

## Iracambi Medicinal Plants Project in Minas Gerais (Brazil) and the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP)

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### Introduction

Medicinal and aromatic plants (MAP) are of global significance, both within the context of the community and within the realm of international trade. Between 40,000 and 50,000 plant species are known to be used in traditional and modern medicinal systems on the global scale. The majority of these MAP species are provided by collection from the wild (LANGE & SCHIPPMANN 1997, SRIVASTAVA et al. 1996, XIAO PEI-GEN 1991).

Many MAP species and populations are threatened by over-harvesting, land conversion, and habitat destruction. This reality necessitates the development of proactive approaches for MAP collection and the incorporation of integrated principles to ensure the sustainability of the plant utilization.

International recognition of the need to “save the plants that save lives” has been gathering momentum since 1988. Guidelines for the Conservation of Medicinal Plants are currently under revision and work is now focused on the development of International Standards and Criteria for the Sustainable Sourcing of Medicinal and Aromatic Plants (ISSC-MAP).

Iracambi has been chosen as a Field Consultation site for the ISSC-MAP (LEAMAN 2005; LEAMAN & SALVADOR 2005). The purpose of the field consultations is to bring global negotiations surrounding sustainable harvesting into local contexts, and to see how understood principles function in a practical sense.

### Iracambi Medicinal Plants (IMP)

Located at the boundary of the Atlantic Rainforest in Brazil, one of the world’s most threatened ecosystems, the Iracambi Medicinal Plants (IMP) project, or Medicina da Mata, has identified twelve indigenous plant species of traditional, medicinal and commercial value (table 1).

The project aims to provide an alternative source of income for local farmers through the sustainable harvesting of these plants. At a later stage, the ISSC-MAP shall be applied as a framework to inform the collection area management plan, in so formalizing an economic incentive to conserve the forest.

The medicinal plants grow within an initial project area of 35 square kilometres. This initial area, known as Graminha, is located in South-eastern Minas Gerais in Brazil, in the municipality of Rosário da Limeira. The identified species of plants are traditional medicines, identified and commonly used by members of the local community. This initial study and collection area is anticipated to expand within an area of approximately 250 square kilometres in the following ten years, contingent upon the results received from the efforts executed in the initial study area.

**Table 1.** Twelve indigenous plant species of traditional, medicinal and commercial value identified for the IMP project.

Scientific name	Common name <sup>1</sup>
<i>Baccharis drauculifoliae</i>	Alecrim de campo
<i>Baccharis genistelloides</i>	Carqueja
<i>Bauhinia forficata</i>	Pata de Vaca
<i>Carpotroche brasiliensis</i>	Sapucainha
<i>Casearia silvestris</i>	Guacatonga
<i>Croton urucurana</i>	Adrago
<i>Cecropia glaziovii / hololeuca</i>	Emba uba
<i>Echniodorus macrophyllus</i>	Chapeu de Couro
<i>Hymenea coubaril</i>	Jatoba
<i>Passiflora alata</i>	Maracuja
<i>Pothomorphe umbellata</i>	Capeba
<i>Tabebuia heptaphylla</i>	Ipe roxo
<sup>1</sup> in Brazilian Portuguese	

Iracambi Medicinal Plants operates with the support of its host organization, the Iracambi Atlantic Rainforest Research Centre, established in 1999. The Research Centre is dedicated to promoting sustainable development through research and action, and to improving the quality of life of local farmers by making the conservation of the rainforest more attractive than its destruction. Iracambi Forest Research and Conservation Centre is largely a volunteer-run organization with volunteers participating between one week and six months. Since 1999 IMP has relied on expertise from its volunteers to continue the research and to meet the objectives of the project. A lack of continuity due to volunteer turnover presents a challenge, but at the same time the high quality of volunteer work has proved invaluable to the project.

IMP is presently funded by the Manfred-Hermesen-Stiftung, Germany. This specifically supports the harmonising of traditional har-

vesting practices with formal collection criteria of sustainable harvesting. Thus it has allowed IMP to create an infrastructure that employs members of the local community in the nursery and a forest engineer as project manager to oversee these two years (2005/2006) of the development of a pilot project for economically viable use of medicinal plants from the Atlantic Forest. It also facilitates support within the pre-assessment and assessment of Iracambi as an ISSC-MAP Field Consultation project.



**Figure 1.** Land use: A view of the topography and different land uses in Iracambi's study area (Photo KAREN FRANZ 2005).

