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ENVIS Newsletter on Medicinal Plants



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वहाँ है खुशाली ।



INDIA



FRLHT

Contents

1. ENVIS Centre on Medicinal Plants
2. Indian Medicinal Plant Species of Conservation Concern in Trade
3. Conservation and Conservation Biology
4. Seed Germination and Seed Viability in *Nothapodytes nimmoniana*
5. Yarsagumbo: A Wonder Plant of Himalaya
6. Kuth: A Western Himalayan High Altitude Herb
7. What is Raasnaa?
8. Medicinal Plants of Conservation Concern for Kerala, Tamilnadu.
9. Conservation Concern Medicinal Plants for Himachal Pradesh

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Next issue

Medicinal Plants Conservation Efforts
across the country ...continued.

Editorial

Dear Friends,

ENVIS Team at FRLHT wishes its readers a Happy New Year 2011.

Year 2010 was International Year of Biodiversity and now this year comes to you as International Year of Forestry. These commemoration days and years are symbolically celebrated to share our concern towards Mother Nature, Biodiversity and its various elements. This is done to remind us constantly that we need to care for our Environment and its elements as they are inseparable and integral part of our life.

In the earlier issue, we presented few articles related to "Diversity of Herbal Raw Drugs and Plant Species in Trade" plus conservation efforts. The current issue includes selected articles related to "Medicinal Plants Conservation Efforts across the country". The main article gives the reader a perspective about the Indian Medicinal Plants Species of Conservation Concern in Trade. This is part of "Demand and Supply of Medicinal Plants in India", Conservation Concern species of Kerala, and N. W. Himalayas as per IUCN guidelines, about Raasana and its identity, story of Kuth, propagation trails of *Nothapodytes nimmoniana* and much more which is shared with you.

We wish to reiterate that "Conservation of biodiversity is positive embracing preservation, maintenance, sustainable utilization, restoration and enhancement of natural environment" (IUCN 1980). In other words, "Conservation is a philosophy of managing the environment in such a way that it does not despoil, exhaust, or extinguish it or the resources and values it contains" (Krishnamurthy, 2003)".

We hope this issue inspires you towards Conservation of Natural Resources and provides directions for resource managers and researchers for applied research, resource augmentation and management of precious medicinal plants, which is presently recorded to be more than 7000 species.

This newsletter is available as free download: <http://envis.frlht.org>.

We welcome your feedback and write-ups for the next issue. Theme for the next issue is same as the current issue but will have more of field experience sharing across the country. Our effort is to converge experiences from all of you towards the mission of revitalising our Indian Medical Heritage. Write to us in about 1500 words articles of common interest. Email: envis@frlht.org

Best Wishes

Suma T.S

Editor - Medplant

ENVIS Centre on Medicinal Plants

Foundation for Revitalisation of Local Health Tradition, Bangalore

FRLHT is a registered public trust, since 1991. Our vision is to "revitalise Indian Medical Heritage". Our Mission is to design and implement strategic programs in the three key thrust areas that will have high social impact:

- A. High priority research and education on Indian systems of medicine
- B. Conservation of threatened natural resources used by Indian systems of medicine
- C. Strategic outreach initiatives for widespread application and dissemination of knowledge of traditional health sciences

Our Campus is beautifully landscaped with more than 1000 medicinally important plant species collected from various vegetation types of our country.

We have a well referenced, dynamic database "Encyclopedia on Indian Medicinal Plants database" at Centre for ISM Informatics. This is partially shared in our ENVIS site: www.envis.frlht.org, www.frlhtenvis@nic.in

You can explore our Repository of Medicinal Resources – FRLH Herbarium and Raw Drug Museum. The total number of medicinal plant species in the herbarium is 3027. About 1900 species are known to be in use in ISM and of which, FRLH currently houses 77.4 % of the species. Similarly in India, 960 medicinal plants are reported to be in trade, of which FRLH houses 81% of the species. raw drug repository now houses 2171 samples of raw drugs, of which 1548 are from the market collections while 623 are authentic field collections. We have tried to share digitised herbarium images of selected species in ENVIS site. Of the 960 plant species found to be in the trade, 365 species are represented in the Repository. Besides the plant raw drugs, the repository also has in its collection 45 minerals and 2 metals used as raw drugs in ISM. You can utilise services of Centre for Pharmacognosy, Pharmaceutics and Pharmacology and Institute for Ayurveda and Integrative Medicine Health Care Centre.

You can interact with more than 200 specialists to know what we do at FRLHT (visit www.iam.edu.in).

FRLHT is designated as "ENVIS Centre on Medicinal Plants" by MoEF, Go.I. Here, we aim to bring awareness about the issues, concerns and experiences related to Indian Medicinal Plants conservation through the website: <http://envis.frlht.org>, quarterly newsletter: Medplant and outreach activities.

Indian Medicinal Plant Species of Conservation Concern in Trade

(Excerpts from "Demand and Supply of Medicinal Plants in India")

DK Ved¹ and GS Goraya² I.F.S.

An estimated 15,000 medicinal plant species, forming about 21% of the total plant species reportedly used for medicinal purposes in the world, fall in the endangered category (*Schippmannet. al* (2006). In the Indian context, 335 wild medicinal plant species have already been assessed as Threatened or Near Threatened in one or more of the 17 states of the country for which rapid assessment of conservation status of prioritized species has been coordinated by FRLHT so far.

Analysis of the list of 178 species in high trade reveals that a number of Threatened medicinal plant species e.g. *Aconitum heterophyllum*, *Coscinium fenestratum*, *Decalepis hamiltonii*, *Nardostachys grandiflora*, *Oroxylum indicum*, *Picrorhiza kurroa*, *Saraca asoca*, *Swertia chirayita*, *Vateria indica* etc. are traded in high volumes. Concerns about global depletion of populations of some of these species have prompted their inclusion in the CITES lists. Government of India, in 1994, had also notified a 'negative list of exports' of plant species wherein some of these species were included. However, wild populations of many of these Threatened species continue to deplete in the face of indiscriminate harvesting. In some cases the export of some of these species has continued on account of nomenclature issues (Box 1).

Box 1: *Picrorhiza kurroa* Royle ex Benth.

Traded as 'Kutki', this temperate Himalayan herb found at altitudes ranging from 3000 to 3500 m was hitherto believed to have wide distribution extending from North-west Hiamalyas to Nepal and Bhutan in the east. Its increasing domestic and global trade coupled with concerns about its fast shrinking populations prompted the inclusion of *Picrorhizakurroa* in the CITES Appendix-II to regulate its foreign trade. However, typification of the taxon growing in Uttarakhand, Nepal and Bhutan as *Picrorhiza scrophulariiflora* Pennel (= *Neopicrorhiza scrophulariiflora* Pennel D. Y. Hong) has added a new dimension to the trade of 'kutki', as the new taxon is not included in the CITES list.

