency of people on wood fuel
- Prices of different types of fuels
- Availability of wood fuel
- Source of wood fuel
- Main cases of non-availability of fuel wood fuel

D. FUEL SOURCES AND ITS CONSUMPTION

- Source of fuel for domestic purpose
- Average consumption of fuel day for each household
- Fuel types (i. e. fuel-wood, kerosene oil, LPG, crop residues, cow-dung, wood-waste, charcoal)
- Average monthly fuel requirement in summer and winter seasons
- Species used for wood fuel
- Preferred species of wood fuel
- Estimated percentage increase of trees III the surrounding
- Source of information about trees
- Suggestion to increase tree cover in the area

Table.1: Species used for different ailments

S.No	Name of species	Scientific Name	Part used	Illness	Success
1.	AK	<i>Calotropis procera</i> R.Br.	Stem	Joint Pain	Comforts
2.	Harmal	<i>Peganum harmala</i> L.	Seed	Abdominal Pain	Comforts
3.	Akashbel	<i>Cuscuta reflexa</i> Roxb.	Stem	Phorey	Comforts
4.	Tumma	<i>Citrullus colocynthus</i> (L.) Schard	Seed Fruit Root Oil of seed Root	1. Constipation 2. Stomach ailment 3. Immunity for Rani Khet Diseases 4. Sun stroke/Heat 5. Abdominal congestion 6. Ammmorrhoea 7. Ascites 8. Asthma 9. Billousnes 10. Cerebral congestion 11. Elephantiasis 12. Epilepsy 13. Facial paralysis 14. Fever 15. Gout 16. Hepaticcongestion 17. Jaundice 18. Leprosy 19. Liver dibility 20. Neuralgic complication 21. Paralysis	1. Comforts 2. Very Effective 3. Very Effective 4. Cold effect

			Root Poultice of root Juice Oil of Seed	22. Rheumatism 23. Sciatica 24. Visceral congestion 25. Inflammation of breast 26. Remedy of dropsy Snake bites scorpion stings and bowl complatints (dysentery, diarrhea) Epilepsy and for growth and blackening of hairl	
5.	Khoob Klan (Chuniakha)	<i>Sisymbrium irio</i> Crantz ex Steud	Seed	1. Typhoid 2. Small Pox (Chechak) 3. Chest debility, cholera, cough, fever, harassness vocal organ debility, vomiting	Removes Small Pox (chechak grains)
6.	Saunf	<i>Foeniculum vulgare</i> Miller	Whole Plant	1. Digestion problem 2. Gas Trouble 3. Female illness 4. Nervous disease	1. Increases Digestion 2. Gas trouble recovers. 3. Treatment. 4. Comforts.
7.	HarniKaKhaj	<i>Cistanchetabulos a</i> Wight	Whole Plant	Blood Purifier	Comforts
8.	Jawah	<i>Carum copticum</i> Benth	Whole Plant	Blood Purifier	Comforts
9.	Boophali	<i>Corchorusaes tuans</i> Linn.	Whole Plant	Stomach and liver heat	Patient becomes healthy
10.	Lauhurian	<i>Tecomella undulate</i>	Whole Plant	Defect in Uterus	Patient becomes healthy
11.	Kahnu		Whole Plant	Defect in Uterus	Patient becomes healthy
12.	Bhakra	<i>Tribulus camaldulensis</i> . L	Seed	Gall Bladder illness, Kidney Allergy	Most successful
13.	Boophali	<i>Corchorus aestuans</i> Linn.	Whole Plant	1. Maleness in Man 2. Liqueria	Successful
14.	Hareer/Arhar	<i>Cajanuscajan</i> L.	Root	Spermatorrhoea	Successful
15.	Asgandh/IksinN eelwat	<i>Withania somnifera</i> L.	1. Root Decoction	1. Weakness of sexual organ. 2. Premature ejaculation 3. Leucorrhoea and frequent miscarriage (ladies) 4. Emaciation (women and children) 5. General debility 6. Glandular swelling 7. Leucoderma	Successful

