

# Non-Timber Forest Products (Ntfp's) Uesd By Tharu Tribe Of Kanchanpur District Of Far-Western Nepal

Nabin Raj Joshi<sup>1</sup> and Vishal Singh<sup>2</sup>

1 Department of Forestry and Environmental Science, Kumaun University Nainital, Uttarakahnd 263002, (India)

2 Centre for Ecology Development and Research, 41/I, Vasant Vihar, Dehradun, 248006, Uttarakahnd (India).

Email: [nabin2001@gmail.com](mailto:nabin2001@gmail.com)

**Abstract:** The study documents plant species used as Non-Timber Forest Products (NTFPs) and traditional knowledge on the utilization of these plant resources by Tharu tribes of in and around the Tharu tribal communities in Kanchanpur district of Nepal. The study was exploratory and participatory in nature. A total of 114 plant species belonging to 54 families have been identified from the Tharu community areas. Most of them have medicinal properties in their bark, root and fruits. A large number of these identified plant species are used for gastro-intestinal problems, rheumatisms, chest infection and fever and typhoid. Medicine from these plant parts is prepared in the form of juice, paste and powder usually prepared by elder female in the family. Elderly persons and traditional healers of the areas pose vast knowledge on ethno medicinal practices along with various rituals in comparison of the young generation. The knowledge transformation system is quite restricted within the family. It is not only essential to conserve such a wealth of information hidden among the local people but also to apply them to modern knowledge of science and technology to meet the ever increasing requirement of mankind. Beside this certain NTFP species like *Piper longum*, *Acorus calamus*, *Pterocapus marsipium*, *Terminalia chebula* *Terminalia bellirica*, *Aegle marmelos*, *Solanum virginium* and *Rauwolfia serpentine* etc. are under threat of being extinct due to growing human pressure as well as habitat degradation impacted by anthropogenic activities, recent trend of climate change.

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## 1. Introduction

Non-timber Forest Products (NTFPs) are important tools for addressing poverty issues for the marginalized, forest dependant communities, by contributing to livelihoods, including food security, income, health and sustainable human development (FAO 1995; Falconer 1997; Ahenkan and Boon 2008). Globally, an estimated 350 million people mostly in developing countries depend on NTFPs as their primary source of income, food, nutrition, and medicine (Chandrasekharan 1996; Olsen 1998; UNDP 2004; FAO 2005). These products play a vital role in sustaining the lives of local gatherers, who must increasingly adapt to diminishing resources to stay alive.

In Nepal, hundreds of plant species are used as NTFPs (Rawal 1997; Shrestha et al. 2004) and have great conservation and economic value (Gauli and Hauser 2009). These resources are a key source of income and livelihood assists for many of the poorest people in Nepal. In certain areas, NTFPs provide up to 50 percent of household income (Edwards 1996). The uses of NTFPs vary from place to place because of the heterogeneity of the community and different traditional practices by ethnic groups in the country. In recognizing this economic value, forest policies of Nepal have

recommended sustainable NTFP management for poverty reduction and livelihood improvement by ensuring community participation in forest management (GoN 2004).

The significance of NTFPs in rural livelihood improvement and for subsistence has been established by a number of studies at the national level in Nepal (Kanel 1999; Shrestha et al. 2003; Gauli and Hauser 2009), but little is known about their collection and marketing dynamics (Bista and Edward 2006). Tracing the history of NTFPs exploitation reveals an over-harvesting of medicinal plants; other items are largely being ignored. The potential uses of many of the NTFPs have not being well-documented in Kanchanpur district despite their potential in poverty reduction and livelihood improvement amongst the indigenous people. The documentation of other uses of NTFPs is essential in the sense that it will provide choices and help the communities to improve their economic conditions by exploring more market values and potentialities. Thus, the specific purpose of this paper was to document and record the knowledge of Tharu tribes (an indigenous group of Far-western low-lands of Nepal) on traditional uses of various NTFP's and Medicinal Plants found in and around various Tharu

communities of Kanchanpur district of far-western part of Nepal.

