ENDOGENOUS DEVELOPMENT IN INDIA

REVISITING SWADESHI

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Illustration on the cover

A woman farmer placing a neem cake bag in the irrigation channel in a paddy field.

PREFACE

The Compas programme for endogenous development has been in existence for over 10 years now, linking 26 partner organizations in 12 countries spread across Asia, Africa, Latin America and Europe. The common thread in the concerns and activities that link these organizations is the desire to comprehend, strengthen and enrich the traditional knowledge systems of their respective areas to meet today's challenges and requirements. In the context of Asia, in the last 10 years, Compas partners have been involved in wide ranging activities in the areas of healthcare, agriculture and veterinary care, to name just a few. The partners have been drawn from India, Sri Lanka, Indonesia and Nepal. The activities have also involved scholars and experts drawn from various branches of traditional knowledge systems. Several universities have also been interacting with the Compas partners in these efforts in all these locations. The Compas Asia programme has a formal collaboration in India with the Gandhigram Rural University in Tamil Nadu and the Rajiv Gandhi University for Health Sciences in Karnataka.

The previous phase of the COMPAS programme was for a period of four years from January 2002 to December 2006. There was a comprehensive review of the experiences of our work in the area of endogenous development during this phase in a partners meeting that took place in Poland in September 2006. Subsequently, these experiences were also reviewed in an Asian partners meeting that took place in Sri Lanka in February 2007. It was decided that a publication can be produced wherein all the partners from India would share their experiences in the area of endogenous development. These experiences constitute the bulk of this publication. There is also an initial chapter where the theme has been introduced by the Compas International Coordinator and an introduction to the Indian experiences that has been put together by the coordinator of the Indian programme. This is largely compiled and edited based on the discussion between partners in the Poland meeting in September 2006. It is our hope that this would enable to share experiences in this area with various other groups in India and elsewhere.

December 2007

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TOWARDS ENDOGENOUS DEVELOPMENT

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The importance of participatory approaches and of integrating local knowledge into the development interventions has become broadly recognised. However, many of these approaches experience difficulties in overcoming an implicit western bias. Endogenous development seeks to overcome this bias by making peoples' worldviews and livelihood strategies the starting point for development. Many of these worldviews and livelihood strategies reflect sustainable development as a balance between material, social and spiritual wellbeing. The main difference between endogenous development and other participatory approaches is its emphasis on including spiritual aspects into the development process, in addition to the ecological, social and economic aspects. Endogenous development is mainly based on local strategies, values, institutions and resources. Key concepts within endogenous development are: local control of the development process; taking cultural values seriously; and finding a balance between local and external resources. The aim of endogenous development is to empower local communities to take control of their own development process. While revitalising ancestral and local knowledge, endogenous development helps local people select those external resources that best fit the local conditions. Endogenous development leads to improved well-being, increased bio- and cultural diversity, reduced poverty, reduced environmental degradation, and a self-sustaining local and regional exchange.

The Compas programme started in 1996 with case studies on indigenous knowledge and worldviews. In subsequent years, the importance of traditional knowledge in a modernisation context was documented making use of insights gained in field programmes. Since 2003, the emphasis was to develop methodologies for supporting endogenous development and on understanding the diversity of knowledges and sciences. This experience culminated in the book Learning Endogenous Development (Practical Action, 2007) and six publications in the Compas series Worldviews and Sciences. Based on more than 10 years of action research across Asia, Africa, Latin America and Europe, the insights gained were animatedly debated during a Network meeting in Poland (September 2006) and a Declaration was formulated and agreed upon to clarify where the Compas network stands for. The Declaration of Lezasjk is included as an Annex in this book. The publications can be downloaded from www.compasnet.org

In October 2007, the following vision and mission was formulated:

Vision: The Compas programme envisions self-sustaining local communities across the globe living in dignity, resilient to external and internal stresses with a sense of belonging to their traditional worldviews.

Mission: The Compas programme is committed to support field programmes of Community Based Organisations (CBOs) and Non-Governmental Organisations (NGOs) to develop, test and improve the endogenous development approach in dialogue with modern western-based science and in close cooperation with universities and research centres. The Compas programme will systematise the experiences in such a way that other CBOs, NGOs and government agencies can make use of the endogenous development approach. Through capacity building and policy dialogue efforts are made to create an enabling environment that promotes and supports endogenous development. Intercultural dialogues between CBOs, NGOs,

universities and research centres across countries and continents are facilitated to enable systematisation beyond the national level.

This book is produced to enable the Compas partner organisations in India to share their methodologies for endogenous development gained in the previous years with a new and hopefully growing group of interested actors. In India, the focus of the Compas network partners will be to increase and deepen understanding of the endogenous approach in thematic areas such as local health traditions and traditional organic farming. At the national level, several activities are planned and implemented to ensure that civil society organizations, social movements and governmental organizations are aware of the importance of endogenous development approach. Where possible staff of these organisations can be assisted to find their own endogenous development approach. Comparable to network partnerships in other Asian, African and Latin American countries, a multistakeholder platform is initiated in India in 2007-2008 to facilitate the dialogue on endogenous development approaches.

Do share your views, challenge ours and join the growing movement of individuals and organisations searching for well-being that builds on balanced material, social and spiritual growth across cultures and continents. It is my hope that the readers will get inspired by the experiences documented in this book. After ten years of sharing mainly among like-minded people, we feel the moment has come to engage in strategic dialogues with critics and non-network members as well.

ENDOGENOUS DEVELOPMENT IN INDIA : REVISITING SWADESHI

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Prologue

The word Swadeshi is rooted in the Indian cultural context and may be said to be deeply embedded in the Indian psyche. During the freedom struggle, the nationalist leader, Balagangadhar Tilak made a declaration – " Swaraj is my birth right" to the then British government. This marked a public declaration of a radical departure from the position that had been till then widely held and expressed, namely, to seek reforms and improvement within the broad framework of the British colonial administration. However, it was left to Gandhiji who returned to India in 1916 after a long sojourn in South Africa to give flesh and muscle to this concept. During the three decades that followed his return to India from South Africa he came up with a series of constructive programmes that were all clustered around the concept of Swadeshi and Swaraj. Swaraj may be loosely translated as – "Self rule or Rule in accordance with once own basic or innate nature". However, Gandhiji died within a few months of attainment of political freedom by India. While his influence at the level of thinking and philosophy has been deep and pervasive in Indian public life, it is a fact that he was not around to shape the destiny of free India after January 1948. It is still an open question as to what difference it would have made to the development of free India had he been around in public life even for a few years after attainment of independence. However, it is a fact that he never had the responsibility of (or chose not to) administering a modern nation state. Thus we are left guessing in terms of how he would have interpreted Swadeshi and Swarajya as an independent nation was evolving its thinking in policies from 1950 onwards. A very large number of individuals and organizations in India are still inspired and guided by the thinking and philosophy of Swadeshi though they may or may not choose to use this particular term. This monograph is an attempt to provide a summary and overview of some recent experiences in this area reflecting the work of the COMPAS partners from India.

Endogenous development in india: Some recent experiences

This book is an attempt to provide an overview regarding experiences in this area from four different Indian partners who have been part of the COMPAS programme – Centre for Indian Knowledge Systems (CIKS) located in Tamilnadu, Krishi Prayog Pariwara (KPP) and the Foundation for Revitalisation of Local Health Traditions (FRLHT) located in Karnataka and Integrated Development through Environmental Awakening (IDEA) located in Andhra Pradesh. These groups have rich and varied experience on various subjects and themes including agriculture, healthcare, ethnoveterinary traditions and livestock and water management, to name only a few areas. In this section we are summing up their experiences based on their work, particularly (but not exclusively) as part of the COMPAS programme upto the end of the year 2006.

The ground reality

The following may be summed up as what we consider as today's ground reality with respect to endogenous development.

The knowledge is rich and extensive. This has two aspects namely classical tradition with its own corpus, texts and theoretical framework as well as a rich and extensive folk tradition. Vast variations exist within the country in terms of strength and prevalence of traditional knowledge. Sometimes this is based on geographical factors such as – an area being tribal or non tribal area and the degree of urban character. There are also some differences seen between northern and southern parts of India since the southern part of India has been relatively sheltered from external influence during the last three centuries. Of course there may also be fascinating insights from modern areas about how traditional knowledge is evolved, adapted and blended with modernity. It also seems to be uneven thematically. It is very strong and extensively practiced in some areas such as traditional medicine and agriculture. However, it is not very visible and perhaps weakening in other areas such as theoretical sciences.

The folk tradition is rich and evolving. It is seen that communities are innovative and are continuously coming up with newer uses for older material and even newer users for new material which may not only be natural products but even synthetic products. There is a high quality of skill and scholarship that is also found outside of formal institutions. For example, while there are over a hundred colleges imparting training in Ayurveda some outstanding skilled practitioners of traditional medicine are also to be found in families where training is still informal.

In many areas the modern and traditional run as parallel tracks with no mutual understanding. For example, all public construction in India draws upon the skills and talents of modern architectural and civil engineers while the traditional religious structures such as temples are constructed using the talents and abilities of traditional artisans and sculptors. Quite often they have no understanding of the approach of each other's work. In terms of social and political support there is a dichotomy. The support that traditional knowledge institutions receive by way of funds and patronage is indeed very limited. For example, in the expenditure of the Ministry of Health of the Government of India, the budgetary allocation for Indian systems of medicine (which includes Ayurveda, Siddha, Unani and Yoga) never exceeds 5% of the total budget. There is also a curious dichotomy between public and private behaviour with respect to traditional knowledge. A very large number of Indians including those who are in positions of power (politicians, industrialists etc) and even in the leadership of modern institutions (Vice Chancellors of Universities, Directors of IITs and Research Institutes) have a great sympathy towards traditional knowledge and may be said to be – "emotionally convinced" about the innate soundness and wisdom of traditional knowledge in many areas including health. However, this rarely or never finds expression in public.

The context of practice of much of traditional knowledge has changed and there is a need to evolve norms and standards to suit the changing times. For example, the procedures with respect to education and qualification of medical experts, production and sale of drugs and formulations etc., have to be adapted to today's changing situation. There are also changes taking place with respect to the life style (clothing, food etc) which have a critical bearing on the use of traditional knowledge, but there is not enough support being provided for traditional knowledge carriers and institutions to design ways and means to respond to these challenges.

There is a great need to evolve methodologies to comprehend and assess traditional knowledge. It is widely seen and accepted that there are many areas in which the modern methodology *per se* may not be satisfactory but one is not able to clearly articulate an alternative

methodology that would be acceptable to the traditional practitioners and also comprehensible to the modern educated public at large. This is because the basic theories, foundational principles and World view are widely different. There is a clear lack of confidence among a large body of traditional practitioners.

This is partly due to long period of neglect by the state coupled with loss of links with the larger Indian society which has nurtured them traditionally. Modern institutions such as Universities and research centers are quite often unable to engage meaningfully with traditional knowledge and its practitioners. This is largely because the modern educated have no knowledge or even an acquaintance of the counterpart areas of tradition. Very few attempts have been made to bridge this gap through any dialogue. Interscientific dialogue that has been undertaken till now has only served a very limited purpose to the extent that it has developed some appreciation and respect for traditional knowledge. However, it will perhaps take a lot more time and effort before this can mature into meaningful collaborations. There is a ready acceptance of the plurality of scientific traditions among philosophers and sociologists of science. However, such an acceptance is generally very difficult to come by amongst working scientists in other disciplines say, for example, in medicine or agriculture.

Under the present circumstances advocacy has an important role to play for influencing state policy as well as practitioners and leaders from modern institutions. Exchange of information and learning between regions has an important role to play in strengthening traditional knowledge initiatives. There has been a realization of unique strengths of India in the Asian region. Traditionally, India has had a strong cultural influence in the rest of Asia and is still looked up to by several of our neighbours for inspiration in areas such as architecture, agriculture etc. It is felt that education and training of traditional experts and scholars should necessarily also draw upon the theoretical and methodological traditions of their own knowledge.

Traditional knowledge has great potential in some identified areas particularly healthcare and agriculture. Revitalisation of a living tradition no matter how weak is much easier than recreation from a mere text. There is a deep emotional commitment amongst a large section of people including the most powerful and influential for the cause of indigenous knowledge – this is indeed a great source of strength in all our efforts. One of the sober realizations of this phase of the programme is the need for persistent efforts. Almost everything took longer than planned – we need to persist with our efforts.

The SWOT analysis of indigenous knowledge in India

In the following section, we present a brief analysis of the strengths, weaknesses, opportunities and threats pertaining to indigenous knowledge in India. This is based on the analysis and discussion between the COMPAS Indian partners of their experiences in a meeting that took place in Poland in September 2006.

Strengths

- Training and capacity building
  - a] Educational material in several languages ,forms
  - b] Modules for various trainings
  - c] Materials to suit a wide range of audience –farmers, trainers, NGOs, vaidyas, academics, special groups like forest officers.

- Support from a wide variety of sources like local communities, state and central governments, corporate donors, Indian foundations and trusts, international donors and multilateral agencies
- Strong involvement with government in making /implementing policy.
- Strong networks with NGOs and CBOs
- Systematic and sustained work in chosen areas.
- Comprehensive work on the theoretical foundations of traditional knowledge systems.
- Varied efforts to build local, regional, national initiatives based on IK promoting enterprises.
- Rich linkages with scholars and practitioners working on diverse aspects of IK.
- Extensive use of ICT, databases etc for research, dissemination and documentation.

Weaknesses

- Availability of trained, motivated human resources.
- Weakening of IK in the younger generations.
- Paucity of communication and language skills of high quality in staff
- Lack of resources for certain kinds of activities –fundamental research ,infrastructure etc.
- Lack of appropriate research methodology.
- Legal constraints – (eg.) local healers. Folk healers (such as Traditional Bone Setters) do not have "formal recognition" but it is generally understood that they can practice locally without advertising themselves as medical practitioners.
- Sustaining networks meaningfully has been a challenge
- Balancing requirements of varied kinds of efforts-training, research, extension, advocacy.

Opportunities

- Environment of increasing awareness and support for IK-organic farming ,traditional medicine etc.
- Increasing awareness among consumers.
- Support from various Government agencies- Rural Development Ministry, Ministry of Environment , Department of Science and Technology etc.
- Policy inclusions relating to IK in health
- Openness and interest of technical staff in universities and research institutions.
- Support for IK across a broad spectrum of political views.

Threats

- Privatization of varied natural resources including water.
- Lack of continuity on key policies with changing government.
- Strong continuation of disparities inspite of overall high growth rate.

- Marginalisation of IK in key decision making bodies.
- Privatisation of research in public funded institutions.
- Inappropriate expressions of support for IK
- Emergence of growing conflicts among religious, ethnic lines.

Challenges for the new phase

The last four years of effort have resulted in a great deal of progress with respect to our knowledge comprehension and activities in this area. We are identifying below some of the challenges in the future phase –

- There is a need for practitioners of indigenous knowledge to evolve standards for our work, training, research etc., drawing inspiration from traditional knowledge. Till now we have been very strong in terms of offering critiques to the available models and to recognize shortcomings of standards and methodologies that are transported from modern institutions and knowledge systems. However, we need to spell out explicitly what our own standards and methodologies are.
- A greater emphasis is to be placed on developing and influencing policy that is relevant to this area. We already have rich experience working in limited areas and demonstrating the contemporary relevance and utility of indigenous knowledge. This now needs to be used for mainstreaming in a variety of ways including building capacities for other organizations as well as influencing thinking and policy particularly of the state.
- We also need to evolve a broad platform of understanding which can be shared by many other individuals and institutions who may not be in funding relationship with COMPAS.
- We need to evolve suitable institutional forms for coordinating all our activities in the future phase.
- Finally, in this phase we are also actively engaging with the issue of developing our own indicators for assessment of progress and poverty reduction.

GRAMAVIKASA, ENDOGENOUS RURAL DEVELOPMENT - THE KPP EXPERIENCES

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Background

India has a rich tradition of agriculture on which its economy is still largely based. Many efforts therefore have been made to improve agriculture. The 'Green Revolution' was one of the major efforts which did increase the food production in the country substantially. However, the technologies used in the Green Revolution have a number of disadvantages like environmental pollution, health disorders, decreasing soil fertility, desertification, pest resurgence, increased pest resistance, etc. Confronted with these drawbacks, many people started to look for alternative methods. 'Krishi Prayoga Pariwara' (KPP) is one of the farmers organizations that started to promote organic, nature friendly farming.

In the early nineties, a Summer Agricultural Camp was organized in a small village called Tumari in the Western Ghats of Karnataka State. A Social worker, Dr. Upendra Shenoy, and a practicing farmer from Terthahalli, Sri Purushothama Rao, were the resource persons. Dr. Shenoy encouraged the participating farmers to list the problems they were facing in agriculture and rural life. The farmers identified nearly 40 problems including the problems they had with chemical agriculture. After a deep reflection on these issues, both Dr. Shenoy and Shri Rao came to the conclusion that they should form a working group to study and solve some of the problems. This working group was called 'Krishi Prayoga Pariwara' (KPP) which can be loosely translated as a community of farmers involved in experimentation. To solve the problems mentioned by the farmers, KPP started to experiment with new ideas on organic agriculture, which were indigenous in nature and were using local resources, to eliminate the need for agrochemicals and so on. The group grew informally and its activities spread to different centres in the State, under the able guidance of the now late Sri Rao. He was acknowledged by the people as 'Krishi Rishi', sage farmer, for his notable work in this field.

KPP was later registered as a Trust under Indian Trust Act, in 1996. Its vision and objectives were by then broadened. It was aiming at designing practical development strategies which were not only based on economic objectives but also on moral, spiritual and ecological values. KPP still has the following as its three major objectives:

- to promote indigenous, self-reliant and eco-friendly organic agriculture, which is thoroughly sustainable;
- to revitalize local health traditions, in which safe, non-chemical agriculture plays a key role and helps to promote diversified ecosystems which provide the basis of local health traditions.
- to provide Development Education to young people to empower them to play an important role in constructive socio-economic developmental activities.

KPP has its registered office at 'Krishi Nivasa' – a farm developed by Sri Purushothama Rao at Thirthahalli. It comprises 10 acres of land, of which 50% is under local paddy varieties, while the remaining 50% is having commercial crops, such as arecanut, coconut, vanilla, pepper,

cardamom, coffee, banana and vegetables. The farm is fully organic since 1989. Farmers from various parts of the State visit this farm to learn about organic agricultural practices such as producing and using organic manures, preparation of biopesticides, cropping systems, sowing, planting, intercultivation, pest control, harvesting and post harvest technologies. KPPs publications are also available here. Most of the meetings of member-farmers and the Board of Trustees of KPP as well as various training and seminar programmes are held in this campus.

Presently, since 2006, KPP has a Board comprising of nine trustees. Eight of them are organic farmers from different parts of Karnataka State, and the other is a social worker. KPP has two full-time directors, who help to plan, advise, and direct the activities, also ensuring good relationships with both the farmers and the academic community.

KPP is a Compas partner since 1998. Even though its farmer members are spread throughout Karnataka State, the Compas activities are mostly concentrated in Shimoga, Uttara Kannada and Chickmagalur Districts.

Traditional practices and values threatened

These Districts receive an average rainfall of 2,000 - 2,200mm. The soil is lateritic, shallow in nature and of low fertility, but blessed with a vegetation rich in biodiversity. The main crops are paddy, arecanut, coconut, coffee and spices. The small and marginal farmers mainly grow the staple food crop-paddy, while the medium and big farmers grow cash crops. Arecanut *(Areca catechu)* is the main cash crop but in recent years, vanilla is becoming popular as well. There are numerous medicinal herbs, shrubs, trees, resins and fruit yielding trees, like mango, amla, garcinia, jamun and jack. Not withstanding the natural wealth in these Districts, thirty percent of the people still live below the poverty line.

Indigenous practices are still being used by a large number of farmers. Some farmers consult astrologers for timing their operations like sowing, transplanting, intercropping and harvesting. Some base their practices on organic manure, traditional methods of seed treatment, mixed cropping and home-made biopesticides. Some are trying to give their practices a modern touch by using modern medicines available in the market in the form of ayurvedic (the classic Indian health system) medicines or natural eco-friendly products. KPP looks at these indigenous, chemical-free practices as a heritage which has the potential to support and increase the self-reliance and sustenance of the local people.

The people in this region respect the ancient Indian scriptures - the Vedas. It is interesting to note that these ancient Hindu scriptures consider agriculture as the most honourable of the human activities. They say that agriculture is the area where humans and the divine co-operate with each other to sustain the Creation. A hymn in the Rig-Veda says: *"don't play the game of dice; get involved in agriculture. You will acquire plenty and prosperity. This will bring you fame and recognition. Thereby you will lead a happy life."* The Bhagavad Githa, another honoured text based on the Vedas says: *"If you respect and co-operate with the Gods, they will also respect and co-operate with you. By this mutual respect and co-operation you derive prosperity - both material and spiritual."*

There are two famous collections of hymns in the Vedas. In the *Bhoomi Sukta* (Earth hymns), the human relationship with Earth is equated to that of a son with his mother. She expects us to worship her devoutly because she bestows on us food, water and air, the three essential requirements for our life. In the *Anna Sukta* (Food hymns), food is equated to God, as it gives us vigour to achieve our ends - both material and spiritual. Thus, according to the traditional Hindu thought, not only the earth, but also mountains, rivers, lakes, oceans, forests, birds and animals are considered sacred and worthy of worship. Further, in the traditional

Indian agriculture, human needs are allowed to be met, but human greed is condemned. In the past decades, these traditional values and practices in Indian agriculture have increasingly been replaced by westernised ideas and methods. Farmers are accepting chemical inputs and the new cropping patterns solely to maximize their economic profits. Continuous propaganda in the media in favour of chemical agriculture, the policies of the government, the teachings in agricultural universities, as well as national and international economic pressures, all have contributed to the present situation where traditional practices and values are seriously being threatened.

The farmers who are members of KPP belong to different ethnic communities, such as Idigas, Bovis, Havyka Brahmins, and Vokkaligas. These communities have their own customs, beliefs, norms and values, but all of them observe commonly the Hindu festivals such as Ganesh Chathurthi, Dashera, Yugadi, Bhoomi Hunnime and so on. Although in their rituals they use the surrounding biodiversity in different ways, they all worship the different elements of nature like water, soil, plants, animals and air, in the name of Gods and Goddesses. They also worship agricultural inputs like seeds, manures, farm implements and equipments. Although threatened, this concept of sacredness of the natural resources is still alive even in this modern era. In this cultural context, KPP works with the farmers to revive among them the relevance of traditional values, knowledge and practices.

The objectives of the Compas programme

Since 1998, KPP, as a Compas partner, is trying to evolve a practical vision, an alternative approach and a strategy for *Gramavikasa* (endogenous rural development) in which not merely the economic but also the moral, ethical, spiritual and ecological values and perceptions are popularized among the people. The objective of KPP as a Compas partner, is 'to understand how indigenous knowledge systems and techniques, as well as indigenous institutions, can enhance *Gramavikasa* . For this, different activities are being implemented:

A - Documentation and revival of indigenous farming practices and food recipes

B - Conservation and propagation of indigenous cattle breeds and Cow products.

C - Ecological and spiritual treatment of arecanut yellow leaf disease

D - Seed conservation for organic paddy cultivation.

E – *Gramavikasa* at village level

F - Training programmes, workshops, seminars and mass meetings for the farmers.

G - Publication of relevant literature.

H - Networking with other organizations having similar objectives.

A. DOCUMENTATION AND REVIVAL OF INDIGENOUS PRACTICES

Revitalising traditional food dishes – Tambli

Traditional Indian foods are highly diversified. An ordinary lunch consists of many vegetables, grains and herbs. The Indian kitchen prepares a wide variety of dishes, and any particular dish can be prepared in many different ways to suit the different tastes of the persons in the family. KPP got interested in recording the relationship between the preparation of such dishes, human

health and agriculture. In 1998, KPP invited school children of the area to collect information from their mothers and grandmothers about the recipes for *tamblis*, the traditional soup preparations, in which many local herbs are used. Nearly 160 different recipes were enlisted. KPP classified these different *tamblis*, according to their nutritive and health restoring properties on the basis of Ayurveda. It turned out that people use about 130 plant species in the preparation of these different *tamblis*. The parts used varied from tender leaves to flowers, fruits, seeds, barks and roots. The result of this research was presented in the form of a booklet during a mass meeting. The booklet has been well received by the general public and is in great demand. A popular Kannada Weekly has published serially more than 100 *tambli's* enlisted in this booklet. It also distributed more than 2,00,000 copies of this booklet as a gift during 'Deepavali', the festival of lights.

Home-made pickle from tender mango

Pickle is an indispensable side dish in any traditional Indian meal. There are many varieties of pickles such as those of tender mango, lime, mixed vegetables and so on. The tender mango pickle is famous for its taste. Mango is also an auspicious tree for Indians. The wood of the mango tree is used for building construction purposes and mango leaves are used in specific rituals. Leaves are also tied to decorate the doors of the houses which are supposed to protect the house from pollutants in the atmosphere. The tender leaves of the mango and jack are also used in the *Kalasha*, a copper pot with water. The leaves are believed to energise the water in the *Kalasha* and to make it holy.

Two rather surprising facts about the use of tender mango led KPP to further study the use of this fruit tree. First, there were a large number of varieties of tender mango in the local vegetable markets. They differ in size, shape, flavour and the sap content. This made KPP wonder about the mango varieties in the region and about the quality parameters used by the local population. The second factor that astonished KPP was that the local sellers harvested the tender mangoes by cutting down whole branches of the trees. Lorry loads of the mangoes are transported in this fashion to the big cities like Shimoga, Bangalore and Chennai, where they are industrially processed and pickled. We wondered why people indulge in such damaging harvesting practices. Moreover, due to the industrial processing of the mangoes, the local technology and know-how of pickle making is getting lost. Besides, young people no longer interact with the older generation to know about the process of pickle making. People have lost their habit of offering a gift of homemade pickles, and even during community gatherings factory-made pickles are being commonly used.

