Folk use of plant resource at Madi valley of Chitwan District, Nepal

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The purpose of this study was to compare the use of the forest plant resources and folk nomenclature in the two communities of the Madi valley a Chitwan District. The information was collected during 2001 from 83 households in Chirauli and 57 households in Dhikurbari using semi-structured questionnaires. The folk nomenclature and relative importance of the plant species for medicine, firewood, fodder and timber differ in the two communities were recorded. A total of 128 species were reported in use by both communities, out of which 64 were common to both communities. The plant species used only in Chirauli accounted for 44 and that in Dhikurbari are 20. Tharu community of Chirauli reported higher number of plant species for medicinal, fodder and forage, fuel wood and timber than that of migrated people of Dhikurbari.

Key Words:

Chitwan is a district where existences of many ethnic groups make a web and offers opportunities to exchange knowledge on use of plant resources. This include naming, use and valuation of forest tree species for different purposes has now been transferred from one community to another. Many indigenous plants have been reported for various uses by ethnic communities (Khan, 1998; Manandhar, 1990; Rijal, 1994; Shakya *et al.,* 1995; Dangol and Gurung, 1991; Mueller- Boeker 1993). Dangol (2002) has described many forest plant species of this district and their economic value. However, the plant resources used by migrant communities, use-value, naming and relative importance and comparisons in those aspects are yet to the subject of study. Hence, an attempt has been made here to document the species diversities that are used by two different communities of the Madi valley that differ in social, economic and cultural settings. The study dug out the information on the variation in both the villages on naming, use values and valuation for different purposes.

Materials and Methods

Survey site

The study was conducted in two communities; Tharu in Chirauli and other migrants at Dhikurbari of the Madi valley of Chitwan District. These villages differ each other in socio-economic and cultural aspects. The people rely on the forest and forest products for their social, economic and cultural requirements. Churia hill range, which is rich in forest diversity, extends across the southern frontier of Madi region and offers many useful medicine, fodder, fuel wood and timber tree species to the dependents. Traditional norms still pervail in both the villages, as the Madi area itself is not highly accessible to the big cities and market set up.

Information collection

Since the knowledge on the use of forest plant diversity is uniformly distributed among different communities within same ethnic groups, only one village each from Tharu community and hill migrant community was purposively selected. In each village, a small tole (cluster) was selected to draw sample population. All the households in the selected tole were then interviewed using semi-structured questionnaires. A total of 83 households in Chirauli and 57 in Dhikurbari were surveyed, each figure representing 80% of total households in each village.

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Results and discussion

Relative importance of plant resources in two communities

Out of 128 plant species reported, 64 were common to both communities. Forty-four species were reported from Chirauli while 20 by Dhikurbari. During the survey, it was revealed that Neem (*Azadirachta indica*), Dudhkaraiya (*Holarrhena antidycentrica*), Jamun (*Syzyzium cumini*), Bel (*Agle marmelos*) and Med (*Viscum album*), were the most commonly used species for medicinal purpose in Chirauli, and those of Dhikurbari were Neem (*Azadirachta indica*), Hadchur (Med) (*Viscum album*), Dahikamle (*Callicarpa macrophylla*), Tulsi (*Ocimum tenuiflorum*) and Harro (*Terminalia chebula*). For fuelwood, Sal (*Sorea robusta*), Bakaina (*Melia azedarach*), Botdhairo (*Lagerstromia parviflora*), Sisau (*Dalbergia sisoo*) and Panan (*Desmodium oojeinense*) were most common in Chirauli, and Sindure (*Mallotus phillippensis*), Sal (*Shorea robusta*) Baira, Piyal and Botdhairo (*Lageresrtomia parviflora*), were the most common in Dhikurbari. However, many people put several species other than Sal in "Kukath" category (less important wood), the figures for different species might vary. Likewise, people in Chirauli valued Bakaina, Ipil- ipil (*Leuceena leucocephala*), Dumari (*Ficus racemosa*), Khanue (*Ficus semicordata*) and Panan for fodder, where as in Dhikurbari, Sajan (*Demodium oojeinense*), Galene (*Leea crispa*), Khannue *(Ficus semicordata)*, Lampate (*Aesculus indica*) and Gayo (*Bridelia retusa*) were the most valued tree species for fodder purpose. For timber, Sal is the most common tree species followed by Bakaina, Sisoo, Satisal (*Dalbergia latifolia*) and Panan in Chirauli. In Dhikurbari, Sal is only one species that is used by large number of people followed by Bakaina, Saj (*Terminalia alata*), Gayo and Jamun. Results on use of each plant species for different purposes have presented in Table (2). Species use were higher for Chirauli (108) while that of Dhikurbari was 84 (Appendix 1). It revealed that the Tharu community used more plant species than did the migrant community.