The estimated consumption of 'Kutki' by the domestic herbal industries was 416 MT during 2005-06. Since rhizomes of both these species are freely traded as 'kutki', it is difficult to link a specific quantitative estimate to any one of these. The foreign trade of 'kutki', derived from both the species, can also continue under the name of *P. scrophulariiflora*. Cultivation of the species at any significant scale seems to have been initiated only recently. The net result is further decline in wild populations of both *P. kurroa* and *P. scrophulariiflora*.

In addition to the medicinal plant species in high trade, there are other threatened medicinal plant species in trade, presently traded in relatively lower volumes but with high trade potential, that needs focused management interventions. Some such species like *Podophyllum hexandrum* are subjected to indiscriminate harvesting because of their high demand in international market for their chemotherapeutic use (Box 2). A few others like *Gentiana kurroo* and *Dactylorhiza hatageria* are already on the verge of extinction and their populations have drastically declined.

Box 2: *Podophyllum hexandrum* Royle (= *P. emodi* Wall. ex Honig.)

A temperate Himalayan herb found at altitudes ranging from 2800 to 3500 m, it is commercially collected for its rhizomes that are processed to extract 'podophyllin', derivatives of which are used in treatment of tumours. The species, once known to form extensive dense populations in its natural zone, has borne the brunt of heavy exploitation over the past more about 50 years and has become endangered now. Since the rhizomes take 5-6 years to mature, efforts to domesticate the species and cultivate it on commercial scale have proved to be non-viable and abandoned.

In view of threat to its wild populations, export of this species was banned in 1994. However, since it is preferred over its American allied species (*P. peltatum* L.) for its higher alkaloid content, it continues to be indiscriminately harvested from the wild, further endangering even its residual populations.

There is an urgent need to initiate measures for management of high-risk medicinal plant species and to take up re-assessment of wild populations of these species at the regional, national and global level for guiding comprehensive *in-situ* and *ex-situ* species recovery action as well as commercial cultivation programmes to meet the industrial demand for these.

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For further reading, please refer to:

Ved, D.K. and G.S. Goraya (2008). Demand and Supply of Medicinal Plants in India. Bishen Singh Mahendra Pal Singh, Dehra Dun and FRLHT, Bangalore.

Conservation and Conservation Biology

K.V. Krishnamurthy

It is very difficult to distinguish Preservation from Conservation. In simple terms, Preservation implies the protection of biodiversity from any kind of an anthropogenic activity or interference. Conservation, on the contrary, implies protection of biodiversity for sustainable utilization (Virchow 1988). However, most of the earlier workers have used these two terms casually and interchangeably without much differentiation and many still continue to do so.

The notion that biodiversity is worth conserving is based on several fundamental arguments including nostalgia and human benefits and needs. The nostalgic argument goes so far as to say that we have not bequeathed this earth (and its biodiversity) from our ancestors, but borrowed it from our children of the future, and that we must return it to them in the manner we had received it. This nostalgic argument should not push us to construing conservation however, as an act aimed at considering biodiversity as an untouchable holy entity. There are arguments for 'explicit inclusion' of the biodiversity dimension within development planning and the arguments of human benefits and need as more powerful "in terms of the Descartian scientific tradition". It essentially means that unless there is biodiversity conservation, we may lose something of direct or indirect value to human society already known or yet to be discovered. This is amply reflected in the definition of conservation provided in the first World Conservation Strategy: "The management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generation, while maintaining its potential to meet the needs and aspirations of future generations. Thus, conservation is positive embracing preservation, maintenance, sustainable utilization, restoration and enhancement of natural environment" (IUCN 1980) In other words, "Conservation is a philosophy of managing the environment in such a way that it does not despoil, exhaust, or extinguish it or the resources and values it contains" (Krishnamurthy, 2003).

The roots of modern conservation biology can be traced to the first International Conference on "Conservation Biology" held at San Diego in 1973. A separate field of Conservation Biology emerged in the late 1970s and early 1980s as a response by the scientific community to the biodiversity crisis. But, what is new about conservation biology as people have been practicing conservation for centuries? The 'new' and 'rejuvenated' conservation biology differs from the 'old' conservation biology in at least three respects (Meffe and Caroll 1994):

(i) It now includes the important contributions from ecological/ genetical models and their increased application to real- world situations.

(ii) Most, if not all, traditional conservation efforts were based on an economic and utilitarian philosophy, while the new conservation biology views all biodiversity (elements) as equally important and as having an inherent or optional value. Therefore, efforts are to be directed to conserve the whole ecosystem rather than particular species, and

'(iii)New' conservation biology emphases that non-biologists also play a very important role in conservation.

Thus, conservation biology has become a new, mission-oriented and synthetic discipline. It applies the principles and results of diverse disciplines such as Ecology, Biogeography, Population Genetics, Economics, Sociology, Anthropology, Geology, Philosophy, Engineering and Technology and many others to the maintenance and conservation of biodiversity across the world. It has, therefore, become a synthetic field "to develop scientific principles and then apply them to developing technologies for the maintenance of biological diversity" Biodiversity conservation has, thus, been changed from an idealistic philosophy to a very serious technology. Conservation biology has also become a very challenging discipline in that it has "to counter by human forces all that humans themselves have been responsible for".

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4. Virchow, D.1998. Conservation of Genetic Resources- Springer, Berlin.

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<http://www.iaim.edu.in/coe/index.htm>

*Next Issue know more about
 Conservation Concern Species for selected states.*

Medicinal Plant Species of Conservation Concern for Kerala

Conservation Assessment Management Prioritization workshops were held during 1995, '96, '97 and '99 at Bangalore to assess the threat status of prioritized Medicinal plants of Kerala. During this process 86 medicinal plant species were assigned the Red List (RL) status of Near Threatened (NT) and above.