Tender mango competition

To understand more about what was happening, the KPP team identified a small group of local farmers to conduct a survey of local mango varieties: to know the local names of the mangoes, the age of the trees, their fruiting pattern, yield and propagation. In April 1999, with the help of the Karnataka Forest Department, a 'Tender Mango competition' was organised. During this competition, nearly 100 entries were exhibited in classes like raw tender mangoes, tender mangoes in brine (saturated salt water) and also in the form of readymade pickles. Two farmers and two housewives were asked to judge the pickle preparations and the tender mangoes. Their judgment was to be according to eight criteria: size, shape, flavour, texture, stalk length, girth, sap content, thickness of the skin and seed character. Nearly ten local varieties of high quality mangoes were selected and compared during the competition. The programme was attended by a large number of local people. The media gave a wide coverage. Sri Vinaya Kumar,

a local official of the Government Forest Department expressed his Department's interest in maintaining and propagating the diversity of the local mango trees.

After this programme, a few grafters from the KPP's farmer group supplied over 10,000 tender mango saplings to the local farmers. The local branches of the State Horticulture Department and the State Forest Department also supplied a good number of grafted tender mango saplings to the farmers in different parts of the district. Meanwhile, home-based pickle production has quantitatively increased, and the KPP is facilitating the marketing of these pickles directly to the consumers. The awareness about the tender mango trees has also reduced the destructive and unsustainable harvesting practices that were prevalent.

Promoting organic *kumkuma*

Kumkuma is the name for the sacred red vermillion powder, which is widely used by the Hindu population. It is applied everyday on the forehead (*Agnya chakra*, or the region of the third eye), after performing morning rituals and worship of the mother Goddess. It is believed to help develop purity in thoughts and feelings, and to improve *Satvik,* mental properties of silence, patience and self-control, and to connect the person's inner and outer worlds. The particular spot of application is also a well-known acupressure point, used to promote health, calmness of mind and happiness. Medically turmeric, the basic ingredient in *kumkuma* preparation, is a good antiseptic against various bacteria and fungi. It improves the colour and smoothness of the skin while improving the eyesight, sense of taste, smell and hearing.

The *kumkuma* available in the market was highly adulterated. To our surprise we noticed that there were not many families who had the traditional knowledge of *kumkuma* preparation. The people also did not know why *kumkuma* is used on the forehead. Hence, KPP thought it necessary to revive the tradition of preparing the *kumkuma*. They found an almost forgotten traditional method of its preparation using turmeric, lemon juice, borax, alum and cow's ghee. To date more than 30,000 women all over the state have been trained to understand the social, cultural, historical and spiritual background of *kumkuma*. They have also been trained to prepare pure *kumkuma*. This has helped some of them to get additional income. This, to our surprise, has spread autonomously throughout Karnataka State. Many religious centres and temples have now opted for the organically prepared pure *kumkuma* for ritualistic use.

B. CONSERVATION AND PROPAGATION OF INDIGENOUS CATTLE BREEDS

Advocacy for Cow products

In India, the Cow is a greatly respected and worshipped animal. It is believed to be the abode of all Gods, particularly of *Laxmi*, the Goddess of wealth. In farmers' families, food is offered to the sacred cow every morning, before the day's activities begin. It is an inseparable member of the farming community. It is worshipped in particular during *Deepavali* the festival of lights, which falls in the month of October. The Cow is referred to as *Kamadhenu,* which means an animal having power to provide whatever people desire. All the products of the Cow are used in agriculture. Gandhiji had once remarked: *"The Cow in India, is the best companion. She is the giver of plenty, the mother of life. Not only does she give milk, but she makes agriculture possible."*

Practices mentioned in ancient texts, such as the use of cow's urine (both of pregnant and non pregnant cows), cowdung, milk, curd, buttermilk, ghee and whey in agriculture are

very useful. The texts advocate also the use of *amniotic fluid* as promoter of growth and inducer of flowering in plants. Most of the KPP farmers are using these products in one way or the other. For example, cow's urine is being used as a foliar spray, dung for composting, milk as an antiviral spray, curd and buttermilk to increase the microbial activity in the soil, while ghee is being used in traditional seed treatment. In the context of the Compas programme, KPP is now involved in a scientific evaluation to know more about the use of cow products in agriculture.

Improving local cattle breeds

In India, there are about 30 descriptive indigenous breeds of cattle as well as numerous non-descriptive breeds. In the recent decades, foreign Jersey and Holstein-Friesian breeds have been introduced in cross breeding programmes. The farmers however, are rueing for this because these crossbred cattle do not perform well in their farm operations. They require more concentrates and roughage than the indigenous breeds. Moreover, they often suffer from diseases and disorders for which qualified veterinarians have to be called in. Poor farmers, obviously, cannot afford the high and increasing costs of maintenance and external inputs such as antibiotics and other drugs needed for these cross bred Cows. The farmers associated with KPP have concluded that, except for a few incidental successes, for them crossbreeding is not an economically viable option. This made them to look at the local cattle breeds afresh.

A survey conducted by a KPP team concluded that a local breed, known as 'Malnad Gidda', can yield 3 litres of milk per day. This comparing favourably to an average yield of 4-6 litres of milk produced by cross bred animals. Animal scientists say that through selection and careful breeding, the yields of this indigenous breed can be further improved. KPP has collected relevant literature on ethno-veterinary medicine and has documented the role of indigenous cattle in family life. It has disseminated all the available information to the interested farmers. The findings of the KPP study have been documented and published in a booklet titled *'Namma Kamadhenu'*. This booklet describes the characteristics of the four main local cattle breeds of Karnataka State in detail and also provides short descriptions of other well known breeds of India. The booklet also provides information about several ayurvedic medicinal preparations based on Cow products, and their promotive effect on human health.

KPP, with the kind support of a local religious leader, Sri Sri Raghaveshwara Bharathi Swamiji, was able to establish a centre for breeding and conservation of the indigenous cattle. The centre is playing a key role in the selection, breeding and distribution of local breeds, while also producing a variety of cow-based products for human health. It is supported by experienced ayurvedic doctors and also by a research institute in Nagpur, Maharastra State. Revered Swamiji has launched a mega project by name *'Kamadugha'*. The main aim of the project is to conserve and develop Indian cattle breeds. He also took up a mass campaign in the State in the form of a 64 day *'Goyathra'- campaign* for spreading the message of the importance of the Cow and indigenous cattle breeds in our national life. Presently the Mutt's (religious) conservation centre is rearing 23 Indian Breeds. There is a *'Gavya Chikitsalaya'* - a clinic where patients are treated with cow products and records of the treatment are being regularly maintained. There is also a production unit of cow-based products used specially in health promotion. The project educates the people about the current scenario related to the Cow protection; about the Indian way of looking at the Cows and about the differences between indigenous and cross bred cows.

C. ECOLOGICAL AND SPIRITUAL TREATMENT OF ARECANUT

KPP's experiment on arecanut yellow leaf disease

KPP started an on-farm experiment on how to treat yellow leaf disease of arecanut in October 2000. Arecanut is a perrenial cash crop. Yellow leaf disease is a complex of diseases and disorders, first observed in early 1941 in Karnataka. This disease reduces the yield drastically. Within some 5 years of affliction, the plot becomes unfit for the cultivation of arecanut and there will be no yield from the gardens. KPP collected primary information regarding this problem through local surveys and it also conducted a review of the available literature. The KPP team discussed the matter with the local farmers, agricultural scientists and ayurvedic doctors, and planned a treatment scheme according to the principles of *Vrkshayurveda*, the well known treatise on ancient plant science. The treatment as prescribed in that text published by Asian Agri History Foundation, Hyderabad: is in the form of an application of a decoction prepared out of hog's fat, horse hair, cow's horn, cow's ghee and hemp. This was tried on each of the ten plants every month on the tenth day of the ascending moon. The treated plants have started showing some promising changes, like increased root growth, decreased nut shedding, and improved flowering and fruiting. The treatment to the plants was given thirty seven times till 2004.

A decoction prepared out of Amritaballi (*Tinospora cordifolia)* was applied regularly every month to a different set of areca trees. However, after 2004, the plants under experiment were not given any further treatment, because farmers started feeling that they have to search for deeper reasons for this destructive disease. Some of them felt that Indian astrology could provide some answer to their problem.

Spiritual treatment of yellow leaf disease

The Indian astrology has a spiritual procedure by name – *'Ashta Mangala Prashna'*. It has been described in 'Brihat Samhita', a text of Varahamihira (of 7th Century AD). It helps to unravel the deeper and hidden causes of sufferings of humanity. The procedure is believed to discover causes of even several centuries old. Though, the procedure was being resorted to get out of tricky human situations, it was for the first time used to find a way out for the yellow leaf disease prevailing over a wide geographic area in the Malnad districts of Karnataka.

The 'Asta Mangala Prashna' programme was held on 27th and 28th of September 2004 at Sri Ramchandrapura Mutt, Hosanagar – a religious center. Sri Raghaveshwar Bharati, the Swamiji of the Mutt, blessed the programme by his presence. On the first day, the expert astrologers tried to look into the reasons and on the second day, tried to find possible solutions for the problem. The reasons and symptoms listed by them on the first day were:

1. The people of this area in earlier times used to respect and worship God, religious leaders and their own elders. But this attitude and practice slowly disappeared over a period of time as they increasingly adopted commercial production and went in for a materialistic lifestyle. Now money mattered more than human values & respect to the elders, nature, animals and the forest.
2. The disease is affecting mostly the waterlogged areas. The roots have decayed and the leaves lack in chlorophyll.

3. The diseased trees die untimely because of wrong procedures for manuring and treatment of pest problems of the roots and wrong water management practices.
4. The disease is rooted in soil, water and the air.
5. The soil is deficient of potash and has become acidic. This is related to the deferred ritual procedures of the communities of this area.
6. People who migrated and forgot their ancestral spirits and family deities are suffering from this problem more seriously.

The possible solutions for the problem as indicated by the astrologers on the second day were:

1. The farmers should visit the local religious centres to request the leaders there for their blessings. The farmers thereafter should perform a series of rituals at different religious centres and should make offerings to the local Gods.
2. They have to perform some daily rituals, should respect their elders, and start performing ancestral rituals.
3. They have to use proper manure with balanced nutrition to the field. These manures should be bitter in taste and should be provided timely. Areca gardens should be provided with fresh red soil. The drainage channels should be properly repaired and maintained.
4. The farmers can also opt for alternative crops like paddy, vanilla, spices, forest trees and the trees yielding lac like rubber, jack, etc.

If these prescriptions are strictly followed for three years, it is predicted that the problem will be overcome.

The farmers have joined together after this *'Ashta Mangala'* programme and have made a committee to execute all the prescriptions suggested by the astrologers. The committee is meeting regularly, planning the activities and organizing the farmers and is collecting necessary funds under the guidance of KPP. It is worth noting that a small group of farmers who were associated with KPP during the earlier experimentation phase succeeded to organize the other farmers of the district to carry out the remedial measures suggested by the *'Ashta Mangala Prashna'*. They pooled the required resources needed for conducting the rituals at the three major religious centres in the area. With the guidance of KPP, the committee succeeded to execute all the suggested rituals by February 2006 :

1. The Committee met the three religious leaders at their respective Mutts viz. at Sringeri, Hariharapura and Ramachandrapura, conveying first the results of *Ashta Mangala Prashna* and then provided prescriptions and requested the permission and blessings of these religious leaders to perform the indicated rituals.
2. The Committee then, performed Gurupuja, Guru Bhiksha and other rituals to all Gods & Goddesses present in the compound of these religious centres and offered a symbolic Golden Arecanut to all the three Gurus (religious leaders).
3. Many individual farmer families started worshipping their family deities as their family elders were doing in older days. They have also started offerings according to the ancestral practice which most of the families had discarded.
4. The families also performed "*Ashlesha Bali*" for the Naga Dosha and sprinkled the *prasadam* (Sacred ash of the ritual) in their respective plantations.
5. The group performed a "*Vanaspathi Havana*" at the Thirthahalli Branch of the Ramachandrapura Mutt. The Ash (Bhasma) was sprinkled into the affected plantations.

6. The farmer families involved have taken to a vow of no meal or a single meal for one day in each week (*Upavasa*) which will be continued for three years. One individual in a family shall do this ritualistic practice.
7. Proper drainage in the plantations, application of ash (Potash) and neem cakes or cakes of bitter taste, renewing of the soil, etc. have been given attention to in farms as directed by the *Prashna*.
8. The Committee has also performed '*Nilakanta Tryakshari Havana*' and has sprinkled its ash (*Bhasma*) in the plantations of the farmers. This *havana* was performed at the Hariharapura Mutt.
9. The group has performed '*Koti Kumkumaarchane*' at the Sringeri Mutt.

The farmers in the project area are now feeling psychologically relieved after performing all these rituals. The KPP group communicated to other farmers regarding the efforts to solve the problem of yellow leaves disease. A small booklet has been printed for circulation among the farming community.

The total expenses for these various rituals came to about 2,000,000 rupees (nearly 35,000 Euros). This amount was pooled by the committee. The savings out of this fund will be utilized as seed money for the further scientific studies and activities towards the betterment of these farmers. The whole process has generated self-confidence among the farmers. They say that hereafter they will face the problem in a systematic and cooperative way.

D. SEED CONSERVATION FOR ORGANIC PADDY CULTIVATION

Seed is the very basis of agriculture. KPP is working on local and traditional varieties of paddy from its inception. It has organized three community seed banks with the help and guidance of Green Foundation, Bangalore. At the same time, it has documented traditional paddy varieties of the *Sagara* and *Thirthahalli* taluks. Seventy two varieties have been documented and seeds of these varieties have been collected. Two small booklets by name *'Kadiru' and 'Battada Bhattada Tore'* have been published as documents on these traditional paddy varieties of *Sagara* and *Thirthahalli* taluks respectively. Information related to the varieties' name, duration of their growth, height of each variety, size and colour of the paddy and rice, soil and topography on which each variety is grown, special characteristics of the varieties, their pest and disease resistance characteristics, type of cultivation, season, major purpose of cultivation, villages growing the individual variety, yield, rice recovery percentage and name and address of the farmers growing the variety are given in the booklets. The booklets also list the reasons for the decreasing number of traditional varieties in the two taluks. The booklet *`Battada Bhattada Tore'* also has documented 31 traditional proverbs, 23 puzzles relating to paddy, prevalent in the *Tirthahalli* Taluk. The booklets are published in *Kannada*, the local language of the State.

To sustain the movement of seed conservation and development, KPP has concentrated on seed multiplication in the farmers' fields. It has identified interested farmers who help to conserve these varieties.

E. GRAMAVIKASA AT VILLAGE LEVEL

Gramavikasa, endogenous rural development

Since its inception, KPP is providing training to interested farmers on the philosophy and practice of organic farming. It has also documented and disseminated many useful indigenous

practices in agriculture, animal husbandry as well as in the social and personal life of the farmers. KPP farmers, thus stimulated, are doing on-farm experiments and have even developed a few innovations based on these indigenous practices. This has led to a considerable change in the lives of the participating farmers. Most of them have reduced their use of agro-chemicals, and many have fully shifted to organic farming. However, most of these KPP associates have relatively large farms, and belong to the wealthier groups in the village community. The majority of the farmers who did not change their practices are poor, owning small farms. They grow paddy as a major crop, and practice chemical farming. In order to be more useful to such small and marginal farmers KPP decided to work for an integrated village development, *Gramavikasa*, which includes all aspects of rural life, also agriculture.

The steps undertaken for *Gramavikasa*

1. KPP chose two villages on the basis of their socio economic background and their relationship with the KPP programme.
2. Community diagnosis of the villages was undertaken.
3. The strengths, weaknesses, opportunities and problems of the area and the community were identified.
4. The problems were prioritized based on the local needs and their urgency.
5. An action plan with a time frame was formulated.
6. The village volunteers ready to execute the work together with the KPP team were identified.
7. The volunteers and the villagers were empowered with the necessary information and technology.
8. A process for documentation of the whole programme, its execution and resulting changes was thought of.
9. Monitoring and evaluation of the outcome was planned.
10. Follow-up programmes for sustained transformation in the desired direction was also thought of.

Hulegaru of Sagara taluk of Shimoga district was the first village interested in this programme. Several farmers, who were involved in the earlier programmes of KPP, took leadership. By building on the strengths of the village, they dreamed to transform the village from the present state of increasing poverty and degradation into a state of continuous prosperity and harmony. They were blessed by Sri Sri Raghavaeshwara Bharathi Swamiji, a religious leader, who wields influence over this village. The people were told how they can prosper by caring for nature, creating social harmony, sustenance, and self respect. Swamiji named the initiative *Akshaya Jeevana*, or *'life with continuous prosperity'*.

The KPP staff started visiting Hulegaru village every week to conduct meetings with the villagers. A team of volunteers was formed. In early 2004, a survey of each family in the village was conducted to collect information regarding the socio economic conditions of the villagers. Some results of this survey are presented in Box 1. On the basis of this survey, it was decided to start activities by addressing first the problem of water shortage in the village.

Box 1. Problems and strengths of Hulegaru village

Hulegaru is a small village in Sagara taluk of Shimoga district of Karnataka State. The total population is 563 people belonging to 120 families. 57 families among them belong to the Havyaka Brahmin community, 25 to the Vokkaliga community, 15 to the Bunt community and 23 to the Idiga (scheduled tribes) community. 68 families among the 120 are marginal farmers (<2.5 acres), 15 are small farmers (between 2.5 to 5 acres) and 12 have bigger holdings (above 5 acres). 25 families are agricultural labourers.

The total geographical area is 868 acres: of them 330 are common grazing land, 321 *soppina betta* (common land reserved for harvesting of green leaves for fodder and compost preparation), 66 forest lands and 107 private drylands mainly used for grazing. 75 acres are with areca plantations, mostly in the valleys, and 55 acres are wetlands for paddy cultivation, the local staple food. Most of the farmers depend on the local market for their needs such as seeds, fertilizers and pesticides and also vegetables and grains.

The area receives an average 1500 mm rainfall per year. The village has 7 tanks, 2 are perennial and 5 are seasonally filled with rainwater. The village has 5 bore wells and 30 open wells, most of them are used for drinking water. Soils are lateritic and shallow.

Most of the families are mainly subsistence oriented and economically poor. Farmers with areca gardens have relatively higher income but they also are highly indebted. The total yearly income of the village is around Rs. 6,700,000 where as its expenditure is around Rs.7,000,000. The village has a total outstanding debt of Rs.4,700,000.

Problems of the area

The villagers suffer from a number of problems. Among them are:

1. Even though the average yearly family income is around 55,000 rupees, nearly 25 per cent of the families have income less than 30,000 rupees (less than 1 USD per day per person), which indicates extreme economic poverty. These families are indebted though lead a very simple, humble life. There is a need to increase their income along with a proper guidance for their financial management so that their expenses can be reduced and their outstanding loans cleared.
2. The total cattle population in the village is decreasing. For organic farming it is crucial that there are sufficient animal droppings for composting and manure preparation. It is therefore important that farmers increase their cattle population again and learn to improve their management.
3. Many families suffer from water shortage during the summer. As the rainfall is sufficient, proper guidance and support for water conservation, rainwater harvesting, irrigation facilities and water management is to be provided.
4. The Natural common resources like forests and grazing lands are slowly degrading. This degradation has surely affected the soil, water and the biodiversity of the region. Hence special attention has to be given to conserve and develop these resources.
5. Farmers apply more and more chemical fertilizers especially to the paddy. Many of them are not aware of the harmful effects of the agro-chemicals on soil, water,

air, ecological balance and the food quality. They also do not know how all this affects their health and the future of their farm. Hence there is an urgent need to educate the farmers regarding the ill effects of modern agriculture, the strengths of local traditional technologies and the philosophy and techniques of eco-friendly agriculture.

6. The life styles of the villagers are fast changing. They are depending more and more on urban markets for their daily needs and are trapped in the vicious circle of debt and poverty. Traditional knowledge and skills, also the traditional local crop varieties, animal breeds and medicinal herbs are being gradually lost. This needs to be prevented.

Some of the villagers realize these problems and say that they are heading towards a disaster but they do not know the alternatives.

Strengths of the village

But the village has also some important strengths such as:

1. Only 18 per cent of the population is illiterate. And hence most people are capable of understanding the severity of the problem, when explained. Proper guidance can unite them for a good cause.
2. There are 10 different local social institutions created for different purposes. All of them have a habit of cooperating with each other for the welfare of the village.
3. Women participate more in the planned activities. Consequently the involvement of the families is relatively high.
4. Most of the people are motivated by the local religious leader Shri Raghavveshwar Bharati Swamiji and work under his guidance for the welfare of the community. He has blessed the KPP efforts.
5. The different communities that reside in the village have good relationship among themselves.
6. The villagers still respect some of the traditional values, norms, beliefs which would be of help for the KPP's efforts.
7. The villagers like to have an alternative to the modern development to improve the local resource base, increase in biodiversity, lessen the cost of cultivation and promote ecological balance.

Walk for creating water awareness

The KPP staff conducted first a 'water literacy' programme for the volunteers. This programme focused on the reasons for the water shortage and methods for rainwater harvesting, water conservation, reduction in water wastage and prevention of water pollution. After this training programme, the village volunteers planned a campaign to spread the message. They first visited some farmers who already had successful experiences with rainwater harvesting and water conservation. Thereafter, they started digging percolation pits in their own farms, in the school campus and on community lands.

Further, they organised a procession, *Jala Jatha* or 'walk for water awareness', through the whole Hulegaru village to inform the village community and to convince them about the necessity to take action. Following this, most of the villagers started digging percolation pits in their own farms or in their backyards. These pits stored part of the rainfall in 2004 and thus helped to recharge the ground water considerably.

In the areas surrounding the school campus the villagers worked collectively and dug over 200 percolation pits of 6 x 2 x 1 feet in 1.5 hectare field. They also installed rainwater harvesting equipment on the roof of the school building. The students who were involved in this initiative are now maintaining the work done by the villagers. After observing this, the Education Officer of the area thought it fit to invite all the teachers in the district to visit this school, and ask them to follow this good example.

People in Hulegaru also have started consuming less water for bathing, cooking and in other daily uses. They are now aware why they have to use natural products instead of industrially produced soaps and detergents which pollute their drinking water sources. They now know why they should maintain the underground water balance, thus why not to pump up too much ground water. Thus, they are more conscious now and have stopped wasting water.

Making the village committed to organic farming

In January 2004, the Minister of Agriculture of the Government of Karnataka invited KPP and other organisations working on organic farming to jointly formulate a policy on organic farming. KPP organised a two day workshop for these organizations at Sagara. Many organisations, including Green Foundation from Bangalore, contributed to the draft policy which resulted from this workshop. This draft was submitted to the Minister subsequently and served as the basis for the present Karnataka State Policy on Organic Farming (see box 2).

The State Department of Agriculture, in the beginning of 2005, launched an "**Organic Village Programme**" in pursuance of its policy. In this programme, one village in every District has been selected for governmental support for converting 100 hectares of land to fully organic farming. Out of 27 Districts in the State, KPP is in charge of two (Hulegaru in Shimoga and Kilara in Uttara Kannada district).

Box 2. The Karnataka State policy on organic farming

The Government of India and many other State Governments understand the necessity to promote organic farming in a big way. Government of India has already launched the National Programme for Organic Production and Standards and Accreditation during the year 2000. The Government of Karnataka also has initiated an action plan to promote organic farming in the State. As a first step, it formulated and published the Karnataka State Policy on Organic Farming in 2004. Besides an overview of the context and principles of organic farming, the policy document stipulates the policy objectives and provides an elaborate set of strategies for the promotion of organic farming in the State. These strategies among others deal with: the institutional set up for policy formulation, coordination, promotion and support for the production and commercial promotion of the organic products. It also discusses conversion of farms to organic farming, increase in biomass production, ensuring biodiversity, mixed farming, soil and water conservation and land regeneration, making inputs available, value addition, processing, marketing, credit facility, export promotion, research and development, education and training.

Under the same name of '*Akshaya Jeevana'* – Life with continuous prosperity - KPP launched the project for fully converting both the villages to organic farming. For this, KPP had to increase its activities in Hulegaru and Kilara villages considerably. After the water conservation programme, farmers were trained in organic farming, including how to increase biomass production, nutrient management, and organic pest and disease management.

The conversion strategy

Conversion from chemical to organic farming at such a large scale does not happen without freeing farmers, particularly marginal farmers, of their fear to loose yield and income. In its training programme for the farmers, KPP brought in some successful organic farmers to explain their success stories to the trainees. Even field visits to the farms of those successful organic farmers were arranged. But, still the trainees stayed afraid. KPP therefore adopted a new strategy which had to make it easier for these small and marginal farmers to convert to organic farming: Farmers who were growing their paddy only for home consumption, were assured that any yield reduction due to the conversion would be compensated; for those who were growing paddy in slight excess for marketing, assurance was given that income loss due to the conversion would be made good by guaranteeing them a higher price than the average market price. Many well-off farmers agreed to take the risk on their own.

This offer by KPP convinced the farming community that they could safely take up organic farming during the Kharif season of 2005. With increase in confidence in organic farming they started to experiment more and more.

The results

Since then, there was progress in the conversion to organic farming in the two villages. Now in 2006, 194 families participate in the project. Together, they try to bring 200 hectares of land to fully organic farming by the end of 2007.

KPP has observed and documented the steps adopted by the villagers, the problems faced by them and the result achieved. 61 paddy farmers in Kilara and 6 farmers in Hulegaru are practicing 100 percent organic paddy cultivation from the first year of the programme onwards. The adoption of organic farming techniques is different for each farmer. Ten of them realised yields at par with their average yields of previous years. Other farmers had 10 to 50 per cent lower yields. The reason for the lower yields can be the sudden shift from chemical to organic farming, which happens usually. Selection of the wrong paddy variety and heavy rainfall may be the other reasons for the lower yield. However, through the success of their neighbours, these farmers still have gained sufficient confidence to take up organic farming again in the next season.

The total paddy yield reduction is estimated to be around 200 quintals of paddy in 120 acres of the Kilara village and about 21 quintals in 12 acres of Hulegaru. KPP therefore supported these farmers by providing paddy equivalent to their yield reduction. KPP also marketed more than 80 quintals of their paddy at a premium price of more than 67 per cent above the ruling market rate. The farmers now say that they will continuo with organic farming, not only because it is of low cost due to low external input use, but it also produces good and poison free food. They have also become confident that their soil will regain its fertility in another four or five years, after which they will not suffer yield reduction anymore. More care and attention is being taken in 2006 to avoid yield reduction.