			2. Root Paste and Cow Urine	8. Loss of memory 9. Nervus exhaustion 10. Rhumatica affection. 11. Snile debility 12. Syphilis 13. Skin diseases	
16.	Puthkanda	<i>Achyranthes aspera</i> L.	Root	14. Impotency	Successful
17.	Bathu	<i>Chenopodium album</i> L.	1. Cooked leaves . 2. Leaf extract 3. Root powder	1. Urinary troubles and colic 1. Piles 2. Cought 3. Worms 1. Spermatorrhoea	Successful
18.	Drunk	<i>Polygonum plebijum</i> R.Br.	1. Plant Decoction 1. Plant ash + Oil	1. Colic complaints 1. Eczema	Successful
19.	Jau	<i>Hordeum vulgare</i> Linn.	Leaf Juice	Cataract	Successful
20.	Jund	<i>Prosopis cineraria</i> (Linn) Druce	Leaves	Leucorrhoea	Successful
21.	Mako/MirchBoti	<i>Solanum nigrum</i> L.	1. Leaf paste and branches 2. Whole plant Decoction	1. Jaundice 2. High fever 1. Spermatorrhoea	Successful
22.	Kashmiri Kiker	<i>Prosopis juliflora</i> Swartz			
23.	Pilchi/Lei/Frash	<i>Tamarix dioica</i> Roxb. ex Roth	1. Bark (Bitter and Tonic)	1. Annal Fisher 2. Cough 3. Diarrhoea 4. Dysentry 5. Pectrol Affection 6. Piles 7. Uleers 8. Leucorrhoea 9. Spoleen Trouble 10. Leucoderma	
24.	Chiraita	<i>Swertia chiraita</i>	Whole plant and Decoction	All kinds of fever particularly (i) Pneumonia (ii) Malaria (iii) Typhoid	

Table.2: Ethno-botanical uses of different plant species

S. No	Local Name	Scientific Name	Part Used	Fuel Wood	Timber	Fodder
1.	Shrin	<i>Albizia lebbek</i> (L.) Willd		-		Fodder
2.	Kiker	<i>Acacia nilotica</i> L.	Leaves & Wood	Excellent Fuel	Agricultural implements	-do-
3.	Beri	<i>Zizyphus numularia</i> (Burm.f.)	Leaves	-	-	-do-
4.	Shisham	<i>Dalbergia sisoo</i> Roxb. Ex DC.	Leaves	-	-	-do-
5.	Khagal	<i>Tamarix dioica</i> Roxb. ex Roth	Stem	Fuel	Building	-
6.	Sufeda	<i>Eucalyptus globulus</i>	-	-	Building	-
7.	Channa	<i>Cicer arietinum</i> L.	Seed & Stem	Fuel	-	Fodder
8.	KhoobKalan	<i>Sisymbrium irio</i> Cranz ex Stued	-	-	-	-do-
9.	Jund	<i>Prosopis cineraria</i> (L.) Druce)	Stem	Fuel		-do-
10.	Gowara	<i>Cyamopsis tetragonoloba</i> L.	Stem	Fuel	-	-do-
11.	Bursin	<i>Trifolium repens</i> L.	Except roots	-	-	-do-
12.	Jowar	<i>Sorghum bicolor</i> (Linn.) Moench	Except roots	-	-	-do-
13.	Bajra	<i>Pennisetum typhoideum</i> (Burm. F.) Staff & Hubbard	Except roots	-	-	-do-
14.	Loosen	<i>Trifolium alexandrianum</i> L.	Except roots	-	-	-do-
15.	Jowadar	<i>Avena sativa</i> Linn.	Except roots	-	-	-do-
16.	Kashmiri Kiker	<i>Prosopis juliflora</i> (Sw.) DC.	Except roots	Fuel	Construction	Fodder paper and cosmetic industry
17.	Wheat (Kanak)	<i>Triticum aestivum</i> Linn.	Hay/Stem	-	-	
18.	Sarsoon	<i>Brassica comperis</i> L.	Stem/Leaves	-	-	-do-
19.	Kallar grass	<i>Leptochola fusca</i>	Stem/Leaves	-	-	-do-
20.	Juo	<i>Hordeum vulgare</i> Linn.	Upper part	-	-	-do-
21.	Gana	<i>Saccharum spontaneum</i> Linn.	1. Stem 2. Thin end of the stock (Tili) 3. Shea thing petiole after being burnt at the lower end beaten with a mallet yield a fiber (Munj)		1. Thatching and making chairs 2. Making baskets and screens (sirki) 3. Munj is twisted into ropes	
22.	Kah	<i>Saccharum spontaneum</i> Linn				1. Grazing for Buflalos 2. Making brushes 3. Use to strew on the floors of mosques
23.	Dhub	<i>Desmostachya bipinnata</i> (L.) stapf				Making ropes

