



**M.S. SWAMINATHAN RESEARCH FOUNDATION**  
**COMMUNITY AGROBIODIVERSITY CENTRE**

KALPETTA, WAYANAD, KERALA

*A Centre for*  
Biodiversity Conservation  
Biodiversity based Livelihood & Food Security  
Biodiversity related Education



WAYANAD: A "HOTSPECK" OF WILD LIFE AND  
AGRO - BIODIVERSITY IN WESTERN GHATS  
- A GLOBAL BIODIVERSITY HOTSPOT





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## Preface

Until now, the *in situ* and *ex situ* systems of conservation have been studied largely from the point of view of the contributions of scientists and foresters. The role of local communities in *in situ* on-farm conservation of land races, and *ex situ* conservation through sacred groves and village forests has not received the same attention. The M S Swaminathan Research Foundation therefore, set up in 1997, a Community Agrobiodiversity Centre (CAbC) at Kalpetta, Wayanad, Kerala, for the purpose of revitalization of the *in situ* on farm conservation traditions of tribal communities. Wayanad is an agrobiodiversity rich area with particular reference to medicinal plants and speciality rices like *Navara* which is widely used in Ayurvedic treatments. At the same time Wayanad is a biodiversity hotspot. The present publication describes the strategic areas of action that CAbC has to achieve for the period 2008 - 2012 and summarises the work done during the past 10 years at this unique Centre under the leadership of Dr N Anil Kumar for saving valuable plants and thereby an invaluable genetic heritage. I hope this publication will stimulate widespread interest in recognizing and supporting the work of tribal communities in the conservation and enhancement of lifesaving crops through participatory research and knowledge management.

A handwritten signature in black ink, which appears to read 'M S Swaminathan'.

M S Swaminathan

# Wayanad District Map









M. S. SWAMINATHAN  
COMMUNITY AD...



## OVERVIEW

On November 24, 2007, M S Swaminathan Research Foundation celebrated one decade of service of the Community Agro-biodiversity Centre (CAbC) in Wayanad district of Kerala. 'Community' Agro biodiversity Centre, as the name implies, is a Centre to promote local community partnership in conservation and sustainable and equitable utilisation of local biodiversity, including the associated traditional knowledge and cultural domains. The pathways for achieving this goal are participatory research and knowledge management.

The 'community' approach to conservation of biodiversity and the strategic placement in a "biodiversity hot spot" provides a unique position for CAbC amongst other institutions in the region. Indeed, very few organisations in the region work towards "developing activities of community conservation significance". In most of the activities of CAbC, its convening role in linking Panchayathi Raj Institutes (PRI), Non Governmental Organisations (NGO) and Self Help Groups (SHG) institutions, was recognised as a strong comparative advantage. The Centre's interventions in strengthening community efforts in addressing the conservation issues have been appreciated by people from different sectors.





The overall strategy of CAbC since its inception was to educate the public, farmers, women SHGs, teachers, youth and children about the importance of conservation, sustainable and equitable use of biodiversity, particularly, those associated with their livelihood, food and health security and cultural needs. This process helped many villagers in and around Wayanad district to enhance their capacity in responding to their immediate problems, such as rapid loss of traditional varieties in food crops like rice, vegetables and fruits, species of wild food plants and animal diversity which are of medicinal value, pollution of soil and water by way of intensive chemical farming, biodiversity loss in on-farm habitats, and shift in land use that leads to multifarious issues and so on.

## THE SUCCESS AREAS OF OUR ACTION

A major success area of CAbC over the last 10 years is conservation of traditional varieties in crop plants of food value and Rare, Endemic and Threatened species (RET) in wild flowering plants. Ten years of work in the area of conservation has provided ample baseline information on wild foods, yams and RET plant species, seen in the Western Ghats. In this area of action, participation of the tribal communities, who have strong attachment towards the traditional food crops and wild species, was very explicit. The role played by CAbC in slowing down the pace of conversion of paddy fields into banana fields and revival of homestead farming by promoting marginal foods like yams and taros, and revitalization of traditional health care practices is significant in the district and invited wider attention from the whole of Kerala. Promotion of Organic & Low External Input Sustainable Agriculture (LEISA) farming methods and education in biodiversity aimed at tribal and rural children were two other

areas of notable achievements. A large number of men and women have learned to manage their natural resources like soil and water, and improve their food security by managing their home-gardens and semi-wilderness habitats in a better way. Over 500 women have been trained in the production and use, and marketing of primary health care products. A sizable number of children have been educated with regard to the importance of biodiversity and traditional knowledge. This has resulted in the emergence of core teams of educated youth, women and men farmers in villages who are engaged in spreading the message of sustainable resource management methods across other regions.

The past 10 years have witnessed several such notable achievements in the objective areas set out in the 1997 action plan document. Moreover, building partnership with people from different walks of life has led them to contribute creatively to the Centre's growth and the natural resource management, specifically the agro-biodiversity management of Wayanad district.

