Ethnobotanical studies among the Chitawan Tharus

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3. *Nepalese National Bibliography* (in collaboration with the Tribhuvan University Central Library)
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Ethnobotanical Studies Among the Citawan Tharus

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Introduction

Studies dealing with wild edible and other useful plants do not appear at first glance to be up to date. The use of wild plants is an extensive form of economic activity adapted to thinly settled regions; in Nepal, given the enormous growth in its population, it is without doubt increasingly losing its significance, what with the goal of development policy being to intensify and raise productivity in the production of foodstuffs, while at the same time protecting and preserving the forests and — what is particularly applicable to Citawan — biotopes of endangered fauna. Nevertheless, as formulated by P. SHRESTHA (1985:63) in his ethnobotanical studies in Palpa, "the tapping of ethnobotanical informations proves quite essential to acknowledge as well as exploit the potential vegetational resources, which represent a vast reservoir of natural products", a fact all the truer for slowly accumulated plant lore having become lost due to the general lack of written documents. One should add that the results of an ethnobotanical study demonstrate in detail the economic demands made upon the natural environment even today in a traditional society, and document the "losses" due to limitations placed upon exploitation. But were one to carry the studies further, ways might be shown how, by an environmentally sound exploitation of wild plants, particularly medicinal ones, alternative sources of income not oriented simply to subsistence could be tapped. The plant lore transmitted from generation to generation is therefore by all means a high priority item in planning-oriented research activity addressing current concerns.

The considerable number of ethnobotanical studies published pertaining to Nepal document the fact that natural plant resources are still being used in many regions of the country to meet subsistence needs or to market as foodstuff, fodder, medicinal plants and as raw materials for house construction and household items (MANANDHAR, 1989). Medicinal plants have also since begun to be exported. The Department of Medicinal Plants, while being concerned with their botanical description, their general distribution in Nepal, their uses in medicine und their processing (HMG, Department of Medicinal Plants, 1970; MALLA, 1977; MANAN-
Dhar, 1980a), has also established a section Economic Botany, which is attempting to make a survey of wild edible and other useful plants (HMG, Department of Medicinal Plants, 1982). Manandhar, a member of the department staff, carried out ethnobotanical studies in Rasuwa District (1980b), in Nuwakot (1982), Dang-Deokhuri District (1985) and Jumla (1986). Publications exist on the ethnobotany of the Rolwaling Sherpas (Sacherer, 1979), the Tamangs of Ganesh Himal (Toffin & Wiart, 1985), the Magars and other people in Palpa (Shrestha, 1985) and on the useful plants of the Manang District (Pohle, 1990). Coburn (1984) has made a survey of the native medicinal plants of the Western Gurungs, and Bhandary & Shrestha (1982) of the poisonous plants of Annapurna and Langtang Himal. The following contribution dealing with Citawan, concerning which no studies hitherto exist, may therefore add one more brick towards a comparative ethnobotany of Nepal, while at the same time depicting one facet of the tremendous conflict between environmental protection and local economic interests.¹

The Area Studied

Citawan, or the Râpti Dun (Fig. 1), is the largest of the broad valleys in the region of the Himalayan foothills. The Râpti River flows from east to west, meandering through the valley, and near Meghaulî (149 m above sea level) enters the Narâyâni River, which then cuts through the Cûriyâ Range in a transverse valley towards the south. Although Citawan boasts of equally favourable ecological conditions for the cultivation of rice as the Terai, until the middle of this century it was only thinly settled. The forested, undeveloped Cûriyâ Range in the south and the steep southern flanks of the Mahâbhârat Range in the north made access to the large synclinal valley difficult. Riverine forests and humid grasslands were, in addition, breeding grounds for malarial mosquitoes (Haffner, 1979: 51 ff.). During the period of Nepal’s policy of limiting foreign influence (1816-1950) the interests of the government were consciously geared to preserving this protective zone of forests and swamps, all the more so for its constituting at the same time one of the best territories for hunting big game. The autochthonous inhabitants of Citawan, the majority of whom are Tharus, lived relatively unmolested in this environment. Their traditional form of livelihood and economic activity was oriented towards exploitation of forests and grasslands. Up to the 1950s they had an agricultural form

¹ I owe a debt of thanks to the German Research Foundation (DFG), which supported my research work within the framework of its Nepal German Research Programme. I would like to thank Mr. Surendra Mani Pathak for his all-round support during the fieldwork in Citawan and Mr. Philip Pierce (Nepal Research Centre, Kathmandu) for translating the manuscript into English.

of economy based on shifting cultivation, involving the partial use of forests. The forests and grasslands together with rivers and streams were, in addition, pasturage for their large herds of cattle as well as being hunting, fishing and gathering grounds; they provided all the firewood and the raw materials necessary for house construction and household items. The situation changed drastically with the eradication of malaria — Citawan having been largely free of malaria since 1969 — and the turnabout in Nepal’s political orientation: A large and still continuing flow of immigrants from the mountains (who are collectively known as Pahâriyâs) entered Citawan, having the added impetus of governmental settlement projects to do so. In 1973 the Royal Citawan National Park was established with the purpose of preserving the habitats of endangered fauna, particularly the great one-horned rhinoceros (Rhinoceros unicornis) (Photo 1) and the Bengal tiger (Panthera tigris), which were threatened with extinction (Bolton, 1975). An area of almost 1000 sq. km. has been incorporated into the preserve up to the present and thus withdrawn from use for the local population.

It is the Tharus in particular who have been greatly affected by the loss of these areas so important to their way of life. Against this background, an ethnobotanical study is close to having historical value, for what was a part of daily life up until a few decades ago — the gathering of edible plants, materials for house constructions and household items, and medicinal plants — is now only to a limited extent possible, and is for the most part a breach of law.

Citawan’s Vegetation

Although large tracts of the Râpti valley have been transformed into an almost unbroken landscape of rice fields, extensive forests and savannas of tall grass have been preserved — thanks to the National Park — along the river’s course and in the southern hills.

A dry to moderately wet variant of sal forest (Photo 2) is found in Citawan’s intermittently wet lowland climate (Bolton, 1975: 11 ff.; Haffner, 1979: 52 ff.; Stainton, 1972: 17 ff. and 58 ff.). Sal (Shorea robusta) frequently grows in almost pure stands or with relatively few associated tree species like Terminalia sp., Baulinia sp. and Dalbergia latifolia. Phoenix species are conspicuous among the light undergrowth in the region of the Cûriyâ Range consisting of porous sediments and conglomerates of the Siwâlik strata. Pinus roxburghii occurs to a certain extent on the upper ridges, while the moister slopes of the upper valleys support Bamboo species.
On the active and recent alluvium of river banks Dalbergia sissoo introduces a succession of richly varied trees forming a jungle-like riverine forest, the dominant varieties being Acacia catechu, Bombax ceiba and Trewia nudiflora. Callicarpa macrophylla and Phyllanthus emblica are common understorey shrubs.

The presence of the tall and short grass cover is conditioned both edaphically and by human factors. Saccharum-Phragmites-Themeda communities occur on the flood plains of periodically flooding rivers, with Saccharum spontaneum being one of the first grasses to colonise on sand and river banks (Photo 1). The yearly burning back of the grassland works against the natural succession, i.e. against the appearance of forests. In permanently wet locations — these are frequently former tributaries — communities of Saccharum-Phragmites are found in association with Arundo donax and Cyperus species.