Sl.No	Botanical names / Species / Varieties / Author	Habit	Status in Kerala	RL status (Global)	Trade 100 MT/yr (dry wt.)
1	<i>Cosciniium fenestratum</i> (Gaertn.) Coleb.	C	CR	-	H
2	<i>Eulophia cullenii</i> (Wight) Blume	H	CR	CR(G)	
3	<i>Heliotropium keralense</i> Sivar. & Manilal	H	CR	CR(G)	
4	<i>Janakia arayalpathra</i> J.Joseph & V. Chandras.	S	CR	CR(G)	
5	<i>Paphiopedilum druryi</i> (Bedd.) Pfitz.	H	CR	CR(G)	
6	<i>Piper barberi</i> Gamble	C	CR	CR(G)	
7	<i>Uleria salicifolia</i> Bedd.	S	CR	CR(G)	
8	<i>Valeriana leschenaultii</i> DC.	H	CR	CR(G)	
9	<i>Vateria macrocarpa</i> B.L. Gupta	T	CR	CR(G)	
10	<i>Acorus calamus</i> L.	H	EN	-	H
11	<i>Ampelocissus indica</i> (L.) Planch.	C	EN	-	
12	<i>Cayratia pedata</i> Lam. Juss. ex Gagnep.var. <i>glabra</i> Gamble	C	EN	EN(G)	
13	<i>Cinnamomum wightii</i> Meisn.	T	EN	EN(G)	
14	<i>Decalepis hamiltonii</i> Wight & Arn.	C	EN	EN(G)	H
15	<i>Dipterocarpus indicus</i> Bedd.	T	EN	EN(G)	
16	<i>Dysoxylum malabaricum</i> Bedd. ex Hiern	T	EN	EN(G)	
17	<i>Garcinia travancorica</i> Bedd.	T	EN	EN(G)	
18	<i>Gymnema khandalense</i> Santapau	C	EN	EN(G)	
19	<i>Gymnema montanum</i> (Roxb.) Hook.f.	C	EN	EN(G)	
20	<i>Holostemma ada-kodien</i> Schult.	C	EN	-	H
21	<i>Humboldtia vahliana</i> Wight	T	EN	EN(G)	
22	<i>Hydnocarpus macrocarpa</i> (Bedd.) Warb.	T	EN	EN(G)	
23	<i>Nilgirianthus ciliatus</i> (Nees) Bremek.	S	EN	EN(G)	H
24	<i>Operculina turpethum</i> (L.) Silva Manso	C	EN	-	H
25	<i>Merremia turpethum</i> (L.) Shah & Bhat	C	EN	-	H
26	<i>Oroxylum indicum</i> (L.) Vent.	T	EN	-	H
27	<i>Plectranthus nilgherricus</i> Benth.	H	EN	EN(G)	
28	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	H	EN	-	H
29	<i>Santalum album</i> L.	T	EN	-	H
30	<i>Semecarpus travancorica</i> Bedd.	T	EN	EN(G)	
31	<i>Strychnos aenea</i> A.W.Hill	C	EN	EN(G)	
32	<i>Swertia lawii</i> (Wight ex C.B.Clarke) Burkill	H	EN	EN(G)	

Sl.No	Botanical names / Species / Varieties / Author	Habit	Status in Kerala	RL status (Global)	Trade 100 MT/yr (dry wt.)
33	<i>Syzygium travancoricum</i> Gamble	T	EN	EN(G)	
34	<i>Trichopus zeylanicus</i> Gaertn. subsp. <i>travancoricus</i> (Bedd.) Burkill	H	EN	EN(G)	
35	<i>Adenia hondala</i> (Gaertn.) W.J.de Wilde	C	VU	-	
36	<i>Amorphophallus commutatus</i> (Schott) Engl.	H	VU	VU(G)	
37	<i>Ampelocissus araneosa</i> (Dalz. & Gibson) Planch.	C	VU	VU(G)	
38	<i>Aphanamixis polystachya</i> (Wall.) Parker	T	VU	-	
39	<i>Artocarpus hirsutus</i> Lam.	T	VU	VU(G)	
40	<i>Baliospermum motanum</i> (Willd.) Mull.Arg.	S	VU	-	H
41	<i>Calophyllum apetalum</i> Willd.	T	VU	VU(G)	
42	<i>Canarium strictum</i> Roxb.	T	VU	-	
43	<i>Celastrus paniculatus</i> Willd.	C	VU	-	H
44	<i>Chonemorpha fragrans</i> (Moon) Alston	C	VU	-	
45	<i>Cinnamomum macrocarpum</i> Hook.f.	T	VU	VU(G)	
46	<i>Cinnamomum sulphuratum</i> Nees	T	VU	VU(G)	H
47	<i>Curcuma pseudomontana</i> Graham	H	VU	VU(G)	
48	<i>Cycas circinalis</i> L.	T	VU	-	
49	<i>Diospyros candolleana</i> Wight	T	VU	VU(G)	
50	<i>Diospyros paniculata</i> Dalz.	T	VU	VU(G)	
51	<i>Drosera peltata</i> J.E.Sm. ex Willd.	H	VU	-	
52	<i>Embelia tsjeriam-cottam</i> (Roem. & Schult.) A. DC.	S	VU	-	H
53	<i>Garcinia indica</i> (Thouars) Choisy	T	VU	VU(G)	H
54	<i>Gardenia gummifera</i> L.f.	T	VU	VU(G)	
55	<i>Gloriosa superba</i> L.	C	VU	-	H
56	<i>Glycosmis macrocarpa</i> Wight	S	VU	VU(G)	
57	<i>Helminthostachys zeylanica</i> (L.) Hook.	H	VU	-	
58	<i>Heracleum candolleianum</i> (Wight & Arn.) Gamble	H	VU	VU(G)	
59	<i>Hydnocarpus alpina</i> Wight	T	VU	VU(G)	
60	<i>Hydnocarpus pentandra</i> (Buch.-Ham.) Oken	T	VU	VU(G)	
61	<i>Kingiodendron pinnatum</i> (Roxb. ex DC.) Harms	T	VU	VU(G)	
62	<i>Michelia nilagirica</i> Zenk.	T	VU	VU(G)	
63	<i>Myristica dactyloides</i> Gaertn.	T	VU	-	
64	<i>Myristica malabarica</i> Lam.	T	VU	VU(G)	
65	<i>Nervilia aragoana</i> Gaud.	H	VU	-	
66	<i>Nothapodytes nimmoniana</i> (Graham) Mabber.	T	VU	-	