Nearly 60 vermicompost units were installed in the two villages. The farmers were given green manure seeds at a subsidised price to encourage them to use green leaves in their paddy field. They were motivated to plant seedlings in the forest lands surrounding their farms. During 2005 and 2006 more than 16,000 seedlings were planted in the community lands of these villages. More than 80,000 cubic feet percolation pits per village were dug in both the villages which are sure to collect more than 2,200,000 litres of water. The farmers are now trained to manage their natural resources efficiently.

The Challenge

For securing continuous prosperity, as well as for making the resource base sustainable, it is important that the farmers convert to and continue with organic farming. To make this possible, the farmers need to develop effective strategies and practices which increase the overall performance and productivity of their organic farms. It is also necessary to make specific organic products commercially competitive. In this regard, there is still a lot of work to be done.

KPP has observed that the adoption of organic farming depends not only on technological and economic performance but also on the emotional attitudes of the farmers towards Mother Earth or Nature. The farmers, who do not feel a sacred bond with the earth, nature, forest, water and the environment in general, will not easily adopt organic farming. Thus the challenge is also to understand and change the behaviour and attitude of the farmers and to develop strategies which convince them about the philosophy and practice of organic farming. There can be controversies as well. A problem in Hulegaru village can serve as an example. Farmers were trained in water conservation, rain water harvesting, water literacy etc. They were induced to constructing percolation pits in community lands also. Initially all farmers were confident to implement the project. But in one part of the village, KPP suddenly found that it did not get support anymore from a section of the villagers. These villagers were opposed to the construction of percolation pits in the community lands and started to fill the pits again. KPP volunteers, the local Panchayat President, the Agri department officials etc could not convince these people. Personal interest of some farmers was the major reason for not accepting the action. This also made them to stop their participation in all the other activities related to organic farming that were being executed in the village. This was a major hinderance to various development activities for which we do not have any answer yet. If such problems can be overcome organic farming could become the foundation for a prosperous and a harmonious society once again.

PUBLICATIONS OF KPP

KPP has published booklets and pamphlets in Kannada language, the state language of Karnataka.

1. **Sri Madhava Pai. (Translator). 1997. Lokopakarum. Krishi Prayoga Pariwar, Karnataka. p. 28**

   It is opined that *lokopakarum* is the first scientific book written in Kannada Language (1025 A.D.). KPP has translated a chapter of *Lokopakaram* namely Vrukshayurvedam which deals with agriculture. The book deals with all-most all facets of agriculture viz. Land preparation, sowing, transplanting, seed treatment, manure preparation, manure application, plant protection, grafting, harvesting, intercultivation etc. The book suggests a few simple recipes, which brings about miraculous effects in plants.

2. Sri Venkatrama Daitota et al. 2001. Tambli. Krishi Prayoga Pariwar, Karnataka.

A book dealing with traditional Malnad recipe/dish which uses local bio-diversity. It has listed more than 161 Tambli's. Nearly 130 plant species with their ayurvedic background are enlisted in this book. With the help of housewives and school children the KPP workers succeeded in gathering information of about 161 formulae of TAMBLI or SOUP. All these are prepared from locally available green leaf vegetables, fruits, seeds, barks and what not. One does not have to depend upon vegetable markets to procure the raw materials. The main result of this effort is that people do not have to buy vegetables from the markets. They learn to utilize all locally available farm and forest products, for their daily meals. This leads to self-dependence, innovations, and reduction in cost of living, in addition to saving time.

3. K.P Ramesha. 2001. Kamadhenurs. Krishi Prayoga Pariwar, Karnataka. p.32

This booklet deals with traditional Indian breeds of cattle, their characteristics, their location and special capacities; the colour photographs of all these breeds; uses of cow based products in health promotion and agriculture; how panchagavya (mixture of five cow products viz. Milk, curd, ghee, urine and dung) helped in curing cancer; Ayurvedic properties of cow products and buffalo products; centers of local breed conservation etc.

4. Purushothama Rao. 2003. Krishi. Krishi Prayoga Pariwar, Karnataka. p.24

The booklet deals in detail with organic farming techniques. The book reveals the need for organic farming, how to switch over to organic farming from chemical farming, how to create living soil and to develop resistance in plants. Major focus is on bio-manure and biopesticide preparation.

5. Sri Padre. 2004. Neera Nemmadige Nooraru Darigalu. Krishi Prayoga Pariwar, Karnataka. p.44

A booklet which deals with various aspects of rainwater harvesting (RWH). It describes reasons for drought, definition of RWH, methods of RWH, traditional systems of RWH and water conservation, importance of community participation in RWH for its significant results, case studies of successful villages and individuals, websites dealing with RWH etc.

6. Upendra Shenoy et al. 2004. Kadiru. Krishi Prayoga Pariwar, Karnataka. p.48

The book has information on 60 varieties of paddy that is still grown in Sagara taluka. Varietal name, duration, height of the variety, size of paddy, color of paddy and rice, on which soil and topography the variety is grown, special characters of variety, pest and disease resistance characteristics, type of cultivation, season, major purpose of cultivation, villages growing the variety, yield, rice recovery per centage per quintal of paddy and name & address of farmer growing the variety is given in the book. The book also lists the reasons for the little presence of traditional varieties in the taluka.

7. Upendra Shenoy et al. 2006. Battad Bhattda Tore. Krishi Prayoga Pariwar, Karnataka. p.28.

This is a booklet similar to Kadiru which has information on 26 varieties of Paddy which is still grown in Thirthahalli taluk.

8. Upendra Shenoy et al. 2006. Batthada Besaya. Krishi Prayoga Pariwar, Karnataka. p.24

A booklet on organic paddy cultivation. The booklet has compiled the information systematically starting from seed selection to harvesting and storage. The booklet deals with seed selection, seed treatment, nursery raising, transplanting, main field preparation, manuring and composting methods, pest and disease management, water management etc. Experienced farmers, eco friendly techniques released by Universities and other research centers like CIKS, KPP experiences are the sources of information for the present booklet.

9. Upendra Shenoy et al. 2006. Savayava Krishikara Directory. Krishi Prayoga Pariwar, Karnataka. p.68

A Directory of organic farmers of Shimoga and Uttara Kannada district is brought out. The directory has name and addresses of farmers, area under cultivation, crops grown, estimated production, certification status, extent of self dependency in vegetable and paddy production etc. This is helpful for marketing organizations to source and even to farmers who are interested in exchanges.

10. Januvaru Chikitsa Kramagalu, Krishi Prayoga Pariwar, Karnataka.

A booklet dealing with folk medicines for household animals.

11. Jeeva Chaitanya Krishi. Krishi Prayoga Pariwar, Karnataka.

A booklet dealing with Bio-dynamic agriculture. The booklet concentrates on the Bio-dynamic preparation BD-500 and BD-501.

12. Sadhaka – Sadhane. Krishi Prayoga Pariwar, Karnataka.

This is a series of booklets published every year in September. The booklet highlights the achievements, lifestyle of the organic farmer who is felicitated by Purushothama Sanmana. The day (September18th every year) is to remember the founder of KPP Shri Purushothama Rao. The first booklet in this deals with the achievement and life of Sri B K Deva Rao who has conserved 22 traditional paddy varieties in his farm. He is a successful sustainable agriculturist from Belthangadi taluk, Dakshina Kannada district, Karnataka. The second booklet highlights the achievements of Sri Cherkadi Ramachandra Rao, a dry land farmer from South Canara district of Karnataka. He is known for dry land paddy cultivation, no or low external input use in agriculture, a Gandhian and a self sufficient, reliant farmer. The third booklet was on Sri and Smt Smitha – Dhirendra Soneji from Sakava village of Gujarat who grows nearly 84 crops in just 2 acres of dry land. The family is a self reliant self contended family.

TRIBAL ENDOGENOUS DEVELOPMENT

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Endogenous Development with Tribals

IDEA (Integrated Development through Environmental Awakening) is a research and development organization working for sustainable endogenous development of various tribal groups in North Eastern Ghats. It started to work in 1985 and, as one of the founders, became a member of the Compas network on endogenous development in 1996. Currently, IDEA is working in 300 villages covering about one hundred thousand tribal people in its action and network zones in the states of Andhra Pradesh and Orissa. It has been supported by NORAD for Orissa and is being supported by COMPAS for Andhra Pradesh and Orissa for its work on endogenous development.

I - TRIBAL CULTURE AND DEVELOPMENT

Tribes in India and Eastern Ghats

Tribes in Indian sub-continent are commonly known as *Adivaas*i, *Girijan, or Vanya jaathi*. Constitutionally, they are called *Scheduled Tribes*. The 532 different tribes constitute 8.1 percent (83.58 millions) of the total Indian population (2001 census of India). Broadly the Indian tribes belong to the Negrito, the Proto-Australoid and the Mongoloid racial stocks (Guha) and their sub-stocks. They have been categorized into 4 main language speaking groups such as Indo-Aryan, the Dravidian, the Austric (Kolar Munda) and the Tibeto-Chinese. The tribal communities are broadly confined to the North or North Eastern Zones, the Central or the Middle Zone and Southern Zone of India.

The Eastern Ghats is one of the major natural resource bases of India located between 72° 22' east longitude and 11° 30' to 21° 0' latitude in the tropical region. The 20 million years old mountain range lies between the Mahanadi valley of Orissa state and the Nilgiris of Tamil Nadu and is covering part of Central India (Madhya Pradesh and Chattishgarh states). It is home to about 60 different tribes with a population of nearly 19.6 million. Well-known groups among them are the Konda Reddy, Koya, Pulikonda and the Konda Dora. Most tribes have their own language. The majority of these people live in hilly and forested areas. Thee Eastern Ghats is sub-divided into North Eastern Ghats with a population of nearly 17.6 million, covering Mahanadi Valley in Orissa, Chattishgarh, Madhya Pradesh and Krishna Valley in Andhra Pradesh. The South Eastern Ghats with a population of about 2 million covering South of Krishna Valley to Nilgiris of Tamilnadu. The Eastern Ghats are rich in various natural resources including major and minor minerals, floral and faunal species and a good amount of perennial and ground water resources.

Tribal worldviews and indigenous knowledge

In their long history, the tribal societies developed unique cultures with indigenous worldviews (cosmovisions), values, institutions and indigenous knowledge. Each tribe has a distinct lifestyle

based on the belief that nature, mankind and the spiritual world are inseparable. Tribal people believe that they are the children of Mother Nature / earth (diverse beliefs) (**Goddess of Nature and Earth)** and that she protects and guides them. Trees (such as tamarind and mango), wild animals (such as the Indian bison, tiger and common langur [monkey]), birds (like the peacock and dove), streams, mountains and caves are all considered to be holy and to contain sacred elements. Besides, they also have sacred hills and forests, which are inhabited by divine beings. Tribal people believe in a wide range of divine beings and ancestral spiritual forces with benevolent and malevolent characters, who inhabit houses, villages, agricultural fields, burial grounds and surrounding forests. The Pulikonda, for example, have more than 100 Gods, Goddesses and spirits. These divine beings are beyond human control and able to help or harm nature and human beings. The tribal people also believe that the good and bad ancestral spirits always watch over them and may help them in times of danger and distress. Therefore, they perform certain ceremonies and rituals to appease the divine beings and ancestral spirits so as to protect themselves and to get rid of evil influences. They do not start constructing a house, distributing land, felling trees, performing a marriage, or going hunting until they have performed the appropriate rituals.

Tribal societies have a rich heritage of indigenous knowledge: history, mythology, language and imagery in varied forms of expression and a wide variety of technologies that helped to ensure their survival against all odds of time. They maintain cultural identity and values through their social organizations (traditional institutions), animistic practices, languages, customs, traditional norms, values, rituals, folk songs, music, dance etc. They disseminate this knowledge through traditional dormitory education, in an informal way. Most of this knowledge is still relevant and expressed in contemporary sustainable development oriented practices.

The tribal cosmovisions also contain beliefs that are related to their agro-ecological and health practices. The tribal people from the Konda Reddy, Koya and the Konda Dora, for example, believe that certain crops, such as the major and minor millets, hill paddy and red gram, are not only important food crops, but also sacred gifts from their ancestors and the Goddess of Nature and Earth. Hence any ritual connected to their festivals would not be complete without offering these grains to the divine beings and ancestral spirits both good and bad. Festivals such *as Chaitra Parob, Pushya Parob,* and *Magh Parob*, for example, are related to seeds and crops.

Their animistic religion, social organisations and subsistence oriented forest and agro based economy in harmony with nature were securing their survival.

The tribal economy

The tribal economy in the Eastern Ghats is based on gathering of minor forest produce, shifting agriculture, and settled agriculture, depending on the location of the land. In the hills, shifting cultivation is practised as the major component of the subsistence economy in all communities. It involves a mixed agriculture with a variety of cereals and millets, pulses, beans, tubers, medicinal plants, fuel, fodder and roofing material. Short duration crops produce a harvest in a relatively brief period of time and can enhance economic stability and food security in times of drought and floods. The harvest is sequential, which enables the farmer to use part of the crop for food grain, part for investment and festivals and part to pay off debts. Terraces to control soil erosion are combined with the application of farmyard manure and bio-fertilisers. Settled cultivation in the plains includes wetland and dryland agriculture, with a variety of mixed crops such as dry paddy, millets, pulses, beans, vegetables and fruits. These agricultural lands are either community property entrusted to different clans by traditional village institutions, or property owned by individual families.

Traditionally, barter was an effective mechanism to share resources, especially related to the minor-forest-products. With increased exposure to non-tribal customs this has changed dramatically. But, the level of awareness among tribals on the use of money and the value of their products is generally poor. As a result, they are often victimized by unscrupulous traders, who buy tribal produce at bottom prices. This leaves the tribal economically vulnerable and open to exploitative labour practices.

Moreover, encroachment by non-tribals into tribal lands in search of timber and other resources has pushed tribals deeper into the remote areas, thus further marginalising them. The increased interaction between tribals and non-tribals has also led to an acculturation process and an increasing loss of identity among tribal people. More alarmingly, it has given rise to aspirations that are difficult to fulfil.

Traditional institutions

The physical and material well-being of the tribal people is supported by **traditional** institutions and functionaries. The *naik* is the village headman, responsible for village administration, law and order, and co-ordination of festivals. The *kotpaik* is the sacerdotal head, who is responsible for ensuring the functioning of various social, cultural, religious and agricultural norms. The *disari* is responsible for traditional medicine, including the use of magico-religious and herbal remedies. The *poojari* is the priest who controls the religious protocols of the village and performs rituals associated with agriculture. There are magico religious women/men priests cum healers called *gurumayi*, *guniya,* besides, *sutrani*, who are also the traditional birth attendants and medical women. The *gowd* are the cattle health healers cum herdsmen. A group of eight to ten or more villages constitute a *muta*, headed by a *mutadar*. This person plays a vital role in maintaining the cohesion, stability and social identity of the communities in their specific geographical territory. *Lok, taas, ghor, nonnimon aur pillamoon* in the adivasi oriya language, refers to Human, Crop, Cattle, Women and Children respectively.

Indigenous knowledge

Though the traditional lifestyle has been mostly disappeared physically in all the villages studied, we still found that tribal people have retained some of their knowledge systems in different forms. The knowledge related to cosmovision is mainly vested in the four important functionaries of the village: the *disari, poojari, guniya and gurumayi*. The community has clearly visible knowledge of, for example natural resources and land management. Experiences with soil testing and selection of land for different crops includes the skilled knowledge of the *disari*, and the *kattela* and *sirla disaries*, who are able to test soils by colour, weight, and taste, and assess the degradation of the land. They know about specific floral species for improving soil fertility, and understand how to use green manure and growth hormones for the benefit of the plants. They celebrate the festivals related to grain conservation and ensure that individual members follow the principles of conservation for food grains and other natural resources. Touching, eating or selling grains, vegetables, wild vegetables and medicinal plants without celebrating the necessary 'first eating ceremonies' is taboo.

Mutte is the name given to the body of the tribal science, written on palm leafs. These are possessed by *disari, poojari and guniya* and include subjects like astronomy, herbal medicine, *chakras/gondas* (symbols), eco-agricultural ethics and knowledge, and ways to influence the divine beings and evil spirits. Their mythological histories, clan totemic relations, agro-ecological and health knowledge are also preserved in the form of folk songs, dances and music, mostly

retained by the tribal women and elders. For example, the *kandul baza* is a combination of music and song that explains the origin of red gram and its cultivation practices as well as the need to protect its germ plasm. The *onum*, or sacred forests, originate from mythological times and are the dwelling place of biodiversity and divine beings. *Gondas*, or specific chalk marks, are the symbols of communication with supernatural beings. The *gondas* are used to propitiate or to appease evil spirits and to protect crops from humans, animals and witch craft.

Rituals and ceremonies

To appease the benevolent divine beings, the tribal people carry out acts of propitiation with a number of rituals, ceremonies and festivals. The *disari* fixes the auspicious dates for festivals, ceremonies or rituals on the basis of his astrological calculations and the lunar calendar. The *poojari* performs the ritual for the community. There are different costs for performing the major festivals. The individual families also celebrate the same festivals in their homes with the head of the family as family priest. Prosperity always depends on the proper functioning of the *disari* and his accurate astrological calculations. If he miscalculates the dates of festivals, it would disturb all agricultural practices, upset the benevolent divine beings and spirits, and result in serious consequences for the community. There is also the risk that benevolent or divine spirits may become malevolent. The position of *poojari* is also very important and critical. If he fails to perform rituals properly, the divine beings could curse the village bringing about crop failure, cattle death and even sickness and death to humans. If something goes wrong in the village, like a crop failure or outbreak of an epidemic, the community attributes this to the fact that the God or Goddess has not been properly propitiated by *disari* and *poojari*. They then have to offer an explanation and perform the necessary rituals.

Gender

The majority of divine beings are Goddesses and their priests are men. This shows that the communities' attitude towards gender at the cosmovision level is positive. However, during community rituals and ceremonies, the male functionaries play a major role. The female *gurumayi* is only allowed to officiate in rituals and ceremonies relating to the family Goddesses or spirits. In some villages, she is even limited to spiritual healing of women and child diseases. Their ritual status is not equivalent to that of men, as they are subject to several taboos. No woman is allowed to touch the sacred sword, axe or spear belonging to the divine beings. Women are limited to the role of preparing food and offerings, merry making, dancing and singing during most of the festivals, except during the first eating ceremonies for mango and pumpkin, where they are allowed to worship *Bondurga* - the Goddess of forests.

External influences

The effects of external influences are manifold and can be seen, for example, in the ecological destruction of the area. The forests of the Eastern Ghats have remained largely undisturbed until the middle of the 18th century, when fuelwood and coal were needed for industries and transport, and timber logs for construction purposes. Bamboo harvesting for the paper factories is another reason for the ecological destruction. The increasing food and economic needs of the growing tribal population also forced the tribals to exploit considerable parts of the natural resources for traditional shifting cultivation practices. In more recent years, this process of deforestation has further accelerated, due to loss of their lands to non-tribals, industry and to

the growth of several forest-based industries. Following this ecological destruction, rainfall in the area as well as soil fertility has decreased considerably, resulting in food shortage and consequently over-exploitation of the natural resources. At the same time, a process of tribal migration to the 'settlement villages' in Orissa, resulted in the displacement of millions of tribal youth. The elderly people and priests were left behind in the original villages, and with them the best part of their knowledge and worldviews.

Modernisation has entered into this remote area in many ways, among others through formal education based on western knowledge systems. When attending the local primary schools, or the secondary schools in the larger towns, the tribal children have to adapt their dress and language as well as their ways of thinking, reasoning and seeking answers to questions. Traditional ways of learning are largely, or totally, ignored in this process. Similarly, formal efforts of the state and the communities to improve tribal livelihoods have ignored the relevance of indigenous knowledge systems and the role of traditional leaders. The government-supported community health workers did not take into account the local health systems or the experience of the traditional herbal medicine men, snakebite specialists and midwives. In agriculture, the policy based on subsidies and modern development inputs have ignored the existing agro-ecological practices of these tribal communities.

"Our health and nutritional conditions were always good until some 50 years back. We used to eat the local crops, seasonal nutritious wild foods and medicinal herbs. But gradually we lost these. The destruction of the forest and even the changes in the climate have influenced our food habits. Less food is now available in the wild. Therefore we are loosing our knowledge and resources. People from other cultures have also brought us new food habits." J. Balaram, K. Seethamma, K. Arjun

Effects of modernisation

Modernisation and acculturation in the tribal areas has resulted in many changes in tribal lifestyles. For example, new food habits have been adopted, changing from the mixed and highly nutritious traditional dietary habits and staple foods, to modern rural and urban breakfasts, snacks, beverages and drinks. Deforestation, the change from mixed crops to cash crops and the availability of exotic vegetables and tubers in the markets, has reduced the consumption of local foods, such as wild leafy vegetables, meat products, edible tubers, fruits, nuts and fresh or dried berries.

The cash economy is very attractive to the tribal youth and women, and is influencing their culture, health as well as social relations. The traditionally close community and family relations are eroding and are being replaced by individuality, violence, inequality, socio-economic differentiation, gender discrimination, and political elitism. Traditional musical instruments such as the *dompu*, *kiridi*, *tomuku* and *bousi* have been replaced by the harmonium, clarinet and guitar. The *oili* and *sankidi* songs are now dominated by songs from the film world and christianity songs.

Besides this, community ownership, as well as traditional institutions with their norms, taboos and customary practices related to cultural identity and natural sustainability are breaking down. The functions of *naiks, disari, kattela disari* and *sirla disari* have weakened. Their decision-making role in terms of land and crop management and traditional agricultural practices has eroded under the influence of modern agriculture. This has resulted in further exploitation of natural resources, as well as the deterioration of soils, water resources and bio-diversity in the fragile natural environment. This process includes the loss of social control and regulatory mechanisms by the tribal groups, the loss of their cultural identity and their agro-ecological and health-related practices.

The cosmovision beliefs, festivals, crop calendars, and traditional agricultural practices are changing rapidly. Frequent contacts with neighbouring non-tribal communities, settled landlords, merchants and the coming of christian groups also contribute to this acculturation process. The adoption of foreign religions and practices can create disharmony. Many of the christian missions openly advise the tribal people to change their religion and rid themselves of the wrath of traditional deities, whom they cannot please because the cost of performing the necessary rites are too expensive for poor people.

At the same time, we have found that there are also forces within the communities, which aim at maintaining their identity, traditional system and practices. Though the above trends are affecting tribal life, the well-knit social systems can resist the influences of foreign cultures to a certain extent. It was also observed that in several tribal villages the traditional functionaries themselves realised that there were also negative elements in their practices, and slowly began to change their attitudes, while strengthening their positive practices and looking for selective support from outside. For example, in the villages of the Konda Reddies, women are now allowed to participate in religious ceremonies and worship the Goddess at communal ceremonies. And in some villages, the *guniya* and *sutrani* - the traditional birth attendants - are working together with governmental health workers. These trends indicate the changes in attitude of these functionaries, and their intention to interact with modern development approaches whilst keeping their identity and community functions intact.

II - IDEA's APPROACH TO TRIBAL DEVELOPMENT

Planning and preparation

IDEA's work on endogenous development started in 1996 with an initial participatory baseline study on which the 1st phase of the Compas programme was formulated in 1998. The programme is implemented at two levels simultaneously: (i) in the Action Zone in 35 villages in Andhra Pradesh and Orissa states and (ii) in the Network or Research Zone in 10 villages in different parts of North Eastern Ghats. The action zone is the area where IDEA directly involves in specific selected villages. The network zone is the area where IDEA interacts with local NGOs / tribal youth to conduct studies and also to take up experimental programmes. The *Naik Gotna* networks of traditional institutional functionaries play the major role in promoting endogenous development.

The planning of the 2nd phase of the Compas programme was based on a community diagnosis and prioritisation exercise in 2003. The situation assessment and prioritization by the communities has also helped them to identify contemporary relevant indigenous knowledge systems and worldview practices for further revival and integration with modern knowledge systems and institutions.

The necessary technical expertise for the programme comes from the subject specialists, Compas partners and Compas international and regional coordinators. Inter-cultural dialogues, exchange of experiences with Compas partners in other parts of India and in other countries and networking with other NGOs and research organisations enhance the further development of the approach and insights.

Vision and mission

IDEA's philosophy emphasizes the need for **emotional integration and awakening** to achieve **sociologically acceptable, economically viable, environmentally sound and culturally**

acceptable lines of comprehensive sustainable endogenous development in which traditional institutions and knowledge are enriched with modern institutions and knowledge. IDEA is facilitating this process by organizing different village based development groups and project based research groups with active involvement of all sections of the community and the traditional institutional functionaries.

General objective

To enhance sustainable endogenous development and eco-agri-cultural diversity by supporting tribal communities and local small development and research organizations in their efforts to build their methodological approaches.

Goals

- To document, revive, improve and enhance the use of the tribal indigenous practices and knowledge systems for sustainable endogenous development based on eco-development, biodiversity conservation, sustainable agriculture, watershed development, gender development, community health care and nutrition in which traditional and modern knowledge are combined.
- To revive and strengthen tribal traditional institutions and to empower their functionaries to promote endogenous development. Facilitation of the integration of the traditional institutions with modern development institutions and the formal local panchayats.
- To promote people based policy and intra- and inter-cultural dialogues and to exchange information on indigenous cosmovisions and practices.

Methodology

In the 1980s many tribal communities were moving away from their clan totems and histories. To revive the tribal sense of identity, IDEA documented and revived some traditional tribal songs and clan histories. We found that, besides reviving the sense of identity, these songs also included important lessons on specific tribal knowledge. We have documented and reconstructed these songs with the traditional leaders and also made new songs for dormitory training of village youth.

These songs have become very popular. IDEA believes that providing such emotional content makes tribal people realise their own value and the value of their traditions. This in turn leads to increased self-confidence, emotional realisation and emotional involvement in endogenous development activities. This also ensures that everybody is motivated to participate in community processes for endogenous development and to sustain their efforts also after the programme has left. This observation led to the creation of IDEAs main methodology for endogenous development: *Emotional Integration and Awakening.*

The concept of emotional integration refers to the need to participate not only with the mind, but also with the heart. This applies to tribal people as well as to the workers of the organisations which try to support them. Only on this basis can true joint learning take place.

Emotional Integration and Awakening

The concept of emotional integration refers to tribal peoples' emotional attachment to their history (their roots), their culture, cosmovisions and language, the way they organize social and

economic life, and how this is linked to the ecosystem. It refers to their identity and self-respect: their human values, psychology and social ethics. This gives tribal people a feeling that they belong to a single race that is divided into heterogeneous groups, and will set them to thinking about tribal solidarity.