MARKET SURVEY

Table.3: Prices of different species

S.No	Name of Species	Local Name	Qty (Kg)	Price (Rs.)
1.	<i>Peganum harmala</i> L.	Harmel	1	50
2.	<i>Cusuta reflexa</i> Roxb.	Ahashbel	1	500
3.	<i>Citrulluscolocynthus</i> (L.) Schrad	Tumma	1	50
4.	<i>Tribulus camaldulensis</i> L.	Bhakra	1	100
5.	<i>Calotropis procera</i> R.Br.	Ak	1	1000
6.	<i>Eucayptus globules</i>	Sufeda	40	110/(2.7/K.g)
7.	<i>Tamarix dioica</i> Roxb. ex Roth	Khagal	40	100 (2.5/kg)
8.	<i>Dalbergia sissoo</i> Roxb. ex DC.	Shishum	40	200 (5/kg)
9.	<i>Citrus colocynthus</i> (L.) Schrad.	Tumma	1	15
10.	<i>Trianthma portulacastrum</i> L.	Biskhapra	1	30
11.	<i>Acacia nilotica</i> L.	GondKiker	1	40
12.	<i>Sisymbriumirio</i> Crantz,ex Steud	KhoobKalan (Chaniakha)	1	50
13.	<i>Cicer arietinum</i> L.	Channa (Black)	1	20
14.	<i>Cicer arietinum</i> L.	Channa (White)	1	40
15.	<i>Foeniculum vulgare</i> Miller	Sounf	1	20
16.	<i>Zizyphus nummularia</i> (Burm.f.)	Beri	1	3
17.	-	Lahurian	1	1500-28000
18.	<i>Corchorus astuans</i> Linn.	Boophali	1	65
19.	<i>Peganum harmala</i> L.	Harmel	1	40
20.	<i>Tribulus calendulensis</i> L.	Bhakra	1	40
21.	<i>Plantago psillium</i> Forssk.	Isbaghol	1	80
22.	<i>Tribulus cameldulensis</i> L.	Bhakra	1	20
23.	<i>Corchorus astuans</i> Linn.	Boophali	1	150

Statistical Analysis

Table.1: Variation in the price of fuel yielding species by using ANOVA Statistical Analysis of the price of fuel yielding species of Thal

REPLICATIO N	Prices		Total	
	50	40	20	110
	50	50	65	165
	15	20	40	75
	30	40	40	110
TOTAL:	145	150	165	460

Source of variation	Sum of Squares	Degree of Freedom	Mean Squares	Computed Frequency
Row means	1383	3	461	F1=2.82
Column means	54	2	27	F2=.165
Errors	980	6	163	
Total	2417	11		