## MILES AND MILES TO GO ...

There are still grey areas in our targeted goals and achievements. For instance, reaching the men and women living in poverty with the goal of improving their livelihoods in a sustainable manner is still a challenging goal for us. Much more needs to be done to address various dimensions of livelihoods and poverty of the district, particularly tribal communities like *Paniya*, *Kattunaikka* and *Adiya*. The household food and health security initiatives and income generation process by commercializing biodiversity products and ecosystem services without undermining their other values like cultures, production, opportunities, can prove to be a major improvement in the lives of the poorest in CABc's intervention sites. This will be a major area of attention for CABc in the coming years.





Another area we look for improvement is in getting benefit to local communities in the area of their traditional rights. Though CABc has succeeded in strengthening the grass-roots' base through partnership building with important institutions and individuals, the Centre is yet to show successful examples for assisting local biodiversity knowledge holders to access economic benefits to such knowledge holders from the National Gene and Biodiversity Funds provided under the Biodiversity Act -2002 and Protection of Plant Varieties and Farmers' Rights Act -2001. Imparting legal literacy with reference to those Acts and also the Scheduled Tribes and Other Traditional Forest Dwellers Act (Recognition of Forest Rights)-2007 is an important goal.

## THE STRATEGIC AREAS OF OUR ACTION (A C-4 Strategy)

The learning from our 10 years of experience for achieving a match between the title Community Agro-biodiversity Centre and its programmes, interaction with community, helped in developing the following four integrated packages of strategic action for the strategic frame work to achieve for the period 2008 - 2012:

- 1 Conservation:** This area gets high attention at the levels of *in situ on farm* conservation, *ex situ conservation* involving seed bank, cryogenic community gene bank, in-vitro cultures in the case of vegetatively propagated plants like yams, and the cultural landscapes like sacred groves, etc. The conservation of Rare, Endemic and Threatened species (RET), will also be continued under the category of genetic resource conservation of tree and woody climber plant species.
- 2 Cultivation:** Here the focus is the promotion of low external input, sustainable agriculture based on organic farming principles. This is to reduce the cost of production and minimize risks. Cultivation of medicinal plants and food plants will be promoted without any use of inorganic chemical pesticides. Integrated Pest Management (IPM) and Integrated Natural Resources Management will be promoted.



- 3 Consumption:** The work in this area with tribal families include the revitalization of earlier food habits including the use of underutilized crops. This also involves the conservation and cultivation of life saving crops like tubers, (based on our earlier work on wild foods). Particular efforts are being made to undertake a survey of the prevailing macro and micro nutritional deficiencies and promote horticultural and agricultural remedies for nutritional maladies such as Vitamin A, Iron, Iodine and Zinc deficiencies amongst the tribal communities.
- 4 Commerce:** Creating an economic stake in conservation is a major focus area for serving simultaneously the causes of conservation as well as livelihood security. Market driven products have been identified from food and medicinal plants, and production is being organized through Farmers' groups, Kudumbasree and SHGs.

To achieve visible and replicable results in the above 4 areas, appropriate programmes in the fields of education, social mobilization and regulation are being developed.

- a) Education:** The need to impart legal, genetic, quality and trade literacy through appropriate pedagogic methods is being recognised and addressed through the ongoing Genome Clubs, Every Child A Scientist programme, and the Village Knowledge Centre programme. The legal literacy campaign deals with the implications of the Biodiversity Act and the Protection of Plant Varieties and Farmers' Rights Act.
- b) Social Mobilisation:** This is being done at the level of Panchayaths and Kudumbasrees. Panchayaths are enabled to prepare Community Biodiversity Registers. The social organization proposes to be compatible with tribal culture and norms that are gender sensitive.
- c) Regulation:** There are many regulations now relating to land rights for tribal families, Intellectual Property Rights (IPR), Geographic Indication (GI) and the Biodiversity and Protection of Plant Varieties & Farmers' Rights Legislation and Scheduled Tribe & Forest Rights Act. The implications of these regulations are being brought home to tribal women and men through effective communication and education procedures.



- d) **Capacity building** in all the above areas are being given high attention. The capacity building programmes are based on the principle of partnership with local families. The facility of Community Training Centre (CTC) available now is dedicated exclusively for undertaking periodic in-house training programmes. Also peripatetic training will be undertaken to reach the unreached. In addition to this facility, the advantage of having adequate farm land will be appropriately used for training to promote cultivation practices like organic farming. In other words an approach of learning by doing will be promoted.
- e) **Documentation and publications** is an area, of exceeding important attention for CAbC. Publications designed for tribal and rural families are in Malayalam. The Village Knowledge Centre (VKC) runs a small community newsletter to disseminate useful information on the entitlements of tribals with reference to government schemes. Each tribal family of the district will be given an entitlement passbook. An important document which will be published soon is the Agro-biodiversity Atlas of Wayanad. This is being prepared for all the major components of agro-biodiversity.
- f) **Developing a Herbal Bio-valley** starting from Wayanad to the Silent Valley Rainforest will be an expected outcome of actions of the Centre. CAbC will undertake, with other appropriate institutions coordinated projects like the ongoing RET and Medicinal plant projects to strengthen the ongoing programme. The effort of establishing a herbal bio-valley will be facilitated by the Centre. Appropriate government and non-governmental organizations including the Forest Department and financial and marketing institutions will be involved in this effort. The aim of this Valley is to provide infrastructure for decentralized production, supported by key centralized services in areas such as producing products on franchise, labeling and marketing. Effort will be taken to establish the post-harvest infrastructure and facilities for value addition in the major crops like coffee and pepper. The whole programme will be organized on a hub and spokes model, with CAbC serving as the facilitating hub.