Sl.No	Botanical names / Species / Varieties / Author	Habit	Status in Kerala	RL status (Global)	Trade 100 MT/yr (dry wt.)
67	<i>Ochreinauclea missionis</i> (Wall. ex G. Don) Ridsdale	T	VU	VU(G)	
68	<i>Persea macrantha</i> (Nees) Kosterm.	T	VU	-	
69	<i>Pseudarthria viscida</i> (L.) Wight & Arn.	H	VU	-	H
70	<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.	C	VU	-	
71	<i>Salacia oblonga</i> Wall. ex Wight & Arn.	C	VU	VU(G)	
72	<i>Smilax zeylanica</i> L.	C	VU	-	
73	<i>Swertia corymbosa</i> (Griseb.) Wight ex C.B.Clarke	H	VU	VU(G)	
74	<i>Tragia bicolor</i> Miq.	C	VU	VU(G)	
75	<i>Vateria indica</i> L.	T	VU	VU(G)	H
76	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	H	NT	-	
77	<i>Embelia ribes</i> Burm.f.	C	NT	-	H
78	<i>Garcinia gummi-gutta</i> (L.) Robson	T	NT	NT(G)	
79	<i>Garcinia morella</i> (Gaertn.) Desr.	T	NT	-	
80	<i>Hedychium coronarium</i> Koenig	H	NT	-	
81	<i>Knema attenuata</i> (Hook.f. & Thoms.) Warb.	T	NT	NT(G)	
82	<i>Michelia champaca</i> L.	T	NT	-	
83	<i>Piper longum</i> L.	H	NT	-	H
84	<i>Piper mullesua</i> Buch.-Ham. ex D.Don	C	NT	-	
85	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	T	NT	-	H
86	<i>Tinospora sinensis</i> (Lour.) Merr.	C	NT	-	H

Number of RL species (KL) recorded in trade = 48
No of RL species (KL) in high trade = 21

Of these 86 species, 50 have a global RL status as these are endemic (or nearly so) to the state/region for which the assessment was undertaken. 9 species have been assigned Critically Endangered (CR) status, 24 species are Endangered (EN), 41 species are Vulnerable (VU) and 11 species are Near Threatened (NT). 21 of these Red Listed medicinal plant species have been recorded in high volume trade, as per the national level trade study. (D.K.Ved and G.S.Goraya, 2008)

Whats in news?

This year we at FRLHT ENVIS Centre on Medicinal Plants celebrated International Year of Biodiversity 2010 with various school and college students. We believe instilling conservation values at the younger age is the first step to conservation of biodiversity. Inspired people will always do mindful action filled with passion.

12th Jan 2010- BVB's Nagarjuna Pre-University College, Yelahanka visited FRLHT with 100 students and two teachers to know about Medicinal Plants Conservation and Indian Systems of Medicine.

5th June 2010- Presented a popular science lecture @ titled: Medicinal Plants Diversity of Bangalore City" on World Environment Day at Vishveshwaraiah Industrial and Technological Museum, Bangalore. Nearly 400 high school students took part enthusiastically.

18th June 2010-One day exposure workshop for horticulture students from Association of People with Disability was organised. 20 students took part in the event.

2nd July 2010-12 students and 2 teachers from University of Kansas were sensitised on neighbourhood medicinal plants and traditional knowledge.

Continued in page 14

Seed Germination and Seed Viability in *Nothapodytes nimmoniana*: A pre-sowing treatment for a Rare Medicinal Tree Species of the Western Ghats, India

Guniger, R.V., Rajesh P. Gunaga*, Rane, A.D., Narkhede, S.S. and S.G. Bhavne

Nothapodytes nimmoniana is one of the endangered plant species of Western Ghats, India. It yields Camptothecin (CPT), an alkaloid having anti-cancer property. There is a great demand for wood chips of this species in global market for extraction of pure form of Camptothecin and its derivatives. Hence, domestication of this species was undertaken in different parts of the country to meet the global demand. Information on seed germination is very essential for raising seedlings in large quantity.

The present study described was undertaken in the forest nursery of College of Forestry, DBS Konkan Krishi Vidyapeeth, Dapoli during 2009-10. The main objective was to standardize the pre-sowing treatment to enhance seed germination as well as enhance period of seed storability in this species. For this experiment, fresh seeds of *N. nimmoniana* were collected from different trees located in Konkan Western Ghats of Maharashtra during December to January.

Immediately after collection, fruits were de-pulped by squeezing in water and seeds were extracted and then dried under shade. The average test weight (100 seeds weight) of seed lot was 24.25 g. A total 12 treatments including control were carried out using physical and chemical methods.

Results showed that the above seeds treated with cow dung slurry (alternate wetting and drying) for 3 days showed the maximum seed germination at 72 per cent, germination rate index (1.44), mean daily germination (1.87) and germination vigour (5.19). Other seed treatments like GA_3 @ 100 ppm for 12 hrs (60.0%), KNO_3 @ 50 ppm for 30 min (56%) also showed good seed germination, which is on par with control. Seed viability in terms of seed germination showed that seeds can be stored up to 60 days with about 30 per cent seed germination.

Treating seeds with cow-dung slurry has shown very good germination and it required less number of days to achieve maximum germination. Further, seed viability study showed that seeds can only be stored up to 2 months with germination per cent of 30 per cent. Hence, it is recommended to use fresh seeds immediately after collection following alternate wetting and drying in cowdung slurry for three days to raise quality seedlings on a large scale.

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For more reading:

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Tree Habit



Flowering Branch



Mappia Pollinator



Fresh Fruits

Dried fallen Fruits



Immature fruits



Conservation Concern Medical Plants of Kerala & Tamilnadu



Acorus calamus L.
Vulnerable (Kerala and Tamilnadu)
High Volume Trade

Herb



Adenia hondala (Gaertn.) W.J.de Wilde
Near Threatened (Tamilnadu)

Climber



Adhatoda beddomei C. B. Clarke
Critically Endangered (Tamilnadu and Globally)

Shrub



Cayratia pedata Lam. Juss. ex Gagnep. var. *glabra* Gamble
Endangered (Kerala, Tamilnadu and Globally)



Hydnocarpus pentandra (Buch.-Ham.) Oken
Vulnerable (Tamilnadu, Globally)

Tree



Celastrus paniculatus Willd.
Vulnerable and High Volume Trade (Kerala)
Near Threatened (Tamilnadu)

Climber



Michelia nilagirica Zenk.
Vulnerable (Kerala, Tamilnadu and Globally)

Tree



Myristica malabarica Lam.
Vulnerable (Kerala, Tamilnadu and Globally)

Tree



Paphiopedilum druryi (Bedd.) Pfitz.
Critically Endangered (Kerala, Tamilnadu and Globally)

Herb



Pterocarpus santalinus L.f.
Critically Endangered (Tamilnadu, Globally)
High volume Trade

Tree



Santalum album L.
Endangered (Kerala and Tamilnadu)
High Volume Trade

Tree



Trichopus zeylanicus Gaertn.
subsp. *travancoricus* (Bedd.) Burkill
Endangered (Kerala and Globally)

Herb

Yarsagumbo: A Wonder Plant of Himalaya

Sabita Sharma

Cordyceps sinensis (Berk.) Sacc. which is locally known as *Yarsa gumba* or *Catterpillar fungus* in English, a plant-cum animal life was first described as *sphaeria sinensis* in the Chinese pharmacopoeia. The Chinese name refers to the notion that it is a herb in summer and a worm in winter. The Tibetan name 'Yarsagumbo' also carries the same meaning.