Non-significant

Table.2: Variation of average monthly wood-waste fuel in summer and winter

SUMMER		WINTER	
X1	X ² 1	X2	X ² 2
40	1600	80	6400

40	1600	80	6400
40	1600	80	6400
80	6400	1600	25600
40	1600	80	6400
80	6400	1600	25600
80	6400	1600	25600
40	1600	80	6400

At 5% Significant

Table.3: Variation of Fuel Wood Consumption in summer and Winter Seasons

WINTER		SUMMER	
X1	X ² 1	X2	X ² 2
120	14400	60	6400
800	640000	600	360000
240	576000	200	40000
600	360000	400	160000
80	6400	40	1600
240	56700	200	40000
400	160000	40	1600
120	14400	80	6400
94	8836	80	6400
174	30276	120	14400
147	21609	94	8836
120	14400	80	6400
120	14400	80	6400
100	10000	100	10000
120	144000	80	6400

At 5% Significant

Table.4: Variations in the kerosene Oil consumption in the summer and Winter

SUMMER		WINTER	
X1	X ²	X2	X ²
20	400	25	625
20	400	25	625
10	100	15	225
10	100	15	225
2	4	4	16
1	1	2	4
1	1	2	4
2	4	4	16
10	100	15	225
10	100	15	225
10	100	15	225
10	100	15	225
60	3600	15	225

60	3600	15	225
60	3600	15	225

At 5% Significant

Table.5: Variations in the Wood waste consumption in the summer and Winter

SUMMER		WINTER	
X1	X ² 1	X2	X ² 2
40	1600	80	6400
40	1600	80	6400
40	1600	80	6400
80	6400	160	25600
80	6400	40	1600
40	1600	80	6400
80	6400	40	1600
40	1600	80	6400
94	8836	80	6400
174	30276	120	14400
147	21609	94	8836
120	14400	80	6400
120	14400	80	6400
100	10000	100	10000
120	14400	80	6400

At 5% Significant

Table.6: Variations in LPG consumption in the summer and Winter

SUMMER		WINTER	
X1	X ² 1	X2	X ² 2
20	400	800	6400
20	400	800	6400
10	100	2	4
10	100	2	4
2	4	2	4
1	1	4	16
2	4	15	225
10	100	15	225
10	100	15	225
10	100	15	225
60	3600	15	225
60	3600	15	225
60	3600	15	225
60	3600	15	225

At 5% Significant

Table.7: Variations in the Crop-residues consumption in the summer and Winter

SUMMER		WINTER	
X1	X ² 1	X2	X ² 2
120	14400	160	25600
120	14400	160	25600
40	1600	80	6400
400	160000	600	360000
80	6400	120	14400
20	400	2	4
80	6400	160	25600
10	100	20	400

At 5% Significant

Table.8: Variations in the Cow-dung consumption in the summer and Winter

SUMMER		WINTER	
X1	X ² 1	X2	X ² 2
120	14400	160	25600
120	14400	160	25600
80	6400	160	25600
800	640000	1000	100000
40	1600	80	6400
10	100	10	100
320	102400	640	409600
40	1600	80	6400
40	1600	80	6400
60	3600	80	6400
30	900	70	4900
80	6400	10	10000
40	1600	20	400
40	1600	80	6400
40	1600	80	6400
60	3600	80	6400
60	3600	80	6400

III. DISCUSSION

Species Used For Different Aliments

There are about 24 plant species, which are used for different aliments. Ak (calatropis procera) R. Br. is used against skin diseases, eczema, toothache, abdominal pain and asthma (jadhev, 2008a). Harmal (pognum hermella) is used as narcotic, emetic anodyne, hypnotic, anti-lice and fumigated by ladies during small-pox. Dried pulp of bitter

fruit of Tumma (citrullus colocynthus) (L.) Shrad. is effective in constipation (Usmanghani, et al., 1997). Fruit of Thumma (citrullus colocynthus) (L.) is useful for the stomach ailments and immunity for Rani Khet diseases and has cold effects against sun-stroke (Heat).