## WAYANAD

### An Agrobiodiversity Hotspot of Western Ghats

Wayanad, located at an elevated plateau of 700 -750 MSL, that gradually slopes from 10,000 meters of Nilgiri to a midlevel plateau, the Gudalur- Cherambady tract is perhaps the single richest Agrobiodiversity Centres in the Western Ghat region with a long history of agricultural and traditional health care systems. The Western Ghats, more popularly known by the name of Malabar Region (Hooker 1904), is considered to be one of the 34 global biodiversity hot spots that abounds with a multitude of plants and animals in diverse kinds of vegetations. Wayanad, one of the 14 districts of Kerala is a natural abode of Spices, Beverages, Fruits & Vegetables and Medicinal & Aromatic Plants. Wayanad district stands remarkably high in terms of the production of fruits, vegetables, spices, beverages and medicinal & aromatic plants and the Non Wood Forest Produces (NWFP) in the State.

The district is rich in biodiversity with a high percentage of endemism; for instance about 300 species out of an estimated 2000 species of flowering plants endemic to Western Ghats are found in this district. Some of the exclusively endemic species of flowering plants of the district are *Tephrosia wayanadensis*, *Hedyotis wayanadensis*, *Cynomytra bourdillonii* and *Bulbophyllum rheedei*.

The landscape diversity of the district varies from forests, bushes, thickets, rocky grass lands, fallow fields, springs, streams, canals and wetlands- a fine example of a heterogeneous ecosystem in which a number of highly useful but endangered plants and animals have been reported. Many species in this district are included in the Red Data Books of the Botanical Survey of India and a large number of once commonly available species and varieties to communities have now become very rare or extinct. Recent studies by MSSRF show the existence of over 100 RET species, 650 medicinal plants, 343 wild food/wild relatives of crop plant species, 150 vegetable varieties and about 14 traditional rice varieties.

## Wayanad- A Centre of Ethnic Diversity

The district with an area of 2136 sq. km and a human population of 7,80,167 (Census Report 2001), is considered to be one of the earliest human settlement areas in Kerala as evidenced by the historical monuments and other pre-historic documents. Wayanad has the highest concentration of tribal communities in the State, which form 17.1% of the total population of the district. The dominant tribal groups are *Kurichiya*, *Kuruma*, *Paniya*, *Adiya* and *Kattunaikka* and other minor communities are namely *Koombaranmar*, *Kadar*, *Pulayar*, *Mannan* and *Kuravar*.

1. **Adiyan** - The word 'Adiyan' means 'bonded labourer'. The Adiyans are found in Wayanad and Kannur districts in Kerala. Most of them are agricultural labourers. It is believed that they were bonded agricultural labourers in the past. Their total population in Kerala is 9690 (Kerala Census Report, 2001). The Adiyas are known as 'Ravulayar' traditionally.
2. **Kadar** - Kadar is listed as a 'primitive' tribe by the Government. As per the 1991 census, total population of Kadar in the State is 2021. In Wayanad, one settlement of Kadars are found in Niravilpuzha. In Kerala, Kadar settlements are largely confined to Palakkad and Thrissur Districts.
3. **Kattunaikan** - The Kattunaikan community is found in Wayanad, Kozhikode and Malappuram districts. A sub group of them are also called as Cholanaickan, in the interior forests of Nilambur area of Malappuram, and Pathinaickans, in the plains of Malappuram districts. As their name denotes, the Kattunaikan were the kings of the jungle regions, engaged in the collection and gathering of forest produce.
4. **Kuruman** - Two different tribal communities Mullu Kuruma and Urali Kuruma are jointly listed as Kuruman in the Scheduled Tribe list of the Government. The total population of both communities together in Kerala is 23444 (Kerala Census Report, 2001).