It is formed by the parasitism of sparingly branched fungus *Cordyceps sinensis* on the larva of *Hepialus armoricanus*. A 5-8 cm long, 3-4mm diameter, club shaped mushroom comes out from the anterior end of caterpillar during the month of April to June. The larva hibernates underground in winter and the spore of the fungus enters the body of the larva and feed on it and causes its death. At the end of spring, the spore of the fungus will grow out of the ground like a little grass.



It is found in India, Bhutan, China, and Western Nepal (Rai, L.K. & Sharma, Eklabya 1994). In India it is distributed in Arunachal Pradesh, Uttarakhand and Sikkim. In Sikkim it is found in between 3800-5000m in Chopta Valley, Muguthang, Yumay Samdung, Yongdi, Zadong and in Kalapather in North District.

So far its medicinal values are concerned, no herb can be more valuable than this (Gurung 2002). Chronic nephropathy, arrhythmia, emission, neurasthenic, rheumatoid arthritis, coronary heart diseases, diseases related to blood vessels of the brain, are major ailments which can be beneficially treated with this herb. Besides it has unique property of strengthening the immune system of the body. The whole plant is taken with milk or honey as an aphrodisiac and tonic by Bhutia and Lepcha tribe of Sikkim. (Sharma T.P & Sharma, Sabita).

However, in the recent times the demand for *Cordyceps sinensis* for trade has increased rapidly in the global market and as well as locally as traditional practitioners have been found using them on a large scale. As a result the population of this valuable wealth of the state is being depleted at an alarming rate. For instance from Nepal alone nearly 200-300 Kg of *Cordyceps sinensis* is exported annually at the rate of Rs. ten to fifteen thousand per Kg (Gurung, 2002), and from Sikkim nearly 60-80 Kg of *Cordyceps sinensis* is being illegally collected and exported annually.

In the light of the shrinking resource base of this valuable wonder herb the Government of Nepal has already banned the collection and trading of *Cordyceps sinensis*, while in India there is no such concerted effort in this direction aimed at promoting its conservation. Therefore there is an urgent need to conserve this valuable

herb and such other plant by means of *in-situ* conservation before we reach a point of no return.

For further reading:

Gurung, B. 2002. *The Medicinal Plants of the Sikkim Himalaya*. Maples, Chakung, West Sikkim.

Sharma, TP & Sharma, Sabita, 2010. *Medicinal Plant of Sikkim*. Beracah Printing & Stationary.

Rai, L.K. & Sharma, Eklabya 1994. *Medicinal Plants of Sikkim Himalaya, Status, Uses and Potential*. G.B.Pant Institute of Himalayan Environment & Development, Gangtok.

About the author: Ms. Sabita Sharma represents Himalayan Science Society, Gangtok-737102, Sikkim.

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Celebrating International Year of Biodiversity - 2010
Prize Distribution event At KV IISC, Bangalore on 21st Dec 2010

Exploring these gentleness... along with young minds has been an exciting and interesting process for us. Its fun.

GREEN AMBASSADOR COMPETITION 2009-2010

We had a competition organised for Kendriya Vidyala Sangathan Students- GREEN AMBASSADOR COMPETITION. We had almost 90 entries from 9 nature clubs from 9 KVS in Bangalore region.



For more information :

<http://envis.frlht.org/documents/Green%20ambasador%20competition.pdf>

Kuth: A Western Himalayan High Altitude Herb

O.P.Sharma

The state of Jammu and Kashmir is traditionally rich in medicinal plants. One of the reputed medicinal plants is Kuth, *Saussurea costus* (Falc.) Lipsch., also known by the name, "Fragrant Saw-wort" belonging to Family Asteraceae. The other common names of this important medicinal plant in the regional dialects are as under:

Balti	: Kuth	Dogri	: Kuth
English	: Costus Root	Gojri	: Kuth
Hindi	: Kushtika	Kashmiri	: Postkhai
Ladakhi	: Rusta	Pahadi	: Kuth
Pogli	: Kuth	Shina	: Minaal

Kuth is a perennial herb with marginally lobed stalked leaves and with fragrant aromatic roots. Its flowers are deep blue in head like clusters. It grows in temperate coniferous forests and sub-alpine slopes of Jammu and Kashmir, preferably occupying moist & sheltered locations along hill streams at elevations ranging from 2400-3600 m. Its habitat is considerably prone to the twin impacts of snow damage and soil erosion. It is distributed in areas of Pakistan occupied Kashmir (PoK), Jammu and Kashmir and Himachal Pradesh states in India.

In Jammu and Kashmir, it is found at areas like, Simthan, Seoj, Marwah, Dahi Nala, Kanzalwan, Dawar, Chorwan, Barnai, Neeru, Badao, Chakwali, Bootmali, Gurez, Tilel, Machhil, Lolab, Toshmaidan, Bungus, Furkian Top, Budhnambal, etc.

Kuth roots are traded in National and International markets, as the roots are among the important constituents of *Ashthavarga* group of drugs used in preparation of *Chyavanpras*

Jammu and Kashmir Government had enacted a famous *Kuth* Act in pre-partition days, which now stands repealed by the state government. *Kuth* has been assessed as a Critically Endangered plant in the Conservation Assessment & Management Plan (CAMP) workshop organized by FRLHT at Shimla in the year 2003. The major threats to its survival are: due to illicit collection, due to border disturbances, less effective surveillance and control, loss of habitat due to construction of roads for defense purposes & dam building activities in the region.

The plant stands included in schedule VI of Jammu and Kashmir Wildlife Protection Act -1978 amended up to 2002. Recently TRAFFIC; INDIA in collaboration with Himachal Pradesh, Jammu and Kashmir and Uttarakhand Forest Departments, NGOs and *Kuth* grower community organized one day consultation workshop on *Kuth* plant to know implications of its inclusion in Appendix 1 of CITES [Convention on International Trade in Endangered Species of Flora and Fauna]. For protection of this important plant following measures have been suggested, such as:

1. Do not allow illicit extraction of its roots, which needs to be controlled with stepped up surveillance by the Government.
2. Encourage ex-situ *kuth* cultivation by the farmers outside forests, as is being practised in Lahul Spiti area of Himachal Pradesh.
3. Support laws which protect Forests, Wildlife & Biodiversity Conservation.
4. Raise public awareness among nomads to reduce overgrazing and allow *Kuth* plants to set seeds in alpine areas.

Historically, Jammu and Kashmir State Government had developed famous *Kuth* extraction fields in *Gurez* and *Astore* area, but due to partition of India, maintenance of *Kuth* fields could not be continued further. Stock maps relating to *Kuth* are also available in the old Departmental Library at *Sheikhbagh, Srinagar*.