Multipurpose trees

Many of the species reported in the two communities have more than one use, which further increase the importance of those species. In Chirauli, a total of 35 species are reported as multipurpose, of which Anp (*Mangifera indica*) and Jamun have fourfold uses, 11 species have threefold, and the rests 22 have twofold uses. In Dhikurbari, only 12 species were reported as multipurpose, of which 5 have threefold uses and rest 7 have twofold uses. Most of the multipurpose species reported in both the villages are used for firewood.

The result shows that knowledge on naming, use methods and valuation of forest plant diversity in one community differs from another community due to, in part, variation in socio-cultural, economic and political situation. Since indigenous people use greater number of forest species more commonly than migrants do, they hold better knowledge and

Table 1: Number of species reported for different purposes in Chirauli and Dhikurbari.

Communities	Medicinal	Fodder and forage	Fuelwood	Timber
Chirauli	56 (62.22)	43 (51.8)	45 (75)	18 (60.0)
Dhikurbari	34 (37.78)	40 (48.2)	15 (25)	12 (40.0)

Figures in the parentheses represent percentages of the total used species.

Table 2: Five most important species for each purpose based on household survey

S.N.	Medicinal	Fodder and forage	Fuelwood	Timber
a. Chirauli				
1	Neem (57)	Bakaino (80)	Sal (80)	Sal (75)
2	Dudhkaraiya (36)	Ipel-Ipel (75)	Bakaino (57)	Bakaino (38)
3	Jamun (30)	Dumri (55)	Botdhairo (39)	Sisau (31)
4	Bel (25)	Khannue (47)	Sisau (32)	Satisal (29)
5	Med (22)	Panan (29)	Panan (22)	Panan (27)
b. Dhikurbari				
1	Neem (32)	Sajan (28)	Sindure (46)	Sal (50)
2	Hadchur (28)	Goleni (20)	Sal (21)	Bakaino (15)
3	Dahikamle (18)	Khanue (18)	Baira (18)	Saj (12)
4	Tulsi (17)	Lampate (15)	Piyal (17)	Gayo (10)
5	Harro (10)	Gayo (12)	Botdhairo (13)	Jamun (8)

Figures in the parentheses are the total households reported the species.

understanding of using native plant species. Since the several species used by one community differ from those used by another community, there is potential to repatriate planting materials and the knowledge from a place to another. The data also show that many people commonly use several species even though the species used in the two communities vary. More the commonly used for various purposes, higher might be the chance to be exploited and thus eroded. Therefore, many species will get endangered if initiative is not taken to conserve and utilize them. This necessitates detailed studies in the indigenous knowledge on morphology, habit and habitat, propagation methods, and the methods of use.

In addition to conservation efforts, the useful forest diversity needs to be promoted for the social, economic and ecological benefits in the communities. This is possible only with the active participation of all the concerned stakeholders including local communities, who rely on forest products. Involving community forest users groups in problem identification, planning, implementation and evaluation processes can enhance management practices in the participatory action. The locally available species have to be registered using locally available methods and technologies, which will be helpful for certification process in future. There are several multipurpose tree species that need more attention than any other species in order to meet multiple needs of households and communities from a few thriving species where reforestation or tree planting activities can not be introduced.

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Appendix 1: Use of plant species in two communities