5. **Kurichian** - Kurichians are inhabitants of Wayanad and Kozhikode districts of Kerala. They are known for their exceptional honesty, truthfulness and courage. Their total population in Kerala is 28287 (Kerala Census Report, 2001). The Kurichiyans are an agricultural tribal community. Till some decades ago untouchability had been fairly and widely practiced by these tribals.
6. **Paniyan** - Paniya inhabit Wayanad, Kozhikode, Kannur and Palakkad Districts of Kerala. They are the largest single Scheduled Tribe in Kerala. Paniyans were believed to have been bonded labourers used for agricultural labour, who were brought to Wayanad by Raja of Malabar, several centuries ago. Their total population in Kerala is 67948 (Census Report, 2001). About 71.95 percent of the Paniya population is found in Wayanad alone. The word '*Paniyan*' means worker, as they were supposed to have been the workers of non-tribes.
7. **Thachanadan Moopan** - They are settled in Moopainad, Ambalavayal, Muttil, Vythiry and Kalpetta municipality of Meppady panchayath in Wayanad. Population details collected by Thachanadan Mooppan Society shows their total number is 1978. They are more integrated into the mainstream society. The government has recently enlisted them in the class of Scheduled Tribe.
8. **Uralikuruma** - This community is also called Betta kuruman who speak a dialect of Kannada. They are the most versatile and colourful tribal people with a population of 10335 in 1991 (Census Report). Traditionally they are artisans involved in basketry and pottery. Uralikurumans forming 2.69% of the total adivasi population in Wayanad are found mainly in Sulthan Bathery and Mananthavady Blocks of the Districts.

## Wayanadan Chetty:

This is a major non tribal community engaged in sustainable agricultural activities in the district.

Wayanadan Chetties are settled in Sultan Bathery, Kalpetta and Vythiri Taluks. In Tamil Nadu, they are seen in Gudalur and Panthalur Taluks of Nilgiri district. According to the data collected by Wayanada Chetty Service Society (WCSS) their population was 16,970 in 2003-2004.

This community is predominantly a farming community. They follow a harmonious lifestyle with the local environment and share many traditions and culture that revere nature and natural agricultural resources comparable to the tribal communities of the region. Culture and other agricultural practices are more or less similar to the Kuruma tribal community. This community is characterised by a matrilineal line (73 clans). They are skilled in making basket and other bamboo products tools for agricultural implements etc. The major source of income is from agriculture, dairy, as daily wages earners followed by white collared jobs. Similar to some of the ethnic communities like Kuruma, Kurichiya of the district, Wayanadan Chetties mostly engage in paddy cultivation which is for self-consumption. A particular kind of Musa species locally known as '*paduvan vazha*' is still cultivated as it is inextricably linked to their beliefs with regard to death, worship etc. Sickle cell anaemia, a genetic disorder has been reported from this community.

The customs and beliefs of this community play a big role in conservation of plant species as well as water resources as most of their religious ceremonies relate to water and most of their *Kavus* (temples) are associated with ponds. Most of the ponds are situated in paddy fields, but is rarely used for irrigating crops since these ponds are considered to be used for only holy purposes. *Kavus*, usually have *sarpakkavu/gulikanthara* or sacred groves which is an abode for diverse varieties of fauna and flora.



## The Targeted Goals for the period 2008-2012

1. Transform CABc to a farmer participatory research and knowledge management centre and a high performing knowledge institution;
2. Establish an IPR cell at CABc;
3. Empower CABc stakeholder institutions Wayanad Agriculture & Rural Development Association (WARDA), Jeevani, Wayanad District Tribal Development Action Council (WDTDAC)
4. Reintroduce 80-100 RET plant species in Wayanad and adjoining forests;
5. Set up an Agro-Clinic and Develop model farms in different categories at CABc;
6. Establish 1000 home gardens each with not less than 10 species in Wayanad;
7. Establish 3-5 Plant Genetic Resources (PGR) Centres (field gene banks) each in not less than 1-acre area;
8. Develop an organic farm in a contiguous or select micro watershed;
9. Bring out an agro-biodiversity Atlas of Wayanad district;
10. Establish 6-10 Village Knowledge Centres and 1 Village Resource Centre;
11. Establish 25-30 ECAS Centres at both village level and schools of Wayanad;
12. Establish 10 tree groves (arboreta) each in not less than 2 ha in Wayanad;
13. Revitalise traditional practices of one tribal dominated village;
14. Develop 15-20 green agricultural farms and promote green certification;
15. Integrate 1000 families into market value chain of bio resource based products;
16. Restore ecologically sensitive habitats like Paddy fields in not < 10000 ha.



## PROMOTING CONSERVATION

Focus: Rare Endemic & Threatened (RET)  
Plants of Western Ghats





Since the inception, CABc has been focusing on conservation of Rare, Endemic and Threatened species of Western Ghats. The efforts in this regard started with the documentation of the floristic diversity of Wayanad district. This study unraveled the angiosperm diversity of the area and highlighted the biological significance of the region that provides habitat for about 25% of the Rare, Endemic and/or Threatened flowering plant species of Western Ghats. A total of 1950 flowering plants were documented, with 32 Red Data Species and 550 endemics of Western Ghats. Besides, seven forest patches viz., Banasuramala, Chembramala, Kurichiarmala, Vaduvanchal forest, Sugandhagiri, Thirunelly and Chanthanathodu of the district were prioritized for immediate conservation. Discerning the reality that poor natural regeneration is posing severe threat to a good number of RET species in Wayanad, attention was drawn towards adopting suitable *ex situ* conservation measures in the Centre. It led to the establishment of an Orchidarium with 125 orchid species, a fernery with 30 fern species and an Arboretum with 156 endemic tree species and a CABc Herbarium with more than 8000 specimens of flowering plants of Wayanad. For recognizing the role of traditional beliefs in promoting conservation measures, the Centre has also facilitated the establishment of zodiac forest and the restoration of sacred groves in the premises of CABc and Koottakkavu temple, Pozhuthana.