The various ecotopes of the Râpti valley together with the types of vegetation found in them are distinguished and named by the Tharus. A sal forest is called either kâthâban (= wood-forest) or jinâwahan. In using jinawa (= Shorea robusta) they have taken — as in a vegetational classification — the name of the dominant tree species to designate the area. Correspondingly, a riverine forest is referred to as sissohan (sissowa = Dalbergia sissoo) or simarhâni (simar = Bombax ceiba). They usually call the areas of tall grass jhâkshi after the dominant grass (jhaksi = Saccharum spontaneum). For the ecotopes of periodically flooded or potentially floodable areas the term bagar is common. Swampy areas they call dhab; for waterlogged land the term gâheri is used.

These terms are for the most part employed in connection with the use the areas are put to; e.g. “We’re going to the jhâksihan” implies “in order to cut grass”. An essential factor in the Tharus’ assessment of ecotopes, therefore, is their fitness for a particular use. This will become clear once we compile a list of the multitude of plants growing in the forests and grasslands actually known or used, both in the past and in the present, by the Tharus.

**Useful Plants Found in Forests and Grasslands**

Together with a group of Tharus who had shown themselves to be particularly knowledgeable in plant lore, I was able to collect during the various vegetational seasons an extensive herbarium of plants the Tharus find useful — and, as those working with me said, it is still not complete. Altogether we were able to gather 61 plants serving as food, the tubers, leaves or fruits of which are consumed by the Tharus as vegetables or fruits, 36 plants used in house construction and material culture, and 62 medicinal plants. To be added to this list are plants used as fish poisons, as fermenting agents for the local spirits and beer, and as drugs. The great majority of these plants could be identified by W. Haffner and N. P. Manandhar3 in the herbarium of the Department of Medicinal Plants in Godâwari. To round out the field work, for purposes of control, I placed the herbarium once more in front of my informants, who — to my great surprise — had no trouble whatsoever in reidentifying the pressed plants.4 The plant names obtained from the Tharus were spoken onto tape by two Tharu speakers and transcribed by R. Bielmeier.5

After some confusion it was realised that the Tharus in some cases call one and the same plant by different names according to the part being used or what the plant was being used for, e.g.:

| Grewia sclerophylla | =   |
| bhokota: | bark for making rope |
| dapher: | fruit |

persons, who, unlike those younger than they are, can look back on a long experience of using wild plants.

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3 For their help (not only with the work at Citawan) and good collaboration I would like to cordially thank Dr. N. P. Manandhar (Kathmandu) and Prof. Dr. W. Haffner (Giessen).

4 Their excellent knowledge of plants was manifested, too, in their descriptions of the plants, which brought to mind data from a book for plant identification. (By contrast, they were unable to recognise plants from photos.)

5 Points to be noted in the transcription:
1) — over a vowel indicates nasality.
2) A dot under a consonant indicates retroflex pronunciation.
3) A dot over /h/ indicates the velar nasal.
4) h following a stop indicates aspiration of the stop.
5) Examples of /bh/, /nh/ and /nh/, which are treated monophonematically in TRAIL (1973:7), are not found in the material. Such letter combinations here refer to sequences consisting of /n/m/ and /h/.
6) The phonematic distinction of two qualities cited in TRAIL (1973:7) could not be confirmed on the basis of the present material. I should like to cordially thank Prof. Dr. R. Bielmeier, Sprachwissenschaftliches Institut der Universität Bern, for his time-consuming assistance.

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In every village there are “experts” whose knowledge of plants is held to be above the average, and who know where particular plants may be found. They are the gurus (shamans), who are especially versed in the collecting of medicinal plants, but they are also, quite frequently, older
Narenga porphyrocoma =

- kārari: plant as a whole
- khaṛahi: cane (leaves burned away)
- sola khaṛahi: cane (leaves cut off)
- dāhar: leaves (for roofs of houses)
- patahēri: poorly growing kārari

Reference to a particular use is also frequently achieved by attaching such words to the names of plants as sag = leafy vegetables, (y)aruwa = tuber, tupa = tip of a shoot and phar = fruit.

The following inventory of wild edible and other useful plants is divided according to type of use. The plants have been arranged alphabetically according to their botanical name,6 which is followed by the Tharu name, and this by a short description of the plant's use.

Edible Plants

Tab.1: Edible Plants

Acacia pennata (L.) Willd., Leguminosae = yarari:
— tender leaves as vegetable, acār7

Aegle marmelos (L.) Correa, Rutaceae = bel:
— fruit, raw or roasted

Amaranthus spinosus L., Amaranthaceae = kāṭai-k sag:
— tender leaves as vegetable

Artocarpus integrus (Thunb.) Merr., Moraceae = kāṭahar:
— fruit, raw or as vegetable

Asparagus racemosus Willd., Liliaceae = khōtha:
— tender leaves as vegetable

Azadirachta indica A.Juss., Meliaceae = nim:
— fruit

Bauhinia purpurea L., Leguminosae = koilara:
— flower as acār

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7 acār = pickles, chutney, relish

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Bombax ceiba L., Bombacaceae = simar:
— raw fruit as vegetable, flower as fodder

Callicarpa macrophylla Vahl, Verbenaceae = dahiguan:
— fruit

Chenopodium album L., Chenopodiaceae = bathuwa:
— very healthy green vegetable, also prepared with urid (dāl)8

Cleistocalyx operculatus (Roxb.) Merr. & Perry, Myrtaceae = bodar:
— fruit

Costus speciosus (Koenig) Smith, Zingiberaceae = larkāiyā:
— tender stems as vegetable

Crotalaria albida Heyne ex Roth, Leguminosae = dim:
— fruit

Curcuma aromatica Salisb., Zingiberaceae = citi:
— flower as vegetable

Curcuma zeodorariva Rosc., Zingiberaceae = ban harādi:
— masālā8

Deeringia amaranthoides (Lam.) Merr., Amaranthaceae = morthaiya:
— tender leaves as vegetable

Dillenia pentaphylla Roxb., Dilleniaceae = tejār (agāi):
— fruit as vegetable

Dioscorea bulbifera L., Dioscoreaceae = ban pharyaruwa:
— tuber as vegetable

Dioscorea deltoidea Wall. ex Griseb., Dioscoreaceae = gitā:
— tuber as vegetable

Dioscorea esculenta (Lour.) Burkill, Dioscoreaceae = suthaniyaruwa:
— tuber as vegetable

Dioscorea sp., Dioscoreaceae = hardgohi:
— tuber as vegetable

8 dāl = lentils
8 masālā = spices
Diplazium esculentum Ret., Aspidiaceae = kocaiya:  
- tender shoots as vegetable

Edgaria darjeelingensis C.B.Clarke, Cucurbitaceae = cathil:  
- fruit as vegetable

Ficus auriculata Lour., Moraceae = koilar:  
- fruit

Ficus hispida L., Moraceae = koðhaýa:  
- fruit

Ficus oligodon Miq., Moraceae = canadumari:  
- fruit

Ficus racemosa L., Moraceae = gullar:  
- fruit

Ficus semicordata Buch.-Ham. ex Sm., Moraceae = khurhuri:  
- fruit

Gonatanthus pumilus (D.Don) Engler & Krause, Araceae = patar kac:  
- stems as vegetable

Grewia sclerophylla Roxb. ex G.Don, Tiliaceae = bhokota (dapher):  
- fruit

Grewia subinæqualis DC., Tiliaceae = pharsa:  
- fruit

Lasia spinosa (L.) Thwaites, Araceae = moraiya:  
- tender stems as vegetable

Leea crispa van Royen ex L., Leeaceae = gorýa:  
- fruit

Melastoma melanobathricum L., Melastomataceae = dadgijari:  
- fruit

Momordica charantia L., Cucurbitaceae = ban karil:  
- fruit and tender shoots as vegetable