S.N.	Nepali and Latin names	Habit	Chirauli				Dhikurbari			
			Medicine	Timber	Fuel wood	Fodder	Medicine	Timber	Fuel wood	Fodder
1	Amala, *Phyllanthus emblica*	T	x				x			
2	Amaro, *Spondias pinnata*	T	x			x	x			
3	Amriso, *Thysanolaena maxima*	H				x				x
4	Ank, *Calatropis gigantea*	S	x				x			
5	Ankhlejhar (Hadjorni), *Equisetum debile*	H	x							
6	Anp, *Mangifera indica*	T	x	x	x	x			x	
7	Archal, *Antidesma acidum*	T							x	x
8	(Asidh)	T	x							
9	Babari, *Ocimum basilium*	H					x			
10	(Babin)	T	x							
11	Babiyo, *Eulaliopsis binnata*	H				x				x
12	(Babur), *Acacia nilotica*	T	x							
13	Badahar, *Artocarpus lakoocha*	T		x	x	x				x
14	Bakaino (Bakena), *Melia azedarach*	T		x	x	x		x	x	x
15	Banjhi, *Anogeissus latifolius*	T			x				x	
16	Balu (Bariyar), *Sida rhombifolia*	H	x				x			
17	Bankera, *Musa nepalensis*	H				x				x
18	Banso, *Digitaria spp.*	H				x				x
19	Bar, *Ficus benghalensis*	T				x				
20	Barro (Baraiya), *Terminalia bellirica*	T	x				x			
21	Bayar (Bahera), *Zyziphus nummularia*	T	x							
22	Bel (Bel), *Agle marmelos*	T	x				x			
23	Betlauri, (Larkaiya), *Costus speciosus*	H					x			
24	Bhalayo (Bhela), *Semecarpus anacardium*	T			x					
25	(Bhatte)	T		x	x	x				
26	Bhorla (Malhan), *Bauhinia vahlii*	C				x				x
27	Bhui amala, *Phyllanthus urinaria*	H	x				x			
28	Bojho (Bach), *Acorus calamus*	H	x				x			
29	Bot dhairo, *Lagerstromia parviflora*	T			x				x	
30	(Charari)		x							
31	Charchare lahara, *Parthnocissus semicordata*	C								x
32	Chiuri, *Aesandra butyracea*	T	x							
33	Dabdabe (Jhengra), *Garuga pinnata*	T								x
34	Dahikamle (Dahigona), *Callicarpa macrophylla*	H	x				x			
35	Dalchini (Tejpat), *Cinnamomum tamala*	T	x				x			
36	Datiun, *Achyranthes aspera*	S					x			
37	Dhairo (Dhaira), *Woodfordia fruticosa*	S	x		x		x		x	x
38	(Dhama)					x				
39	Dhupi, *Thuja compacta*	S	x							
40	Dhurseli, *Colebrookea oppositifolia*	S					x			
41	Dudhe lahar, *Trachelospermum lucidum*	C								x
42	Dumri (Dumari), *Ficus racemosa*	T			x	x				x

Contd...

S.N.	Nepali and Latin names	Habit	Chirauli				Dhikurbari			
			Medicine	Timber	Fuel wood	Fodder	Medicine	Timber	Fuel wood	Fodder
43	Galene, *Leea crispa*	T								x
44	Gandhe jhar, *Ageratum conyzoides*	H	x				x			
45	Gaujo, *Milletia extensa*	S								x
46	Gayo, *Bridelia retusa*	T						x	x	x
47	Ghiu kumari, *Aloe vera*	H	x				x			
48	Ghod tapre, *Cassia tora*	H	x				x			
49	Ginderi, *Premna integrifolia*	T	x							
50	Gudurgano	H	x				x			
51	Gurjo ko lahara, *Tinospora sinensis*	C	x				x			
52	Gulmohar, *Delonix regia*	T			x					
53	Hadchur (Med), *Viscum album*	T	x				x			
54	Hadebayar (Chhoti bayera), *Zyziphus incurva*	S	x							
55	Harro (Haraiya), *Terminalia chebula*	T	x				x			
56	Imili, *Tamarindus indica*	T	x							
57	Ipil Ipil, *Laeucoena leucocephala*	T		x	x	x		x		x
58	Jamun (Jamu), *Syzygium cumini*	T	x	x	x	x		x	x	x
59	(Jhingad), *Lannea coromadelica*	T	x		x					
60	Kadam, *Anthocephalus kadamba*	T		x	x					
61	Kainyo, *Wendlandia puberula*	T			x					x
62	Kalikath, *Glochidion velutinum*	T			x				x	
63	Kans (Jhaksi), *Saccharum spontaneum*	H				x				
64	Kapok, *Ceiba pentandra*	T		x	x	x			x	
65	Karma (Haldu), *Adina cordifolia*	T		x	x	x		x	x	
66	Katahar, *Artocarpus heterophylla*	T		x	x	x		x		
67	Khamari, *Gmelia arborea*	T								x
68	Khannue, *Ficus semicordata*	T			x	x				x
69	Khayar (Kattha), *Acacia catechu*	T	x	x	x			x		
70	Khirro (Dudhkaraiya), *Holarrhena pubescens*	T	x							
71	(Khuja)	T			x	x				
72	Kimbu (Muslendi), *Morus alba*	T				x				x
73	Koiralo (Koirala), *Bauhinia variegata*	T			x	x				x
74	(Kumpadari)	T			x					
75	Kumvi, *Careya arborea*	T			x					
76	Kurilo (Khonta), *Asparagus racemosus*	H	x				x			
77	Kusum (Athera), *Scleichiara oleosa*	T	x		x	x				x
78	Kutmiro, *Litsea monopetala*	T			x	x			x	x
79	Kyamun (Kyamuna), *Cleistocalyx operculatus*	T					x			
80	Lajjawati (Lajapati), *Mimosa pudica*	H	x							x
81	Lampate, *Aesculus indica*	T								x
82	Lankuri, *Fraxinus floribunda*	T				x				x
83	Latikath, *Swida oblonga*	T			x					
84	Lunde kanda, *Amaranthus spinosa*	H	x				x			
85	Main kanda, *Xeromphis spinosa*	S	x							