As a follow up, the second phase was implemented in the year 2004 paying attention to the conservation of ten selected RET plant species of Wayanad by way of integrating conservation and livelihood security of the community. The species were selected giving thrust to the demand of the forest dwelling people for their food, health and livelihood. The target was achieved through the community-oriented multiplication of selected species and by adopting both *in situ* and *ex situ* conservation measures towards ensuring their subsequent availability in the near vicinity of their dwelling places.



The third phase of the programme, initiated to mark the 80th birthday of Prof. M. S. Swaminathan, is envisaged to accelerate the Centre's conservation efforts through an increased number of target species and an expanded outreach beyond the boundaries of Wayanad. For this purpose, a novel approach has been adopted by means of partnership building, in conservation as well as research and by initiating fellowship schemes for providing ample opportunity to meritorious candidates to prove their worth in conservation. Targeting the conservation of 80 RET plant species, eight doctoral programmes have been integrated, and collaboration has been established among five multidisciplinary institutions *viz.*, CABC, Kerala Forest Research Institute, Peechi, Centre for Medicinal Plant Research, Arya Vaidya Sala, Kottakkal, Sree Narayana Mangalam College, Maliankara and Centre for Research in Indigenous Knowledge, Science & Culture, Kozhikode. Each research fellow was entrusted with the responsibility of collection and conservation of ten target species and the species were thoroughly studied giving emphasis to their distribution, taxonomy, ecology and conservation biological aspects. Thus, a total of 26,000 seedlings of 80 target species were multiplied through this programme, of which 9,700 seedlings were distributed to various groups for achieving the *ex-situ* conservation. In view of the fact that, farmers, religious institutions, students can be targeted for extending *ex situ* conservation measures, 15 tree groves each with 36 RET plant species were established at different regions of Wayanad district. A RET Conservation Garden with a total of 300 seedlings of 50 species in 8 acres of land has also been established at CABC. A display zone for RET species and a zone for climbing plant species are the other *ex situ* collections.

Further, it needs to be specially mentioned that environmental education and awareness campaigns have been adopted in all the three phases of the programme, as a major tool for enhancing and ensuring a concerted action towards RET Conservation. The Centre has formed a forum - *for RET* in 2007 for ensuring the open-ended participation of organizations and individuals working for the cause of conservation of RET species.





## PROMOTING CULTIVATION

Focus: Medicinal Plants, Medicinal Rice,  
Organic Cultivation of Fruits, Vegetables  
and Spices

## MEDICINAL PLANT PROGRAMME

Wayanad is known for its medicinal plant wealth and the indigenous communities who have a deep knowledge on the usage of such plants. To a large extent, Wayanad still retains an organic method of cultivation; particularly the women who still maintain the tradition of growing a number of plants in their homestead garden in an organic way. Keeping these points in mind, the Community Agrobiodiversity Centre (CAbC) embarked on a *Bio health programme* aimed at promoting conservation and sustainable use of medicinal plants.

Awareness programmes are conducted on indigenous healthcare systems, medicinal plant identification, propagation, and harvesting among farmers, youths and students in Wayanad and adjoining regions. As part of the awareness programme and training, educational materials are prepared in local language, exposure visits have been conducted to organizations working on medicinal plants. In view of the richness of the floral diversity, a study on the status and availability of medicinally important roots/tubers, orchids and macro fungi of Western Ghats was carried out and many of these plants are conserved *ex situ* at the Centre. A check list of 630 medicinal plants recorded from the district has been prepared, out of which three hundred are maintained at the Centre.

The growing demand for medicinal plants and the low availability or restricted access to it, necessitate the need for cultivation of such plants in the locality. Hence the Centre has established a mother nursery of medicinal plants to make available the seedlings that can either be cultivated commercially or be used for the primary healthcare needs. The Community medicinal plant gardens contribute to the conservation of many locally rare but important plants. Farmers have formed a society named 'JEEVANI' with technical guidance from MSSRF to promote medicinal plant cultivation and to explore market avenues.

With financial assistance from Department of Biotechnology (DBT), Govt of India, MSSRF implemented a programme 'Bioresource Complex for Women' since 2006. Training is imparted to 375 women who are members to the venture on medicinal plant cultivation and utilization. Under this programme 75000 seedlings of 15 species have been distributed to the members for cultivation. 3 nurseries have been established to cater to the need of seedlings; two at SHG level and one at MSSRF. The value addition of herbals will be carried out with the infrastructure support of an herbal production unit established, which is for the benefit of the SHGs formed earlier.