Awareness of physical integration in which people realise the relations between the different traditional practices, to understand the unity within the diversity, is necessary for emotional integration as well. This awareness is needed for the community to initiate endogenous development actions. Both physical and emotional integration are powerful tools to bring about sustainable, stable, and equitable change.

The concept of Emotional Integration and Awakening has four methodological steps:

a) Emotional content

When entering a new community, we start by building up a relationship with the traditional leaders and the population. Group discussions and case studies follow. We encourage and participate in cultural programmes with songs related to peoples' history, culture and festivals, their ancestors, clan totems and environment. Extensive dialogues are held with the community leaders on the inter-connectedness of the natural world, human world and spiritual world. The local situation is discussed through stories, songs and pictorial presentations. This creates emotional participation and physical integration. This process ensures the proper consideration of relevant worldviews, indigenous knowledge systems and related practices and participation of local knowledge holders and their traditional institutions.

b) Emotional realisation

The second step involves short, simple lectures during group and village meetings. We try to show the relationships between customs, norms, festivals, environment and animistic religious practices and explanations of the meaning of songs are sought. Confidence is built by creating awareness that development can be build on local resources. Examples and evidence are provided from the local community. Emotional realisation also includes a growing awareness, that, though they are ethnic groups with different language backgrounds, their common problems can be tackled through community social action. This promotes tribal cultural identity as well as tribal solidarity.

c) Emotional involvement

The third step includes formalising the groups and setting a common agenda. It involves training and awareness programmes to create actions such as documentation, experimentation, revival and improvement of local knowledge systems. This increases the confidence in these practices.

The community feeling is strengthened in the mind and hearts of the people, not only due to the common agenda, but also by using song, dance and music. All people, including the traditional leaders, participate in the programme.

Environmental Protection and Development Groups (EPDG's) are established and work out plans for integration of their ecology related cultural festivals and the conservation of their natural resource base. Village based women groups are organised, with involvement of their traditional leaders, to enter into economic programmes.

At this level, the local knowledge systems interact with outside practices. It involves exercises to integrate indigenous worldviews, knowledge systems and institutions with modern knowledge systems and institutions for promotion of endogenous development.

For example, traditional herbalists receive training in documenting their local practices, and learn about allopathic first aid. Traditional birth attendants receive training in mother and childcare, immunisation and nutritional improvements.

d) Emotional edge over rationality

The forth stage includes leadership building, networking and lobbying. Realisation of objectives with emotional content, with a focus on tribal solidarity, leadership building, networking and lobbying.

As a result of this work in the various communities the *Naik Gotna* network was established in 1998; the network of tribal leaders. This network organizes various activities that benefit the tribal population as a whole.

The concept of emotional integration and awakening is strengthened through cadre development trainings, dormitory education, training of traditional functionaries, farmers' research and experimentation methodologies and revival strategies for endogenous development. In this way thrust is given to revive and enhance the agro-ecological, health and nutritional practices and hence the tribal economy and livelihoods along sustainable lines.

Since the wellbeing of any tribal society is largely dependent upon the strength of its tribal identity, it is important to ensure that all development activities are non-intrusive and do not threaten that sense of identity. Tribal systems already have developed mechanisms to address almost every environmental and community concern through their traditional practices in forest conservation, herbal health care, wildlife protection and soil conservation. It is essential, therefore, that development initiatives draw on this knowledge.

III. THE PROGRAMME ACTIVITIES

A. Revival, transformation and documentation of traditional practices

The growing pressure on the forests in the Eastern Ghats has severely affected the living standards of the tribal peoples. To address this issue, IDEA together with the traditional leaders, found a way to modify the traditional hunting festival *(Chaitra parob)* and turn it into a festival for ecological protection.

Tribal people believe that their ancestors originated from nature. Each clan, therefore, is the direct descendent of a bird, an animal or a tree. This totem is a supernatural power that protects them. Thus, in each community, people identify themselves as belonging to clans such as the Barking Deer, Peacock and Jungle Fowl. Each clan has a strong affinity for the particular species they have adopted. There are many different totemic clans in each community. They will never harm this animal or plant and will protect it as much as possible. This cultural practice was found to be an important starting point for people-based biodiversity conservation.

A traditional hunting festival transformed

IDEA found that similar festivals are being celebrated by different tribes in India and elsewhere under different names. In North Eastern Ghats tribals traditionally conduct a hunting festival

called *Itukala Panduga*. In the past, this festival included an informal natural resource survey during ceremonial hunting. During this exercise, communities took stock of their natural resources under the guidance of the traditional institutional leaders. Whilst this informal survey was being carried out, the people would eat what the hunters had caught. However, due to several reasons, the major significance and objective of this festival was lost, and the image that prevailed was one of destroying forest resources and indiscriminate killing of wild animals during the ceremonial hunting time.

In the early 1990s, IDEA promoted tribal Environmental Protection and Development Groups (EPDGs) in the tribal villages. During a series of meetings the tribal elders expressed their concern about the changing environment and ecology in the area and, the attitude of the younger generations towards nature. This led to a dialogue between the younger generations and traditional institutional functionaries in the villages. This resulted in a collective decision to transform the traditional environmental protection and ceremonial hunting related festival Chaitra Parob also known as Itukala Panduga, into a festival for the conservation of their natural resources. Courses were organised to exchange views on the traditional environmental protection system and the role of totemic plants and animals. On the basis of the results of the survey, resolutions related to natural resource conservation were passed. This exercise was initiated in 40 villages in 1998, and radiated to nearly 450 villages by 2006 in and around the project areas of IDEA and in the network zones.

During the *Itukala Panduga /Chaitra parob* festival, the villagers divide themselves into four groups based on age, sex and vocation and spend two to three days in the natural resource survey. Children of 10-15 years old take stock of the fruit bearing trees, birds' calls and animal footprints. The intention of this exercise is to prepare them for the complex environmental issues they are likely to meet in the future. Youth in the age group of 16-35 survey tree species, grasses, wild life, water sources and wastelands. Adults above the age of 36 survey the pattern of shifting cultivation and various trees of fruit, economic and timber value. The fourth group consisting of traditional leaders surveys the medicinal plants and other ingredients for their practices. The findings of each group are discussed and recorded systematically.

On the third day, all groups assemble in the village and perform a ritual to Goddess *Sanku Devatha*. Each group presents its findings. Together, they analyse the status of the

Box 1. First-eating ceremony

The first-eating ceremony, commonly known as *Kothala Panduga / nuakiya*, is celebrated after the first harvest of farm and wild crops. It is a food-security related cultural mechanism of the tribal groups, which includes a taboo on touching or eating any food or crop until the entire community has celebrated the festival, and offered the harvested crop to the ancestral spirits. During the past decades this practice was often abandoned, which according to the tribal leaders was one of the reasons for the food security crisis among tribal groups, as well as the declining diversity of wild animals and plants. According to tradition, until the first eating ceremony is performed, the tribal community members may only collect matured and fallen fruits and flowers from the forests. These fruits also serve as food for wild animals, while the left over seeds of the rotten or fallen fruits contribute to natural forest regeneration. After understanding this rationale, the tribal communities together with IDEA have developed different strategies to motivate the tribal communities to revive this first-eating ceremony.

natural resources and identify various floral and faunal species that are disappearing. They further analyse the reasons and factors responsible for this disappearance and decide on actions to conserve these species. Such a people's survey is better than a modern surveys as it assesses the exact strength of the natural resources, the state of the biosphere and tribal knowledge regarding the natural resources.

Besides the *Chaitra Parob,* nature conservation festival, several other development significant festivals and rituals have been revived such as, *Nuakia* or *Kothala Panduga* (first eating ceremony), *Ashada Jatra* (festival to prevent pests in crops and animal diseases) and *Bali Parob* (soil testing ritual).

Revival of the tribal eco-cultural meeting

The tribal eco-cultural meeting *or Adivasi Dharbar,* is another traditional practice revived by IDEA to address contemporary issues related to natural resource management. Traditionally, group leaders and active members from different villages would come together to share their experiences in a community gathering normally called as *Adivasi Darbar* during or immediately after the *Chaitra parob* festival. Now, the leaders discuss the outcome of the natural resources survey's and protection activities taking place in their villages during the festival of *Itukala Panduga.* They discuss the strategies to stop / control the loss of wildlife and ecological degradation. They also discuss the experiences of the previous year to improve their natural resources and measures to punish those who disobey the code of behaviour. The *Adivasi Dharbar* meeting helps the villagers to understand the ecological situation on a regional scale.

To enforce the rules determined during the *Adivasi Dharbar*, the communities have set up a coordinating committee that closely interacts with the traditional village heads and clan heads. Violations of the *Adivasi Dharbar* resolutions are viewed seriously. IDEA's trainings, the totemic concepts, the festivals, traditional songs and the experience of the elders all play a role in implementing these resolutions successfully. As a result of these resolutions some families have minimised and some have totally abandoned (those people who have some alternatives) the shifting cultivation practice.

Reviving traditional institutional leadership

In 1998, the co-ordination between the tribal leaders and IDEA resulted in the establishment of the *Naik Gotna* network, the 'Network of Tribal Leaders'. The major objective of the network is to form a strong group of tribal leaders to support the endogenous development process of their communities. Though the starting point of IDEA's activities in the Eastern Ghats has been natural resources management, it has also stimulated the traditional leaders in the *Naik Gotna* to address many other aspects such as agricultural innovation, collection and protection of wild plants used for herbal medicine and leafy vegetables for improved health and nutrition. These practices are being experimented with in the communities; the results are documented by IDEA together with the *Naik Gotna* members and exchanged during meetings and training sessions. In order to support endogenous development of the tribal communities and prevent further destruction of local natural resources, the tribal leaders aim for integration of their local knowledge, practices and structures with state tribal development institutions and modern knowledge systems. With the help of IDEA, the *Naik Gotna* has initiated several activities, ranging from exchange meetings to training sessions, bio-cultural expeditions, and workshops. This has resulted in increased communication between the different tribes and communities in the area.

Indigenous Knowledge Fair

One of the actions the *Naik Gotna* organised was a four-day Indigenous Knowledge Fair (*mela*) at IDEA's Resource Centre. Hundreds of representatives of all ages and from different tribal communities gathered at the fair. The major objective of this event was to provide a platform for the tribal communities to exchange and demonstrate their knowledge, practices and experiments. A wide range of practices related to agriculture, soil conservation, natural resources, traditional medicine for humans and animals, as well as folklore, bio-cultural practices and development-related rituals, were exhibited. In this way, the IK *mela* provided another opportunity for conservation of indigenous practices. The event created a platform for inter-cultural dialogue and strengthened the networking between different tribal communities. Moreover, it provided an opportunity to demonstrate the relevance of tribal indigenous knowledge to local policy makers, universities and administrators.

The Indigenous Knowledge *Mela* of *2001* was followed by the Traditional Leaders *Mela* in 2002 and the *Adivasi Parob Mela* in 2003.

IDEAs support divisions for endogenous development of the community.

IDEA has set up several technical support divisions to cater the participatory action research, conservation, experimentation, demonstration and training needs to the community in their effort to achieve endogenous development:

IKRC (Indigenous Knowledge Resource and Conservation division)

This is a division situated in IDEA's Endogenous Development Resource Centre (EDRC) formally known as EMRTDC at Araku, Visakhapatnam district Andhra Pradesh. This IKRC division consists the data banks of various indigenous knowledge systems and conservation and demonstration units of various subjects such as herbal health, traditional seed conservation, sustainable agriculture, agro-forestry, school of traditional education (dormitory education), facilities for experimentation and training.

DINARCS (Development Interaction and Natural Resource Conservation Services) division: This support division is implementing the decisions concerning resource conservation taken by the *Naik Gotna* during the *Adivasi Dharbar*. Families have changed their shifting cultivation practices, which has prevented approximately 200 acres – some 90 hectares – of forestland from being reduced to barren patches. The existing cultivated patches are being used for reforestation with local species, agro-forestry, medicinal plants and horticulture using local varieties. Organic agriculture is promoted by widespread experiments and exchange on organic practices as well as by experimentation with several plant-based organic insecticides throughout the area. DINARCS is co-ordinating these efforts.

FRS, Farmers Research Stations

FRS have been initiated at village level to strengthen the capacity of the tribal communities to conduct experiments, to validate their endogenous development activities at village levels as onfarm activity. Several participatory action research activities have been promoted in the FRS under the guidance of the *Naik Gotna* and its thematic forums with active community participation on major thematic areas such as: agro-ecology and the use of herbal plants for bio-pesticides and human and animal health and nutrition.

Conservation units

Several ex-situ conservation units have been established and are being managed by IDEA in close collaboration with the *Naik Gotna* and its thematic forums and communities. These conservation units for research and training on agro-ecological, herbal health and nutritional aspects have facilitated the healers, dormitory students, tribal women and youth to learn about the traditional use of wild plants and also to conduct experiments to enhance their practices. Lately, the conservation units have been expanded with additional species of medicinal plants and with new sections such as commercial cultivation of medicinal plants and village herbal garden demonstrations for human, cattle and crop health. These conservation units are:

BION, the conservation unit of traditional seeds

A group of traditional leaders have initiated this tribal traditional seed conservation programme called *Bion* (seed). Traditional crop seeds (285 varieties) and edible tubers (273 varieties) (by 2006) are being conserved and propagated. A newsletter on traditional seeds is being published. The seeds are demonstrated in the IDEA Resource Centre, where they are actively exchanged with seed varieties from other regions.

Weed management

Groups of women have documented and classified weeds into various sub-groups: edible, medicinal, green manure and fodder weeds, and have conducted training in weed management for women in more than 100 villages. It was estimated that about 32-35% of the crop loss was due to the weeds in the crops. This revived weed management with systematic categorisation of different weeds and their re-use for different purposes has helped the tribal farmers to re-gain the crop loss due to weeds for various purposes. On the other hand the production has also been increased (by 30%-35% in about 200 villages) due to systematic weed management combined with traditional weed identification techniques and categorisation of weeds using the modern classification techniques.

KOILARI, the conservation unit for traditional leafy vegetables

The women farmers together with traditional healers have identified about 256 (between 2002-2006) wild vegetables and edible tubers, berries and nuts, and started a conservation unit by the name KOILARI to conduct demonstrations, research, trainings and experimentations on this subject. They also brought out posters, calendars and stickers to promote the use of leafy vegetables in the villages to improve nutrition for human health and distributed them.

KASTURI, the conservation unit for traditional medicinal plants

Between 2002-2006, this unit had collected and documented about 500 species of medicinal plants which are conserved and propagated. The unit is also used for research, training, experimentations and revival activities.

ASEEL, the conservation unit for traditional poultry breeds

This unit identified and documented 32 different traditional poultry breeds.

B. Strengthening of development networks

Naik Gotna – the Network of Tribal Leaders

In order to revive and support the tribal institutional functionaries, to make their skills available again to the community, IDEA facilitated the creation of the *Naik Gotna* Network of Tribal Leaders. This network has as major objective to form a strong group of tribal leaders to support the endogenous development process of their communities.
Thematic Forums were created on forest health, human health, cattle health, crop health and women and children health, bringing together the tribal knowledge specialists from about 35-40 villages. These thematic forums are clustered at regional level in the Naik Gotna regional federations. In these village and regional networks, traditional institutional functionaries come together regularly to share, discuss and assess their traditional knowledge, thereby greatly increasing their knowledge and skills and restoring their self-confidence.

The *Naik Gotna* and its thematic forums are further strengthened to participate in and lead the process of endogenous development in, among others, the areas of agriculture, biodiversity conservation, herbal health and nutrition. These community based institutions have established their own structures and infrastructures and are facilitating the tribal youth to participate in the action research programmes, documentation, dormitory and cadre development trainings and the experimentation and revival exercises. They have also conducted seed *melas* and cultural *jatras* during festivals to spread the concept of endogenous development and to revive development significant components of the festivals, e.g.: seed testing, soil testing, pest control, etc. They established farmers research units / stations (FRS) to facilitate on-farm experimentation, livelihood enhancement programmes and revival activities at community level, which are promoting dormitory education (*Gothul / Akadasaal)* and managing conservation units at the IDEA Resource Centre.

Their skills of planning, decision making, implementation and coordination of different endogenous development activities are being trained to achieve self-reliance and empowerment. Besides, these networks are also conducting workshops, exchange visits and dormitory trainings in other regions of the Eastern Ghats while initiating inter-cultural dialogues.

The traditional leaders of the *Naik Gotna* have also been brought in contact with government agencies, to mutually assess the tribal development policies. Most government agencies do not integrate tribal and modern practices in their tribal development policies. Through these discussions both parties have discovered the relevance of tribal practices for the local conditions, such as in the case of the first eating ceremony. At the same time, useful modern knowledge has also been identified to complement the tribal practices.

After the successful organisation of the village-based associations of traditional functionaries in the North Eastern Ghats, IDEA decided to replicate the approach in other regions of the Eastern Ghats, in Andhra Pradesh, Chattishgarh, Orissa and Madhya Pradesh. So far, three regional *Naik Gotna* federations have emerged, as well as one national tribal federation for endogenous development. In 1998, there were about 2,000 *Naik Gotna* members, and by 2005 the membership had increased to around 26,000. There is great potential to expand these endogenous development programmes to other areas with tribal populations.

IDEA is also developing a **data bank of traditional institutional functionaries** with their profiles for the promotion of endogenous development in different tribal regions. In 2006, the profiles of about 10,000 traditional functionaries have been entered.

For example, IDEA has identified about 300 *gurumayies*, medical women or shamans, and *sutranis*, or traditional birth attendants, who possess knowledge on traditional reproductive and magical religious herbal practices for gynaecological diseases, childcare and nutrition.

Mountain Farmers Network

A similar initiative has been taken by nearly 7,250 mountain agricultural farmers, who have started their own federation. The main objective of these mountain farmers is to revive the community lead nature resource conservation practices, in utilising the land management practices including their land for agriculture for the survival. Besides, to workout various alternatives for sustainable mountain agricultural and land management practices using indigenous knowledge and technologies and integration of modern knowledge systems and conservation policies where ever they are viable for application.

Women Development Groups and SHGs

Women development groups are the major decision making bodies for the overall development of women in the village. The Self Help Group members (SHG) are the sub groups of the women development group to take up specific tasks such as agro-forest and animal husbandry based livelihood improvement programmes, food security related programmes, seed conservation, environmental sanitation, community herbal health and nutrition etc.

Special importance is attached to the role of women. Tribal societies accord special status to their women, yet a tribal woman is often marginalized in the present scenario. Through the village based women groups, a range of activities have been initiated to empower them and improve their status within the communities.

Tribal women possess vast indigenous knowledge among others on agro-ecological, health and food practices. Women groups have focused their attention on the documentation and revival of diverse indigenous agro-ecological, health and food practices. Women Self Help Groups (SHGs), with the support of female traditional institutional functionaries, have conducted several validation studies and revival activities at village and institutional level. They studies focused on:

- *First eating ceremonies.* These ceremonies are important for local food security. Later this concept has been strengthened with the grain bank initiative.
- *Seed and soil testing ceremonies.* These ceremonies are important in agro-ecological agriculture. Later they have been strengthened through seed bank and seed conservation programmes, land and soil management training programmes and watershed and water harvesting programmes.
- *Batbiba – the health related ceremony.* Later this has been supported with trainings on maternity health care to traditional birth attendants (*dhais*), support to SHGs to revive and experiment with traditional food practices, active participation of SHGs in immunization programmes and in the preparation of supplementary nutritional foods etc.

About 2000 women SHG members have been supported to conduct experiments on different agro-ecological farming, health and food practices such as weed management, preparation and use of organic manure and biological pest control methods, sustainable harvesting practices, wild leafy vegetables and songs related to agriculture and ecology. This has resulted in an increase in crop productions by 40%-45%, sustainable returns to forest products for consumption and sale and improvement of nutritional status and health.

Women's groups have also successfully documented, analysed, re-constructed and revived some of the eco-agricultural songs, dance and music such as *Sankidi, Oli, Dhimsa, Pathorthola, Ninjani, Baag dhimsa.*

Indigenous Knowledge Research, Conservation and Development Forum

IDEA also interacts with other NGOs, government tribal development agencies and universities, who wished to interact, share and learn from their experiences with endogenous development. For this purpose the Indigenous Knowledge Research, Conservation and Development Forum (IKREF) was created. IKREF has more than 350 members *(2006)*: staff from NGOs, researchers, academicians and senior tribal institutional functionaries from 5 regions. Each region has its regional coordinators to facilitate endogenous development. At the national level, thematic coordinators deal with the specific subject needs of the network members and their communities. IKREF has conducted 4 workshops on different subjects, methodologies and long term strategies to promote endogenous development in the tribal belts of India.

University Consortium Programme

Under the Compas University Consortium topical research programme IDEA has taken up the subject of traditional food preparation in 5 Indian communities. For this it started collaboration with the Department of Nutritional Sciences, Andhra University college of Home Sciences. Together they documented about 315 traditional menus, out of which 189 preparations have been scientifically verified for their nutritional values and ayurvedic health properties. The results of this research will be published for wider distribution of the information, revival of the traditional food practices and for further studies.

C. Training for capacity building

IDEA Resource Centre

The IDEA Centre serves as resource and documentation centre where tribals can come for meetings and training. The centre uses computers and other modern communication methods, and has a garden for farming experiments. There is a conservation centre where all the plants traditionally used for medicine and food are grown; here the students learn to identify the plants with their vernacular names. This study is complemented by trips to the surrounding forests. During festivals, traditional leaders perform rituals, the significance of which is also taught.

Training to traditional institutional functionaries

Training activities for traditional institutional functionaries, tribal youth and women are conducted on subjects such as: action research, planning, prioritization, documentation, and methods for revival, integration and networking. Members of various thematic forums have participated in and conducted different village and institutional training programmes to tribal youth and women on specific subjects such as – traditional seed conservation, agriculture, natural pest control, botanical pesticides, traditional natural resource management, traditional nutritional practices etc.

Several training programmes have been conducted for young tribal women, women farmers and SHG members to improve their knowledge and skills on indigenous knowledge and worldviews. Besides, several re-orientation trainings have been provided to traditional birth attendants to enhance their traditional knowledge with modern knowledge on issues such as hygiene, use of aspirin as painkillers and bandaging.

Certificate courses on endogenous development

Certificate courses are conducted to tribal youth and *Naik Gotna* network members to strengthen their skills in aspects of endogenous development such as sustainable agriculture, bio-diversity conservation, and herbal health for human, cattle and crops. These trained people are now providing training services to communities and dormitory students as master trainers, village resource persons and also as tribal herbal health guides.

Dormitory education

On the edge of extinction, IDEA has revived the tribal traditional learning institute, which is known as *Akadasaal* in Andhra Pradesh and Orissa and *Gothul* in Chattishgarh (dormitory schools), at institutional and village level. At village level, the youths stay in the dormitory school during the night and go back to their homes during the day. At institutional level they stay some time at the IDEA Resource Centre, which looks like a tribal village. Sometimes boys and girls are segregated, sometimes they learn together.

Dormitory education is open to those who are interested. In the farming season, however, it is compulsory, as young people have to learn many things. The village level dormitory schools are open to youth until they get married, a minimum of three to four years. Once married, tradition states that they may no longer return to the dormitory.

The tribal indigenous knowledge is mostly preserved in folk form. The traditional institutional functionaries and senior farmers in the village used to disseminate this knowledge to the younger generations through these traditional dormitory schools. Their knowledge which is preserved in the form of folk art, song, dance, music, proverbs and even in the form of rituals is transferred to the youth by teaching them through different ways including song, dance and music, proverbs, clan histories etc., and also by involving them in practical learning process in the fields, forests, festivals and rituals. This curriculum is further developed by IDEA together with the traditional institutional functionaries and integrated the elements of endogenous development.

The main themes of the dormitory education syllabus are:

- cultural identities of the tribal communities,
- sustainable development and traditional knowledge and practices,
- indigenous knowledge and worldview analysis and revival techniques,
- social learning through documentation and experimentation for revival and enhancement for endogenous development.

The teachers of these dormitory schools are village elders, senior youth and traditional institutional functionaries together with IDEA research and training staff and other subject specialists from outside. Each village elder or group of village elders / functionaries is teaching different subjects depending on their expertise on the subject. The main functionaries such as *poojari, dhisari, guniya and gurumayi* etc., take up the classes very informally, but with effectiveness and thrust on the subject. They stay together with the youths for a few days, to pass on their knowledge and skills on subjects relevant to tribal life, such as hunting, farming, ecology and health care. Social issues, such as marital life, social regulatory measures related to

Box 2. A teacher with a difference

Korra Ghasi, 72 years old, is an important member of the Poraja tribe. He lives in Pulikonda, a remote village in Orissa. While he is a *pujari* (spiritual leader), Ghasi is also extremely knowledgeable on development issues, particularly about mountain land management practices. He is also a member of the *Naik Gotna*, the Network of Tribal Traditional Institutional Functionaries, promoted by IDEA. Ghasi has supported the process of reviving indigenous knowledge and practices, especially the clan customary regulations for mountain land management and shifting cultivation practices. Ghasi has also provided training on these concepts to youngsters and some 300 mountain farmers through the dormitory education programme.

pre-conjugal relations, and inter-caste marriages, are also covered in dormitory schooling. This is combined with anthropological, sociological and historical aspects through classroom lectures, demonstrations, field visits, transact walks and PRA exercises. Some of the expertise and technical skills, e.g. on documentation, experimentation, standardization, analysis, etc. are provided by experts from IDEA or from outside. Dormitory students are also exposed to bio-cultural expeditions, research and training in the demonstration plots and the resource divisions at the IDEA Resource Centre. The classes sometimes are conducted in the forests and fields and also during festivals, ceremonies and rituals.

Preparation and distribution of educational material

Several types of educational materials in local languages have been prepared and distributed to communities by IDEA through the *Naik Gotna* and its Thematic Forums. This has helped the tribals to improve their knowledge, perceptions, skills and management on the specific subjects and at the same time it stimulated inter-cultural dialogue with neighbouring tribes on their endogenous development activities. The distribution of the posters, pamphlets and newsletters to NGOs and other development agencies is helping to spread the concept of endogenous development in different tribal regions in India.

Income Generation Programmes

About 400 women SHGs have taken up agro-forest based income generation programmes (IGP), which includes vegetable cultivation, medicinal plant cultivation in herbal home gardens, Adda leaf plate making, petty trade businesses, basket making, animal husbandry and marketing of agricultural produces, thrift & micro credit programmes etc. Through these activities, the economy of the small and marginal women farmers and land-less farmers has been improved.