## 2. Materials and Methods

### 2.1 Study Site

The study site is situated between 28° 32' and 29° 08' north latitude and 80°03' and 80°33' east longitudes, and altitude ranged from 160m to 1528m from mean sea level. The total geographical area of the Kanchanpur district is 1, 61,741 hectare, of which about 88,200 hectare, area is under forest. The climate is sub-tropical monsoonal, the land is nearly level and productive. The soil is deep fertile, moist alluvial loam, conspicuous by free from boulders and gravel. The general appearance of the tract is gently sloping towards the south-east. The temperature of this area in the summer is maximum 43° C., average 27.4° C. Average rainfall for the whole of the terai tract is 1775 mm with 80% occurring between June-September.

### 2.2 Data collection and analysis

Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) following Martin (1995) were conducted on the use of plants with focus on the season of availability, mode of harvest, status of the plant, personal and community choices and indigenous conservation approaches. Guidelines for the interviews and group discussions were developed to facilitate the collection of information. Altogether six community-level discussion groups were held in different Tharu communities representing an average of eight persons in each discussion group. Additional 21 key informants like plant collectors, cultivators, traditional healers, traders, community heads and

district forest office staffs were purposively selected for interviews (Huntington 2000). Prior informed consent was obtained with the help of community workers (Martin 1995) that facilitated interviews and discussions with the local Tharu people. Consent was granted by the local people for the dissemination of their traditional knowledge. Herbarium specimens were collected for each species and brought back to the lab to facilitate identification using reference collections (Hara and Williams 1979; Hara et al. 1982; Polunin and Stainton 1984; Press et al. 2000) and expert knowledge.

## 3. Result

The tribal communities are living in vicinity of forest since several of years and their medicine-men have inherited this good knowledge of ethno botany and local nature flora of with hidden value from their ancestors and it is passed from one generation to another through oral communication, this vital knowledge needed to be scientifically and systematically documented before it is lost due to rapid change in the Tharu tribal community on an account of attaining western culture. Certain important species of NTFP's like *Piper longum*, *Acorus calamus*, *Pterocapus marsipium*, *Terminalia chebula*, *Terminalia bellirica*, *Aegle marmelos*, *Solanum virginium*, *Rauwolfia serpentine* have become rare and are under threat of being extinct due to growing pressure as well as habitat degradation impacted by anthropogenic activities and recent trend of climate change. In this study altogether 114 species belonging to 54 families were identified as important NTFPs, which were commonly used by Tharu tribes of Kanchanpur District. (Appendix: 1).

### Appendix: 1 List of NTFP's Found and used by Tharu tribes in Kanchanpur, District, Nepal.

S.no	Local name	Latin name	Family	Life form*	Parts used	Local use value
1	Ratigedi	<i>Abrus precatorius</i>	Leguminaceae	C	Leaf, seed, root	Leaf juice is used to treat sour, seed paste used in sciatica, stiff, shoulder leucoderma and also used in purgative.
2	Babool	<i>Acacia arbica</i>	Leguminaceae	T	Leaf, Bark	Very good fodder, Bark juice/paste is used to make fermenting material "Marcha".
3	Khair	<i>Acacia catechu</i>	Leguminaceae	T	Bark, wood	Bark juice used in Aau (dysentery) and timber for making handles of agricultural utensils.
4	Bojho	<i>Acorus calamus</i>	Araceae	H	Root	Anti-helminthes, used in cough and fever.
5	Haldu	<i>Adina cardifolia</i>	Rubiaceae	T	Leaf	Used as fodder.