The Jammu and Kashmir Govt. has presently imposed a 5 year ban on extraction of all wild medicinal plants including *Kuth* roots. The wild resources of *Kuth* *Patrees Kaur* are shrinking fast and need to be regulated along with cultivation by the bonafide registered growers.

Kuth cultivation in *Kuth* fields was abandoned after area got divided into India and Pakistan, authority to govern *Kuth* resources also got partitioned, *Gurez* got divided and Line of Control skirmishes ruled erstwhile *Kuth* fields of *Astore* and *Gurez*. Nevertheless, in Jammu and Kashmir, best *Kuth* resource is concentrated in *Gurez* Tulel of *Gurez* range of present Indian administered Bandipore Forest Division.

Illicit collection due to border disturbances, less effective surveillance, has however continued. Ban on collection of *Kuth* and other medicinal herbs imposed by Jammu and Kashmir Govt. have proved ineffective in checking illicit trade in medicinally important herbs.

There are observations reported regarding illicit collections in the wild despite being banned from wild collection. In Kashmir, roots of many herbs like *Arctium lappa* (*Richhkuth*), *Senecio jacquemontianus* (*Palfut, Khattar in Kashmir*), *Salvia moorcroftiana* (*Thuth, Sholur*) are being sold as *Kuth*. In Himachal Pradesh, *Arctium lappa* and *Inula racemosa* grows in the wild and they are being collected and sold by the name of *Kuth*. It is also observed that a large quantity of *Kuth* is imported from China, from Myammar (*S.lappa*).

Critically Endangered *Saussurea costus*, *Kuth* therefore needs *in-situ* conservation as never before, with considerable focus, thus helping this great species to survive through a programme of strategic resource management and augmentation processes.

About the author: Dr. O. P. Sharma, IFS, Conservator of Forests, State of Jammu & Kashmir. Email: opsfrijk@gmail.com



Community to community training programme for sustainable management of Non-Timber Forest Products/Medicinal plants

Suresh H.M. and R. Jaganatha Rao

There is an immense traditional and indigenous knowledge pool with local people about Non-Timber Forest Products (NTFPs)/Medicinal Plants, their uses, method of harvesting and processing. The framework of participatory approach for sustainable management of NTFPs emphasizes on involvement of local community in conservation and sustainable utilization of NTFP resources through generation of income and employment. Participatory approach integrates people of different social status, establishes a need based and objective oriented local institution.

The uniqueness of this training lies in its design of Community to Community Training (CTCT). This provides for horizontal spread of study ideas across communities and across resources. The significant feature of the CTCT is to develop community not only for action, but also to spread the methodology into other areas for wider application. CTCT emphasizes on transfer of knowledge and skills among the people, who have similar attitude, socio-economic and education status and other inter personal features, in which Task Team (Task team is a cohesive group with the representatives from different stakeholder groups' viz. VFC president/members, state forest department officials, collectors, traders, folk healers and self help groups) members transfer information and skills of developing methodology for sustainable management of medicinal plants/NTFPs to other communities; such as members of JFMC, members of Self Help Groups, front line staff of Forest Department and local NGO representatives.

The experience gathered through the seven CTCTs organized during the project period ("Design and

development of Methodology for Sustainable Harvesting of Medicinal Plants/NTFPs" under Forestry Research Programme of DFID, UK implemented in Karnataka) has shown that horizontal communication is more effective and efficient in disseminating innovative ideas and practices.

The CTCT is implemented using a set of 25 sequential methodology posters, prepared in local language. The horizontal communication between two community members (one community already practicing the sustainable harvesting and other community needing such knowledge and skills) will be effective in enabling the local community with following capacities:

- Enabling the local community to design and development of participatory methodology for sustainable collection of NTFPs/medicinal plants.
- Preparation of adaptive management plans for wider acceptance and general application of wise practices.

CTCT- an institutional mechanism:

The adoption of CTCT is very much suitable for the on going "Joint Forest Planning and Management" programme in the state/country. This enable local community to prepare adaptive sustainable management plans for medicinal plants/NTFPs.

For details contact:

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What is Raasnaa?

Venugopal S.N.

गन्धामपाचनी तिक्ता गुरुष्णा कफवातजित् ।
शोफश्वासमीराम्बवातशूलोदरापहा ॥
कासज्वरविषाशीतिवातिकामयहिध्महत् । (भा.प्र.)

Raasnaa is widely used in Ayurveda as a prime drug for Rheumatic disorders especially in case of diseases related to inflammation of joints. There are more than fifty important Ayurvedic formulations in which *Raasnaa* is one of the major ingredients such as *Raasnaa ernadadi kasaya*, *Raasnadi kasaya*, *Raasnadi taila*, *Raasnadi choorna*. These formulations are mostly for diseases of joints.

There are around 434 bibliographical citations from 20 classical Ayurvedic medical texts such as *Nighantus*. There are 30 synonyms given to *Raasnaa* in various texts.

The identity of *Raasnaa* is sometimes controversial because of the fact that the practitioners in different parts of India use different species as *Raasnaa* based on availability and usage of drugs. For example 1. *Alpinia galanga* is used as *Raasnaa* by Ayurvedic practitioners of South India. 2. In North India, Punjab and Gujarat, *Pluchea lanceolata* is used as the *Raasnaa* 3. Ayurvedic practitioner Harisaran Anand of Amritsar (Punjab Ayurvedic Pharmacy) believes *Viscum album* Linn. as the real *Raasnaa*. Hence it is known as *Punjabi Raasnaa*. 4. *Withania coagulens* Dunal is used as *Raasnaa* in Sindh region 5. In classical lexicons, both *Nakuli*

and *Gandha Nakuli* are given as the synonyms for *Raasnaa*. One of the famous Ayurvedic practitioner *Hariprapanna* believed *Aristolochia indica* as *Gandha-nakuli* and *A.bracteata* as *Nakuli*. Both these plants are believed to be *Raasnaa*. 6. In 'Aushadhi Sangraha' (a Marathi Ayurvedic Text) has considered *Inula racemosa* Hook. as a real *Raasnaa*.

Ayurveda authorities like Vaidya Bapalal Vaidya and Vaidya K.C.Chunekar have suggested to use *Pluchea lanceolata* as *Raasnaa* until further proof is obtained for other species. Vaidya P.K. Warriar is of the view that *Alpinia galanga* is one of the candidates for *Raasnaa*. According to Vaidya P.V.Sharma there are two types of *Raasnaa*, one is *Surabhi Raasnaa*, which is *Pluchea lanceolata* and *Elaparnee Raasnaa* which is *Alpinia galanga*.