### **Purpose and objectives**

The Iracambi Medicinal Plants (IMP) project is founded on a holistic approach that recognizes the interaction between people and plants. Seeking to treat the cause rather than the symptoms of deforestation, the project aims to strengthen both the economic and cultural value of the forest. In so doing, IMP is determined to revitalise the links between local people and the forest, as well as fostering support for the preservation and application of traditional medicinal knowledge within the local community.

The twelve plant species selected for the project were chosen using three main criteria: (1) traditional ethnobotanical knowledge; (2) existing species-specific economic information, including pharmacological analysis and existing market success; and (3) the role of the species in local forest ecosystems.

### **IMP and ISSC-MAP**

The opportunity to act as one of the field sites for the testing of the draft ISSC-MAP fits into the vision of Iracambi and can help providing it with a methodology and framework within which to operate. Participation in the process of developing the ISSC-MAP ensures that efforts to respect the people, plants, and environment are all reflected in the final product.

An ISSC-MAP field consultation visit is scheduled for autumn 2005, during which an independent panel will be on-site to assess the practicability and relevance of the current draft ISSC-MAP at Iracambi. Wolfgang Kathe and Ximena Buitrón will co-ordinate the field consultation. Results from the various field consultations will be discussed with the advisory panel and fed back into the ISSC-MAP development process in December 2005 on the Isle of Vilm.

### **Project implementation**

#### *Community involvement and contributions to local livelihoods*

Medicinal plants are a bridge between people and the land on which they live. They offer an insight into the wild that brings both health and understanding. Through their healing they touch the core of the community. Thus it is natural that local participation lies at the root of the IMP project. Stemming from this we see community involvement, the creation of direct employments and links to outside regional organizations.

IMP facilitates community involvement through two main channels: workshops and meetings. Workshops are held both formally and informally, at the homes of community members and at the on-site laboratory, where medicines are made. Workshops focus on the sharing of information about plants, including traditional medicinal uses and harvesting techniques. Meetings focus on the institutional components of Iracambi and ensure that other organizations are aware of the workshops and the events that are held within the community. These gatherings provide a way for IMP to broaden its contact and knowledge base, and to react to the activities of other organizations working towards similar goals.

Local involvement in the project begins with the natural distribution of the current market favourite, capeba (*Pothomorphe umbellate*). Found growing on west facing slopes in open pasture, reclaimed forest edge and sparsely covered forest areas, capeba is found in abundance in six farms in the immediate hill communities of Graminha. Here there is specific interest on the part of the farmers to pursue the sale of capeba as a supplement if not alternative to the current cattle and coffee crops.

IMP employs one woman from the Graminha community on a part-time basis to work in the nursery. Also within the local context, IMP is working to revitalize the community herbal practice in the nearby community of Sao Pedro. In Rosário da Limeira the mayor and counsellors are in support of the development of the medicinal plant project. Project collaboration also extends to the university towns of Viçosa

and Muriaé, further developing knowledge surrounding phyto-technology, forest engineering, and pharmacology. IMP facilitates information feedback between the local agricultural, political, and scientific communities.



**Figure 2.** Nursery: Seedlings being grown in the shade of Iracambi's forest nursery (Photo: JOSH KOHLER 2005).

In 2002, IMP cleared a medicinal plant trail through the various forest ecosystems of different medicinal plants. Workshop participants, visitors and school groups are invited to follow a self-guided tour along the trail to view the natural habitat and re-growth stages for each of the medicinal plant species.

CTA (Centro de Tecnologia Alternativa, Viçosa) is another local organization, consisting of community leaders and university instructors who have links with the area. Within the context of sustainable development, CTA also works towards the improvement of local livelihoods through alternative land uses and agricultural practices. IMP and CTA are collaborating to host joint field days. These field days will address sustainable development, sustainable harvesting of medicinal plants and ecotourism in the communities of the buffer zone of the Serra do Brigadeiro State Park.

IMP is also developing a relationship with EMATER (the state agricultural extension agency) and the Rural Workers Union (Sindicato dos Trabalhadores Rurais). With the help of these organizations, IMP hopes to broaden the scope of its project and to identify additional communities who will be able to benefit from the Medicina da Mata's work.

#### *Understanding cultivation, wild harvesting and enrichment planting*

Sustainable harvesting has specific indicators for each plant species. Iracambi recognizes that each plant has its own ecological footprint that allows it to create a niche within the environment.