Grain Banks

Once draught and poverty stricken area became rejuvenated with healthy crops developed due to extensive watershed, sustainable agriculture and re-introduction of traditional seeds by IDEA. The revival of indigenous knowledge and worldviews related to agriculture started yielding significant results. The poverty stricken people started producing enough to meet their subsistence needs. The concept of conservation started addressing not only the problems of natural resource but also the problems of food security of the communities. Thus, the grain

bank concept emerged, where the communities collect small quantities of grains and distribute them to the people in need, during distress times especially to the marginalised families and recover them, after sometime, when the receiver attains the repaying capacity.

"A surprising change started in our area when IDEA came to our villages. That was around the 1990's. Since then IDEA has helped us to address many things. Within a few years our denuded mountains started to regenerate again. Our leaders now feel more confident and their skills have improved. Traditional seeds are brought back to our farms. Within no time the food production has doubled and tripled. By 1997 or 1998, if I rightly remember, there is no more starvation in our villages, and very little migration."

"Our women groups have even ventured to take up grain banks. In the communities Pogara and Manjuguda the grain bank started in 1997 with 100 kilos of rice, 40 kilos of minor millet and 40 kilos of finger millet. By the end of 2003, the stocks in the grain banks have reached to about 400-500 kilos of rice, almost 200 kilos of finger millet and 100 kilos of various varieties of beans and 200-300 kilos of minor millet. We are now self-sufficient and support families in times of drought and emergency, in case of a wedding, or a deficient crop period. There is no more going to moneylenders for petty loans. This once starvation stricken area is now producing enough, not only for consumption, but also for sale and to take up ventures like this grain bank. They have even contributed grains to the cyclone victims in Orissa, some 4 years back! We are very proud of that." Jayram Pangi, Chedda Bhimanna, Korra Chandramma.

Savings programme

After women were complaining that their savings were disappearing an experimental Savings programme was started in 2001 which was named Nisani Donn (money of the divine beings and women). Initially there were 240 members from 12 villages. IDEA provided saving pots and training on thrift programme management. The programme is very successful. Presently, this programme covers 30 villages, involving 500 women.

"When we started in 2001 the average actual monthly saving of each member of the groups was around Rs. 20.00, while the women were finally left with not more than 10% of these savings. After the first month of the experiment, the savings reached to more than Rs.35.00 per woman, and nobody had touched it. Money was intact in front of the goddess. Within months the saving programme started accelerating. In the second year ten more villages joined in this experiment, and the savings had gone up to an average of Rs.43.00 per woman every month. In this way the modern concept of a savings programme was combined with our own customs and beliefs. No male members or our own group members and children ever tried to touch this money again!" Muvvala Muthai and Madala Yeeramma.

IV. RESULTS OF TRIBAL DEVELOPMENT EFFORTS

The endogenous development model, which is promoted through the concept of 'Emotional Integration and Awakening' is yielding results, which are sociologically acceptable to the community and economically viable (see box 3). It is based on the tribal subsistence based economy, and also addresses their needs for economic empowerment. One of the main pillars is addressing the environmental problems of the communities. This model also helps the tribal communities to maintain their cultural identity, while integrating certain external cultural practices to join the main stream of the society.

Box 3. Highlights of some of the main tribal development results

- Improvement of bargaining capacity of their agro-forest based products, resulting in getting fair prices.
- Reduced cost of crop production, due to the use of botanical pesticides, traditional soil and land management practices, organic manure, biological pest control, and the use of disease resistant, draught and pest resistant traditional seed varieties.
- Reduced expenditure on allopathic medicine for human and animal health due to revival of the use of herbal medicines and support to local healers.
- Extra income for women due to value adding and processing techniques of the raw forest and agriculture products. For example, leaf plate making, turmeric powder production.
- Less expenditure for buying seeds due to the conservation programmes of traditional seed varieties at institutional, community and farmer level.
- Increased production from agro-forest and livestock based activities. This has created more food for consumption, more income generating activities, and less need to migrate elsewhere in search of paid work.
- The revival of first eating ceremonies has further contributed to food security throughout round the year, and helps the communities to conserve surplus grains to meet the emergency needs. This has also reduced the loss of crops and land to non-tribal petty traders due to indebtedness, and exploitation in bonded labour.
- Increased possibility for women to save money. Women village groups have created revolving funds which provide small loans for income generating activities, such as vegetable cultivation, petty shops, agro-forestry based processing units, and duck- and chicken raising activities.
- The revival of local food habits, herbal medicines, and the preparation of supplementary nutritional foods for vulnerable groups is contributing for the improvement of health, nutritional status, and has lowered the rate of mother and child mortality.
- The grain banks meet the emergency consumption needs and food supply.

Economic results

The agricultural economy is improving due to revival of traditional agricultural practices such as natural pest control, botanical pesticides and weed management and revival of agriculture related rituals and ceremonies such as *Bali parob, Chaitra parob, Ashad jatra* and first eating ceremonies. Also the revival of agricultural health related tribal almanacs and symbols (*Gondas*) is contributing to this result just as the complementation and integration of traditional and modern knowledge.

Organic food production is increased in 627 acres belonging to about 200 small farmers by 2002 and in about another 600 acres of about 225 farmers by 2006, by the revival of botanical pesticides for home-consumption as well as for sale in the local markets as '*vanavaasi* foods'. Animal husbandry based economy is also slightly improving due to the revival of animal health healers and inputs such as first aid kits, trainings etc.

About 2000 women (between 1998 and 2006) SHG members in different projects of IDEA have been supported to improve their food production, income and livelihood through agro-forestry and livestock based small scale income generation programmes. This has resulted in an increase in crop productions by 40%-45% between these years, which is continuous and sustainable returns to forest and livestock products for consumption and sale. Random studies and case studies of IDEA have confirmed this increase of production. Additionally, the grain bank concept is introduced to meet food security in time of crisis.

The forests based economy is improving due to the revival of traditional natural resource management practices and related rituals such as conservation of clan totemic species, adoption of natural forest regeneration programmes, observation of protocols related to natural resource conservation during *Chaitra parob* festival and also during the harvesting time of forest fruits and other products.

This is resulting in improved food production, food security and income in the entire project area, including COMPAS programme area.

*"We have learnt to make our own botanical pesticides from local herbs, to control pests in crops and diseases in our cattle. We are again seeking to integrate the cosmic divine powers. In this way we have revived some of the health related rituals, for example Bali Parob (*ritual for crops and soil health*), Chaitra Parob (*ritual for the health of medicinal plants and edible tubers*), and Ashada Jatara* (ritual for the health of our crops and animals*).*

For agriculture, we are using veterinary first aid kits, modern eco-friendly pest management practices and sometimes we consult with the soil testing departments for their advice. " J. Balaram, K. Seethamma, K. Arjun

Health results

About 2000 *(by 2006)* healers and youth have improved their skills and knowledge on human health, crop health, cattle health and women and child health.

Women development groups and Self Help Groups have revived traditional health and food practices by reviving the use of about 500 species of medicinal plants, 245 wild leafy vegetables, tubers and berries etc.

In order to improve the livelihood of the healers and also to revive their practices for the benefit of the communities 181 healers (by 2006): *Lok guniya* (Human health healers), *Taas guniya* (Crop health healers), *Ghor guniya* (Cattle health healers) and *Nonnimon and Pillamoon guniya* (women and child health healers) have been supported through training and the set-up of their first aid units in the villages. This has further improved the skills and quality of service delivery of the healers.

The nutritional status of 747 (by 2006) children, pregnant, lactating women and aged people is improving due to the support to revival of traditional supplementary nutritional food preparation based on the indigenous knowledge with integration of modern formula components. The grain banks also contributed to the improved nutritional and health status.

"IDEA is helping us to protect and use our local resources, so we have food to eat and better health. IDEA has helped us to systematize the knowledge about herbs and food of our traditional healers. In this way we have classified the traditional herbal practices for the health of humans, cattle and crops. Our healers have improved their skills and are teaching others about this through trainings that IDEA is organising. We have also started herbal gardens, in our homes and villages. Many of our health problems are better controlled now. The medical expenses which we were incurring on allopathic medicines, such as for travel expenses and the time to get the medicine from distant places, are now reduced to a good extent."

"We are also combining our traditional health practices with other Indian traditions, such as Ayurveda, Unani and even Homeopathy, and also with allopathic medicine wherever it is feasible. We have learned modern first aid practices, and are using preventive vaccinations and delivery kits now."

*"Our traditional village leaders, healers and senior women are giving us advice on different types of wild foods and how to prepare them in a special way. We have even started a new supplementary food preparation by name 'Poshak podi' (*Nutritional food powder*), with the combination of our traditional and modern nutritional formula's. This special nutritious food is very good for our children, pregnant women, women with young children, and even the aged people. We have also started to experiment with edible tubers, wild leafy vegetables and various berries and nuts in the wild. In this way we need to spend less money on buying food from elsewhere."* J. Balaram, K. Seethamma, K. Arjun

Network results

The Naik Gotna network of traditional leaders has grown from 2000 in 1998 to **26,323** in 2006 and the IKREF network has expanded to 368 members (by 2006) as follows –

STATE	COMMUNITY NAIK GOTNA	IKREF MEMBERS NGOS	Researchers	Traditional leaders
1. Orissa	5,250	25	11	28
2. Andhra Pradesh	5,150	16	15	24
3. Chattishgarh	2750	7	3	14
4. Rajasthan	1100	7	2	14
5. Gujarat	1000	8	2	17
6. Madhya Pradesh	3150	8	4	26
7. Jarkund	2750	9	3	10
8. Bihar	1000	6	2	15
9. Himachal Pradesh	1750	12	6	15
10. Utter Pradesh	500	8	2	9
11. Uttaranchal	550	11	4	9
12. Assam	500	2	1	2
13. Andaman (UT)	523	4	3	-
14. Nicobar (UT)	350	3	1	-
TOTAL	***26323**	**126**	**59**	**83**

* Figures as given by members

Ecological results

Communities have been supported to improve the ecology and biodiversity through afforestation programmes with 16,360 *(between 2002 and 2006)* saplings of natural forest during the *Chaitra parob* festival. This is linked to the revival of traditional natural resource management practices, clan regulatory mechanisms, clan totemic concepts, sustainable harvesting practices and ceremonies, songs, dances and music related to traditional natural resource management. This is resulting in the successful re-generation of mountain land and forest resources such as minor forest products (Adda leaf, broomsticks and several forest fruits including non-timber forest products such as amla, marking nut, terminalia species and several edible tubers, medicinal herbs etc.). This is resulting in the protection of about 76 floral and faunal species through totemic clan concepts and 2,50,000 acres of forest land from shifting cultivation, covering 3000 sq. kms in Andhra Pradesh and Orissa areas of North Eastern Ghats. This is improving bio-diversity and contributing to the reduction of global warming.

Training results

Training programmes have been conducted to 558 tribal youth and women with the active participation of Naik Gotna and other senior farmers and IDEA staff. This is resulting in the further revival of agro-ecological and health related worldviews and knowledge systems leading to the enhancement of the agro-ecological situation and the health and nutritional status of the tribal communities. The dhisari-network has trained about 120 tribal youth on herbal medical practices.

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REVITALISATION OF LOCAL HEALTH TRADITIONS

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Foundation for Revitalisation of Local Health Traditions

Background

The Foundation for the Revitalisation of Local Health Traditions, or FRLHT, is a non-governmental organisation established in 1991, dedicated to revitalising India's rich and diverse health traditions. FRLHT's mission further includes the conservation and sustainable use of medicinal plants, building databases, setting up traditional medicinal clinical centres as well as research on selected medical, sociological and epistemological aspects of the Indian medicinal heritage. In 1993, in response to the dwindling medicinal plant resources, FRLHT initiated a pioneering collaborative programme with the state forest departments, research institutes, local NGOs, and local communities. Since then a network of over 53 conservation sites of medicinal plants has been established across the states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra, covering 11,000 hectares in different forest areas. FRLHT has accumulated a wealth of researched data, as well as a unique medicinal plant herbarium and a museum of traded raw drugs and is offering support to local healers. FRLHT is a National Centre of Excellence for Medicinal Plants and Traditional Medical Knowledge under the Ministry of Environment and Forests, Govt. of India. In 1998, FRLHT received the prestigious Norman Borlaug award for its contributions to the field of conservation and revitalization. In 2002, the Medicinal Plants Programme in Peninsular India was one of the projects selected by the United Nations from around the globe for the Equator Initiative Prize at the World Summit on Sustainable Development in Johannesburg. In 2003, the Rosenthal Centre for Complementary and Alternative Medicine, in the Columbia University, New York, awarded FRLHT with its first award for International Cultural Stewardship.

FRLHT is participating in the Compas programme since its formulation in 1998. The main objective of the first phase of the programme was to design a participatory method for documentation of local health traditions, and to carry out a rapid assessment of some selected elements and aspects of local health traditions in certain rural communities in South India. The health practices that were assessed positively formed the basis in various extensive programmes, such as the Kitchen Herbal Garden (KHG) programme in various states in Southern India. In the second phase, the objective was to mainstream the finding of the first phase through training and orientation programs for NGOs and GOs as well as to do topical research on selected aspects of local health traditions following a rigorous community diagnosis. This phase also included the university consortium program in order to develop linkages between local communities and university scientists/researchers for formulating appropriate methodologies for research as well as incorporating aspects of Indian Medical Heritage in the medical curriculum.

The vision of FRLHT is to demonstrate the contemporary relevance of Indian Medical Heritage by designing and implementing innovative programmes, on a size and scale, which will have societal impact. For this purpose, it is focusing on the following themes:

a) Exposition of the theory and practice of traditional systems of medicine,
b) Conservation of the natural resources used by Indian systems of medicine and
c) Revitalization of social processes (institutional, oral and commercial) for transmission of the heritage

The Compas program was primarily designed to develop appropriate methodologies for assessing local health practices as well as supporting social processes of revitalization.

Relevance of Local Health Traditions

Indian subcontinent has a deep-rooted pluralistic health culture. Traditional medicine in India includes 'codified' systems like Ayurveda, Siddha, Unani, and Tibetan (Gso-wa-rig-pa) medicine and the 'non-codified' oral traditions. The non-codified Local Health or folk Traditions (LHT), such as those represented by traditional folk healers (*vaidyas*) such as bonesetters, birth attendants, pediatric specialists, veterinary healers, poison healers, healers specialized in specific diseases like jaundice, eye diseases, gastro-intestinal diseases etc., have been transferred orally for generations through a person-to-person apprenticeship process. A unique feature of folk traditions is that they are ethnic community and ecosystem specific, and thus embody tremendous geo-bio-cultural diversity. Folk knowledge also includes what is popularly known as grandmothers' remedies, the household knowledge about primary healthcare, different health food recipes, seasonal health regimens and health customs, rituals etc. Many practices such as rituals, customs, daily and seasonal regimens, which are part of community specific cultural and religious traditions, seem to be inherently linked to overall well being as well. It is estimated that there are around 1.4 million *vaidyas* in India as well as millions of rural (and to a much lesser extent, urban) households who possess considerable knowledge of home remedies. In many rural areas of the country they are providing the only recourse in primary healthcare. According to an All India Ethno-biological Survey carried out by the Ministry of Environment and Forests, Government of India, over the period 1985-1995, around 8,000 species of wild plants were listed as being used in health care by rural and tribal communities, which account for almost 40 per cent of the known flowering plants of India. This shows the vastness of folk health knowledge.

The folk traditions have nutritional knowledge of thousands of eco-system specific food resources that are not documented in modern books on the subject. It has unique knowledge of therapeutic and manufacturing techniques for the use of local resources. Specialised skills include diagnostic methods such as *nadi pariksa* (pulse examination), *mutra pariksa* (examination of urine), *visa pariksa* (diagnostic and prognostic methods used in cases of poisoning), and *varma kalai* (diagnosis and treatment using vital points in the body), diagnosis and reduction techniques for fractures, emergency care like treating poisonous bites etc. Every village in India has a few traditional birth attendants or midwives. It is reported that midwives manage around 60% of the deliveries in the world, which includes antenatal and postnatal care. It is estimated that India has around 600,000 such midwives. Amazingly, India also has a folk orthopaedic tradition. Every cluster of 20–25 villages has a bonesetter or about 60,000 in total India. These bonesetters treat sprains and simple fractures, and in some parts of the country they also manage compound fractures with open wounds. There is no systematic study available on them yet, but it is obvious from the low access to hospitals available in rural India that traditional bonesetters manage most broken bones in the villages. Local health practitioners do not just deal with general health problems. There are also an estimated 60,000 *vaidyas* who treat poisonous and even life-threatening snake as well as other poisonous bites. There are another 100,000 *vaidyas* who treat a range of common ailments, chronic and specialized conditions related to the eyes, ears, skin and muscular and nervous disorders. They are one of the largest

private, community supported health care providers. The extent of the service they provide is enormous, almost one healer per every three villages.

Interestingly it is observed that particular ethnic communities are specialized in certain local health practices. The various systems of local health traditions are associated with the rich cultural diversity in India. For examples, Navidhars or barber community of certain locations in Tamil Nadu are experts in treating skin troubles. Similarly Kurubas in Karnataka and Konars of Tamil Nadu, the shepherd or cattle rearing communities, are well versed in veterinary medicine. The Irula tribes of South India, who are known for their skills in catching rats and snakes, are well versed in treating poisonous bites. The prevalence of a particular category of *vaidyas* in a locality is related to the local needs. *Pashu vaidyas* (veterinary healers) are more in North Karnataka where cattle rearing are a major profession. *Visha vaidyas* (healers who treat poisonous bites) are prevalent in dry and drought prone areas where snakebites are common.

The most fascinating feature of local health traditions is their non-institutional, person-to-person transmission and the self-sustaining nature without the aid of any external source of funding. They embody the knowledge which is medical as well as cultural and ethical codes, which evolve, adapt and alter in time. Though community health practitioners have no legal recognition, they enjoy much social legitimacy in their localities. *Vaidyas* do not generally undertake medical service as a full-time vocation, nor are they dependent on their health services for a livelihood. They may be a farmer, a barber, a shopkeeper, a blacksmith or even a wandering monk. And while the medical services they provide are not free of charge, they are offered in an ethical and non-commercial spirit. The low sustenance cost is one reason why the tradition still is so large, widespread and decentralized.

From the modern drug development perspective local knowledge has immense value. According to the NAPRALERT database (University of Illinois, WHO), 95% of all modern drugs derived from plants are similar to traditional drugs and originally come from leads provided by LHTs. The discovery of quinine, a drug from Cinchona tree, which became the life saver of millions and millions of malaria patients, was possible through the lead from a Peruvian LHT. Yet another promising antimalarial drug Artemesia, is based on a Chinese local tradition. The solution for Hepatitis B and C which is presently being developed from the plant *Phyllanthus amarus* comes from Indian local knowledge. It is therefore attracting bio prospectors to a considerable extent.

Contemporary Status of Local Health Traditions – A SWOT analysis

As there is growing interest in the field of traditional medicine, so many systematic programs have been initiated by various organizations. This systematic approach towards revitalizing IK among the network members is found to be a good strength. Existence of good networks and large number of resource centers to support the work especially in South India is also a positive situation. It is also noted that more evidence is emerging for traditional medicine in public health through various research programs in the country and abroad. This is contributing to boosting confidence about traditional medicine among scholars as well as general public.

However there are also many weaknesses. There has been a constant erosion of these traditions in the past two centuries due to various reasons. Besides the known reasons of erosion of cultural diversity, the promotion and acceptance of western medical systems, which are inherently techno-centric, external resource dependent and alien to the understanding of health traditions in India, has been one of the largest contributors to the erosion of LHTs. The current western education model also fails to impress on the young generation the rationale

and logic of the sound traditional practices, leading to their negligence. It is very often noticed that the younger generations today look at LHTs with suspicion and often believe them to be superstitions and therefore deride the use of these traditions. Consequently there is a reduction in the use of home remedies, and preventive and promotive diets at the household level. As presently the number of *vaidyas* in the communities and people seeking help from them are also reducing, there is unwillingness of the younger generation to take up the profession of *vaidya*. The long year process of apprenticeship learning involves all the aspects of treatments starting from selection and identification of the right resource to dispensing of the appropriate dosages of medicine. It is a full package of traditional teachings through practical work with a *guru* (teacher). This involves the transfer of diagnostic skills and procedures, knowledge about properties of herbs and other ingredients used for preparation of medicine and precautions, over a period of time. The disciples undergo rigorous training and have to follow a strict code of conduct. In a recent survey, out of the 303 *vaidyas* documented 142 *vaidyas* are above 40 to 60 years old. Only about 18 percent of the *vaidyas* were able to pass on their knowledge to the successive generation. The lack of social recognition is one of the major reasons for the younger generation not to carry-on the tradition. The present average age group of the *vaidyas* is 50 and if this generation of healers with their diverse skills passes away, LHTs are sure to die a slow death.

Lack of political support, lack of social support and esteem, marginalization by other systems of medicines, issues related to intellectual property rights and benefit sharing, lack of serious effort to the fundamental research, as well as collaborative research and large scale depletion of natural resources are some of the major concerns to be addressed in a revitalization strategy. Lack of appropriate and rigorous methodologies inorder to validate and mainstream these practices are also a matter of concern. Lack of legal support mentioned earlier is a major hurdle. An unfortunate fact is that LHTs do not figure anywhere in the medical programmes in the country. Folk traditions are hardly treated as medical knowledge of any importance. This is a serious failure in country's public health policy given the number of folk knowledge holders. Over the years it was understood that sustaining active relationship with network members is also a major challenge.

On the other hand more awareness among public seem to be contributing to a revival of interest about the field of traditional medicine. Policy inclusions at the national level in the recent past have also contributed to confidence building measures among practitioners. In terms of government support in the recent past there has been a changing attitude among politicians and bureaucrats towards traditional medicines. This is evident from the fact that there is support for traditional knowledge in general across broad spectrum of political views. There are endless requirement in the area of public health, which is creating a niche for traditional medicine to operate successfully. Traditional medicine has much to offer in priority areas such as malaria and diarrhoea. However a major challenge is how to develop mass application based solutions.

Apart from these also there is a general positive outlook towards traditional knowledge now. Environment of increasing awareness and support for indigenous knowledge - Organic farming, traditional medicine are part of this movement. The relative political stability in the country is also a promising context for revitalization. Government departments such as environment and forests, health, science and technology and bio-technology are supporting an enabling environment for revitalisation. In the recent past there have been policy inclusions of a knowledge system in the five-year plan process. There is also more openness and interest of technical staff of universities and institutes. In general more awareness about biodiversity and sustainable living are also contributing to the positive growth trends.

Marginalization and conflicts with mainstream groups seems to be one of the major threats. Concern of validity/safety/falsification/misuse of standards seems to also be some of the stumbling blocks. From the past experience it is understood that principle of self-regulation and monitoring among traditional healer bodies would help to resolve some of these threats. Lack of continuity of key policy issues with changing governments, strong continuation of disparities despite overall high growth rate of the country, privatization of R&D institutions, inappropriate expressions of support in some areas of IK, emergence and growth conflicts along religious and ethnic lines are some other problems confronting traditional knowledge in general today.

Revitalisation of Local Health Traditions Urgently Needed

In India, the Government's share of health expenditure is 21.7% whereas that of the private sector is 78.3%. This means that in India, majority of the citizens pay out-of their pockets for health care. Costs of health care are rising due to emerging international trade and Intellectual Property Rights (IPR) regimes. According to the 10th plan document of Planning Commission of Government of India, the second highest cause of rural indebtedness is on account of health expenditure, the first one being due to livelihood needs. The insurance companies do not find health coverage to the rural poor a viable business; hence the current and future health status of the rural masses is far from secure.

Indians spend about 6% of their GDP on health care, inclusive of both private and public expenditure, which is comparable to most developed nations and more than almost all developing countries. However in absolute terms, it is low. For example, an Indian spends on an average Rs. 250 per person per year, while in England it is Rs. 2500 per person per year, and in Asian countries it is Rs. 1000 per person per year[3]. This means people in India can afford to spend relatively less for their health care.

Over 80% of the need for health care is in rural areas, where only 25% of the existing services are located[4]. This is typically so, in the case of village communities in India. The State Government of Karnataka for example allocates an annual budget of Rs. 30,000 (660 USD) per PHC Center for the purchase of medicines. With population coverage of 30,000 per PHC, this means that only medicines worth Re. 1 per person per year is available from the PHC centers to the citizens in the state of Karnataka. It has not been possible for the poor, especially those who live in rural parts in India, to obtain primary health care due to ineffective Government PHC centers and unaffordability of private health care facilities.

The present public health care system in India is based on Western capital-intensive and technology-centred medicine, which depends heavily on external resources. It has been estimated that only one-third of the population is covered by this system. In rural areas the coverage is much lower, sometimes as low as 3%. The high fees of the private health sector are making it unaffordable for the poor. High costs of staff and drugs, long travelling distances to access health care, lack of supply of drugs, lack of facilities, long waiting time at the health centres, and absence of staff are some of the reasons for dissatisfaction with the existing governmental health care system.

In this context the LHTs have immense value, as the outreach of this system is very high. It is felt that there is an urgent need to revitalise these LHTs for betterment of healthcare. The traditional remedies used for primary health care are affordable and accessible as they are locally grown medicinal plants and kitchen condiments

Most of the products are applied in semi-processed form or in simple preparations. They can be made in any rural kitchen and are culturally compatible.

It is time that the country devotes attention to this folk medical knowledge not merely to the practices but also to their theoretical as well as worldview aspects. This will ensure medical pluralism and will help sustain the only primary health care option in many of the interior rural areas of the country. What is required is participatory research to highlight the contemporary relevance of LHTs through appropriate assessment methods and social and political efforts to mainstream these effective traditions. Preliminary experiences make clear that LHTs, if strengthened, are a rich resource which can fill the lacunae in the present system of primary health care among the rural communities.