Currently, *Alpinia galanga*, *Alpinia calcrata* and *Pluchea lanceolata* are considered as the top three botanical candidates that are being traded and used as *Raasana* by major Ayurvedic pharmaceutical industries and practitioners. To accept other candidates widely we may have to establish their genuine identity as per Ayurveda Dravyaguna parameters and subject them to clinical research for their candidature.

About the author: Dr. Venugopal S.N., Assistant Director, Head of Centre for ISM Informatics, FRLHT-IAIM, Bangalore
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Alpinia galanga



Alpinia calcrata



Pluchea lanceolata

Primary Health Care uses of Raasnaa

Parts used: Leaves, roots

Dose: Decoction: 50-100 ml

- Piles: Hemorrhoids should be fomented with warm lump of *Raasnaa* leaves/ roots
- Skin disorders: Roots mashed with cows urine, used as a paste, for topical application in skin diseases like eczema, scabies. Also skin wash with decoction of *Raasnaa* roots is beneficial

- Poultice prepared from *Raasnaa* leaves can be applied on joint swellings which reduces pain and swelling.

Additional inputs: Dr. Shilpa Naveen, Research Officer, CII, FRLHT-IAIM, Bangalore.

References: Charaka & Susruta samhitas

Amrutha Vana - FRLHT's Ethnomedicinal Garden

What is unique about our herbal garden?

Our garden is unique because it has been aesthetically landscaped, exclusively with native medicinal plants. Several theme based demonstration plots have been established in the garden using over 950 native species, covering all possible habits, ranging from grasses to herbs and trees. In this garden, the signage accompanying each plant is informative. There are special signages for some plant species, like those that are host to specific butterflies. Visitors, comprising of students, doctors, folk healers, traders, housewives, researchers, etc., can witness here some of the rare species, many that have been collected from distant places and previously only heard of. The current holdings of the garden cover 350 genera and 110 families. Our Garden Rules, while encouraging visitors to touch and feel the plants in the garden, we do not permit plucking of leaves or flowers.



Contact us: Email: garden@frlht.org, ganesh.babu@frlht.org,
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Tel: 91 80 28568006, 28568000, 28565760
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Whats in news?



5-6th May 2010 - Release of ENVIS News Letter Vol2 MEDPLANT by His Excellency Minister for Tourism, Forest and Environment and ENVIS representatives from MoEF, Gangtok, Sikkim

12th July 2010-ENVIS centre represented in the Green India Mission Consultative Meeting held at Mysore University and Chaired by the Honorable Union Minister of Forests-Dr.Jayaram Ramesh.

29th Sep 2010- ENVIS team represented as judge at Debating Matters India, organised by British Council Library, Bangalore.

3rd Dec 2010- 22 participants from Canadian School were sensitized on the Medicinal Plants Diversity of Bangalore city.

21st Dec 2010- Announcement of prizes for the Green Ambassador Competition 2010 was done at Kendriyalaya Sanghatan, I.I.Sc, Bangalore. For more info just visit <http://envis.frlht.org/documents/Green%20ambasador%20competition.pdf>

Neighbourhood Medicinal Plants of Bangalore CDROM for High School Students



Now, Bangalore city students can use the new CDROM, to explore your fascinating plant world. Experience the richness of plant diversity in your traditions, life style and environ. Share with us your interesting and enriching learnings in a creative way(such as poems, essays, paintings etc. Best expressions will be published in our website : www.envis.frlht.org. Email:envis@frlht.org or send your entries by post.



Herbarium Technique Training Programme

The goal of FRLH is to make significant contribution towards creating awareness about the diversity of medicinal plants and their conservation status. Thus act as a vehicle to promote medicinal plant conservation and go a long way to help revive our health care traditions. Several training programs and workshop have been conducted for high school students, teachers, lecturers, students of pre-university,

graduation and post graduation, ISM practitioners on need basis. Usually a 15 member team is given training and interested institutions or groups may write to:

Assistant Director

FRLH (Bio-Cultural Herbarium & Repository of Raw Drugs)

Foundation for Revitalisation of Local Health Traditions No. 74/2, Jarakbande Kaval, Post Attur, Via Yelahanka Bangalore. 560 106, Karnataka, INDIA. Phone: + 91 80 2856 8005/8000/8001 Fax: + 91 802856 5873

Email: herbarium@frlht.org, k.ravikumar@frlht.org
<http://www.iaim.edu.in>

Conservation Concern Medicinal Plants for Himachal Pradesh

G.S.Goraya

Conservation Assessment and Management Prioritisation (CAMP) workshop was held at Shimla on 1-4 Dec 2010. This CAMP was sponsored by National Medicinal Plants Board, Government of India and organised by Himachal Pradesh Forest Department. This CAMP is based on IUCN Guidelines.

Outcome of this workshop: 57 species were assigned threat status for Himachal Pradesh. Amongst them 47 species are threatened and 10 species are near threatened and not evaluated. The following list provides details:

Critically Endangered:

- | | |
|------------------------------------|----------------------------------|
| 1. <i>Aconitum heterophyllum</i> * | 6. <i>Juniperus communis</i> |
| 2. <i>Aconitum deinorrhizum</i> * | 7. <i>Litsea glutinosa</i> |
| 3. <i>Atropa acuminata</i> | 8. <i>Ephedra gerardiana</i> |
| 4. <i>Dactylorhiza hatagirea</i> | 9. <i>Malaxis acuminata</i> |
| 5. <i>Gentiana kurroo</i> * | 10. <i>Rheum australe</i> |
| 6. <i>Habenaria edgeworthii</i> * | 11. <i>Rheum webbianum</i> * |
| 7. <i>Jurinea dolomiaea</i> | 12. <i>Roscoea alpine</i> |
| 8. <i>Lilium polyphyllum</i> * | 13. <i>Roscoea procera</i> |
| 9. <i>Malaxis muscifera</i> | 14. <i>Selinum vaginatum</i> * |
| 10. <i>Picrorhiza kurroa</i> | 15. <i>Selinum connifolium</i> * |
| 11. <i>Swertia chirayita</i> | 16. <i>Skimmia laureola</i> |
| | 17. <i>Symplocos paniculata</i> |