Recognizing and rewarding the traditional wisdom is important. It is well known that ethnic communities possess a deep knowledge regarding the local floral diversity. CAbC has made efforts to document similar knowledge with Prior Informed Consent and submitted such cases to National Innovation Foundation (NIF) for reward and recognition.

With the progress of the Green health programme, organic cultivation of medicinal plants by Women's Self Help Group has been initiated with a buy back arrangement dovetailed with Wayanad Vanamoolika Samrakshana Sangham- a grassroot level Community Based Organization (CBO) for a project supported by the Planning Board under the RSVY scheme for establishing a herbal production unit. Our long term goal is to encourage organic cultivation of medicinal herbs that will on one hand, raise the economic level of the members and on the other, contribute to the decrease of collection from wild.

The campus of CAbC MSSRF is a conservatory for medicinally important plant species too. There are more than 700 species of plants enumerated from the campus alone. Out of these 450 species are medicinal plants of which 300 species have been planted and managed with special care. *Saraca asoka*, *Symplocos cochinchinensis*, *Samadera indica*, *Santalum album*, *pterosperrum rubiginosum*, *Terminalia chebula*, *Pongamia pinnata* *Trichosanthus lobata*, *Gluta travancorica*, *borassus flabellifer*, *Cycas circinalis*, *Mucuna gigantean*, *Salix tetrasperma*, *Embelia ribes*, *Celastrus paniculatus*, *Salacia fruticosa*, *Coscinium fenestratum*, *Nothapodytes nimmoniana*, etc., are some of the species planted and managed in the campus. Around 275 of these medicinal species are also maintained in the shade house in pots for education purpose.