Morus macroura Miq., Moraceae = musleri:  
- fruit

Narenga porphyrocoma (Hance ex Trin.) Bor, Gramineae = kaðari (kharah):  
- fresh shoots, raw

Ophioglossum reticulatum L., Ophioglossaceae = jhibhi-k sag:  
- leaves as vegetable

Phoenix acaulis Roxb. ex Buch.-Ham, Palmae = khacuratl:  
- fruit, root, raw or boiled as vegetable

Phoenix humilis Royle, Palmae = khajuri:  
- fruit

Phyllanthus emblica L., Euphorbiaceae = yáwara:  
- fruit, acär

Schlechteria oleosa (Lour.) Oken, Sapindaceae = kosamha:  
- fruit, bark

Smilax lanceolata Roxb., Liliaceae = dankariýot:  
- tender shoots as vegetable

Solonum torvum Swartz, Solanaceae = bhid:  
- fruit as vegetable

Solenà heterophylla Lour., Cucurbitaceae = char;kha:  
- tender shoots and unripe fruit as vegetables

Spatholobus parviflorus (Roxb.) Kuntze, Leguminoseae = mahai (pratsati):  
- oil pressed from the seed

Syzygium cumini (L.) Skeels, Myrtaceae = jamu:  
- fruit

Terminalia bellirica (Gaertn.) Roxb., Combretaceae = bahe;ri:  
- fruit

Trichosanthes dioica Roxb., Cucurbitaceae = parra:  
- tender shoots and fruit as vegetables

Xeromphis uliginosa (Retz) Maheshwari, Rubiaceae = piru:  
- fruit as vegetable

Zizyphus incurva Roxb., Rhamnaceae = haria bairi:  
- fruit, raw or boiled (like dált), acár, ground and spiced with salt and sugar

Zizyphus mauritiana Lam., Rhamnaceae = bairi:  
- fruit, raw or boiled (like dált), acár, ground and spiced with salt and sugar
pasturing and the removing of timber and firewood that it is difficult to find edible plants. All forms of exploitation are prohibited in the National Park, and thus collecting edible plants in large quantities presents too high a risk. The women go collecting together only occasionally, when time permits.\(^10\) Those of the Tharus who possess land have made the transition to cultivating vegetables or to subsisting on only rice and lentils.

**Plants Used for the Production of modo and gadela**

**Tab. 2: Plants Used for the Production of modo\(^1\) and gadela\(^2\)**

<table>
<thead>
<tr>
<th>Plant Family</th>
<th>Species</th>
<th>Common Name</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artocarpus</td>
<td>integrar</td>
<td>koilar</td>
<td>leaves for modo and gadela production</td>
</tr>
<tr>
<td>Blumeopsis</td>
<td>flavum</td>
<td>koilar</td>
<td>whole plant for modo and gadela production</td>
</tr>
<tr>
<td>Datura</td>
<td>stramonium</td>
<td>koilar</td>
<td>whole plant for modo and gadela production</td>
</tr>
<tr>
<td>Elephantopus</td>
<td>scaber</td>
<td>koilar</td>
<td>whole plant for modo and gadela production</td>
</tr>
<tr>
<td>Ficus</td>
<td>semicordata</td>
<td>koilar</td>
<td>leaves for modo and gadela production</td>
</tr>
<tr>
<td>Lycopersicum</td>
<td>esculentum</td>
<td>koilar</td>
<td>leaves for modo and gadela production</td>
</tr>
<tr>
<td>Solanum</td>
<td>lycopersicum</td>
<td>koilar</td>
<td>leaves for modo and gadela production</td>
</tr>
</tbody>
</table>

To produce the local rice-based spirits (modo) and rice beer (gadela) a fermenting agent is required,\(^13\) which the Tharus derive from the above-mentioned plants. From the fruit of the *datura* (*Datura stramonium*), which is known for its narcotic properties, a paste is prepared that is said to “fortify” the liquor.

\(^1\) Fear of the forest rangers and soldiers who watch over the National Park is great. It is the women therefore — a fact openly admitted to — who are sent in to do the “stealing”, as they generally have “milder” punishments to face than men.

\(^2\) modo = distilled spirituous liquor

\(^3\) gadela = local beer

\(^13\) On the brewing of the local beer among Tamangs and Newars cf. TOFFIN (1987).
**Plants Used for their Narcotic Properties**

**Tab. 3:** Plants Used for their Narcotic Properties

*Cannabis sativa* L., Cannabaceae = *gāja*:
- dried leaves are smoked, intoxicant

*Datura stramonium* L., Solanaceae = *dhatura*:
- fruit is ingested (rarely), has sleep-inducing effects

*Terminalia chebula* Retz., Combretaceae = *harai*:
- seeds are boiled, dried, pulverized, smoked in a *cilom*

*bhutibhañi*:
- dried leaves are smoked, intoxicant

*ghumana* (mushroom sp.):
- dried mushrooms are ingested (rarely), intoxicant

Used for smoking in a *cilom* are the dried leaves of *gāja* (*Cannabis sativa*), which grows wild along paths and in gardens, and the leaves of *bhutibhañi* (not identified), which is collected in the forest, and which demonstrates similar hallucinatory effects to those of *gāja*. The seeds of *harai* (*Terminalia chebula*), on the other hand, after having been made into a powder, are smoked only for their "good taste". "Magic mushrooms" with intoxicating effects or *dhatura* fruits, the use of which purportedly causes a person to fall into a 24-hour deep sleep, are only seldom ingested.

**Materials for Making Houses and Household Items**

**Tab. 4:** Plants Used for Making Houses and Household Items

*Acacia catechu* (L.f.) Willd., Leguminosae = *khair*:
- timber for oil presses, wooden nails (kili)

*Aegle marmelos* (L.) Correa, Rutaceae = *bel*:
- timber for oxcart wheels

*Artundinella nepalensis* Trin., Gramineae = *basheri*:
- canes for fish traps

*Bauhinia vahlii* Wight & Arn., Leguminosae = *manhan* (Photo 7):
- leaves as plates, sun and rain hats
- bark for rope making

*Bombax ceiba* L., Bombacaceae = *simar*:
- "cotton" (bhuîka) used as mattress and pillow stuffing
- timber (light!) for boats, otherwise inferior quality, sometimes used for furniture, bows
- resin (karair) is applied to branches and blossoms to catch birds
- (young tree — "rhinoceros rubbing tree")

*Bridelia retusa* (L.) Spreng., Euphorbiaceae = *khujhi*:
- wood frame for drum (daphu)

*Calamus tenius* Roxb., Palmae = *bêt*:
- leaves used for weaving

*Calotropsis gigantea* (L.) Dryand., Asclepiadaceae = *yak*:
- "cotton" (bhuîka) used as mattress and pillow stuffing
- (Gâine produce sarâhn from the root)

*Cyperus rotundus* L., Cyperaceae = *mothi*:
- mats

*Dalbergia sissoo* Roxb. ex DC., Leguminosae = *sissowa*:
- high-quality timber for furniture, plough components, bows, shoes

*Desmodium ooeinense* (Roxb.) Ohashi, Leguminosae = *panan*:
- timber for plough components

*Dillenia pentagyna* Roxb., Dilliaceae = *ṭeṭari*:
- timber for roofs
- leaves used as plates