Seeds of Khoob Kalan or chanakhla (sysimbrium irio) Crantz ex steud are used as treatment against Typhoid, small pox. Whole plant of Sonuf (Foeniculum vulgare)

Miller. is used for digestion problems, gas troubles, female illness and nervous diseases.

Harni Ka Khaj (cistanche tubolose) Wight is effective in diarrhoea and cures sores (Baquar, 1989) and Jawah (carum copticum) Benth. is used as blood purifier. Whole plant of Boophali (corchorus aestuens) Linn. is used for stomach and liver heat. Whole plant of harmal (Pognum hermela) L. is used for the defect in the uterus.

Seeds of Bhakra (Tribulus calendulensis) L, are used for gallbladder illness and kidney allergy. Whole plant of Boophali (corchorus aestuens) Linn. is used for maleness in man and leucorrhoea.

Leaves of Sumbli or norgundani (vitex negundo) Linn. are used for wounds, oraksus, and rheumatic pain. Its stem is used for fever. Its juice is useful for gall bladder problems. Its root powder is used for menstrual disorder and restores fertility. If it is roasted seeds powder and wheat flavour is useful for easy delivery.

Neelwat (Withania somnifera) L. is used as an antiinflammatory and sedatve agent (Williamson et. al., 2009). Cooked leaves of Bathu (chenopodium album) L. are used for coronary troubles. Its leaf extract is useful for piles, cough and worms.

Plant decoction of drunk (Polygonum plebijum) R. Br. is used against colic complaints. Plant ash and oil is useful for Eczema. The root of this plant is used in bowel complaints and powdered herb is given in pneumonia (Trivedi, 2002). Leaf juice of Jau (Hordeum vulgare) Linn. are useful for cataract. Leaves of Jund (Prosopic cineraria) (L.) Druce is useful for leucorrhoea.

Leaf paste and decoction of Mako or Mirchibooti (solanum nigrum) L. is used against jaundice and in case of high fever, cough and liver diseases (Tridevi, 2002).

Problems related to herbal medicines Business.

- 1 Pure things are not available.
- 2 Wild plants are expensive.
- 3 Hard work and labour is required.
- 4 Most of area is cultivated.
- 5 Forests are less, so wild plants have reduced.
- 6 Wild plants have high prices.
- 7 People discuss more, the prices of medicines.
- 8 Pure medicines are not available.
- 9 Information about plants is negligible.
- 10 Herbal medicines are shelter-classics Govt. is not paying any attention.
- 11 Trained people are not enough.
- 12 Area is being populated.
- 13 People do not collect plants due to low prices.
- 14 They insist on purchasing low prices.

People treated per day different places.

Mostly 10 people are treated per day at Adhi kot almost 80 persons are treated per day at Jamali Baluchan. Mostly 20 people are treated per day at Noor pur thal. About 50 people are treated per day at Peeluwance and 20 people are treated at Quluanwala. All classes are treated. 15 people are treated per day. Mostly poor and middle class are treated daily at Biland.

Suggestions to increase the cover of the area.

1. Government should give permission for forest plantation by giving free nurseries.
2. Government should make contact with ther farmers.
3. No of tubewell have to increase.
4. Farmers should be provided with fir nurrsries and plants from the Government nurseries.

Discussion regarding Statistical Analysis and Ethnobotany

A- Variation in the prices of different fuels yielding species of Khushab District.

Variation in the prices of different fuels yielding species of Khushab District was determined by analysis of variation (ANOVA). Prices vary from Rs.15 to Rs.165 treatments and replicates were made and then total was taken. Sum of square of treatment, sum of square of columns and sum of square of errors were calculated which were 2417, 1383, 54 and 980 respectively (table 15).

By using source of variation, sum of square, degree of freedom and mean square, row means, and errors was calculated. Frequency (f1+f2) was found to know the significance of data. f1 was 2.82 which was the more than actual value i.e. f2 0.165. So it was found that the variations in prices of different species at that area were significant.

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