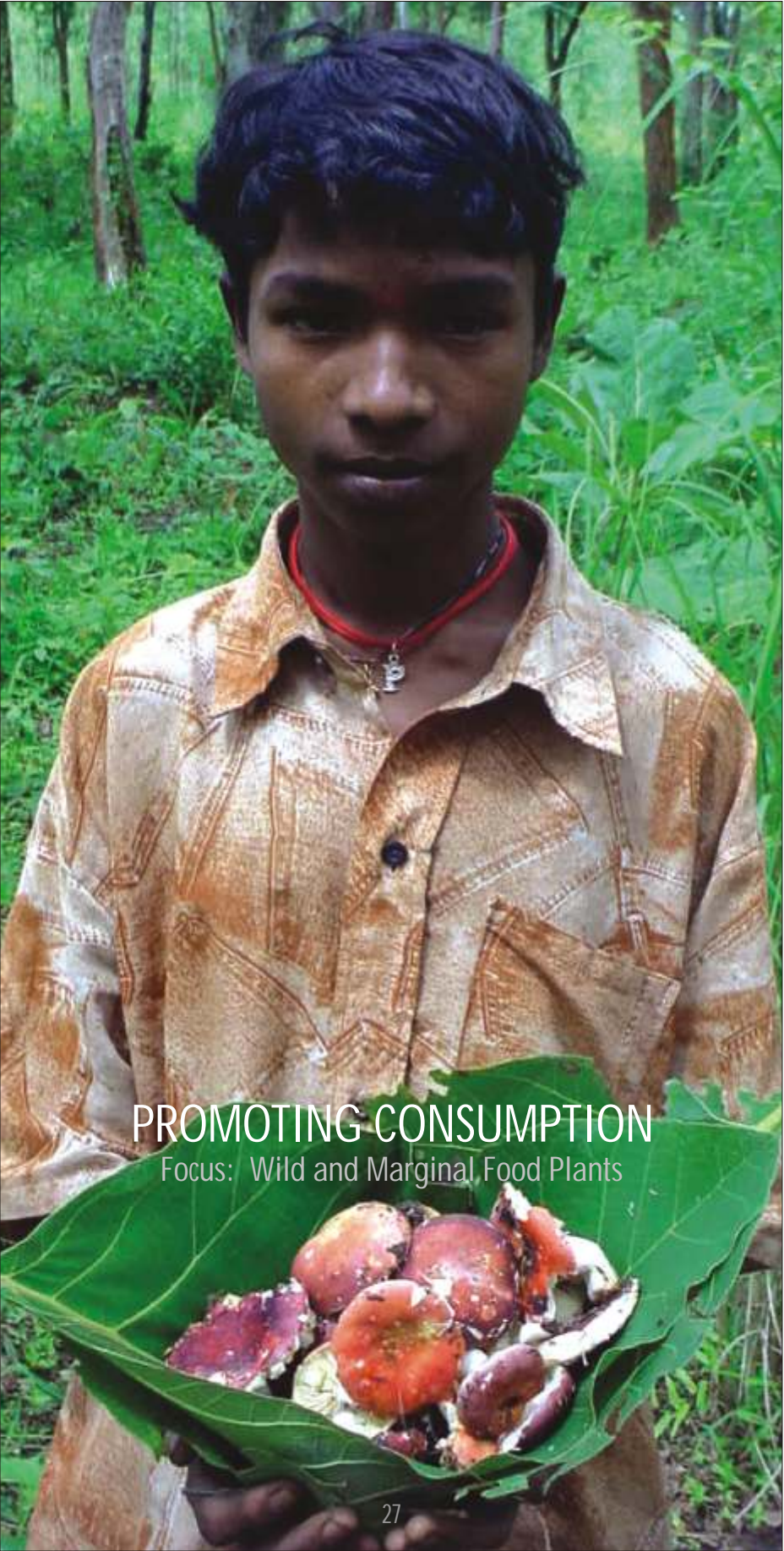
## Speciality Rice Varieties of Wayanad

The category of traditional specialty rice includes aromatic varieties like *Jeerakasala*, *Gandhakasala*, *Mullanchanna* and medicinal varieties like *Navara* and *Chennellu*. We have been involved in the conservation of local cultivars of paddy and the traditional practices as well since 1997. In 1997, a survey was initiated in Wayanad and 71 traditional varieties were reported and 12 of them, including *Navara*, a highly potent medicinal variety has been deposited in the Community Gene Bank at MSSRF Head Quarters. We have collected some biotypes of *Gandhakasala*, *Mullanchanna*, *Navara* and *Chennellu* which are prominent in the State and were evaluated for their performance in different fields. Later, a collaborative mode of work with farmer participation, wherein scientists work to strengthen farmers' informal research and development system was adopted to conserve *Navara* and to protect paddy ecosystem, a neglected agro-ecosystem in Kerala.

Among the specialty rice category, the focus is on *Navara*, the gifted medicinal rice of Kerala. *Navara* has qualities of a drug and used internally in many ailments and also used externally as an application to muscle wasting, burns and scalds. A preliminary effort has also been made to understand the different strains of *Navara* variety at biochemical level, and has resulted in prioritizing the varieties based on their amino acid composition. The potential of System of Rice Intensification (SRI) was also experimented with and promoted. Seed purification of specialty rice varieties in community plots (Farmer centered seed purification) is also being executed for the last 10 years. since 2005, CAB International executes a project with the support of National Medicinal Plants Board (NMPB) which was conceived mainly around the medicinal property, validation and market expansion of *Navara* and other specialty rice varieties endemic to Kerala and in particular to the Wayanad region.







## PROMOTING CONSUMPTION

Focus: Wild and Marginal Food Plants

CAbC started a programme in 2000 that aimed at enhancing the household food security of tribal groups through sustainable use of wild and traditional edible species based on a detailed study conducted earlier on such resources. The study sought to focus attention on observation of the difference in the approaches and pattern of wild food resources conservation and utilization. The changes in gender relations and its impact on food species management, the perception of both males and females of different age groups about the structure, function and dynamics of the agricultural landscapes *vis-à-vis* availability of food species also came under the purview of this study. The results showed that the tribal groups have an extensive knowledge on a wide array of plants and animal species that have food value. Some groups had even found uses for alien species, indicating that traditional knowledge is constantly evolving. The study brought out information on 372 wild edibles, which include 102 leafy greens, 19 species of *Dioscorea*, 40 species of wild mushrooms, 5 species of crabs, 39 species of fishes and five types of honey. A synthesis of the role of wild foods in the lives of the different ethnic communities of the district, showed that *Paniya* community depends heavily on the wild environment for their food needs followed by the *Kattunaikka*. Interestingly, the non-tribal communities like resource poor Muslim women also access the semi-wild environment for food, particularly edible greens. The decline in traditional knowledge related to wild food from one generation to the next is a stark reality indicated by the study. The implications of land use changes, agrochemicals, restrictions of forest access, influence of development and impact of invasion of alien species on the availability of wild food were highlighted in the study.

Following the study, extensive awareness classes were conducted amongst wider groups of people on importance of conserving wilder habitats and thereby wild foods. Nearly 100 species of wild edible plants are maintained alive in CAbC farm. A nutritional survey was conducted in selected tribal colonies to assess the existing nutritional status of people in selected hamlets to identify basic health and nutrition issues. As a result of this study and feedback with different stakeholders, an *anganvady* was opened at Ponkuzhy Kattunaikka colony. Realizing the importance of enhancing the nutritional supply, a 'food plants' package for home gardens was prepared with the help of Central Tuber Crops Research Institute (CTCRI), Thiruvananthapuram. 200 home gardens were established in 6 tribal hamlets in the district (*Paniya* 75 families, *Kattunaikka* 75 families, *Kurichiya* 50 families) with both wild and traditional edible species like tubers, greens, vegetables, fruit trees and fruit yielding climbers. The specific package consisted of four species of fruit trees, three species of fruit yielding climbers, seven species of traditional yam varieties, sweet potatoes, taros, elephant foot yam, asparagus and seeds of nine traditional vegetable species.





As a result of the project, a germplasm plot with thirteen wild and fourteen traditional species/varieties of dioscorea, four traditional varieties and three wild varieties of colocasia, one species of *amorphophallus*, three varieties of sweet potato, two varieties of *canna*, two varieties of arrow root, twelve species/varieties of legumes have been conserved *ex situ* at CABIC.