Main Approaches Followed by FRLHT

In the Compas Programme several methodologies have been developed and approaches are being followed to document, assess, understand and mainstream Local Health Traditions:

A Documentation and Rapid Assessment of Local Health Traditions

B The Kitchen Herbal Garden approach for mainstreaming

C Studies on special aspects of traditional medical knowledge

D Curriculum on Indian Medical Heritage

A. Documentation and Rapid Assessment of Local Health Traditions

Identifying effective health practices through elaborate pharmacological and clinical trials is a time consuming task. Validating a single practice may involve several years of laboratory research and huge capital investments. Thus in the early phase of the Compas programme we developed an alternative methodology to assess local health practices without detailed laboratory and clinical studies. This methodology is called 'Documentation and Rapid Assessment of Local Health Traditions' (DALHT). It is aiming to understand the local needs in the area of primary health care which build on the local knowledge and skills available among the community based organizations, village resource persons, *vaidyas* and the community members.

The DALHT methodology involves several steps (see Box 1):

1. Selection and training of field collaborators
2. Data collection and documentation
3. Prioritising health conditions
4. Intercultural rapid assessment of selected remedies
5. Identification of remedies for promotion

As an outcome of these community-based workshops selection of the best home remedies for their promotion in primary health care is done. The rapid assessment method is a participatory platform where there is active interaction among the local community members, healers and external experts from other systems of medicine. Thus these workshops facilitate inter-cultural dialogue and learning between the different systems (cultures) of medicine. Since the assessment is focused on the experiences of community members, the methodology advocates minimum usage of external knowledge and resources for both assessment and promotion. The programme has been able to generate enough interest among the community members and various community based organizations such as *nattu vaidya* (local healer) associations to take forward the idea of self-reliance in primary health care.

Databases

Two databases have been compiled from this work. The first database systematises the local health traditions of the selected area. As the contents are the intellectual property of the local people, the documented data was returned to the respective communities in the form of People's Biodiversity Registers. This is housed in the respective NGOs, where other organisations and local communities can access it. This is part of an extensive programme to protect local knowledge from being pirated for commercial purposes without proper consent of the local communities or equitable benefit sharing. All together this database contains information related to 1048 healers, around 80% of the folk healers in the area. Moreover, the practices of 1800 knowledgeable households, 6-8 in each hamlet of 100-200 families, are also recorded.

The second database consists of reference literature, providing evidence of pharmacological and clinical studies based on Indian classical medicine systems and modern science for local health practices. This database housed in FRLHT office in Bangalore is accessible for firms and NGOs that operate in line with the Convention on Biodiversity.

Steps involved in the first DALHT programme

Selection of field collaborators

To start the documentation and assessment of the local health traditions in the states of Maharashtra, Karnataka, Tamil Nadu and Kerala, a meeting of 13 local NGOs was organised. These agencies had already been involved in activities on the conservation of medicinal plants and traditional health care, and had established good relationships with the local communities. Operational details and responsibilities were agreed upon. NGO staff would be trained and community level support committees established. Local communities would be fully involved in the revitalisation activities.

Training of field staff

A series of training workshops were held to orient the field staff in documenting local health traditions. A number of training modules were developed on the following subjects: the splendours of cultural diversity and cosmo visions; the documentation of local health traditions and the world view in which these practices are embedded; finding the effective health practices through participatory rural appraisal; and rapid assessment of local health traditions. Appropriate tools for documenting these practices and describing prevalent health conditions were discussed.

Designing data collection

A pilot study was carried out in four field locations prior to the actual documentation process. Questionnaires to record the knowledge, resources and socio-cultural aspects of health traditions were field-tested. In order to record different levels of knowledge and practice, five subsets of questionnaires for folk healers were designed: for veterinary practitioners, for healers treating poisonous bites, for traditional birth attendants, for traditional bonesetters and for those healers who treat more general health conditions.

These questionnaires included the concepts of health and disease, disease management, the availability of natural resources for the remedies, and what people thought about traditional health practices. The household questionnaires focused on home remedies as well as food practices and the health related aspects of the daily routine.

Data collection and processing

After compilation of data from all the areas those were checked for any inconsistencies. Various analyses were conducted. Based on these, 96 health practices were selected for further analysis in the assessment workshops in the second phase of the project. The resources (from plant, animal or mineral origin) used in the practices selected were subjected to literature research for further evidence of their use.

Prioritising health conditions

In five selected areas, the prevailing health conditions were prioritised by means of participatory rural appraisals with groups of 35 community members. This exercise had four steps: listing the health conditions prevalent in the community; establishing the criteria to prioritise the health conditions; developing a matrix with criteria and health conditions; and ranking, or scoring, the conditions based on each criterion. Twenty health conditions with the highest scores were selected for the assessment procedures.

The communities' understanding of these health conditions, like causes, symptoms and stages, was also discussed and documented during the exercise. The selected health conditions were screened to see what home remedies were available to prevent or cure them, and if the health condition or remedies were repeatedly mentioned during the interviews. The accessibility of the natural resources, their affordability and the effort required to prepare the remedies were also documented.

Rapid Assessment

In the second phase of the project the objective was to develop a Rapid Assessment of Local Health Traditions (RALHT) protocol to assess the selected home remedies for subsequent promotion in the primary health care system. This exercise was named 'Rapid', as it did not involve detailed laboratory or clinical studies.

Planning Meeting

A workshop was organised to determine the methodology of the assessment process and design formats. It was decided to base the assessment on the practical experience of the local communities and the health care experts, as well as on the experiences from Ayurveda, Siddha, Unani and modern pharmacology. Five areas in Tamil Nadu were selected for assessment workshops on the basis of the quality of data and the diversity of practices identified.

Intercultural rapid assessment workshops

The assessment workshops included community members, folk healers practitioners, practitioners of Western bio-medicine and of the Indian system of medicine (Ayurveda, Siddha and Unani), field botanists, pharmacologists, researchers, facilitators, NGO staff, reporters and FRLHT staff. These community-based workshops aimed at selecting the best home remedies for their promotion in primary health care by means of a rapid assessment exercise. The references for the selected plants, animal parts or minerals collected from literature of Ayurveda, Siddha, Unani and modern pharmacology helped the participants to comment on the local health practices under view.

During the workshop, groups were formed to comment on a specific health condition and it's remedies from the perspective of the different systems (cultures) of medicine. The different explanations and remedies used by each system of medicine to treat the health condition under evaluation were discussed in a respectful way. Thus the workshop became a platform for intercultural learning and exchange of ideas.

The NGO staff assisted to facilitate and report on the process. The natural resources used in the remedies were identified by the community through demonstrations and documented in a voucher specimen collection. Missing data were added and cross-checked. The discussions and individual comments were also documented. In the plenary sessions each group presented its conclusions on the remedies, and commented on efficacy. Any differences of opinion were clarified and a common understanding was developed. In five workshops, about 50 remedies were assessed for 20 health conditions.

Identification of remedies for promotion

Remedies with strong empirical evidence from the community and the folk healers will now be promoted, irrespective whether they receive support of other medical systems. Distorted practices are discouraged. Remedies with strong positive empirical evidence from the communities, but negative assessment from the other medical systems, will be subjected to further research among the communities. This category is called 'data-deficient'. The remedies which are selected positively are subjected to rapid pre-clinical trials in the rural locality, with the active involvement of folk healers, community and representatives from different medical traditions.

Some learning points

This entire process has only looked at curative practices. Many important preventive or promotive traditional practices for example lactation enhancing practices, or certain porridges used to prevent rheumatic complaints, medicines for hair growth or body strength etc., are equally relevant. This will be included in future activities.

We also found that rural people's understanding of health conditions does not always coincide with the symptoms, stages and causes mentioned by the other medical systems. For instance, the community from Virudhunagar understood that leprosy was caused by the bite of a snake. This exercise gave the local community an opportunity to seek clarification on the causes and symptoms of leprosy and its transmission.

During the workshops valuable lessons were learned which lead to the improvement of the methodology of rapid assessment of local health practices. We learnt that great emphasis should be given to selecting and orienting local healers and medical experts of different backgrounds before the actual assessing exercise. Moreover their experience in health care in the area and familiarity with the local language should be considered. This maximises the interaction with the community members.

During the process of prioritising health conditions and remedies to be discussed during the assessment workshop, more detailed data should be collected. This could be done through pre-workshop exercises, in which the prioritised conditions are discussed with folk healers. This helps to ensure that both literature research and assessment workshops are carried out as effectively as possible. Moreover the number of health conditions and remedies to be assessed per day should be limited, in order to facilitate a complete and comprehensive discussion and understanding of each local health practice. We found it difficult to manage more than six health conditions in a one-day workshop.

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B. The Kitchen Herbal Garden Approach for Mainstreaming

As a next step ways were sought to introduce the positively assessed LHTs into the mainstream public health system. The Kitchen Herbal Garden (KHG) programme is one of the methodologies that FRLHT designed to promote the positively assessed practices to promote self-help in PHC among rural populations using medicinal plants. The objectives of the HHG program are

- To increase public awareness about the value of ecosystem specific plants and local knowledge for solving specific PHC conditions
- To promote self-help for PHC problems among rural populations using herb based home remedies and
- To train women, village resource persons in growing and use of ecosystem specific package of medicinal plants for common PHC related complaints faced by the community particularly for women-related health conditions

At the household level a package of selected medicinal plants for several prioritised health conditions was promoted. The programme targeted rural women and the local community organisations, the *sanghas.* Around 6220 villages have been covered under various projects and 1,75,000 home gardens have been established. Some of the livelihood programmes that are ongoing have contributed to material benefits. Similarly the ethno-veterinary programme has made a strong impact on cost saving among milk unions that have participated in the programme. For instance Dakshina Kannada Milk Union established 1350 home herbal gardens during the period 2003-2005. However, we have not been able to clearly make an assessment of reduced poverty in social and spiritual domains during the assessment. Besides constituting a valuable aid in the household health situation, the possibility of growing some herbals for commercial purposes and also developing local enterprises (as a livelihood initiative) have been taken into account. The micro-enterprise venture initiated by Grama Mooligai Company Limited (GMCL), for example, enables women's groups and farmers to sell medicinal plants material and value added products, to the market through a profit-sharing mechanism. At the local level the Women Federations of 200-300 members in each locations, have taken the responsibility

for executing the project, while the NGOs play the more technical role of arranging training and growing the medicinal plants in nurseries. Moreover, FRLHT and its allied NGO's are seeking citizens' support in general for saving critically endangered species from extinction, by encouraging individuals, community centres, schools and other organisations to grow them in small numbers. Formation of Taluka level *nattu vaidya* (local healer) associations was also initiated in an active way in several states.

As a major outcome of the above process, various training modules were developed on: What are LHTs?; How to do documentation?; How to do rapid assessment?; and, How to develop home herbal gardens and village based enterprises? These modules are now translated into vernacular languages like Tamil, Kannada, Marathi, Hindi and Oriya and a series of training programmes have been conducted in 8 states of India involving non-governmental organisations, community based organization and local healers. Around 50 organizations and 300 individuals have been trained in these programs.

C. Studies on special aspects of traditional medical knowledge

During the above documentation and assessment process it was understood that specialized and more sophisticated aspects of local health traditions couldn't be assessed through this methodology. In the second phase of the Compas programme FRLHT embarked on two new activities such as studies on speciality areas of local health traditions as well as the Compas University Consortium Programme. After the extensive fieldwork carried out and a community diagnosis undertaken in the previous phase we identified traditional bone setting, ethno-veterinary and malaria as three important specialty areas for further study. A study on spiritual aspects of LHTs also took place in the first phase of the Compas programme.

1. Documentation of spiritual aspects of LHTs

A first attempt towards the documentation of spiritual aspects of local health traditions in South India was undertaken in 2001 and 2002. Around sixty *vaidyas* from various parts of Southern India, where the local health traditions have particularly strong spiritual aspects, were interviewed and health care activities observed. An analysis was made of the personal rituals of the healers, and the spiritual aspects of the collection of medicinal plants, of diagnosis and of treatment.

All healers interviewed during the study indicated the need to ask permission from God in order to treat a patient. They feel that only through communication with God, and with God's blessing, they are able to cure the patients, and that without *Bhakti*, or devotion to God, there is no scope for treatment. Depending on their culture and region, healers carry out different types of personal rituals, prayers and offerings. They feel that it is necessary to have the good will of God to prepare the medicine and to treat the patient; otherwise the treatment will be ineffective. Some of the *vaidyas* pray to *panchabhutas* (space, air, fire, water, earth) or call up community deities, such as *Shiva* and *Mahalakshmi* before dispensing the medicine. Many of them make an offering, or *pooja*, to deities such as *Shiva* or *Ganesha*. Most *vaidyas* also believe that they should lead a pious life, they should have purity of mind, and that they should be merciful.

The spiritual element in the diagnosis and treatment of disease varies considerably. Most of the *vaidya's* diagnostic method consists of checking the pulse in various ways; some diagnose by analysing the body condition and voice of the patient, others analyse more specific symptoms. Certain healers pray and request god to help them to understand what kind of

problem the patient has, while in some instances verses from the Koran are used to cure a patient possessed or affected by black magic, a few use astrology for diagnosing the problem.

In local health traditions there are numerous ways to treat the patients that include a spiritual element. For example, the *vaidya* may tie a knot or bundle of rice, to protect or cure children from various spirit ailments. There is an understanding by patient and healers that certain diseases are caused by disturbance due to the influence of spirits, and not because of any physical or biological factors. A patient who is possessed by a spirit can be treated with amulets. Y*antras*, or specific symbols, can be used to remove bad dreams. Many of the diseases are cured using *mantras*, or repeated sounds, sometimes combined with herbal medicine. A poison healer Mr.Kalvimadai Iyer of Madurai district, for example, make the patients recite God's name while a herbal drug is administered, as it has a calming effect. It is believed that in a relaxed state of mind the patients become more receptive to the drugs. Medication for chronic problems is usually started on an auspicious day. It is believed that during those particular days the patient's system is more receptive to medication.

Many *vaidyas* indicate their belief that it is God who cures the patients, and therefore they need to pray and present offerings to God before collecting the natural inputs for their treatment, especially plants. "*Mooligai, to do a good deed, to help someone I am plucking you now, your life should stay in your body swaha*" or "*Shanmuga, sathguru, this is your work not mine, you have to save the patient*" are examples of such prayers. This is based on the recognition that plants are also living and therefore it is essential to treat them with affection.

The *vaidyas* have different beliefs regarding the day and time of collection, the amount of a resource to be collected at one time, prayers to be offered, methods of collection, place of collection, directions and diet during the collection process. Some healers place impositions on themselves before collection, such as cleanliness, concentration and fasting. In a few cases the healers indicated that they have to go naked to collect the plants at midnight, and nobody should see them. Other healers request God to accompany them so that the plants are sighted easily.

It was learned that non-material aspects are central and live aspect of healing in South India. Though the descriptive data has been compiled into a report after various analyses, no aspect was further studied as studying spiritual aspects are much more complex and an appropriate methodology is not readily available for the same.

2. Traditional Bone Setting

It was felt that bone setting is one of the key specialties of LHTs and nearly 70% of orthopedic load in the rural India is being taken care of by traditional orthopedic practitioners. It is understood that current government and private institutional facilities are neither adequate nor suitable to cope with the patient load particularly in rural areas and hence the people depend on locally available facilities. For the bio-medical management, the cost of diagnosing, medicine and surgery is quite high compared to that of bone setting through traditional methods. The presence of orthopaedic practitioners in the country is very large and in terms of coverage it is estimated to be next to traditional birth attendants. Micro studies on the bone setting traditions show that approximately 60,000 bonesetters are serving the rural population of India. The unique methods in traditional bone setting such as oil application, functional bandages contribute to efficiency of healing.

So far no comprehensive study (either medical or sociological) has been done in this field. The scope of traditional bone setting includes areas such as fracture and dislocation management, *marma chikitsa /varma kalai* (diagnosing and treating a health condition through

understanding of vital points in the body) management of injuries and its complications, management of complicated conditions such as congenital anomalies like club foot etc., different types of oil therapies. In order to understand the status and extent of coverage of traditional bonesetters in South India and to understand the clinical efficacy of their management, a pilot project was initiated in 2002. The objectives of our study were:

1. To conduct a survey and make an inventory of bonesetters and *marma* practitioners with practice details and service outreach in selected states of South India.
2. To make comprehensive clinical documentation of selected bonesetters and cases managed by them.
3. To conduct participatory assessments involving folk healers, ISM and western bio-medical practitioners to find out the best practices among them.

A random survey of traditional bonesetters in 25 districts of Tamil Nadu, revealed that there were more than 400 active bonesetters. This included documentation of the socio economic profile of the bonesetter, cultural practices related to his/her medical practice, clinical set up and management of cases, resource/medicines used in medical practice, specific study on cases managed by vaidya and public and peer opinion about the healer.

We also followed 40 patients who were X-rayed before and immediately after treatment and again after 45 days. It was found that some of the bonesetters manage compound forearm fractures that need surgical intervention or dislocations in a relatively simple way. However, a number of complications in their management were also noted. Given the large presence of bonesetters, there is a need to endorse their strengths and address their weaknesses. There is also a need for research into the unique aspects of traditional bone setting such as bandaging techniques, management of inflammation, the art of *varma* (an anatomical understanding of vital points in the body) in treatment of fractures / dislocations, methods for early healing of fractures and strengthening of bones by the use of certain medicated oils and pastes etc.

There was an interesting incident. A nine years old patient was brought to the traditional healer who is from a place, which is 40 km away though his residence is next to a modern orthopaedic hospital called Sugam hospital. The case was studied in detail and it was one among those fractures (open fracture of both Radius and Ulnar), which required internal fixation methods. The case was managed by the *vaidya* through splintage with bamboo and the total cost was around Rs 10,000, inclusive travel charges etc. This was a striking example of the appreciation of this bonesetter in the area; case based health-seeking behaviour of the communities as well as the cost effectiveness of traditional bone setting methods.

A state level workshop of bonesetters was organized in Tamil Nadu in collaboration with the community health and orthopedic department of Christian Medical College, a premier hospital in the country. The objective of this programme was to share the experiences of the above study and to create a dialogue between modern orthopedicians and traditional bonesetters about the strengths and weaknesses of the tradition. Though there were initial difficulties in intercultural understanding, the workshop proved to be a very productive exercise due to the open mind of the participants.

As an outcome of this workshop a future activity a training module for bonesetters has been envisaged. This training module will look at the strengths and weaknesses of traditional practices in a participatory mode and provide appropriate solutions for overcoming the challenges through a series of training programmes. Formation of bonesetters associations, establishing centres of excellence and fellowships for young entrants were some other programmes envisaged.

3. Ethno-Veterinary Practices

The total market of animal health care products in India is estimated at about Rs. 1500 crores (about 400 million US$) in the country. Out of this, about Rs. 225 crores (about 55 Million US$) is the share of herbal products. The use of antibiotics, hormones and other chemical products are being phased out for animal health care in many countries as the world is looking for safer alternatives. The high treatment cost, inaccessibility and side effects such as high antibiotic and hormonal residues in the milk are serious issues of modern veterinary medicine in India. A rich ethno-veterinary health tradition exists in India, which is facing the threat of rapid erosion. Ethno-veterinary practices have great potential to address current challenges faced by veterinary medicine. However, they are not documented and disseminated. Veterinary health care reaches only 20% of the livestock owners in India. This is leaving a big gap between the demand and supply of animal health care services and products. Hence, there is a need to develop standardized herbal products for veterinary health care ensuring quality, safety, efficacy and affordability as well as its delivery to the farmers. It was understood that this could be done through a participatory approach. So the documentation and rapid assessment methodology that was applied to human health was applied to this program as well in a more focussed way. Target population for this program are local healers, local communities / dairy farmers, Consumers, Policy makers.

Issues to be addressed in the sector of veterinary health care are:

- Reduction of the cost of modern health care for dairy farmers. They frequently face the problems of mastitis, repeat breeding and skin diseases. Cost of allopathic medicines and treatment is high.
- Reduction of antibiotic and hormonal residues in the milk where excessive and repeated use is taking place.
- Provision of timely veterinary service through trained animal health workers.
- Documentation, assessment and standardisation of local herbal medicines.
- Training and capacity building in the use of medicinal plants and their products.
- Product development of standardised herbal remedies.
- Contribution to the economic improvement of the local milk producers. Most of the cooperative dairy members belong to socially backward and economically poor communities.
- Organisation of workshops and seminars for periodic sharing of experience and policy advocacy

FRLHT has been coordinating a project on documentation, assessment and promotion of ethno-veterinary health practices in selected locations of Southern India for the last four years. Using the DALHT methodology, a total of around 141 plant species used for treatment of nearly 18 health conditions in cattle were taken for assessment. It was found that nearly 70% of the practices had supportive evidence from Ayurveda and modern pharmacology on their prescribed uses. It was also found that 55% of the positively assessed plants are widely available in each of the bio-geographical locations and can be grown in home herbal gardens. On ethno-veterinary practices a database has been developed.

In order to mainstream the findings a user's manual was published. This contains detailed illustrated information on the folk knowledge as well as on modern veterinary medicine regarding 18 health conditions in cattle as well as their remedies.

As a follow up to the assessment programme, a community owned enterprise was established, called Parampara herbals, which produces various licensed veterinary products for wide promotion. This is also benefiting the livelihoods of the stakeholder communities through sharing of benefits of the company.

In order to share last three years' experiences a national workshop on the contemporary relevance of ethno-veterinary medical traditions was conducted. Eminent personalities including representatives of government (Indian Veterinary Research Institute, Director of Animal Husbandry, Government of Karnataka, members from National Diary Development Board and Directors of various diary milk Unions), non-government organizations, local healers and community members participated in the programme. The programme was intended to promote documentation; rapid assessment and promotion of best ethno-veterinary health practices through a cost efficient management affordable to the poor farmers as well as assuring improved quality of milk (reducing the antibiotic and hormonal residue in the milk).

The workshop deliberations included clinical trials and research and product development work as a long-term follow-up programme. A panel of experts drafted an action plan based on the two-day sessions to be implemented with in the next five years. The main recommendation was to replicate the model created in various places in the country. The proceedings of the workshop has been published.

4. Malaria management through Local Health Practices

There is a resurgence of malaria as a major public health problem in India both in rural and urban areas (2 million cases/year). Over 30 million cases of malaria are estimated each year all over the world, resulting in more than a million deaths, most of these victims are children under 5 years old. Malaria prone areas in the country are pockets of rural poverty. It is well known that malaria compounds poverty and impedes economic development. There is a high correlation between the malaria incidences with low income; low level of schooling; high migration; traditional cultural beliefs; low coverage of health services; employment patterns; poor forest management, and environmental degradation. Malaria and its relation to eco-system destruction and poor development planning is becoming an important issue in its management.

Resistance to anti-malarials is now one of the major problems in Western bio-medical strategy. A roll back malaria programme was identified as thrust area by WHO. This global partnership aims to halve the world's malaria burden by 2010. Despite substantial investments in research and eradication programmes, malaria still continues to be a major public health problem in the country.

In India, 60-70 % of the malaria patients first approach the Traditional System of Medicine. There are several examples of malaria drugs which originate from traditional knowledge, e.g. quinine, Artemisinin, which plays a major role in treating malaria all over the world. It is also known that compound drugs are expected to have fewer problems of resistance and adverse effects. Ecosystem specific herbal treatments are urgently needed for alternative management of malaria. These may be available as local traditional practices. In this context it is essential that efforts have to be made to study and strengthen local health traditions that may be helpful in malaria treatment and prevention, especially in areas of epidemics National drug research laboratories with clinical trails do regular assessment and research of herbals that have anti-malarial potential.. But a special programme and strategy is needed to document and evaluate these local traditional health practices in different regions.

FRLHT was involved in studying traditional management methods for malaria since 2000 as part of an international network program called Research Initiative for Traditional Antimalarial Management Methods (RITAM). The objectives of this program are:

1. To assess effectiveness of a set of anti- malarial remedies from folk traditions (Local Health Traditions) through clinical case study documentation based on a pluralistic interdisciplinary research design.
2. To initiate pilot projects for promotion of the through the study selected traditional folk remedies through community health organizations.

With the Compas program the field research component was strengthened. This involves documentation and assessment of malaria management practices, clinical study of efficacy of selected preventive practices through kashaya camps.

Activities carried out in RITAM so far are the following. A database of traditional malaria management methods has been prepared from the Ayurvedic medical literature through an exhaustive referencing process. Around 170 plant drugs, belonging to 115 formulations from 20 classical Ayurvedic texts have been listed. Through a survey of folk healers various decoctions with commonly available local herbs and dietary rules for the management of malaria have been documented and assessed through a participatory process. During the documentation of folk malaria management practices, 52 healers were interviewed and 102 practices (Curative: 94, Preventive: 8) have been documented. Malarial fevers are called *chali jvara, sheeta jvara, thandi tap* (cold fever), *visama jvara* (erratic fever) and *Naduka jvara* (fever with rigours) in these communities. Compilation of Ayurvedic and modern pharmacological references for toxicology and efficacy of these practices has been done. Out of 50 prioritized folk knowledge based formulations selected, 37 were positively assessed with detailed literature search, i.e. these formulations had supportive evidence in Ayurveda and modern pharmacological literature through earlier in-vitro and in-vivo studies. Community experience on each of these formulations was also documented during the assessment process. Some of the selected practices have been taken up for a participatory clinical research through *Kashaya* camps.

Kashaya Camp Study

Kashaya camp is a health camp where a decoction (*kashaya*) made of herbs that is expected to prevent malaria is administered to selected volunteers for two days a week for a period of 3 months during the monsoon season when malaria is predominant. During the documentation of folk malaria management methods in 2003, it was reported that one of the prioritised formulations was used on a regular basis as a prophylaxis for malaria during the monsoon season in Tiptur Taluka of Karnataka. The BAIF Institute of Rural Development, Karnataka, a Tiptur based non-governmental organization, initiated regular *kashaya* camps in selected villages with this formulation.