6	Bel	<i>Aegle marmelos</i>	Rutaceae	T	Fruit, leaf, whole plant	Used in constipation and juice making, dysentery and leaves have religious value Fruit edible, fruit juice used as fish poison Entire plant has ritual importance.
7	Ketuki	<i>Agave americana</i>	Agavaceae	H	Whole plant	Used in rope making, soil conservation and live fencing.
8	Payaj	<i>Allium ceipa</i>	Liliaceae	H	Tuber	Vegetable spices, and juice used as sedative and ear pain.
9	Lashun Ban	<i>Allium malichii</i>	Liliaceae	H	Tuber	Spices, stomach ache and bleeding.
10	Jambu	<i>Allium strachegi</i>	Amarylsidaceae	H	Whole plant	Its sap is used for body massage and bulb is used in pectoral disease, piles and also used as spice.
11	Ghyu Kumari	<i>Aloe barbadensis</i>	Liliaceae	H	Juice of leaf	Used in constipation, burn and facial.
12	Sitaphal	<i>Annona squamosa</i>	Moraceae	S	Fruit, seeds	Edible, seed used for oil extraction.
13	Maha	<i>Apis nepalensis</i>	Apidae	I	Honey	Medicinal and Tonic.
14	Kurjo	<i>Artemisia annua</i>	Asteraceae	H	Leaf, branches	The extract of herb is effective in curing malaria, sap is used in fever.
15	Kurilo	<i>Asparagus racemosus</i>	Liliaceae	H	Root/Tuber	Roots are anti-diarrheic and diuretic which are used in fever also used as Tonic, Gastritis and milk production for livestock.
16	Kathar	<i>Atocarpus heterophyllus</i>	Moraceae	T	Fruit	Vegetable, Leaf juice used to make fermenting material "Marcha".
17	Neem	<i>Azadirachta indica</i>	Meliaceae	T	Bark, leaf, fruit, seed	Used in typhoid, wound insecticide, Juice used as refrigerant.
18	Kat Bans	<i>Bambusa arundinaceae</i>	Gramineae	T	Whole plant	Basket making, Leaf juice used in jaundice, young root shoots as good vegetable; root juice is used in Otitis (Kan Pakne).
19	Tanki	<i>Bauhinia purpurea</i>	Leguminaceae	T	Bark, flower	Antidiarrhetic and anti-dysenteric also used as good fodder.
20	Malu	<i>Bauhinia velhi</i>	Leguminaceae	C	Leaf and bark	Leaf used as a plate (Doona) making and rope making.
21	Koiral	<i>Bauhinia verigata</i>	Leguminaceae	T	Leaf and Flower	Leaf used as Fodder and flower used as vegetable, pickle making as well as medicine.
22	Kubindo	<i>Benincasa hispida</i>	Cucurbitaceae	C	Fruit	Used in jaundice, vegetable and sweet making.
23	Semal	<i>Bombex Ceiba</i>	Bombacaceae	T	Flower	Flowers are used in pillow making; Flowers are taken as vegetable and calyx used in boils.
24	Ank	<i>Calotropis gigantean</i>	Asclepiadaceae	S	Root, leaf	Dysentery, cough, Asthma and wounds.
25	Bhang	<i>Canabis stava</i>	Cabanaceae	S	Bark, leaf, seed	Bark used as thread making, clothaned and seed used in pickle making.
26	Lal mirch	<i>Capsicum frutescens</i>	Solanaceae	H	Fruit	Stem juice used to make fermenting material "Marcha". Vegetable and making chilly sauce.