*Eulaliopsis bina* (Retz.) C.E.Hubbard., Gramineae = *sabai*:
- rope making

*Flemingia strobilifera* (L.) Ait., Leguminosae = *kannijhañi*:
- branches are used to make coarse brooms for the yard

*Grewia sclerophylla* Roxb. ex G.Don, Tiliaceae = *bhokotâ* (fruit = dapher):
- bark for rope making
- peeled sticks (samthi) used as torches

*Helicteres isora* L., Sterculiaceae = *patuha*:
- bark for rope making
- peeled sticks (samthi) used as torches, for fish traps
Imperata cylindrica (L.) Beauvios, Gramineae = dabhi:
— superior grass for thatching, for brooms and ropes

Lagenaria sicera (Molina) Standl., Cucurbitaceae = lauqa:
— soundbox for musical instrument

Narenga porphyrocoma (Hance ex Trin.) Bor, Gramineae = karari / kharahi:
— canes for house construction (best quality), fences, fish traps
— leaves (darhar) for thatching

Phoenix acaulis Roxb. ex Buch.-Ham., Palmae = khacuraṭi:
— from the leaves mats are woven

Phoenix humilis Royle, Palmae = khajuri:
— from the leaves mats are woven

Phragmites karka (Retz.) Trin. ex Streudel, Gramineae = larkat/gaular:
— canes for house construction (rarely) and grain bins

Pinus rixburghii Sarg., Pinaceae = yerghi:
— splinters are burnt as incense

Quercus glauca Thunb., Fagaceae = phalat:
— wood used for handles of implements, sticks for the "stick dance"

Ricinus communis L., Euphorbiaceae = yaṛer:
— timber used as house beams
— oil from the fruit to lubricate oxcarts

Saccharum bengalensis L., Gramineae = baruwa:
— canes for house construction, fences, baskets, mats, ropes
— leaves (darhar) for thatching

Saccharum spontaneum L., Gramineae = jhaksi:
— canes for house construction
— leaves for thatching, baskets (wrapped with baruwa)

Saccharum sp. = kās:
— leaves for thatching

Shorea robusta Gaertn., Dipterocarpaceae = jinawa (Photo 2):
— high quality timber for beams, oil presses, plough components, mangers, stools
— leaves used as plates
— fragrances from the resin

Sterculia villosa Roxb., Sterculiaceae = odar:
— bark for rope making

Terminalia chebula Retz., Combretaceae = harai:
— timber for plough and oxcart components

Themeda arundinacea (Roxb.) Ridley, Gramineae = ghekari kharahi/yorila:
— canes for house construction

Vetiveria zizanioides (L.) Nash, Gramineae = sikiyarha:
— canes used for fans, fish traps, baskets, hats

Bamboo (Bambusa sp., Dendrocalamus sp., Arundinaria sp.) = bās:
— canes and fibres for house construction, biers, baskets, oil containers, hats, yokes, fish traps, musical instruments

baniya bās (forest-grown bamboo):
— dudhi, newase, koṭi and nigalo bās (knots wide apart): for house construction
— nigalo bās: for pipe stem (lali)
— dhusari bās: for weaving

ghar bās (village-grown bamboo):
— ghan, ḫat (knots close together) and lat bās: for house construction
— murali bās: for flutes

catabahor:
— wood frame for drum (daphu)

kacor:
— leaves used as plates

The traditional technologies of the Tharus make use of the given natural resources of the forest and, even more important, the grasslands — resources that, at least in the past, were abundantly available. The traditional Tharu house consists solely of natural building materials (Fig. 2, photo 3). The house's supporting posts (kamha) are made of sal wood (Shorea robusta). Posts supporting no weight (thunhi), made of wood or bamboo, are inserted in the superstructure and also for purposes of stabilising walls. The placement of transverse elements (bati) of wood, thick bamboo sticks or bound kharahi canes (Narenga porphyrocoma) results in a kind of framework. The filling of the frame consists of kharahi or jhaksi canes (Saccharum spontaneum) woven together by cords of sabai (Eulaliopsis bin-

ata) or paṭuha (Helicteres isora) and tied from the outside to the house posts. Several applications of maṭi, earth mixed with water and cow dung, are then administered to the inner and outer walls. In order to construct the roof, rafters (koro) of wood or thick bamboo rods are laid onto the roof beams. The roof battens (bati) consist of bundled kharahi or jhaksi canes. The roof is then covered with several layers of bundled grass (khar), which are fixed in place by a new row of battens. For thatched roof (chani) the best material is dabhī (Imperata cylindrica), but the leaves of kharahi, jhaksi and baruwa (Saccharum bengalensis) are also used. Every year before the rains a new layer of grass is put on, and after 4-5 years all the grass must be replaced.

Almost all household items are also produced by the local people from natural raw materials (Photos 4 and 5).

Tab. 5: Tharu Household Items Made from Natural Products

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bahiha</td>
<td>shoulder yoke with notches of ḡhar bās</td>
</tr>
<tr>
<td>barhani</td>
<td>broom of dabhī</td>
</tr>
<tr>
<td>bariyar</td>
<td>large fish weir of kharahi or basheri</td>
</tr>
<tr>
<td>baruwa-ka patiya</td>
<td>mat of baruwa (sirkiri)</td>
</tr>
<tr>
<td>berha</td>
<td>fence of jhaksi</td>
</tr>
<tr>
<td>berhi</td>
<td>round grain bin of bās, larkat or kharahi and maṭi, in some cases with a grass roof standing on bamboo stilts</td>
</tr>
<tr>
<td>beth</td>
<td>wooden tool handle of phalāṭ</td>
</tr>
<tr>
<td>bēwa</td>
<td>small fish trap of sikiyarha or jhaksi</td>
</tr>
<tr>
<td>bīra</td>
<td>ring of paṭuha on the outside and sabai on the inside for carrying loads on the head, sometimes with cloth stretched over it</td>
</tr>
<tr>
<td>byana</td>
<td>fan of sikiyarha and/or bās</td>
</tr>
<tr>
<td>calani</td>
<td>tray, sieve of ban bās</td>
</tr>
<tr>
<td>chachā (patiya)</td>
<td>mat of ban bās</td>
</tr>
<tr>
<td>chatiya</td>
<td>sun or rain hat of bās, the border at times of bēṭ, rope of paṭuha, stuffing of manhan leaves (Photo 7)</td>
</tr>
<tr>
<td>cokari</td>
<td>mat of kacuraṭi or khajuri leaves</td>
</tr>
<tr>
<td>dataila</td>
<td>large grain bin (on a platform) of kharahi and maṭi</td>
</tr>
<tr>
<td>dauri</td>
<td>strong basket of jhaksi leaves ribbed with strips</td>
</tr>
<tr>
<td>deli</td>
<td>rectangular-shaped basket of baruwa (sirkiri), woven together with sabai rope</td>
</tr>
<tr>
<td>dhakana</td>
<td>wooden bowl of sissowa or simar</td>
</tr>
<tr>
<td>dhākiya</td>
<td>legged basket of ban bās</td>
</tr>
<tr>
<td>dhār</td>
<td>container of kharahi for seed potatoes</td>
</tr>
<tr>
<td>dheluha</td>
<td>cradle, wooden frame of jinawa, woven parts of paṭuha or sabai or, more recently, nylon</td>
</tr>
<tr>
<td>dhēki</td>
<td>rice husker, wooden parts of jinawa or sissowa, iron from the smith</td>
</tr>
<tr>
<td>dhēwari</td>
<td>fish trap of bās and kharahi (Photo 5)</td>
</tr>
<tr>
<td>diṇa</td>
<td>container of bās for used oil (mobile)</td>
</tr>
<tr>
<td>doṇi</td>
<td>manger of wood (jinawa etc.)</td>
</tr>
<tr>
<td>ghailari</td>
<td>washing bowl and pitcher rack of hollowed-out tree trunks (jinawa etc.)</td>
</tr>
<tr>
<td>ghaṇa</td>
<td>fish net, frame of bās, net strung with purchased yarn</td>
</tr>
<tr>
<td>har</td>
<td>plough of jinawa, sissowa and panan</td>
</tr>
<tr>
<td>heṇa</td>
<td>planer of jinawa</td>
</tr>
<tr>
<td>jal</td>
<td>fish net, string of paṭuha, net strung with purchased yarn, weights from the smith rope of baruwa</td>
</tr>
<tr>
<td>jaurhi</td>
<td>a net for hanging baskets, pitchers etc. on, of sabai or paṭuha rope</td>
</tr>
<tr>
<td>jhōki</td>
<td>net of paṭuha for carrying things in (Photo 4)</td>
</tr>
<tr>
<td>jhora</td>
<td>thick rope of sabai or paṭuha</td>
</tr>
<tr>
<td>kantha</td>
<td>bed with frame of jinawa and woven parts of sabai or paṭuha rope</td>
</tr>
<tr>
<td>khatiya</td>
<td>chicken or duck roost of jinawa, kharahi-maṭi walls or only of kharahi and baruwa</td>
</tr>
<tr>
<td>khenhari</td>
<td>fish net, frame of bās, net strung with purchased yarn</td>
</tr>
<tr>
<td>khusahari</td>
<td>fish trap of kharahi or basheri, used in channels at the ends of the bariyar</td>
</tr>
<tr>
<td>khusam</td>
<td>fish trap of bās or basheri, with or without a chochi (cover) (Photo 5)</td>
</tr>
</tbody>
</table>