Subsequently in 2004 systematic camps were organized in Baluvaneralu village, (a malaria endemic region in Tiptur Taluk and Tumkur districts) by FRLHT in collaboration with BAIF institute for Rural Development. The study site was selected after a comprehensive survey of malaria incidence in the region for past three years and a complete documentation of baseline data of the volunteers. The main objective of this pilot cohort study was to document the efficacy of the *kashaya* in preventing malaria through regular intake during malaria season. As a pre-requisite to conduct the camp, a detailed study protocol was prepared. Malaria epidemiological data from 2001 to 2003 for the selected regions of Tiptur and Tumkur district, Karnataka was collected. Baseline data about the village such as demography, malaria incidence pattern and rainfall data were documented in a specified format. The formulation was studied for toxicity

and was found that there is no known toxicity for the same. Available malaria related pharmacological data of individual ingredients used in the formulation was also compiled from secondary literature. A total of 147 volunteers were selected for the study and prior informed consent was obtained from all of them. Among them 88 volunteers actively participated in the study. On selected days, in the evening, the volunteers took the decoction. Every volunteer was documented in specified format. After the study, the data of these 88 volunteers was compared with the rest of the population (974 villagers). It was observed that there were 7 malaria cases reported during the three months period in the villages among the non-study group and one malaria incidence in the study population. The study that year was inconclusive due to the very low incidence of malaria in the study villages as well as the nearby villages. This was due to some parallel intervention such as introduction of Guppi fish done by the Malaria Research Centre, Bangalore. However the *kashaya* camp was an opportunity to mobilize the community members for a collective action to prevent incidence of malaria in the village. Though the study was inconclusive with respect to malaria, it showed that the *kashaya* had a positive effect on general well being of the volunteers. As a follow up it was proposed that detailed in vitro & in vivo studies should be taken up to find the efficacy of the decoction for malaria prevention.

In the next malaria season in 2005, region specific malaria preventive *kashaya* camps were conducted in four locations in states of Orissa, Andhra pradesh and Karnataka. The objective was to study different ecosystem specific formulations in the respective areas. The protocols of the previous study were used in all the four locations. The initial results were encouraging. From a primary analysis of the data it was found that in one of the locations Kochila Nuagaon, Cuttak district of Orissa, out of the 158 healthy volunteers who participated in the study 9 persons had malaria where as in the control group out of 153 members, 53 persons had malaria during this period. Similarly in Beherasahi, of Gajapati district, Orissa out of the 100 members in the study group 10 had malaria and among the 100 members in the control group 60 had malaria during this period. A general observation made during the programme was that in all the four places after the 10^{th} camp there was no incidence of malaria in the study group. The volunteers also reported good improvement of their general health.

In 2006, in the context of the Compas programme, a peer review was conducted with external experts. Interesting observations and suggestions were made by the reviewers which helped to improve the programme further. Now a more rigorous randomised, placebo controlled study is being planned. Some of the remedies are also being tested through in vitro studies for finding their efficacy in specific stages of parasite life cycle.

Traditional health knowledge based prophylaxis for malaria appears to have immense potential in rural malaria endemic areas due to their easy access, lesser cost and cultural compatibility. Preliminary studies suggest that there is potential in region specific plant-based formulations using locally available herbs for malaria prophylaxis. However systematic studies on efficacy and safety are required to identify useful practices from traditional knowledge**.**

D. Curriculum on Indian Medical Heritage

Apart from folk traditions India has also four rich codified medical systems: Ayurveda, Siddha, Tibetan and Unani, with a documented history of over 3000 years. Until the start of the 20th Century the education in all these medical systems was mostly non-institutional from physicians/teachers to their chosen students. Today there are approx. 600,000 licensed practitioners recognized and registered under the Indian Medicine practitioners Act. At present traditional medical education is under the Central Council of Indian Medicine and allopathic medical education is under the Indian Medical Council. They run parallel with no understanding or appreciation for the other system.

Astute observers of the health sector in India believe that any societal model of healthcare based on a single system of medicine may become obsolete in the next two decades unless it broadens out to judiciously combine complementary with the other systems of medicine. This obsolescence will occur on account of the insufficiency of a single system to offer on its own, effective treatment for curative and preventive healthcare. The healthcare scenario in urban India and globally is undergoing dramatic transformation, evolving into a new emerging situation that emphasizes preventive health, customized care, body-mind medicine and the use of natural products. It is in this context that there has been in recent decades a global and domestic resurgence of interest in the traditional Indian Systems of Medicine (ISM) because some of the requirements demanded by the emerging situation are inherent in them.

There are occasional demands for integration of the different medical systems in India. But a healthy and workable scheme of integration of medical theory and practices is a long way ahead. The first step to prepare our medical education institutions for an emerging era of medical pluralism is to create an environment of mutual respect and understanding amongst students, teachers and researchers for different systems of healthcare. This will lead to better communication amongst medical professionals and good quality collaborative research. The research programs can further deepen mutual understanding and lead towards future schemes of pluralistic medical education at the postgraduate level. Serious thinkers believe that integration should not at all be attempted at the undergraduate level – but suggest that initially after adequate preparation, postgraduate research programmes should be encouraged.

A curriculum development programme was initiated under the Compas University Consortium programme in collaboration with Rajiv Gandhi University of Health Sciences, the apex body of medical education in Karnataka state.

In the Compas University Consortium context, we have developed an experimental curriculum for the university medical students of various specialities (Modern medicine, Ayurveda, Siddha, Unani, Naturopathy, Homeopathy) based on the past few years of experiences in the area of traditional medicine. This curriculum is based on the documentation of best traditional medicine practices, practitioners and centres in South India. This education module has been designed to demonstrate the contemporary, dynamic and evolving, nature of the country's indigenous medical heritage. The educational content is in audiovisual form. It is intended for undergraduate medical students. The module covers best practices, best practitioners and centres of excellences of Ayurveda, Siddha, Unani and Yoga. It also contains a section on issues related to inter- cultural research methods.

Other Related Activities

A book titled "Challenging the Indian Medical Heritage" was published based on the experience of these programmes. This received very good public attention. Various exchange programmes of Indian, Srilankan and Bangladeshi healers and experts of traditional medicine were also conducted. These created an opportunity for sharing various contemporary issues related to their practice as well as their clinical experiences. As a strategy for strengthening local health practitioners various state level and regional healers workshops have been conducted during this period. Supporting centres of excellence and supporting fellowships of young entrants as apprentices with experienced healers were some other activities carried out as part of the programme.

Outcomes and Lessons Learned

In the process of last few years' of revitalisation work, it was understood that there is a 'knowledge rich, practice poor' situation. However there are region specific variations in understanding and utilization of local health practices. For instance there is much higher number of knowledgeable healers in South India compared to some of the North Indian states. Marginalisation by mainstream legal systems of medicine also seems to be one of the reasons for the current situation. An important handicap of the tradition is the lack of standards across various practices and practitioners with related to training, preparation of medicine, clinical practice etc. Lack of appropriate methodologies for studying health traditions is also another major impediment. Lack of confidence and self-esteem among knowledge holders is yet another stumbling block. It was noted that only motivated individuals and institutions respond to the present situation of traditional medicine and not a mainstream institution per say. For instance even among a large percentage of formally qualified Ayurvedic doctors there is distrust even towards even good folk practitioners. It is learned that advocacy has a major role to play inorder to mainstream these relevant practices. Revitalizing from its own roots is a big challenge yet key to keep the dynamics of tradition. External approaches for validation using modern approaches and methods can be only of help in communication to the modern world. Based on the few years of experience working with various rural communities it is clear that primary health care can have immense contribution from traditional medical knowledge.

The main methodology used to validate LHTs is Documentation and rapid Assessment of Local Health Traditions (DALHT). Apart from DALHT, we have also used specific methods such as participatory clinical research, specific documentation protocols for areas like bone setting, malaria, ethno-veterinary, ethno-nomenclature study etc. Monitoring of results has been mainly through feedback documentation and informal discussions with the stakeholders. Various NGOs/CBOs, local healers, community members and external resource persons supported the processes.

Topical research brought out the complexities in dealing with specialized aspects of LHTs. For instance in the case of malaria prevention, though the programme has generated much confidence among community members, it was understood that in order to assess a malaria preventive practice more rigorous studies need to be conducted. Cost effectiveness of the traditional management skills was also studied.

From the inventorization survey of bone setting practitioners we have found that there is large-scale presence of *vaidyas* in our study areas even today managing variety of fractures, dislocations, sprains etc. From one of the districts in Tamil Nadu, Thiruvannamalai we have documented 104 *vaidyas* which shows the extent of their presence. From these studies we have understood that the strength and weaknesses of these traditions need to be clearly identified and appropriate training as well as advocacy programmes need to be developed to strengthen these areas.

As mentioned earlier it was found that the DALHT methodology used for identifying primary health care practices have not been sufficient to assess specialized practices such as bone setting. For these different methods have been evolved later. Similarly participatory clinical study has been added to the methodology to make the assessment process more rigorous. It is also understood that spiritual dimensions of local health traditions cannot be assessed through the method of DALHT. For this purpose a new methodology needs to be evolved.

Home Herbal Gardens - An Impact Study

An impact study conducted of the Kitchen Herbal Garden programme reveals that there is substantial health care cost saving due to the introduction of Kitchen Herbal Gardens. The qualitative part of the study revealed that most of the adopters used home remedies for common complaints such as cold, cough, fever, body pain, stomach ache, dysentery, diarrhoea, head-ache, constipation, skin diseases and minor gynecological problems such as white discharge and menstrual problems. Adopters interviewed across many NGOs confirmed economic benefits in the form of savings from PHC related expenses by use of home remedies. They also reported that the home remedies were easy to prepare, that the frequency of doctor visits had reduced and that medical expenses have come down after adopting home remedies through HHG. Saving of health expenses has been projected as a benefit of HHG across all NGOs. People across all NGOs recognized that remedies could be made at home with the help of HHGs. A few adopters expressed that while home remedies do not provide immediate relief for certain symptoms, they unanimously admitted them as being harmless. Those who sought allopathic mode of treatment cited reasons such as quicker relief and time constraint, for not using home remedies. A NGO staff stated that allopathic treatment was the preferred adoption with the younger generation. A few women non-adopters interviewed reported that their husbands prefer allopathic treatment. A woman adopter said that her children did not like the taste (eg. Bitter) of home remedies. From Focus Group Discussions (FGDs) in the Belgaum District, at the very outset, it became clear that the user-domain comprised largely of women and children. According to a researcher who was involved in the coordination of the impact study, women spoken to during some of the FGDs reported that given the high mobility of men, they had high level of access to 'doctors' and home remedies may only be additional measures. She suggested considering the involvement of men in the future extension strategy.

From the quantitative data it was understood that 90% of the adopters felt that home remedies are useful for primary health care. HHG program had increased awareness among the communities about herbal home remedies and local health traditions. 49% of those interviewed had heard of home remedies before initiating HHG program while 93% of both adopters and non-adopters in the program villages had heard of home remedies after the HHG program. Majority of HHG adopters belonged to highly disadvantaged or disadvantaged families. This was assessed based on their land owning, caste affiliations as well as adopters' ownership of assets including house, cattle, access to drinking water and type of cooking fuel used. HHG program was adopted by the poorest of the poor, namely landless (33%), marginal landholding (37%) and small landholding (21%) farmers. 86% of adopters belonged to the socially deprived communities. 93% of the adopters used firewood as cooking fuel. 82% of the adopters depend on the public tap for drinking water. Only 39% of the adopters had irrigation pump sets for irrigating their agricultural lands. 72% of the adopters were affiliated to Women Self-Help Groups.

The HHG program presented a cost effective strategy to empower the rural communities in their health matters. The health expenditure incurred by non-adopters was ~5 times more than that by adopters. HHG adopters spend Rs. 92 on an average in 3 months towards their family's PHC while the non-adopters spend Rs. 478 in that time. The cost of a HHG package at Rs 100 (for the plants) and maintenance cost of Rs. 50-60 per year would still cost a household only Rs. 160 (3.5 USD). The benefits from one HHG can be reaped by not only the family members throughout the year but by friends and neighbours as well. This can therefore be an important means to alleviate poverty due to health expenditure related indebtedness of the rural poor.

One of the main outcomes is the formation of taluka level *nattu vaidyas* associations in various states. In Karnataka in 30 talukas folk healer associations have been formed. Similarly in Tamil nadu 20 talukas have registered healer associations comprising of between 50- 150 healers in each of the associations. Major activities include regular meetings and sharing of experiences at local, regional and state level, honouring selected practitioners, conducting medical camps and various training programs, documentation and assessment of local health practices, kitchen herbal gardens etc.

There is a good understanding among the *vaidyas* about the need for systematic documentation of their knowledge as well as clinical work. In the process various NGOs and CBOs are taking a more active role as nodal agencies for promotion of local health traditions. External experts who have involved in the assessment process and review have developed more interest in the area of local health traditions. In the process a stronger network has been established with various stakeholders. This network now covers many non-governmental and governmental agencies, folk healer associations, community based organizations in 12 states in India. This has facilitated a more active interaction with communities and *vaidyas.* The topical research we have facilitated interaction between malaria experts, orthopaedicians and veterinary surgeons with the *nattu vaidyas*, which has also contributed to exchange of ideas and learning immensely. It has also helped building confidence in our own methodology and refining some aspects of it based on the feedback received.

In a very general sense, among the policy makers, donor agencies and modern medical academics some changes in attitude towards LHTs is seen. A major outcome of our policy advocacy during the program, the National Health Policy 2002 for the first time after the independence of the country mentioned the importance of local health traditions in primary health care of the country. In 2006, the National Planning Commission constituted a special steering committee on traditional medicine and one of the special task groups was on local health traditions for planning for next five years. This task force has recommended pilot national programs on revitalizing traditional bone setting, mother and child health through traditional birth attendants, folk healer associations, centres of excellence in folk medicines, training school for folk healers etc. to name a few. These were significant developments in the sector.

Challenges for the Next Phase

One of the major objectives of the next phase is to popularize these methodologies. This will have to be achieved by engagement with various individuals/ institutions involved in traditional medicine in multiple forms including resource generation, training program, building local resource centres etc. It is also necessary to evolve suitable institutional mechanism or forums, which are self reliant, decentralized for coordinating all aspects in the future phase. More attention need to be on developing community based approaches for revitalization and strengthening them as social traditions. It is also necessary to give greater emphasis on advocacy related work. Another major future challenge is to evolve standards for training, research, product development and various other services in the section. Yet another area that demands attention is to assess the impact of our programs through identification of indicators of poverty/ well being and quality of life. Intercultural dialogues should continue in an active way in the future phase inorder to develop appropriate field based models. Continuing emphasis on conservation of natural resources and sustainable utilization of those also are major thrust areas for future work.

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BUILDING ON TRADITIONAL KNOWLEDGE AND WISDOM FOR SUSTAINABLE AGRICULTURE : CIKS EXPERIENCE

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Background of CIKS

Centre for Indian Knowledge Systems (CIKS) is an organization devoted to exploring and developing the contemporary relevance and applications of traditional Indian knowledge system. The activities of CIKS can broadly be divided into research and extension work. We have ongoing research programmes in the areas of biodiversity conservation, organic agriculture and Vrkshayurveda. The research activity comprises of work on our experimental farm dedicated for the purpose and actual field experiments involving farmers. Extension work can broadly be classified into training programmes and production of educational material. We design and develop a number of training programmes to suit a range of different target groups. We have brought out a variety of educational material that is widely regarded as extremely useful resources for the agricultural community.

Location of our activities

The field activities of our Centre commenced in Kancheepuram district which is the Northernmost district of the state close to the city of Chennai. We initially started our work in the Tiruporur block of the district. Subsequently, we set up our own experimental farm in the village of Sukkankollai in the Madurantakam block of Kancheepuram district. Through the years we have expanded our activities to three other districts of Tamilnadu namely, Tiruvannamalai and Tiruvallur districts in the Northern part and Nagapattinam district which is a coastal district in Southern Tamilnadu.

Kancheepuram district has an area of about 8000 sq.km. spread over 1200 villages. There are 13 panchayat unions and eight taluks. Kancheepuram is a coastal district, lying adjacent to the city of Chennai. Near the coast, the district is mostly flat but in the hinterland it is undulating and even hilly. The Southeastern taluks of Chengalpet, Kancheepuram and Madurantakam have undulating plains interspersed with hillocks. The administrative unit of the district consists of both revenue villages and village panchayats besides town panchayats and municipalities. Kancheepuram district comprises eight taluks, 13 blocks and 1214 villages.

The district is endowed with a moderate climate but considerable humidity. Extreme heat or cold weathers are not prevalent. The coastal areas receive more rains than the interior land. The average annual rainfall in most of the places of the district is around 1200 millimeters. Generally, the northeast monsoon which lasts during the months of October, November and December brings heavy rainfall and nearly two third of the annual rainfall are received during this season. Major agricultural crops cultivated consists of Cereals (Rice, Cholam, Cumbu, Ragi), Pulses (Red gram, Black gram, Green Gram, Horse gram, Cow pea), Oilseeds (Gingelly, Groundnut, Sunflower, Coconut), Fibres such as Cotton, Condiments such as Chillies, Sugarcane, Tapioca, Horticultural crops comprising of Fruits (Mango, Banana, Guava, Acid Lime, Sweet

lime, Jack), Vegetables (Tomato, Onion, Brinjal, Ladies Finger, Yam, Sweet Potato, Pumpkin, Ash gourd, Bottle gourd, Snake gourd, Bitter gourd, Ribbed gourd) and Plantation crops such as cashew and betel vine.

The Kancheepuram district has a population of 2.869 million people as per the census of 2001. The population growth rate which was 26.14% during the previous decade (1981 – 1991) has declined to 18.84% during the current decade (1991 – 2001). The growth rate is still well ahead of the state growth rate of 11.19% during this period. The sex ratio is increased from 962 to 972 but it is below the state average of 986 at present. The population density at 647 is significantly higher than the state average of 478 demonstrating the strong urban character of this district. The literacy rate of 77.61% is above the state average of 73.47% and the female literacy rate at 70.21 is significantly above the state female literacy level at 64.55%.

Overview of our activities

Some of the highlights of our achievements since our inception in 1993 are listed below.

- We have developed organic farming packages for rice and cotton that give yields on par with those of high yielding varieties. These packages have provided food and livelihood security particularly for small and marginal farmers.
- We have tested out a pilot programme for bringing organic food to the consumer at reasonable prices.
- We have applied Vrkshayurveda successfully for pest control and crop protection, and have set up village based biopesticides units, building on these practices.
- Our publications and solutions have been widely recognized as being user friendly and easy to understand. Currently we have nearly one hundred publications to our credit. We have produced an audiovisual on our experiences with conservation of traditional seed varieties and a set of three audiovisuals on natural methods for pest control and crop protection. Besides this we also have a web-learning module on organic farming that has been developed in English and Tamil.
- The Ministry of Rural Welfare has recognized us as a – "Technology Resource Centre" for sustainable agriculture through the agency – CAPART (Council for Advancement of Peoples Action and Rural Technology).
- The Science and Society Division of the Department of Science and Technology of the Government of India has selected us as one of the fifteen non government organizations (NGOs) in India eligible to receive – "Core Support" for developing our work in the area of sustainable agriculture
- We are the Asian coordinator for COMPAS - a worldwide project that links like-minded organizations in Asia, Africa, Europe and South America.
- Support from farmers and local people are extremely encouraging. Farmers have provided land for setting up biopesticides units, rural libraries and community storage structures.

Involvement in Compas programme

Our Centre has been involved in the COMPAS programme right since the pilot phase of the programme which commenced in 1995. During this phase we had taken up activities in Tamilnadu which had three components namely – study of the importance of indigenous varieties of seeds, studies based on Vrkshayurveda (Traditional Indian Plant Science) as well as

the production of a farmers almanac in Tamil (*Velanmakkal Panchangam*) as an experimental measure. Subsequently we decided that we would focus on two specific areas namely – Vrkshayurveda and Traditional Indian varieties of Seeds. The following section gives an overview of these activities.

In the first two sections we have summarized our activities relating to Vrkshayurveda and the conservation of traditional varieties of seeds. The third section describes how we work with Sangams, which are community based farmers' organizations. The fourth section gives the highlights of our efforts

I. WORK ON VRKSHAYURVEDA AND BIOPESTICIDES

Alternatives to Chemical Agriculture: The Indian Situation

At present, there is a global search for alternatives to chemical pesticides. The effort is in progress at many levels. On one hand, there is a serious examination of various natural products that can be used for pest control. Secondly, efforts are also being made for employing biological control methods for the control of pests. The overall strategy is to work towards 'Integrated Pest Management', which minimizes the use of chemical pesticides and makes the best use of natural products and biocontrol methods for the control of pests. The starting point for many of these efforts that have resulted in the effective use of natural products for pest control is the traditional practices of farmers in various communities. A well-known example is Neem - the starting point for this knowledge was the extensive traditional knowledge of the use of Neem found among the farmers of India. Our country has an extremely rich and diverse flora and our farmers and rural communities across the country have a great wealth of knowledge regarding the use of plants. The All India Co-coordinated Research Project on Ethno biology (AICRPE), has some interesting indications to provide on this matter. As per the preliminary results of this project, tribal communities throughout India make use of about nine thousand five hundred species of plants, of which over three hundred species are used as pesticides, piscicides etc.

Classical Knowledge

An interesting feature of traditional knowledge in these areas is that it exists at two levels, both as oral tradition and the classical or textual tradition. The folk knowledge or the oral tradition consists of knowledge and practice of farmers at the field level. On the other hand, we also have a rich tradition of classical texts of Vrkshayurveda. Vrkshayurveda literally means – "The Science of Life of Plants". There is a vast body of literature on Vrkshayurveda both in Sanskrit and our regional languages. It encompasses areas such as collection, selection and storage of seeds; germination, sowing, various techniques of plant propagation, grafting, nursing and irrigation; testing and classification of soil and selection of soils suitable for various plants/ types of plants; manuring; pest and disease management/preventive and promotive care to build up disease resistance and to cultivate healthy plants; nomenclature, taxonomy, description and classification of plants to suit varied purposes; favourable and unfavourable meteorological conditions for various operations related to cultivation (such as sowing, harvesting) and use of plants as indicators of weather, water, minerals, etc. A series of publications brought out in recent years provides an overview of varied aspects of Vrkshayurveda, covering – a general introduction to this area, plant propagation techniques, nomenclature and taxonomy and pest control and disease management in Vrkshayurveda.

Centre for Indian Knowledge Systems' Experiences and work with Vrkshayurveda

The Centre for Indian Knowledge has been involved in doing a lot of work relating to Vrkshayurveda for the past several years. This has included survey and collection of literature on Vrkshayurveda, short listing techniques and recipes for specific problems and testing out prescriptions of Vrkshayurveda in practice. Since 1998, our Centre has also been involved in an effort for testing methods based on Vrkshayurveda for the cultivation of rice crop. This is a programme that was supported by the Department of Science and Technology of the Government of India and the objective was to work on a programme for the rice crop based on Vrkshayurveda for increasing resistance to disease, management of pests as well as growth promotion. As an outcome of this project, we have also published a book, which is in the nature of a user's manual on Vrkshayurveda for the rice crop. Subsequently, we have also produced a booklet on organic vegetable gardening and poster sets on organic methods of pest and disease management with focus on vegetables. Recently, we have also produced a book on – organic paddy cultivation.

Plants in Crop Protection

Our Centre has been working with several plant products and also experimenting to test the efficacy of these plant products against different pests in farmers' fields. Different parts of the plants such as seeds, leaves, seed cake extract etc. have been found to control a wide range of pests. There are various sources for such traditional knowledge including folk knowledge that is still prevalent among the farmers, reports and literature regarding survey of farmers practices in various parts of the world and literature that is found in the classical texts of traditional Indian plant science namely, Vrkshayurveda. For example, we have provided in the annexure a list of forty-two plants with pesticidal properties specifying in each case the scientific name and common name of the plant and the pest against which it is reported to be effective.

Advantages of Plant Products

What exactly are the advantages of using plant products for the control of pests? Some of them are listed below:

- They are found to be effective against a large range of pests and diseases.
- Unlike the case of chemical pesticides, pests do not develop resistance to natural products.
- They are cost effective as they are often made with locally available materials and low cost technologies.
- They help in the maintenance of ecological balance since we can use them at concentrations that are safe for predators and beneficial organisms.
- They leave no harmful residues in the food that is harvested. Hence they are safe for human consumption.
- They do not cause soil, water or air pollution.

Standardization of Use

Over the last ten years our Centre has carried out a large number of experiments and tests to standardize the use of plant products for pest control. Even though a large number of anecdotal accounts and field reports are available a lot of rigorous work needs to be carried out before we can state that the efficacy of use of a plant product has been convincingly demonstrated. Some of the kinds of tests and experiments carried out are as listed below:

- Determination of the precise kind or range of pests against which a product is effective.
- Preferred mode of use of the plant product – part or parts of the plant that are useful.
- The manner of use (solution, fumigation using the dry parts etc.)
- The concentration at which the use is effective.
- Fixing the concentration and dosage that is effective to control the pests and at the same time is benign towards predators and beneficial organisms.
- Determination of the mode of action since this has implications for explaining the use and training farmers in applications.
- Carrying out experiments and tests to gather evidence for the efficacy. These range from simple experiments to those that are rigorously designed and executed (with controls, replicates, randomized block designs) and experiments repeated over successful crop seasons.

Based on these experiments, we have tested out practically the utility of a large number of plants and their extracts for different pests, crops and diseases. Some of the plants for which we have carried out such tests are neem, garlic, onion, persian lilac, turmeric, ginger, tobacco, papaya, leucas, pongam, tulasi, aloe, custard apple, vitex, sweet flag, poison nut, calotropis etc.

Ready to Use Biopesticides

Farmers are used to pesticides, which are packaged and available from the shelf. Even though farmers realize the importance of using plant products as alternatives to chemical pesticides, the widespread use of these plant products will take a while to become very popular. One of the ways by which they can be popularized is to process it and make it available to the farmers in a readily usable form.

The reasons why one should work with storage forms of biopesticides are varied and some of them are listed below:

- Availability of raw materials is seasonal.
- Raw materials are not available in all geographic locations.
- Products are readily available and user friendly.
- Ready-made alternatives similar to pesticides.
- Cheaper and cost effective.
- Availability of plant extracts throughout the year.

Ayurvedic approach to produce Storage Forms

Subsequently, we commenced a project for the preparation of storage forms of biopesticides based on Ayurvedic principles. This work was taken up with an objective to prepare storage forms of biopesticides with increased shelf life. The Centre has a good expertise in the area of

Vrkshayurveda and Ayurveda and hence we thought it would be best to take up processing of these plants along Ayurvedic principles.

The shelf life of some Ayurvedic preparations is listed below.

Ready to Use Preparations

- *Swarasa* (juice) 3 – 4 hours
- *Kashayam* (water extract) 24 hours

Storage Forms

- *Churna* (dry powder) 6 – 12 months
- *Thailam* (oil extract) 1 – 3 years
- *Arkam* (distillate) 1 – 5 years
- *Asava / Arishta* 3 – 5 years

  (fermented extracts)

It may be added for over a century the modern Ayurvedic industry has been using food grade preservatives to increase the shelf life of *kashayams* – (eg) 1% solution of sodium benzoate.