27	Papaya	<i>Carica papaya</i>	Caricaceae	T	Fruit	Edible, used in jaundice.
28	Rajbrikaha	<i>Cassia fistula</i>	Leguminaceae	T	Fruit, leaf	Used in dysentery, and leaf pest is used for curing allergy.
29	Sikakai	<i>Cassia siamea</i>	Leguminaceae	T	Leaf	Soap and shampoo making.
30	Gopi bans	<i>Cephalostachyum capitatum</i>	Gramineae	T	Whole plant	Basket making.
31	Bethe	<i>Chenopodium album</i>	Chenopodiaceae	H	Tender shoot	Plant laxative and Anti-helmentics and eaten as vegetable.
32	Safed musli	<i>Chlorophytum arundinaceum</i>	Liliaceae	H	Roots, tubers	Roots are tonic, Aphrodisiac and are used to general debility tubers are boiled with milk and taken twice a day.
33	Gurzon lahera	<i>Cissampelos pareria</i>	Menispermaceae	C	Stem	Used in diabetes Mellitus and incresly milk production of cows/buffaloes.
34	Kagati	<i>Citrus aurantifolia</i>	Rutaceae	S	Fruit	Edible, pickle making, good source of Vitamin. 'C'
35	Ghar pidalu	<i>Colocasia esculenta</i>	Araceae	H	Corn & leaves	Leaf juice is styptic, stimulant and used in utrinalhemrage, corn juice is laxative.
36	Bhorla	<i>Cordia vestita</i>	Ethretiaceae	C	Fruit	Fruit is demulcent exporant and astringent.
37	Dhaniya	<i>Coriandrium Satirum</i>	Umbleferaceae	H	Whole plant	Aromatic, Flavoring, spices, etc.
38	Leamon grass	<i>Crympogon lexousnas</i>	Liliaceae	H	Leaves	Used in extraction of essential oils.
39	Babio	<i>Culapiopsia binata</i>	Gramineae	H	Whole plant	Used in rope making & thatching / roofing.
40	Ban haledo	<i>Curcuma angustifotia</i>	Zingiberaceae	H	Root	Spices, Abdominal problem, customary.
41	Haldi	<i>Curcuma domestica</i>	Zingiberaceae	H	Root/Tuber	Used as spices and turmeric, root juice taken during common besar cold, clean throat root powder used to color food.
42	Aakeshi beli	<i>Cuscuta reflexa</i>	Unvolvulacea	C	Seed, stem	Seed are antihelmenthis, stem used as caring of bilious disorder and jaundice.
43	Palmrosa	<i>Cymbopogon martini</i>	Gramineae	H	Whole plant	Used in essential oil production.
44	Citronella	<i>Cymbopogon witerianus</i>	Gramineae	H	Whole plant	Used in essential oil production.
45	Mothae	<i>Cyperus rotundus</i>	Cyperaceae	H	Stem	Anti-helmentics and catheterization
46	Sissoo	<i>Dalbergia sissoo</i>	Leguminaceae	T	Leaf, Root and wood	Fodder, Root used in swelling problem. Wood used to make handle of axe and plough.
47	Satisal	<i>Delbrgia latifolia</i>	Leguminaceae	T	Leaf, Wood	Fodder, Wood used to make agricultural implements.
48	Gulmohar	<i>Delonix regia</i>	Fabaceae	T	Flower	Ornamental.
49	Githa	<i>Discoria deltodia</i>	Discoraceae	T	Stem, tuber	Used in fracture, wound and used as vegetable
50	Amala	<i>Phyllanthus</i>	Euphorbiaceae	T	Fruits, leaves	Fruits edible, also used as pickles. Used in Aayurvedic medicines "Triphala" and

		emblica				leaves used as a fodder.
51	Gulab	Rosa alba	Rosaceae	S	Flower	Ornamental.
52	Sudi	Euphorbia royleana	Euphorbiaceae	H	Leaf, Root	Used in live fencing and soil conservation.
53	Dudhe jhar	Euphorbia thymifolia	Euphorbiaceae	H	Whole plant	Used in medicine.
54	Pipal	Ficus bengalensis	Moraceae	T	Bark, leaf	Used in fracture, fodder and religious purpose.
55	Sami	Ficus benjamia	Moraceae	T	Leaf	Ornamental as well as religious purpose.
56	Kabro	Ficus locor	Moraceae	T	Bark, Leaf	Used in rope making and fodder.
57	Dudhal	Ficus neriifolia	Moraceae	S	Leaf, Gum	Fodder and gum used in fracture.
58	Gular	Ficus recemosa	Moraceae	T	Fruit, leaf, gum	Leaf used as very good fodder, fruit are used as medicine, and gum as local flamation.
59	Timla	Ficus roxburghii	Moraceae	T	Fruit, leaf	Fruit are edible possess medicinal value, leaf used as fodder and religious purpose.
60	Khanyo	Ficus Semicordita	Moraceae	T	Root, leaf, fruit	Cooling and used in gonorrhea, jaundice, leaf used as a fodder and fruits are edible.
61	Sauf	Foeniculum vulgare	Umbleferaeen	H	Leaf, whole plant	Leaves are used in fish sauce, used as spice and flavoring.
62	Ban pidalu	Gonatanthus pumilus	Araceae	H	Leaf, Root	Root is used in boils scores wounds and leaves have medicinal value.
63	Vimal	Grewia optiva	Tiliaceae	T	Leaf, fruit	Fodder, fruit edible with medicinal value.
64	Siru	Imperata cylindric	Gramineae	H	Whole plant	Rope making and thatching.
65	Hazari phool	Jagetes erecta	Asteraceae	H	Whole plants	Flowers are pungent and bitter, acrid, astringent, carminative stomachic, blood purifier also used in fever, ulcer, piles and muscular pain.
66	Khirro	Jatropha corocus	Euphorbiaceae	S	Root, sap, seed	Anti-helmentics, live fencing, sap used in Anti-allergy and seeds used for making non edible oil.
67	Chayu	Lactiporus sulphureus	Polyporaceae	F	Whole plant	Edible as vegetable.
68	Bot Dhamiro	Legestromia parviflora	Lytheraceae	T	Leaf	Fodder.
69	Dalae ghash	Leucaena leucophala	Leguminaceae	T	Leaf, Roots	Very nutritive fodder & soil conservation
70	Litchi	Litchi chinensis	Sapindceae	T	Fruit	Edible.
71	Mauwa	Madhuca indica	Sopotaceae	T	Bark, fruit, flower	Used in wine making, diabetes, oil production.
72	Bakaino	Melia azedarach	Meliaceae	T	Leaf	Anti-helminthes and fodder.
73	Sindurae	Melortus phillipinesis	Euphobiaceae	T	Root, fruit, leaf	Anti-helminthes, scabies, making red color and fodder value.
74	Mango	Mengifera indica	Anacardiceae	T	Fruit, Bark	Fruits edible used in stomach pain, juice very nutritive.
75	Pudina	Mentha arveusis	Labiteae	H	Whole plant	Used in cold, fever, cough and flavoring.

