The project:
The study is being carried out in four sites in India and Nepal, with collaborating institutions the Foundation for the Revitalisation of Local Health Traditions (Bangalore, India), and ForestAction (Kathmandu, Nepal). Work to date includes household surveys in participating villages, participatory exercises to share information about species, prioritisation of study species, formation of a local research team to train in scientific methods, resource mapping, hypothesis development, setting up indicators of yield and plant health, random location of plots within a forest, enumeration and experimental treatments.

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Methodology for planning sustainable management of medicinal plants in India and Nepal

Update report, October 2004

Written by Sarah Gillett and Anna Lawrence

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This project is working with rural communities in India and Nepal to develop sustainable methods for harvesting medicinal plants, on which they depend, from the forest.

Medicinal plants

Around eighty percent of medicinal plants used worldwide for both domestic use, sale and export are wild harvested. As markets increase for medicinal plant products, wild populations are being depleted, often at the expense of local livelihoods. However, these studies extrapolated from areas rich in commercial fruit trees to ecologically and economically incomparable areas, while others were based on poor understanding of community perspectives and priorities. Dove (1993) criticised this movement of advocating opportunities that have no other claimants, expecting rural people to continue living in rural areas once they had the means to go to cities, become educated and get non-labour jobs. A more detailed overview of this can be found in the Special Issue of the International Forestry Review: NTFPs Revisited www.eci.ox.ac.uk/humaneco/he_IFR.htm (Lawrence, A., 2003).

References:


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Outputs

On a local level, sustainable harvesting protocols will be developed for study species, and methods institutionalised by incorporation into local management plans. Finally, the project aims to write a manual, for use by communities, NGOs and government bodies, to develop locally applicable sustainable harvesting methods for NTFPs.

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Enumeration of plots

Our collaborators discussed what factors needed to be measured with the local research teams, and from these discussions have developed methods for enumeration. In all cases, researchers must count numbers of, and measure all plants of the species in question in the plot, along with measurement of various edaphic, physical and biological factors. Regeneration of the species in question is also measured.

Once plots have been enumerated, harvesting can be applied as decided, and plots will be monitored for successive years to judge the effect of the different treatments on the study population.

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Activities to date

Household survey

The household survey was carried out in each location to gain insight into local perceptions of the forest and medicinal plants, and local use. Semi-structured interview techniques were used, and information was triangulated through focus group discussions.

In a group setting, local people were asked to list medicinal plants they used from the forest. These were tabulated in front of the group, with information about uses recorded simultaneously. The resulting list was used to prioritise species for the study.

Local people collect harro leaves for fodder for their livestock in Nepal. Photo by Sarah Gillett

Species prioritisation

Each NGO set certain criteria for species selection, and local people added to this list before choosing species to study. Criteria included species which provide livelihood, are actively harvested at present, cannot be cultivated, are endemic, and are noted to be in decline in an area.

In India, species chosen include Vateria indica, Garcinia gummi-gutta, Decalepis hamiltonii and Gymnema sylvestre. In Nepal, study species are Swertia Chirayita (Chiraito), Gaultheria fragrantissima (Machhino), Asparagus racemosus (Kurilo) and Terminalia chebula (Harro).

Once species were chosen, further focus group discussions were led to uncover local knowledge about the species, including normal harvesting practices. Potential threats to the population of the species were discussed, and these were used to develop hypotheses.

Formation of a local research team

In each locality, a local research team has been formed to carry out project activities and pass on learning to the rest of the community. Research teams include people in positions of power, healers, and those interested in medicinal plants.

Resource mapping

The resource was delimited by the local research team, and mapped both in a participatory way, and with GIS. Populations of chosen species were marked on the map.

Hypothesis development

Once threats to the chosen species were shared, our collaborators were able to lead a hypothesis formation exercise with the local research team. It was kept in mind that hypotheses need the format “If x, then y, because of z”. An example would be: If only one in two kurilo plants are harvested, then regeneration will increase, because more parent plants are available to produce seed.

Development of experimental treatments and indicators

Based on a statistically acceptable protocol, experimental treatments were developed for each species to test the hypotheses.

It was decided to use blocking where possible, to reduce uncontrollable factors. All treatments (3 or 4) are replicated in plots next to each other in a block. Generally three different regimes are used for each species: current harvest (business as usual), a control plot (no harvest), and a treatment plot (for example only picking ripe fruits). It is important to have plots with normal harvest and a control plot in each case. The number of different ‘treatment’ plots however can differ. Each plot within the block has a buffer which is not harvested, but in which the assigned harvest rate is applied. This reduces edge effect in the study plot.

Indicators of plant yield and health have been set for each species, and will be tested during the project. Once acceptable indicators have been found, workload will decrease, as factors which are easy to measure can be used to give an indication of yield or health.

Random location of plots within a forest

Randomness is a scientific construct, which, for statistical rigour, is important. Without randomising plots, bias may be introduced to results, and extrapolation of findings to the whole resource area impossible. In India, in order to randomly locate plots, community members threw stones or seeds onto a map of the study area. The problem then lay in locating the plots in the forest from their random position on the map. To address this, very small scale maps were made of the areas where the stones landed, and the direction and number of paces from landmarks were decided upon.

In Nepal, there was concern from villagers that the stone-throwing method may result in all the plots being clustered in a certain area. This community have a path running the length of the study area, so decided to allocate random time intervals to walk along the path, and at the allocated time, move off the path in a perpendicular direction (to either the left or the right) for another pre-determined time period. The block would then be laid at the point where the researcher stopped.

Local researchers and ForestAction researchers enumerate a plot in Nepal. Photo by Kamal Bhandari