of baruwa

rectangular-shaped basket of baruwa (sirkiri), woven together with sabai rope

wooden bowl of sissowa or simar

legged basket of ban bās

container of kharahi for seed potatoes

cradle, wooden frame of jinawa, woven parts of paṭuha or sabai or, more recently, nylon

rice husker, wooden parts of jinawa or sissowa, iron from the smith

fish trap of bās and kharahi (Photo 5)

container of bās for used oil (mobile)

manger of wood (jinawa etc.)

washing bowl and pitcher rack of hollowed-out tree trunks (jinawa etc.)

fish net, frame of bās, net strung with purchased yarn

plough of jinawa, sissowa and panan

planer of jinawa

fish net, string of paṭuha, net strung with purchased yarn, weights from the smith rope of baruwa

a net for hanging baskets, pitchers etc. on, of sabai or paṭuha rope

net of paṭuha for carrying things in (Photo 4)

thick rope of sabai or paṭuha

bed with frame of jinawa and woven parts of sabai or paṭuha rope

loosely woven basket of larkat, bās, ghekari kharahi or bēṭ

chicken or duck roost of jinawa, kharahi-maṭi walls or only of kharahi and baruwa

fish net, frame of bās, net strung with purchased yarn

fish trap of kharahi or basheri, used in channels at the ends of the bariyar

fish trap of bās or basheri, with or without a chochi (cover) (Photo 5)
khurburiya: sickle sheathe of wood (jinawa, sissowa)  
kolhu: oil press, funnel of khair, everything else of jinawa  
lali: pipe stem of kordi bás  
maciya: small stool of sissowa or jinawa and pátuha or sabai (and more recently plastic) plaiting  
moti-ka gonari: mat of moti  
palaṇa: bier of ghar bás  
pedaha: wooden sandals of sissowa or simar and pátuha (Photo 4)  
perño: small basket of larkat for storing dried fish  
sanokha: grain chest of jinawa (with iron nails), produced by joiners  
sayar: dipper, for transferring water to higher lying fields and for catching fish, made of bás and rope  
soñari: fish trap of bás, kharahi, jhaksi or samthi used in channels at the ends of the bariyar  
sulla: shoulder yoke with sharp ends made of bás (for transporting sheaves of rice) (Photo 3)  
supa: tray for winnowing, sorting out rice and the like, made of ban bás  
ṭap: basket of bás, kharahi or jhaksi for chicks and catching fish  
thaica: loosely woven basket of bás bás or bét  
tharhiya: fish trap of bás or basheri, made simply, used only once  
tirdhanui: bow and arrow, bow of bás and pátuha, arrow of bás or kharahi, iron arrow tip from smith (Photo 4)  
tobaṇa: muzzle of bás, larkat, sabai or pátuha  
ūka: "torch" of samthi, jhaksi or kharahi  

sissowa (Dalbergia sissoo) and jinawa (Shorea robusta) are the most valuable kinds of timber from which one can produce tools, simple pieces of furniture, grain chests, bowls, sandals etc. The less valuable soft wood of simar (Bombax ceiba), being unusually light, is suitable only for the construction of boats. Hard grasses are made into weirs, fences, grain bins etc. Of all the grasses baruwa has the widest variety of uses (Photo 6). The soft parts of a plant that is not yet fully grown are woven into mats and baskets. The tender leaves enclosing the inflorescence are used for baskets and as binding material, the peduncles for rectangular-shaped baskets, and the canes for fish traps, fences and a host of other items. The various bamboo species also have a multiplicity of uses. A distinction is made between bamboo from the forest (baniya bás) and bamboo from the village (ghar bás). It is only the flexible but sturdy dusari bás from the forest that is suitable for use in woven products. Ropes are made from the bark of pátuha (Helicteres isora), bhokoṭa (Grewia sclerophylla), manhan (Bauhinia valvit) and odar (Sterculia villosa) or by twisting sabai (Eualopsis binata) or dabbhi (Imperata cylindrica) grass. Large leaves, particularly those of manhan (Photo 7), are employed as plates and packing material, and the cotton-like plant hairs of the simar and yak (Calotropis gigantea) flower as the stuffing for cushions and mattresses.

In the case of most raw material, however, there are great problems in coming by it in the first place. One can, to be sure, plant some kinds of bamboo, but the grasses arise from the natural conditions of savannas. As the unprotected potential sites of such grasslands are totally overgrazed, it is only in the National Park that the grasses can still be found in sufficient quantity. Since 1976 local villagers have been permitted to enter the park each year to collect, above all, grass for building materials. A fee of NR 1 is charged for each household; one permit allows it to harvest as much grass as possible within 15 days in January.15 First the thatching grass is cut, and then, in order to get at the canes of tall grass, a fire is laid and the leaves are burnt away. This way of regulating affairs is consonant with the aims of the park, as it represents an attempt to preserve the biotope of grassland so important for wild animals, while in fact working against natural succession. Moreover, grass cutting has not been considered detrimental to wildlife, because most of the plant material is dead and of poor nutritional value at the end of the growing season (LEHMKUHL et al., 1988:143). Although the level of work and organisation required on the part of the population has increased considerably, it is nevertheless a very positive step towards a balancing of human needs and conservation (H.R. MISHRA, 1982). Still, one can observe those able to afford it falling back on substitute materials (tiled roofs, brick houses,16 purchased household utensils etc.). One can also witness that the houses of the Tharus have become smaller.