76	Lajjawati	Mimosa pudica	Leguminoase	H	Root	Used in furuncle and ornamental.
77	Karela	Momor dicaharanita	Cucurbitaceae	C	Root, fruit	Anit-helminitics, piles, diabetes, used as vegetable and stomach disease.
78	Kimbu	Morus alba	Moraceae	T	Fruit, leaf	Edible, leaf used as a fodder and sericulture.
79	Kera	Musa nepilensis	Musaceae	H	Fruit	Fruits edible. Stem juice used in diarrhea and also used to make fermenting material "Marcha".
80	Parijat	Nictanthes arbortristis	Aleaceae	S	Flower	Used in jaundice, fever and ornamental.
81	Tulshi	Ocimum sanctum	Labiatae	H	Whole plant	Used in cough gastritis, and religious purposes.
82	Seudi	Opuntia spp.	Cactaceae	H	Whole plant	Live fencing and Ornamental.
83	Chamanil	Oxalis corniculata	Oxalidaceae	H	Whole plant	Used as medicine
84	Bhangiri	Perilla frutescens	Lamiaceae	H	Whole plant	It is sedative, antispasmodic, antiseptic, antidote, used in cephalic, headache and influenza.
85	Salla	Pinus roxburghii	Pinaceae	T	Resin/khoto	Used in fractures and boil.
86	Pipla	Piper langum	Piperaceae	C	Fruit	Fruit edible, Green fruit or dried fruit powder used in cough and cold and spice.
87	Rudilo	Pogostemon bengalensis	Labiatae	H	Leaf juice	Used in cough and fever.
88	Laheae pipal	Populus ciliata	Moraceae	T	Leaf	Fodder.
89	12 O'Clock flower	Portulaca oleararaceae	Fabaceae	H	Whole plant	Used is ornamental
90	Aru	Prunus persica	Rosaceae	S	Fruit	Fruit are edible.
91	Amba	Psidium gaurvaja	Myratecae	T	Fruit	Fruit are edible and Young shoot juice taken during diarrhea. Leaf juice used to make fermenting material "marcha".
92	Vijayasal	Pterocapus marsipium	Leguminaceae	T	Leaf, gum	Leaves used as good fodder, and the tree gum is used as blood purifier and helps in menstruation cycle.
93	Anar	Punica grantum	Punicaceae	S	Fruit	Edible and juice used in reducing blood pressure.
94	Naspati	Pyrus cmmumsis	Rosaceae	T	Fruit	Fruit are edible.
95	Sarpagahdha	Raulvofia serpentine	Apocynaceae	H	Rhizome/Root	Antihypertensive, sedative and used in reducing blood pressure.
96	Arand	Ricinus cummuninsis	Euphorbiceae	S	Seed	The seed produces a types of oil, used in various purpose (not edible)
97	Halhale Sag	Rumex hepolnsis	Polygonaceae	H	Leaf	Edible as vegetable
98	Kans	Saccharum spontanum	Gramineae	H	Whole plant	Used in roofing and religious purpose.
99	Kushum	Scheleria oleosa	Sapindaceae	T	Leaf and fruit	Fodder and seeds are edible.
100	Sal	Shorea robusta	Dipterocarpaceae	T	Leaf, bark, sal dhup seed oil	Bark is used as dyes, and leaves are used plate/Doona making seed oil used as cooking.