After this initial understanding, it was also felt necessary that our project and field staff should get some basic training in the methodology of Ayurvedic preparations of plant products. Our staff were provided training by trained Ayurvedic consultants on preparations of *kashayams* (decoction), *Thailam* (oil), *Arkam, Asavam, Arishtam* etc.

- *Kashayam* is one of the most well known preparations at the popular level. It is the aqueous extract of a drug. Here the extract of the drug is boiled in water and reduced to 1/4 th or 1/8th of the volume. This can be stored by adding suitable preservatives.
- *Asavas* and *Arishtas* are special preparations unique to Ayurveda. They are prepared by fermentation methods. These preparations are superior to various other forms for two reasons. They do not have any expiry date and they become more potent with storage. They permeate easily and have a quick action.
- *Thaila* or oil preparations are potent for above sixteen months and there are several steps in the preparation of a thaila.
- *Arka* is a liquid preparation obtained by the distillation of certain liquids of drugs soaked in water using a special type of equipment known as *arka yantra*.
- Our staff was trained in the preparation of these products. After this training, the plants which have proved to have pesticidal properties were processed in the Ayurvedic way. By trial and error and also in consultation with vaidyas as to what would be a best preparation for a particular plant product, the following preparations were made. For example, if a particular plant product has more volatile substance like that of sweet flag then an arkam preparation was preferred and so on.

Advantages of the Ayurvedic Approach

A recent study by Professor Kumar and his colleagues at the University of Agricultural Sciences, Bangalore has thrown some light on some interesting limitations of the chemical approach and possible advantages of the Ayurvedic approach. His observations are as follows–

- They examined a series of neem based formulations that are available in the market where azadirachtin, which is an active principle, is stabilized in solution.
- They picked up eight such formulations and tested the efficacy against a single pest by making an assessment of the LD 50 values for these formulations.
- Contrary to expectations and claims made by the industry it was observed that as the concentration of azadirachtin increased steadily, the LD 50 values DID NOT decrease proportionately but leveled off after a point.

The authors have suggested that the reason could be that while preparing formulations where azadirachtin is concentrated it is likely that we are losing out ingredients other than azadirachtin that also contribute to pest control properties. This in fact seems to suggest that there may be an advantage in trying approaches other than concentration of a single ingredient – in fact this is an approach used in Ayurveda in the preparation of various medications.

Experimentation with the Storage Forms

After initial trials, the number of preparations taken for detailed experimentation were narrowed down. The biopesticides that were prepared were tested out in experimental plots laid out in the CIKS experimental farms as well as in farmers' field.

We have currently tested out a large number of plant products as Ayurvedic formulations namely as kashayams, thailams, asavams and arkams.

Using the Ayurvedic approach, we have prepared and tested out a large number of storage forms including *Kashayams* (about a dozen *kashayams* both with single and multiple components involving about twenty species of plants), *Thailams* (five *thailams* involving single and multiple components with nine species of plants), three different *Asavams*, four different *Arkams* involving three plants species and one animal product. These preparations have been tested out in varied crops including paddy, cotton and vegetables such as ladies finger, tomato, brinjal and chilli. In addition to this, we have also carried out some experiments on oilseeds such as groundnuts and also on a few pulses. They have been tested out against a wide range of pests including – leaf folder, bacterial leaf blight, aphids and borers, Helminthosporium leaf spot as well as some diseases such as vein clearing disease, fusarial wilt and ripe rot.

Setting up Biopesticides Units

The methods employed for preparing Ayurvedic formulations such as kashayams and arkams are quite simple and widely known. Based on preliminary experiments, our Centre had set up a biopesticides unit in Agani village near our Sirkazhi field station in the Nagapattinam district of Tamil Nadu in 2003. With training and guidance from our field staff the unit is being run by three women farmers. Eight types of preparations are made and sold to farmers. Twenty villages in and around Sirkazhi town constitute the bulk of the market for this unit. The outcome of this effort is that the consumption of pesticides has reduced considerably in Agani village and the surrounding areas during the past several crop seasons. Based on this experience subsequently we have set up four more biopesticides units in the districts of Kancheepuram, Tiruvallur and Tiruvannamalai in Tamil Nadu till now. We are now in the process of standardizing the whole package of practices and technologies so that they may be tested out in different parts of the country as well as various other ecosystems.

Special Features and Highlights

Summing up we present below some of the special features and highlights of our efforts

- A large amount of literature has been collected and processed to identify traditional practices relating to plant protection from folk practices of farmers, reported field practices and the classical textual literature of Vrkshayurveda.
- We have tested and standardized the use of several practices looking into detail at some identified plants, which were listed earlier.
- We have experimented with and standardized storage forms of these natural products, which can be prepared based on the Ayurvedic approach.
- Using the technologies that have been developed we have set up village based biopesticides units in five different locations in Tamil Nadu. It serves multiple purposes of providing safe and tested plant products as biopesticides for organic farming using technologies that can be practiced and transferred to women farmers who maintain these units.
- Simultaneously, we have set up an insect rearing laboratory where we test out the mode of action of these products as well as the shelf life of these biopesticides.

II. CONSERVATION OF TRADITIONAL VARIETIES OF SEEDS

Background

India is the home of one of the greatest diversity of both wild and cultivated crops. However, there has been a marked decline in the variety and diversity of cultivated crops such as rice and vegetables. Our centre has been involved in several programmes involving small and marginal farmers. One of our focus areas has been biodiversity conservation. Through this we have helped to enhance the livelihood security of these farmers.

Our work in this area started in the year 1995. We had been working with the farmers of Valayampattu for almost a year, training them on the methods of organic farming. At this point of time farmers expressed the desire to cultivate indigenous varieties and wanted to have access to those seeds. After detailed surveys and meetings with hundreds of farmers in remote areas of Tamilnadu we were able to revive eight varieties of paddy. These precious seeds became the source pool for many of the varieties for the future. Information about the characteristics of each of these seeds were also gathered from farmers. After a series of discussion, 30 farmers resolved to set aside a portion of their land to cultivate indigenous crops. They undertook to cultivate using only organic inputs and no synthetic chemicals at all. At the end of the harvest they agreed to return twice the quantity of seeds which could be used to give to other farmers who were interested in growing the same. On their own initiative the farmers produced a framework and defined the roles of everybody involved. These farmers became the core members of the project and were defined as the Seed Keepers.

Since 1995, our Centre has expanded this programme to several farmers in Tamilnadu. Currently, we are working with a large network of 2400 farmers cultivating indigenous varieties. In addition to this nearly 1000 women are conserving indigenous vegetable varieties in their backyards. Currently, 130 rice varieties and 43 vegetable varieties are being conserved in more than 125 villages covering an area of 1000 sq.kms. In a few villages, we have also started organic farmers sangams to manage the programme. Community seed banks have been established in the villages. *In situ* conservation is being taken up both in the farmers fields and

also in the centre's experimental farm. Several villages have become self sufficient in the production of seeds. The strong network of farmers which has been established has become the basis for a farmers seed supply system.

To sum up the achievements of the programme so far are as follows :

- The Centre is currently working in 125 villages of Kancheepuram district and with a network of nearly 2400 farmers.
- For the last 12 years the Centre has been involved in collecting and conserving indigenous varieties of paddy and vegetables. The Centre is conserving 130 rice varieties and 43 vegetable varieties with the help of these farmers and also in the *in situ* conservation centers.
- More than 1000 women have successfully established integrated gardens (combination of vegetables and herbs) and get an average income of nearly 300 rupees a month.
- The varieties are conserved organically. The farmers have been provided intensive training on the practice of organic farming.

III. SANGAMS AS ORGANISATIONAL UNITS

The CIKS initiatives in the area of organic farming started about twelve years back and after a lot of trial and error, we have in recent times been working with a model of groups of organic farmers organized as Sangams, being the primary unit for propagation of organic farming. Some of the features of Sangams are as follows –

- Each Sangam represent a group of 30-40 farmers who are involved in and participate in various organic farming activities.
- The members of the Sangam include both men and women farmers and usually a single family is represented by only one member.
- The Sangams elect their own office bearers, hold regular meetings, maintain minute books etc.
- Currently, none of these Sangams are registered.
- The Sangam is a central point around which all-organic farming activities of CIKS in a village / area are organized. These activities include –
  a. Organic cultivation of paddy and other crops
  b. Organization of training programmes for organic cultivation
  c. Maintenance of home gardens which contain a combination of herbs and traditional varieties of vegetables serving a multiple purpose of – biodiversity conservation, nutritional supplementation and income generation
  d. Organization of common assets and facilities particularly – community seed bank for storage and distribution of seeds, power sprayers and hand sprayers that are used extensively for biopesticide and natural products and not used for chemical procedures, tarpaulin sheets that are used for drying harvested grain etc.
  e. Maintaining a village biopesticide unit
  f. Organizing the purchase and distribution of inputs for organic farming including – seeds, green manure, neem seed cake, groundnut cake , biofertilisers and other such products.
  g. Organizing the collection and sale of organic produce
  h. Interfacing with – the local panchayat, block development office, banks, agricultural departments etc.

- Initially we worked with a plan of maintaining these Sangams as different and distinct from self help groups (SHGs) since these Sangams admitted both men and women as members and they were involved primarily in natural farming activities. We were also able to convince many banks to open bank accounts for these Sangams. However, in course of time various Sangams ran into problems in dealing with banks since they were not registered and not organized as Self Help Groups. Hence we have now decided that the Organic farmers Sangams may be constituted by one or more self help groups which give them the identity to interact with banks for maintaining accounts, keeping their savings, negotiating loans etc.
- FUTURE PLANS: Marketing and institutional development

Currently CIKS is playing the role of a facilitator for marketing and sale of organic produce. However on a long-term basis we do not wish to continue to play this role because of the following reasons –

- CIKS is registered as a non-profit Trust and we do not wish to take on activities relating to trade and marketing beyond a certain minimum scale.
- The capacities of CIKS is largely in the area of research, training and extension and we feel that for activities relating to trade and marketing we should think of a new organization rather than change the character of CIKS.
- In the long run it is best if these activities are carried out by farming groups themselves with our Centre serving a catalytic role.

Towards this end, we have the following plans for future development –

- The members and office bearers of Sangams in various districts have started to interact with each other so that they have a larger picture regarding their own activities.
- We plan to help farmers, Sangams to convert themselves into registered local body after they formed themselves into a federation.
- We are now in the process of discussion and consultations to arrive at a proper legal form that such a body can adopt namely – society, cooperative or a company.

In our own view CIKS would help the farmers Sangams to launch this initiative and may be actively involved in it in the inception phase. In the long run, we expect that these initiatives would be handled completely by farmers.

IV. HIGHLIGHTS OF OUR EFFORTS

Achievements Related to Organic Agriculture

- There is an extremely good awareness created amongst all beneficiaries and also in the villages where we work on organic farming.
- More than 90% of the beneficiaries use organically cultivated indigenous varieties for self consumption.
- After cultivation for two seasons organically farmers have observed tremendous changes in the quality of the soil. This has increased their enthusiasm for organic farming.
- Several farmers have come forward to double the area of cultivation organically without project support.
- In some areas farmers themselves have been able to market some of the varieties without support from us.

- Other farmers in the project villages have shown keen enthusiasm to become members of the sangams and they have also expressed willingness to cultivate organically.
- There are requests from farmers in other villages of the neighbouring areas to implement the programme in their villages also.
- Cultivation expenses have come down by 15 – 20%.
- Expenses for pesticides have come down by 60%.
- Farmers make use of all the biomass available in their farm and convert it to good compost. They also make several organic preparations by themselves (based on the training provided by the project) and apply it to the soil. They feel that all this has significantly contributed to the fertility of the soil.
- Some varieties like Seeraga samba has given very good yield (nearly a tonne in half an acre) in certain soil types.
- A variety called Pisini has been found to be extremely suitable for saline soil in the Thazhampedu village.
- All the beneficiaries have learnt to establish home gardens in their backyards and get good organically cultivated indigenous varieties for home consumption. The nutritional security of the household has been ensured. Women farmers get vegetables worth Rs. 300 – 350 per month. Several other farmers (non project farmers) have also come forward to establish home gardens on their own.
- Some women farmers have also been able to raise additional income by sale of vegetable seeds. Some farmers have also raised additional income by sale of vegetables, which they had in excess after home consumption.
- There is a great awareness in the use of medicinal plants for self help amongst the beneficiaries. This has contributed to the reduction of medical expenses. In fact, this is of great use in villages where there are no hospitals nearby.
- Some members have also started preparing certain herbal medicines collectively and sell it to other villagers.
- Every beneficiary has established a small herbal garden along with the vegetable garden. Besides the herbs that were provided by us they also cultivate other herbs on their own.
- Since the farmers are aware of the importance of medicinal plants they also make use of it as a prophylactic for several conditions.
- Farmers also use these herbs for treatment of their cattle.
- *Kalanchoe pinnata* (*Ranakalli*) has been used extensively in several villages for curing wounds, cuts, boils etc. Aloe has been used for cattle, which were weak and had certain types of digestive problems.
- In the case of humans the medicinal plants have been used extensively for cold, cough, cuts, fractures and so on.

Social Benefits

- The beneficiaries have broken the caste barriers and work together. This is a major achievement in the villages since the "caste" plays a vital role in several rural activities.
- There is a forum created for farmers for exchange of views. Everyone patiently listens to each others point of view and respects the same.

- The programme has contributed to the village unity. Several farmers have come together to contribute and work towards a common cause for the betterment of the villages.
- There has also been a good interaction between villages and districts. This has also resulted in marriages being fixed.
- Beneficiaries have also been given training on First aid. A farmer has used this knowledge and saved a person who tried to commit suicide.
- Leadership qualities have increased amongst the office bearers of the sangams. Every village is proud of its sangam and its activities. There is a sense of ownership created amongst them. It has also increased their self confidence levels.
- The members have also learnt to deal with banks and government officials. Their confidence levels in dealing with the external world has increased substantially.

Financial Benefits

- Members save a particular amount every month. This has helped them in several ways. Borrowing from outside agencies for a higher interest rate has decreased. Because of the collective savings that the farmers have put together banks have also come forward to provide them loans for a variety of agricultural activities.
- Because of the reduction of cultivation costs farmers have reduced borrowing from outside for agricultural purposes.
- Since farmers have been provided training on preparation of several organic products they do not depend on external inputs by way of fertilizers and pesticides but are in a position to make it themselves. This has in turn reduced their expenses to a large extent.

Benefits Through Trainings

- The short term trainings provided to farmers at the beginning of the programme helped to create an awareness and laid the foundation for the success of the rest of the programme.
- The trainings have also empowered farmers with organic farming technologies.
- Because of the trainings received, farmers have been able to prepare several bioproducts on their own. They have prepared these bioproducts and used it also for the land, which was not put aside for the project activities.
- Farmers have been able to effectively control pests and diseases by the technologies that they had learnt during the training programmes and also efficiently increased the fertility of the soil by organic compost and other preparations.
- Three long term trainers' training programmes were conducted during the two year course of the project. During these trainings nearly 90 trainers were trained from the villages. They are currently our resource persons on organic farming in the villages where they come from. They have acquired a large number of skills and help in our training and empowering farmers in a big way.
- Some of these trainees are already training others in the villages on several biopesticide preparations and compost preparations.

People's Participation

- In almost all the villages land has been provided by the farmer (a sangam member) or by the panchayat for construction of the seed bank.
- In several villages farmers have contributed more than what was available in the project and have constructed better and bigger structures.
- In all villages farmers have contributed labour extensively.
- In Sathapoondi village in Thiruvannamalai district, it was difficult to get a suitable place for constructing a biopesticide unit. Farmers have contributed money collectively and bought land worth Rs. 12,000/- for the construction of a biopesticide unit in their village.
- Farmers have also contributed sand for construction work.
- The Sangam members have also taken active part in procuring good products and ensuring quality control of the products to be taken to the market.

CHALLENGES AHEAD AND FUTURE PERSPECTIVE

In terms of the challenges ahead and the future perspective, we would like to identify some of the following –

1. Strengthening of technical programme by collaboration with researchers and scientists

We would like to strengthen and deepen our technical programme particularly in two areas namely – experimental work relating to the use of natural products for pest control and crop protection and the characterization of properties of traditional varieties of seeds and the assessment of their qualities. For this purpose, we feel that our activities can be strengthened by collaboration with Universities, researchers and technical institutions. Some institutions with which such collaboration is being planned / under progress are the following –

a. Department of Plant Pathology, Agricultural College, Annamalai University, Chidambaram, Tamilnadu Collaborative work with respect to experimental testing of traditional methods for seed treatment using herbs for protection against wilt disease in tomato plants

b. Collaboration with the Department of Plant Breeding and Genetics with respect to characteristics of selected traditional seed varieties.

c. Centre for Advanced Studies in Botany, Madras University.

Screening of selected traditional varieties of seeds with respect to resistence to sheath blight.

2. Building of institutions for trade and marketing

In the first ten years of our work, CIKS was confined largely to building capacity for the production of organic cultivated crops based on traditional practices and knowledge. However, in recent times, we have increasingly felt the need for providing support to farmers also to market and organic produce. Towards this end the following initiatives are being envisaged and under way.

a. A pilot programme called AROGYAM (meaning Good health) has been tested out for creating a link between producers and consumers of organic food.

b. Three farmers organizations have been set up which are in the nature of associations of producers of organic crops in the districts of Kancheepuram, Tiruvannamalai and Nagapattinam with support from our Centre. These are registered as Societies.

c. A consultancy assignment was commissioned for making a survey of various institutional options that have been tried out by organizations that are marketing organic produce. This spans a wide range of forms including Public Limited Company, Private Limited Company, Producers Company, Society, Cooperative and individual partnership efforts. This has given us some insight about the strengths and weaknesses of various of these forms.

d. Currently, we are exploring the possibility of registering a company that will be involved in trade and marketing activities and also trying to work out ways in which farmers can be involved in it as stakeholders.

PUBLICATIONS OF CIKS

1. Vijayalakshmi, K. and A. V. Balasubramanian. 2004. *Seeds of Plenty, Seeds of Hope: On farm conservation of indigenous genetic resources – the Asian experience.* Centre for Indian Knowledge Systems, Chennai
2. Devi, T. D. N., Arumugasamy, S. and K. Vijayalakshmi. 2005. *Herbs for Good Health*. Centre for Indian Knowledge Systems, Chennai
3. Balasubramanian, A. V. and T. D. Nirmala Devi (eds). 2006. *Traditional Knowledge Systems of India and Sri Lanka.* Compas series on Worldviews and sciences 5. Papers presented at the COMPAS Asian Regional Workshop on Traditional Knowledge Systems and their current relevance and applications. Centre for Indian Knowledge Systems, Chennai
4. *Web Learning module on Organic farming*

ANNEXURE

DECLARATION ON ENDOGENOUS DEVELOPMENT AND BIO-CULTURAL DIVERSITY

Lezajsk, Poland, 27 September 2006

We, the members of the Compas network, who are the representatives of different community-based organisations, NGOs, universities and peoples, with different cultural backgrounds from Latin America, Africa, Asia, Europe, gathered at the Compas partner meeting in Lezajsk, Poland, September 2006, have agreed on the following:

1. For the last ten years we have been working to maintain and enhance bio-cultural diversity by supporting Endogenous Development. This is development based mainly, but not exclusively, on locally available resources, values and knowledge. We are developing mechanisms for local learning and experimenting, for building local economies and for retaining benefits in the local area. We are determined to further contribute to efforts which enhance Endogenous Development and bio-cultural diversity by:
   - supporting local communities;
   - cooperating as partners in the Compas programme;
   - collaborating with other community-based organisations, NGOs, universities and governmental and international agencies that support Endogenous Development and bio-cultural diversity.
2. We recognise that there are important and valuable initiatives for bio-cultural diversity: national and international policies and conventions, initiatives by grassroots organisations and social movements. Yet not enough is being done to prevent further erosion and destruction of bio-cultural diversity. We are concerned about the global environmental, social, economic and cultural crises as well as the way biological and cultural diversity is being eroded and destroyed by human activities.
3. We note that the domination of materialist and mechanistic worldviews in mainstream sciences, technology and commercial systems is contributing to the global crises and the reduction of bio-cultural diversity. We therefore draw attention to worldviews, systems of wisdom and sciences present in:
   - the history of humankind, also of cultures now dominated by materialism;
   - the diverse cultures and sciences throughout the world;
   - the minds and hearts of people and social movements;
   - feminine perspectives on life;
   - recent scientific developments such as transdisciplinarity and new trends in quantum physics.
4. We call on scientists, educators, policy makers and corporate organisations to be fully aware of the consequences of the proliferation and domination of materialistic and commercial values and practices. We invite initiatives from these, and from all parts of civil society, to enhance and respect endogenous innovations and recognise collective rights.

5. We acknowledge that local knowledges, sciences and wisdom of traditional and indigenous peoples may have their specific strengths as well as weaknesses. We also affirm that mainstream science has its own strengths and weaknesses too. Hence, activities are required which build on the strengths and reduce the limitations of both.
6. Intra-cultural and inter-cultural processes of learning and research should be strengthened and collective rights acknowledged.

We reject:

- The growing levels of material, social and spiritual poverty in all parts of the globe.
- The loss of territorial and food sovereignty, as well as the destruction of ecology and livelihood systems.
- The global geo-political, socio-cultural and economic power strategies and the expansion of the global market economy, with its destruction of biological and cultural diversity.
- The loss of social cohesion, solidarity, reciprocity and mutual help in rural and urban communities.
- The negative effects of globalisation, the market economy, and commoditisation of life, water, genetic resources, and the knowledges and wisdoms of traditional and indigenous peoples.
- The loss of spiritual values and practices and the reduction of the role of spirituality in giving people meaning and direction.
- The imposition of dominant values, religions and belief systems on diverse cultures and peoples.
- The lack of respect for and communication between different religions and spiritual traditions, and the related increase in tensions and aggression.
- The dominance of mainstream science as well as the marginalisation and underestimation of traditional and indigenous sciences.
- The imbalance in credibility, prestige, power and access to resources between mainstream and traditional knowledges and sciences.
- The global and national policies that promote and generate the erosion of biodiversity, and of the knowledges and wisdoms of traditional and indigenous peoples in the fields of agriculture, health and conservation of nature.
- The erosion of roles and functions of traditional institutions; systems of governance for managing ecosystems and social organisation of traditional and indigenous communities.
- The dominating role of materialistic and mechanistic worldviews, as well as the global spread of these in policies for development, commercial activities and sciences, and their impact on bio-cultural diversity.
- The lack of recognition of and regard for the collective rights of traditional and indigenous peoples, and the imposition of laws of intellectual property rights and free trade agreements upon these groups.
- All forms of intellectual property rights on living beings. - The production of genetically modified organisms which is taking place, predominantly driven by commercial interests of transnational corporations, with insufficient attention to environmental and bio-safety aspects, and the lack of transparency in the processes of decision making. We reject the negative impact that the production of GMOs has on farmers' autonomy.

We recommend

For policy

1. That the international and national bodies concerned with development policies incorporate programmes and projects that defend collective rights, support the revaluation and revitalisation of wisdoms and ways of knowing of traditional and indigenous peoples, and the non-commodification of local knowledges and natural resources.
2. That national governments respect and acknowledge traditional institutions and organisational systems.
3. That global and national policies strengthen local economic systems, giving priority to local production and marketing, sovereignty and safety of food.
4. An increase in the allocation of resources for research and development of knowledges and sciences of traditional and indigenous peoples.
5. Training for scholars and professionals who are committed to the values and principles of traditional and indigenous peoples to:
   - Develop, update and improve their theories and practices;
   - Set standards for students and professionals;
   - Evaluate mainstream knowledge and practices from traditional perspectives;
   - Enrich the foundations of their own sciences.
6. An increase in intra- and inter-scientific cooperation for mutual learning and co-evolution of mainstream and local sciences (e.g. in health and agriculture), as well as the interaction between folk, classical and mainstream practitioners, enhancing the symmetry in power position and resource access for both types of sciences.
7. Acknowledgement of and respect for the views of territory held by peoples and communities.
8. Acknowledgement of and support for cultures, nations and traditional and indigenous peoples to protect their systems of health and medicinal resources, including their physical, spiritual, mental and social aspects.

For research

1. Recognition of the collective nature of traditional knowledge.
2. Attention by mainstream scientists and thinkers to traditional and indigenous knowledges, sciences and wisdoms as valuable sources.
3. The establishment of an international research centre and/or an alliance for Endogenous Development and Bio-cultural Diversity.
4. Support for local experts to assess, understand, document and disseminate information on:
   - Indigenous plants, crops and animals, as well as local knowledge, values and land-use systems;
   - Indigenous institutions and effective practices in community organisational development;

- Local and indigenous concepts of territory and the existing threats and opportunities for peoples' territorial sovereignty;
- Gender perspectives on bio-cultural diversity in different cultures;
- Collective rights and ways to protect these.

5. Support for carriers of local knowledge and wisdom in their own research and dissemination of the outcomes, and acknowledgement of them as researchers in their own right.

For education

1. That primary, secondary and higher education curricula include traditional sciences and technologies in their theories, methods and practices.
2. Support of informal and non-formal education focusing on Endogenous Development and bio-cultural diversity.
3. That self-confidence and pride in local culture and traditional professions be reinforced and strengthened.
4. Sharing information with farmers and communities on biosafety and land-use rights, cultural rights, ownership of knowledge and commodities.
5. Incorporation of local experts as teachers in schools and in research.

For activities and initiatives

1. Development of methodologies for working with indigenous and traditional institutions.
2. That in engaging with communities, outside agents identify and work with existing institutions rather than establish new organisations.
3. The promotion of empowerment of traditional authorities through training, networking and exchanges.
4. The recognition and use of traditional structures as channels through which traditional authorities and their communities influence the development process.
5. Initiation and support for policy dialogues among stakeholders from different cultural backgrounds on cultural rights and local management of natural resources.
6. Coordination of initiatives for promoting local resources such as indigenous seeds and animal breeds in different parts of the world.
7. That dominant religions respect local spirituality, religions and belief systems.

Members of the Compas network agreed on the Declaration of Lezajsk and undertook wood sculpting and ironworking as an expression of cultural diversity and unity of peoples. Both monuments were handed over to the local community of Lezajsk in Poland.