Ephedra gerardiana

Endangered

- | | |
|--------------------------------------|------------------------------------|
| 1. <i>Angelica glauca</i> * | Near Threatened |
| 2. <i>Arnebia benthamii</i> * | 1. <i>Didymocarpus pedicellata</i> |
| 3. <i>Arnebia euchroma</i> * | 2. <i>Hyoscyamus niger</i> |
| 4. <i>Berberis aristata</i> * | 3. <i>Hyssopus officinalis</i> |
| 5. <i>Betula utilis</i> | 4. <i>Onosma hispidum</i> |
| 6. <i>Colchicum luteum</i> | 5. <i>Rheum speciforme</i> |
| 7. <i>Dioscorea deltoidea</i> * | |
| 8. <i>Fritillaria roylei</i> * | Data Deficient |
| 9. <i>Habenaria intermedia</i> * | 1. <i>Paeonia emodi</i> |
| 10. <i>Nardostachys grandiflora</i> | |
| 11. <i>Paris polyphylla</i> | Not Evaluated |
| 12. <i>Podophyllum hexandrum</i> | 1. <i>Aconitum laeve</i> |
| 13. <i>Polygonatum cirrhifolium</i> | 2. <i>Desmodium gangeticum</i> |
| 14. <i>Polygonatum multiflorum</i> | 3. <i>Oroxylum indicum</i> |
| 15. <i>Polygonatum verticillatum</i> | 4. <i>Uraria picta</i> |
| 16. <i>Rheum moorcroftianum</i> | |
| 17. <i>Saussurea obvallata</i> | |
| 18. <i>Taxus wallichiana</i> | |
| 19. <i>Zanthoxylum armatum</i> | |



Picrorhiza kurroa



Podophyllum hexandrum

*indicates Global Status.

This workshop emerged out list of threatened medicinal plant species for Himachal Pradesh with 5- year Action Plan towards concerted research and conservation action.

More information:

Dr.G.S. Goraya I.F.S. Chief Conservator of Forests, HP. Email: gsgurinder@gmail.com

Vulnerable:

1. *Aconitum violaceum**
2. *Allium stracheyi**
3. *Bunium persicum*
4. *Cinnamomum tamala*
5. *Hypericum perforatum*

Just double click: www.envis.frlht.org / www.frlhtenvis.nic.in

Explore a well referenced, unique one-stop-information house on medicinal plants of India. This exclusively website gives information on conservation concern species, traded species, latest reports/ publications/ directories. User friendly search, enables us to access range of information related to botanical and local names correlations, view digital atlas and digital herbarium! Down load free *Nedplante*-version newsletter. Browse for more.....





Awards and Recognitions

Sri Darshan Shankar, Founder Director, FRLHT has been awarded with the prestigious "Padma Shri Award" in the field of Public Affairs, by the Government of India, on the occasion of the 61st Republic Day, 26th of January in the year 2011.

He has a uniquely distinguished career as an entrepreneur, educationist, visionary and a follower of traditional knowledge systems.

By dedicating his life to establishing world-class healthcare, and education infrastructure and expertise in India in Indian systems of medicine, Sri Darshan Shankar has provided visionary leadership and played a key part, both in developing and institutionalizing the paradigm of inclusive growth, as well as in enabling many private as well as Govt. institutions to take its rightful place at the top table of nations



2010-11: The Indian Express (EMPI Group of Institutions) has recognized I-AIM for "EMPI Indian Innovation Award".

2009-10: The Dept. of AYUSH, Ministry of Health and Family Welfare recognized IAIM-FRLHT as a Center of Excellence in Indian Systems of Medicine.

2009: IAIM-FRLHT's Hospital received an Award for proficiency in clinical application of Ayurveda Shastra from Vaidyraj Datar Panchaboutik Chikitsa and Samshodhan Kendra, Sangli, Maharashtra.

2008: IAIM-FRLHT's Hospital received the Global Propagation of Ayurveda award from the AVR foundation Coimbatore.

2007: Better Interiors - a publishing house in Bombay awarded FRLHT as "The Green institution Award" for its medicinal plants landscaping expertise.

The Rotary Club of Bangalore awarded FRLHT its "Citizen Extra Ordinaire" award for its path breaking contributions to the field of traditional medicine & environment.

2003: The Department of Scientific and Industrial Research recognized FRLHT-IAIM as a organization engaged in "Scientific and Industrial Research".

The Rosenthal Centre for Complementary & Alternative Medicine, of the Medical School in Columbia University, New York, awarded FRLHT with its first International award for "Cultural Stewardship".

2002: The "Medicinal Plants Conservation Program" designed by FRLHT was selected by the United Nations from around the globe for the "Equator Initiative Prize", for linking conservation to livelihood needs. This award was given to FRLHT in Johannesburg, at the World Summit on Sustainable Development.

The Ministry of Environment and Forest, Govt. of India recognized FRLHT-IAIM as "National Center of Excellence for Medicinal Plants and Traditional Knowledge".

1998: FRLHT received the prestigious "Norman Borlaug Award" for its contributions to the Conservation of Medicinal Plants.



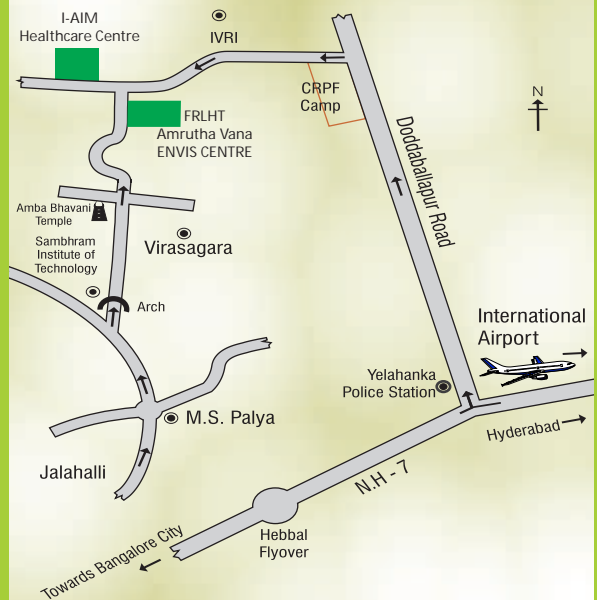
INTERNATIONAL YEAR OF FORESTS • 2011

Celebrating Forests For People

The United Nations General Assembly declared 2011 as the International Year of Forests to raise awareness on sustainable management, conservation and sustainable development of all types of forests. Tell us how you plan to celebrate "forests for people" during 2011, so that we may showcase your stories and initiatives through this website.

<http://www.un.org/en/events/iyof2011>

How to reach us



An Expression of FRLHT Institute for Ayurveda & Integrative Medicine

www.iaim.edu.in

We invite readers to send their responses/views/features of interest etc. through e-mail: envis@frlht.org (Please note: Articles for subsequent issues should not exceed more than 1500 words. It can be accompanied with images in .jpg format)

For more information contact:
The Co-ordinator,
ENVIS Centre on Medicinal Plants

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