15 A further reduction of the season to 10 days is being considered (LEHMKUHL et al., 1988:143).  
16 Tiled roofs and huge brick houses have long since become status symbols of landlords.
Fish Poisons

Tab. 6: Fish Poisons

*Careya arborea* Roxb., Lecythidaceae = *kumh*:
- root paste is placed in a basket and dipped into the water

*Persicaria barbata* (L.) Hara and *Persicaria hydropiper* (L.) Spach, Polygonaceae = *birsari*:
- plant is crushed in a mortar by the riverside and at once dropped into the water

*Xeromphis spinosa* (Thunb.) Keay, Rubiaceae = *main*:
- fruit is chopped up, mixed with ashes, placed in a basket and dipped into the water

Fishing in rivers and irrigation channels is done frequently and with much zeal by the Tharus, although, unlike the Botes, the professional fishermen and boatmen, they do not sell their fish. For the most part they fish using weirs and nets, but in the winter, when the streams contain little water, it is also the practice to introduce fish poisons into small riverlets, channels and the areas near the bank. The plant material, which is prepared on the spot, must be placed into the water immediately in order to be effective. After a while the fish floating on the surface of the water are collected by hand. The Tharus have no second thoughts that the poisoned fish might be harmful for the persons who consume them in the end.

Medicinal Plants

Tab. 7: Medicinal Plants

*Achyranthes aspera* L., Amaranthaceae = *ghorsäwa*:
- root paste mixed with water is rubbed into the skin to treat fever and fatigue
- after hard work (seheri jar) or other types of fever (khati jar)
- the ash of the burnt bark is applied to itchy skin

*Adiantum philippense* L., Pteridaceae = *ratjari*:

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17 Fishing with poisons is common among the Musahars, an "impure" autochthonous group. The use of fish poisons, however, is generally prohibited.

18 Which active agents in the plants led to the death of the fish was a question left unresearched.

19 Nor have they second thoughts in the more recent use of so-called *bikasi bikhi* (= development poison). This is nothing but an insecticide found on the market; it kills not only fish but also snails and crabs quickly and effectively.

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Fish Poisons

**Agle marmelos** (L.) Correa, Rutaceae = *bel*:
- strained fruit juice is taken to treat heat stroke and diarrhoea
- plant pith is applied to wounds
- 7 tender shoots of the tree are boiled in water together with 7 tender shoots of *Clerodendrum viscosum* (bhāṇi) and *Psidium guajava* (runi) each; they are left to steep overnight; the liquid is taken to control fever (sadgaram jar)

**Alstonia scholaris** (L.) R.Br., Apocynaceae = *chatiwan*:
- a piece of bark is placed into a jug of water taken to the tree; after some time the bark is removed — it remains at the site; the liquid is taken to relieve backache, high fever and great thirst

**Asparagus racemosus** Willd., Liliaceae = *khōtha*:
- root paste is administered as an invigorating tonic to lactating women and livestock, stimulates milk secretion
- to help sick livestock a branch is hung in the shed

**Azadricha indica** A.Juss., Meliaceae = *nim*:
- leaf decoction is used to cleanse wounds and to make compresses
- leaves are used as compresses on purulent wounds
- stem is used as toothbrush

**Bombax ceiba** L., Bombacaceae = *simar*:
- resin is used to treat worms and bleeding
- bark is applied to wounds

**Callicarpa macrophylla** Vahl, Verbenaceae = *dahiquj*:
- plant paste applied to wounds will stop bleeding

**Calotropis gigantea** (L.) Dryand., Asclepiadaceae = *yak*:
- latex is applied to wounds and fungal skin infections
- leaves are used for hot compresses to alleviate pain
- the fumes of the burning stem are inhaled to treat cough
Centella asiatica (L.) Urb., Umbelliferae = tarpuraini:
— the plant is pounded together with unboiled rice (anandi dhan), seeds of Cucumis sativus (khira) and leaves of Zizyphus mauritiana (bairi), diluted with water and taken to relieve heartburn

Chenopodium album L., Chenopodiaceae = bathuwa:
— the plant served as a vegetable cleanses the stomach, relieves constipation and has an invigorating effect on the body
— root decoction enhances cleansing of bronchi and lungs after excessive smoking of gāja and tobacco
— leaves are rubbed into the skin to remove nicotine stains (i.e. after tobacco harvest)

Clerodendrum viscosum Vent., Verbenaceae = bhâṭi:
— 7 tender shoots of the bush are boiled in water together with 7 shoots of Aegle marmelos (bel) and Psidium guajava (runi) each; they are left to steep overnight; the liquid is taken to relieve fever (sadgaram jar)
— plant nodes (of 3 leaves) are fastened to a string and worn around the neck to relieve "fever that recurs every 3 days" (tijara-k-jar)
— a leaf is rolled to form a funnel and secured by a thorn, some embers placed inside will extract a liquid that is dripped into an aching ear
— stem is used as toothbrush

Costus speciosus (Koenig) Smith, Zingiberaceae = larkaïya:
— swollen feet are held over the vapors of the boiling plant decoction
— paste of the stem pith is applied to wounds

Crinum amoenum Roxb. ex Ker-Gawler, Amaryllidaceae = ban piyauj:
— the bulb is applied as a compress to swollen testicles
— a bulb the size of the swollen testicle is selected, dried over a fire of dung bricks (gohara) and Pinus roxburghii (yerghi); the bulb is hung up in the house and shown to the patient once a day; as the bulb shrinks the testicle is supposed to shrink, too

Cryptolepis buchananii Roem. & Schult., Asclepiadaceae = hâp:
— the plant is hung around the neck of wheezing livestock

Cucumis sativus L., Cucurbitaceae = khira (cultivated):
— seeds are pounded together with unboiled rice (anandi dhan) and leaves of Zizyphus mauritiana (bairi) and Centella asiatica (tarpuraini), diluted with water and taken to relieve heartburn

Datura stramonium L., Solanaceae = dhatura:
— seeds are taken to treat bronchitis

Dillenia pentagyna Roxb., Dilleniaceae = tejari (fruit = agâi):
— the juice of the bark is applied to tick bites

Dioscorea sp. = hardgholi:
— compresses are made from the root to relieve fever

Dryaria quercifolia (L.) Smith, Polyopiaceae = hathajori:
— the plant is hung in the shed to treat or prevent arheyra (= 2½), a disease killing affected livestock within 2½ hours

Eclipta prostrata (L.) L., Compositae = bhegruna:
— plant juice is applied to chapped skin between the toes
— plant juice is dripped into the eyes of humans and livestock for cleansing purposes and to treat white spots

Enseta sp. = yemarlalti:
— the peeled plant is burnt, the ash rubbed into the skin of the patient and dusted over his bed to treat "yellow fever" (piyeri jar)

Ficus hispida L., Moraceae = kothaïya:
— a leaf is rolled into a funnel and secured by a thorn, embers are placed into the funnel, and the liquid issuing from the leaf is dripped into an aching ear

Ficus religiosa L., Moraceae = pipar:
— a leaf is rolled into a funnel and secured by a thorn, embers are placed into the funnel, and the liquid issuing from the leaf is dripped into an aching ear

Ficus semicordata Buch.-Ham. ex Sm., Moraceae = khurhuri:
— the fumes of a small burning twig are blown into an aching ear

Flemingia macrophylla (Wild.) Merr., Leguminosae = majilauta:
— stem is used as toothbrush

Flemingia strobilifera (L.) Ait, Leguminosae = kannijhaïni:
— when a baby cries frequently a twig is placed into the cradle under the cover (kanni = to cry)