Iracambi uses a system of enrichment planting whereby propagated species are planted out into secondary forest. In the first stage of propagation, seeds and cuttings are collected from the wild and brought into the forest nursery. This shade nursery was created in 2001, specifically located within the forest to emulate the natural environments of the indigenous forest species. By exploring different methods of propagation, and by growing plants in various conditions (including different light and drainage levels), the nursery works to identify the optimum sustainable yield of the plants. These techniques combine traditional plant knowledge, elements of experimentation, and basic botanical study to identify optimal conditions for plant growth and medicinal strength.

The second stage of enrichment planting involves the introduction of the plant species into three primary areas for continued monitoring and study: along the medicinal plants educational trail, alongside forest edges (creating buffer zones between the forest and degraded land), and amongst other plants or with other seedlings in the secondary forest. Once returned to their natural environment, selected mature plants take their place in harvesting trials. In these trials, plants are harvested according to three severities: light, moderate or severe. The re-growth patterns of these plants are monitored to eventually determine their optimum sustainable yield.

In addition to their medicinal uses, many of the species within the IMP project have ecological characteristics that are useful for land restoration planting. Capeba is a locally identified species that is very effective in restoring degraded land by stimulating earthworm activity, which improves soil structure and helps balance soil Ph (GOETSCH 1992). Pata de vaca (*Bauhinia forficata*) is a leguminous, nitrogen-fixing plant that improves nutrient availability in soils. The Emba uba (*Cecropia glaziovii / hololeuca*) tree is a pioneer species that grows quickly and provides shade, opening habitat niches and allowing other forest plants to begin to grow.

#### *Development of Collection Area Management Plans (CAMP)*

IMP recognizes the difference between "wild crafting" and "aggressive harvesting" and seeks to determine a balance between economic return and plant health for each of its twelve identified species. Cultivation techniques can be used responsibly to benefit the ecosystem, to ensure a sustainable yield and to meet commercial demand. The CAMP assesses each species by investigating its biological, ecological and cultural characteristics.

A brief description of the biological and ecological characteristics and cultural significance is being developed for each of the twelve species. Initially a literature search is conducted to determine the general biological, ecological, and pharmacological features of each identified medicinal plant. This information is then supplemented with field studies, examining growth characteristics such as height, and number of leaves and flowers. This information is acquired through enacting sustainable harvesting trials and performing a geographic inventory of species populations within the study area. Specifically, with the help of Iracambi's on-going GIS project, IMP works to locate and map areas in which medicinal plants are naturally growing. This information contributes to project management, and agro-ecosystems knowledge. Traditional medicinal uses and local harvesting practices indicate the cultural significance of the plants, and these are supported by local and regional ethnobotanical studies. Finally, the commercial importance of each plant is considered.

### Documentation and reporting

IMP is developing an integrated knowledge management system that complements that of its parent organization, the Iracambi Forest Research and Conservation Centre. All studies are recorded for future reference in a document management structure that is separated into two main categories: natural systems and artificial systems. Natural systems are composed of three sub-components: people, plants, and the environment. Similarly, the sub-components of the artificial systems are interlinked: law, institutional management and commercial / market analysis. Due to the nature of Medicina da Mata's work and the interconnected nature of these sub-components, the boundaries between them are often blurred, and thus not mutually exclusive.

Standardized documentation and reporting is a key component of the current draft of the ISSC-MAP. For many of the smaller operations around the globe, the specific information and compliance documentation requested can be difficult and cumbersome. Iracambi is dedicated to meeting these requirements to the best of its ability, given a limited staff and its status as an emerging medicinal plant enterprise. Support in the pre-assessment phase of data collection has been much appreciated under the guidance of ISSC-MAP representative, Ximena Buitrón.

### Conclusions

The development of the ISSC-MAP is essential to meet social, cultural, ecological and economic objectives, all centred upon the sustainable use of medicinal plants sourced from the wild.

However, the ISSC-MAP presents an enormous range of challenges in their development and consequently in their application. As IMP seeks to translate the relevant international documents into practical applications, it works to ensure that original objectives are preserved and reflected. Still in the pre-assessment phase, IMP is incorporating the structure and principles of the ISSC-MAP into its evolving framework. As such, IMP should prove to be a valuable field implementation project and source of feedback on the effectiveness and applicability of the ISSC-MAP.

Meanwhile, the value attributed through the ISSC-MAP to the local understanding of sustainability is helping to establish the vital need for responsible harvests and so help revitalise a deeply rooted tradition of medicine, and with it a way to save the plants that save lives.

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