Contd...

S.N.	Nepali and Latin names	Habit	Chirauli				Dhikurbari			
			Medicine	Timber	Fuel wood	Fodder	Medicine	Timber	Fuel wood	Fodder
86	(Morthaiya), *Deeringia celisiodes*	T	x							
87	Mothe (Motha), *Cyperus rotundus*	H				x				x
88	Neem (Nimi), *Azadirachta indica*	T	x				x			
89	Nimaro (Pakadi), *Ficus roxbeurghii*	T	x		x	x				x
90	Palans, *Butea monosperma*	T				x				x
91	Patpate , *Physalis divaricata*	H				x				
92	Pharsa, *Grewia pumila*	S				x				
93	Pidalu (Kachu), *Colocasia antiquorum*	H	x							
94	Pidar, *Xeromphis ulignosa*	T	x							
95	Pipal (Pipar), *Ficus religiosa*	T	x		x	x				
96	Pipla (Pipari), *Piper longum*	H	x				x			
97	Piyal	T							x	
98	Rajbrikchhya (Ahiroga), *Cassia fistula*	T	x		x		x			
99	Rittha, *Sapindus mukorossi*	T					x			
100	Rudilo (Dlehi bhanthi), *Pogostemon benghalensis*	S					x			x
101	(Sahoroti)	T	x		x					
102	Saj (Asna), *Terminalia alata*	T		x	x			x		
103	Sajan (Panwan), *Desmodium oojeinense*	T		x	x	x		x		
104	Sal (Sekhuwa), *Shorea robusta*	T		x	x			x	x	x
105	Sal lahara, *Spatholobus parviflorus*	C								x
106	Sarpagandha (Dharmaruwa), *Rauvolfia serpentina*	H	x							
107	Satisal, *Dalbergia latifolia*	T		x	x			x		
108	Satuwa, *Paris polyphylla*	T					x			
109	(Sehuli)	S				x				
110	Simal (Simar), *Bombax ceiba*	T		x	x	x				
111	Sindure (Roeni), *Mallotus phillippensis*	T			x				x	x
112	(Sinuri)				x					
113	Siris *Albezia spp.*	T			x	x				
114	Siru, *Imperata cylindrica*	H				x				x
115	Sisoo (Sisuwa), *Dalbergia sisoo*	T		x	x			x		
116	Sitalchini (Sohajan), *Moringa oleifera*	T	x							
117	Tanki, *Bauhinia purpurea*	T			x	x				x
118	Tatelo (Patsan) *Oroxylum indicum*	T	x		x	x				x
119	Tantari (Tetari), *Dillenia pentagyna*	T	x			x				x
120	Tapre, *Cassia tora*	H	x							
121	Teek (Sawan), *Tectona grandis*	T		x		x				
122	Thakal (Khajurati), *Phoenix humilis*	H				x				
123	Thotne (Kothaiya), *Ficus hispida*	T			x	x				x
124	Timur, *Zanthozylum armatum*	H					x			
125	Titepati (Pati), *Artemisia dubea*	H	x				x			
126	Tulsi, *Ocimum tenuiflorum*	H	x				x			
127	(Uchharinga)		x							
128	(Vellar), *Trewia nudiflora*	T			x					
	Total		56	18	45	43	34	12	15	40

Word in parenthesis indicate Tharu name; x indicates species use.