101	Kanthakari	<i>Solanum virginium</i>	Solanaceae	S	fruit	Used in common cold, headache, asthma and fever.
102	Ritha	<i>Spandius mokurossa</i>	Sapindaceae	T	Fruit	Soap and shampoo making.
103	Jamun	<i>Syzizyum cumini</i>	Myrtaceae	T	Fruit	Aayurvedic medicine, used in blood purifying dysenteric.
104	Saipatri	<i>Tagets minuta</i>	Compositae	H	Flower	Used in decoration and ornamental.
105	Sagwan	<i>Tectona grandis</i>	Vevrinaceae	T	Leaf, root	Soil amelioration.
106	Asna	<i>Terminalia tomentosa</i>	Combretaceae	T	Bark, leaf	Used in fracture and leaves are used as good fodder.
107	Barro	<i>Terminalia Belerica</i>	Combretaceae	T	Fruit, seed	Used in "Triphala" and cough.
108	Harro	<i>Terminalia chebula</i>	Combretaceae	T	Fruit, seed	Used in "Triphala" cough and cold.
109	Amriso	<i>Thysanalaena maxima</i>	Gramineae	H	Whole plant	Soil conservation, Broom and Fodder.
110	Tooni	<i>Toona ciliata</i>	Meliaceae	T	Fruit, Bark, leaf	Used as tonic and good fodder
111	Guitel	<i>Trewia nudiflora</i>	Euphorbiaceae	T	Leaf	Fodder.
112	Ashwa gandha	<i>Withania somnifera</i>	Solanaceae	H	Whole plant	Used in ulcer, bronchitis, burn, and also used as uterus problem.
113	Aduwa	<i>Zingiber officinale</i>	Zingiberaceae	H	Root, tuber	Used as spices and used in cold.
114	Bayar	<i>Zizyphus mauritiana</i>	Rhamanaceae	S	Whole plant	Bark juice and stem nodule used in dysentery, fruit-edible. Root used to make fermenting material. Fruit used as fish poisoning.

Life form\*: H= Herb, S= Shrub, T= Tree, C= Climber, I= Insect product, F= Fungi.

#### 4. Conclusion

The present study signifies that Tharu tribal territory in Kanchanpur district harbor a high diversity of useful plant. Despite gradual socio-cultural transformation, the inhabitants have remarkable knowledge of plants and their uses. The reliance on folk medicines for health care is associated with the lack of modern medicines and medication, poverty and the traditional belief of its effectiveness. Generally Tharu tribes use varieties of wild plants in traditional ways for their daily requirements as well as primary health care. The medicinal plants found in this territory are very useful to them who cannot afford the modern medical care. Documentation of this knowledge has provided novel information from the area. Tharu tribe of the study area still have a strong belief in the efficacy and success of herbal medicine and traditional healing practices and prefer to continue the use of such practices. Women and elderly people have the

deep knowledge. The knowledge level differed heavily with respect to generation. Overall users in Tharu tribes hold positive responses towards NTFPs. The awareness among them is found increasing they are being sincere and serious about NTFPs. It is conformed by their opinion about the importance of NTFPs plant species management programs (Documentation, Identification and cultivation). The success of the conservation and sustainable use of resources, therefore largely depend upon the understanding of the people and their acceptance of the concept. That is why this study tried to assess the people's responses towards the NTFPs management. Regarding the difficulties in knowledge transformation and ignorance of new generation towards traditional knowledge there seems great danger of extinction of such healing practices. The results of the present study provide evidence that medicinal plants continue to play an important role in the healthcare system of these tribal communities.

Knowledge and uses of herbal medicine for the treatment of various ailments among these ethnic groups is still a major part of their life and culture. Therefore, it is not only essential to conserve such a wealth of information hidden among these Tharu tribal communities but also to apply them to modern knowledge of science and technology to meet the ever increasing obligation of mankind.

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#### \*Correspondence to:

Nabin Raj Joshi

Department of Forestry and Environmental Science,  
Kumaun University, Nainital, 263002, India.

[nabin2001@gmail.com](mailto:nabin2001@gmail.com)

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