Helicteres isora L., Sterculiaceae = patuha:
— root paste mixed with water is taken to treat worm infestations in man and livestock — most effective (small doses only though, otherwise risk of poisoning)
— large amounts of tender leaves are fed to livestock to treat worm infestations

*Holarrhena pubescens* (Buch.-Ham.) Wall. ex G.Don, Apocynaceae = *dudkaraya*:
— the bark is dried, pulverized and mixed with water to treat stomach ache and rheumatic pains

*Imperata cylindrica* (L.) Beauvois, Gramineae = *dabhi*:
— feet with chapped skin between the toes are held over the fumes of burning green grass

*Jatropha curcas* L., Euphorbiaceae = *ramjoti*:
— latex is applied to burns, chapped skin, wounds and gum infections
— stem is used as a toothbrush to strengthen teeth

*Justicia adhatoda* L., Acanthaceae = *asur*:
— twigs are boiled in water in the evening; in the morning the liquid is taken to relieve colds and fever

*Luffa cylindrica* (L.) Roem., Cucurbitaceae = *ghîra* (cultivated):
— seeds of the plant are soaked in water together with seeds of *Zizyphus mauritiana* (bairi) and root juice of *Callicarpa macropyla* (dahiguan) and then squeezed out; the resulting liquid is administered to treat chicken pox (*"when the pox do not come out")

*Mirabilis jalapa* L., Nyctaginaceae = *nakesari*:
— sniffing the blossom or washing the face with water in which a blossom has been soaked relieves nose bleeding

*Oroxylum indicum* (L.) Kurz, Bignoniaceae = *sauna*:
— bark paste is applied to wounds

*Oryza* sp., round corn var. = *anandi dhan* (cultivated):
— unboiled rice is pounded together with *Centella asiatica* (tarpuraini), seeds of *Cucumis sativus* (khira) and leaves of *Zizyphus mauritiana* (bairi);
— paste is diluted with water, relieves heartburn

*Oxalis corniculata* L., Oxalidaceae = *amtajahān*:
— plant juice is sniffed to treat nose bleeding
— plant paste is applied to bruises, relieves pains
— babies are massaged with the paste when they are cold

*Phoenix humilis* Royle, Palmae = *khajuri*:
— seed paste is applied to itchy skin

*Phyllanthus emblica* L., Euphorbiaceae = *yāwara*:
— pulverized burnt leaves are applied to burns (fruit = *tripalā* in Ayurvedic medicine)

*Piper longum* L., Piperaceae = *pipari*:
— the dried fruits are eaten to treat colds

*Psidium guajava* L., Myrtaceae = *runi*:
— bark paste is administered in cases of diarrhoea
— 7 tender shoots of the tree are boiled in water together with 7 tender shoots of *Clerodendrum viscosum* (bhâthi) and *Aegle marmelos* (bel), soaked overnight; liquid is taken to treat fever (sadgaram jar)

*Rauwolfia serpentina* (L.) Benth. ex Kurz, Apocynaceae = *dharmacura*:
— blossom around the neck or plant in the garden is believed to protect against snakes (should be planted on a cloudy Sunday or Tuesday)

*Ricinus communis* L., Euphorbiaceae = *yarēr*:
— leaves are used as compresses to relieve pains

*Schefflera venulosa* (Wight & Arn.) Harms, Araliaceae = *simarlati*:
— a twig is cut off by a man holding his breath; with the twig stuck between his big toe and the second one of the left foot he is required to walk some distance; inside the house the leaves are crushed together with 2½ black pepper seeds and some water on a stone (the place should be cleaned with cow dung); liquid is administered to women suffering from irregular menstrual cycles combined with fever

*Scoparia dulcis* L., Scrophulariaceae = *gurikkīhāni*:
— plant paste mixed with water is administered to patients suffering from fever and great thirst

*Shorea robusta* Gaertn., Dipterocarpaceae = *jinawa*:
— resin stimulates the appetite and digestion

*Sidha rhombifolia* L., Malvaceae = *baliyari*:
— plant paste is applied to bruises and wounds

*Spatholobus parviflorus* (Roxb.) Kuntze, Leguminosae = *praslati* (mahai):
— root decoction is taken to alleviate menstrual disorders
— twig is worn around the neck of women to protect against "the fever that only
women get" (parsoti jar)

*Stereospermum chelomoides* (L.f.) DC., Bignoniaceae = pāṛar (fruit: adkapari = half a head):
— strung seeds are fastened to aching spot in cases of migraine headache

*Streblus asper* Lourd., Moraceae = sihar:
— stem is used as a toothbrush

*Syzygium cumini* (L.) Skeels, Myrtaceae = ājanu:
— fruit, dried pulverized seeds, bark paste or bark decoction are taken to treat diarrhoea and stomach ache

*Terminalia bellirica* (Gaertn.) Roxb., Combretaceae = baheeri:
— raw or roasted fruit is eaten to treat bronchitis

*Terminalia chebula* Retz., Combretaceae = harai:
— fruit is eaten to treat bronchitis and chest pains (triphalā in the Ayurvedic medicine)

*Trachyspermum ammi* (L.) Sprague, Umbellifera = jain (cultivated):
— plant decoction is taken to relieve colds
— compresses are applied to relieve pains, especially sore throat
— dried and pulverized plant is applied to wounds, pimples and rashes of babies
— plant is warmed up in oil together with the bitter preservative substance of *Ferula assafoetida* (hin) and applied to the fontanelle of babies suffering from pneumonia and serious colds
— plant paste is mixed with water and administered to goats and sheep suffering from diarrhoea

*Xeromphis uliginosa* (Retz) Maheshwari, Rubiaceae = piralu:
— boiled fruit is eaten to treat diarrhoea

*Zingiber officinarum* Rosc., Zingiberaceae = yad (cultivated):
— lightly roasted root is eaten to relieve cough

*Zizyphus mauritiana* Lam., Rhamnaceae = baari:
— seeds of the plant are soaked in water together with seeds of *Luffa cylindrica* (ghiśa) and root juice of *Callicarpa macrophylla* (dahiguan), then squeezed out; the resulting liquid is taken to treat chicken pox ("when the pox do not come out")
— leaves are ground up together with unboiled rice (anandi dhan) and seeds of *Cucumis sativus* (khira) and *Centella asiatica* (tarpuraini), diluted with water; liquid is taken to relieve heartburn

**catabahor:**
— to protect against maggots infestation of wounds in livestock strung leaves are fastened around the neck or the wound on a Tuesday

**giliyar:**
— leaves are hung up in the house by a naked person on a Thursday to guard against mites
— the pith of some branches is pounded and applied to wounds to speed up the healing process

**rauna:**
— root or leaf juice is taken to relieve heartburn and tongue sores

**samthi:**
— leaf juice is applied to chapped skin

**utajari** (Verbenaceae):
— plant juice and compresses made from boiled roots and root worn around the wrist control fever
— massage with boiled root juice relieves rheumatic pains

A large number of various medicinal plants continue to be gathered according to need, since the Tharus, as a rule, try first to cure maladies with traditional methods of treatment. Frequently the guru is consulted, who, besides his ritual lore, possesses specialised knowledge in the use of medicinal plants. Medicinal plants, prepared according to particular recipes, are used in cases of skin diseases (itching, skin funguses, rashes), stomach and diarrhetic diseases, catarhhs and pain of all types (back, head and ears). Wounds, scrapes and bruises are treated with leaf compresses, plant juice and decoctions, and there are also plants which are known to aid in the cure of menstrual problems, testicle swelling, chicken pox and a number of other complaints. The treatment of fever, as one might expect in a region where malaria occurs, plays a large role in Tharu medicinal practice. Various types of fever are differentiated:

**Tab. 8: The Various Types of Fever**

**aula-k jar:** fever caused by "gas"

**piyari** (=yellow) jar: fever during which one has yellow skin

**sadgaram** (= cold-hot) jar: fever during a change in the weather

**tijara-k jar:** fever recurring every third day
seheri jar: fever following heavy work, exhaustion
khaṭi jar: fever coming from "within"
parsoti jar: fever affecting women, during gynecological diseases and during parturition
rati (= night) jar: nighttime fever
rajwahi-k (= bed cover) jar: the shivers

Malaria, as aulα jαr, comes, one may presume, under the rubric of fever, as aul, according to the Tharu explanation, is the fever the Pahāriyās came down with formerly in droves when they went to Citawan. A great many people — though comparatively more Pahāriyās than Tharus — died from aul, particularly during the time of year when mustard was in bloom. One got aul, they said, from gas (the English word is used) which had formed from jhar pat, rotting leaves and scrub. Tijara-k jar (Malaria tertiana?) and rajwahi-k jar may also be particular stages of malaria.

If the medicinal plants known among the Citawan Tharus are compared with those of the Dang Tharus (MANANDHAR, 1985), one finds that, while this or that plant may be used by both groups, recipes and scope of use for the most part differ. Several of the cited medicinal plants, too, are recognised as being effective in Ayurvedic and, to a certain degree, in scientific medicine (cf. hmg, Department of Medicinal Plants, 1970; MANANDHAR, 1980). One would have to determine pharmacologically which of the plants and recipes from the broad spectrum of Tharu medicine are in fact effective.

**Traditional Exploitation in Conflict with Ecological Concerns**

The Tharu say of themselves — in distinction to recent settlers — that they are "a people of the forest"; the forest represents a familiar environment to them, the biological richness of which they know how to exploit (MÜLLER-BÖKER, 1988:120; 1991). The list of wild plants used by the Tharus documents the extent to which demands are placed upon forests and grasslands beyond the simple removal of firewood and forest pasturing. However, this traditional form of economic activity has been coming increasingly into conflict with ecological and economic concerns. In order to preserve part of the forests and, above all, endangered fauna, large areas of Citawan have been put under protection — a sensible decision ecologically. There are also a number of arguments that could be brought forward to support infrastructural development and the opening of the region to people from the outside and to tourism.

One should bear in mind, however, that the complaint raised with one voice by the Tharus, that their living conditions have never been so poor, is doubtlessly justified. In the face of the immediate problems of survival that the Tharus have, one can understand why they should have closed their ears to arguments supporting the need to preserve a biotope and the protection of endangered animal species. Thus we can state that the foregoing ethnobotanical documentation is close to being an inventory of the past. It would certainly be a profitable undertaking to find answers to the questions of how in the future Citawan's natural resources should be used in an environmentally sound manner, and what can be learned in the process from the Tharus' extensive knowledge of their surroundings. It is certain, too, that the Tharus will have to adjust in the future to an economically more intensive form of agriculture, and to the use of "modern" technologies and products. But even if only a drop in the bucket, the fruits of the forest might still be harvested as vitamin-rich food sources, medicinal plants might perhaps also be exported from Citawan and, as is already the practice, material for house construction and the material culture might be removed in an orderly fashion from the forests and the savannas.

**References**


Anocarpus Trail, Acacia n. h. Willd.

Arundinella nepalensis Trin.

Bauhinia vahlii Wight & Arn.

Bauhinia purpurea L.

Blumeopsis flavo (DC.) Gagnep.

Bombax ceiba L.

Bridelia retusa (L.) Spreng.

Casuela axillaris Roxb.

Calamus tenius Roxb.

Callicarpa macrophylla Vahl.

Calotropis gigantea (L.) Dryand.

Cannabis sativa L.

Careya arborea Roxb.

Centella asiatica (L.) Urb.

Chenopodium album L.

Clerodendrum fruticosum Vent.

Costus speciosus (Koenig) Smith

Crinum amoenum Roxb. ex Ker-Gawler

Crotalaria albida Heyne ex Roth

Cryptoplexis buchananii Roem.& Schult.

Curcuma aromatica Salisb.

Curcuma zedoaria Rosc.

Cuscuta sativus L.

Cyperus rotundus L.

Dalbergia sissoo Roxb.

Datura stramonium L.

Dioscorea bulbifera L.

Dioscorea deltoidea Wall. ex Griseb.

Dioscorea esculenta (Lour.) Kurtil

Dioscorea sp.

Diplazium esculentum Ret.

Drynaria quercifolia (L.) Smith

Eclipta prostrata (L.) L.

Edgaria darjeelingensis C.B. Clarke

Elephantopus scaber L.

Esenta sp.

Eulaliopsis binata (Retz.) C.E. Hubbard

Ficus auriculata Lourd.

Ficus hispida L.

Ficus oligodon Miq.

Ficus racemosa L.

Ficus religiosa L.

Ficus semicordata Buch.-Ham. ex Sm.

Flemingia macrophylla (Willd.) Merr.

Flemingia sordiflora (L.) Ait

Gonatanthus pumilus (D.Don) Engler & Krause

Grewia clerophylla Roxb. ex G. Don

Grewia subinermis DC.

Heliceres isora L.

Holarrhena pubescens (Buch.-Ham.) Wall. ex G. Don

Imperata cylindrica (L.) Beauvios

Jatropha curcas L.

Justicia adhatoda L.

Lagenaria siceraria (Molina) Standl.

Lasia spinosa (L.) Thwaites

Leuca crispa van Royen ex L.

Luffa cylindrica (L.) Roem.

Melandoma melabathricum L.

Mirabilis jalapa L.

Momordica charantia L.

Morus macroura Miq.

Narenga porphyrocoma (Hance ex Trin.) Bor

Ophioglossum reticulatum L.

 Oroxyllum indicum (L.) Kurz

Oryza sp.

Oxalis corniculata L.
<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Species</th>
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<td>Persicaria hydropiper</td>
<td>(L.) Spach/P. barbata (L.) Hara</td>
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<td>Phoenix acuila</td>
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<td>Phoenix humilis</td>
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<td>(L.) Benth. ex Kurz</td>
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<td>Saccharum sp.</td>
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<td>Schlechthera oleosa</td>
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<td>iakpuni (bhataka, cha-ta, ghumana)</td>
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**Figures**

1: Location of Citawan and the Royal Citawan National Park
2: The Tharu house

**Photos:**

1: Rhinos hidden between Saccharum spontaneum (Nov. 1986).
2: Sal forest (Curīyā hills, June 1986).
3: The Tharu village Dhidhauli: rice straw is carried with the help of a bamboo yoke (suila).
4: A Tharu man with arrow and bow (tirdhanui) and a string bag (jhora) made from pātāhā (Helicteres isora), wearing the traditional wooden sandals (pedaha).
5: kōnī (left) and dhwārī (right), fish traps made from bamboo, bāherī (Arundinella nepalensis) and khāparī (Narenga porphyrocoma).
6: Canes of baruwa (Saccharum bengalensis) are dried in the sun (Nov. 1987).
7: manhan (Bauhinia vahlii) (Curīyā hills, June 1986).
ETHNOBOTANICAL STUDIES AMONG THE CITAWAN THARUS

Fig. 1

Photo 1

Photo 2

Fig. 2

Royal Citawan National Park
Photo 7