An integrated tribal development programme in Kuttimoola tribal colony, based on the felt needs of the people, has been initiated with the financial support of Tribal and Forest Departments. 150 tribal families are the beneficiaries of this programme. Major outcomes of this programme have been the formation of a Tribal Cluster Development Society with democratic checks and means, to ensure transparency in fund utilization at Kuttimoola and a tribal cluster in Mananthavady Grama Panchayath for comprehensive tribal development. A nursery has been started to raise seedlings of coffee, pepper, coconut, areca and medicinal plants in the plantation area as well as for wild plants for afforestation programme. Nursery raising and marketing of these seedlings by a trained tribal SHG group became a notable livelihood initiative in tribal areas.

# GREENS ECOSHOP

ORGANIC, ETHNIC, NATURAL AND SAFE PRODUCTS

*Catalyzed and Supported by*  
SCIENCE AND SOCIETY DIVISION

DEPARTMENT OF SCIENCE AND TECHNOLOGY, NEW DELHI  
THROUGH M.S. SWAMINATHAN RESEARCH FOUNDATION



ശാസ്ത്രസാക്ഷരതയും സുസ്ഥിരതയും ഉറപ്പാക്കുന്നതിനായി 'ഗ്രീൻസ് എക്കോഷോപ്പ്' പ്രവർത്തിക്കുന്നു. ഹൈന്ദവ മതത്തിന്റെ മൂല്യങ്ങൾ ഉൾക്കൊള്ളുന്ന ഓർഗാനിക്, എഥ്നിക, നാച്യുറൽ ആൻഡ് സേഫ് പ്രോഡക്റ്റുകൾ വിൽക്കുന്നതിനായി ഇത് ഒരു പര്യായമാണ്. ഹൈന്ദവ മതത്തിന്റെ മൂല്യങ്ങൾ ഉൾക്കൊള്ളുന്ന ഓർഗാനിക്, എഥ്നിക, നാച്യുറൽ ആൻഡ് സേഫ് പ്രോഡക്റ്റുകൾ വിൽക്കുന്നതിനായി ഇത് ഒരു പര്യായമാണ്.

## PROMOTING RESPONSIBLE COMMERCIALISATION

Focus: Market For Herbal Products And Organically Produced Fruits And Vegetables, Spices, Rice And Tubers

## Bio-Health Initiative

MSSRF's bio-health programme was started in the year 1998 with the support of Ford Foundation Endowment Grant. This resulted in the partner grass root level Community Based Organization getting an additional support in the form of a central assistance of Rs. 32.1 million through the State Planning Board for primarily, the commercial production and marketing of herbal products. This endeavour supports over 100 women directly and 2000 women indirectly. The initiative proved itself as a viable model in poverty reduction and livelihood enhancement of the rural community through the sustainable utilization of locally available medicinal plant resources. Since most of the medicinal plants required were cultivated by the members, it can be considered as the best replicable model for conservation. Revitalizing the primary healthcare traditions through trained women's Self Help Groups (SHG) made significant socio-economic changes among the group members as well as in the society that they represent. Women, especially from economically and socially backward sections are given trainings to identify, conserve and sustainably use nearly seventy five potential species of medicinal plants and to prepare thirty six herbal formulations. Nine out of these products were found to have good local demand and have been marketed by the SHGs. The qualities of new formulations have to be assessed before marketing with the help of reputed research organizations. One of the formulations '*Navadhanya mixture*' was found to be nutritionally richer than many similar products in the market, as per the results of analysis by the Central Food Technological Research Institute (CFTRI), Mysore. Though the women were able to market some of the herbal formulations at local level and could earn anything between Rs. 2000 to Rs. 50,000/- annually, mass marketing was not possible. The bench mark survey conducted among the group members prior to the initiation of the bio-health programme shows that all the women were unemployed, but were doing household work with zero income from any source - are now at a group level making a net additional average annual income of Rs. 60,000 during the year 2005-06 within the range of Rs. 800 - 144,000. A total of Rs. 10,04,995 was generated during the period by 19 groups. In addition to the individual gain, the programme has contributed to the family in terms of taking care of the health worth Rs 17,21,090 and to the society, Rs 30,38,485. All the members worked part time without affecting their household work.

The bio-health programme that addressed the socially and economically deprived communities, imparting knowledge and skills through training on medicinal plant cultivation and sales of value added products, accelerated biodiversity conservation and poverty reduction amongst the families of the partner SHGs of over 500 women.

## 'Greens' Market Outlet

As part of supporting people to run eco-enterprise, we have identified opening up of a Market Outlet in Kalpetta, as a viable option. This outlet caters to the people's requirement of biosoftware (organic inputs like trichoderma, trichogramma, vermicompost, quality nursery plant materials produced by various groups of people trained by CABc) and organically produced fruits, vegetables and spices by groups of farmer whose farming has been certified as organic by `Indocert', an agency for organic certification.

The Market Outlet was proposed by CABc after an initial study conducted by the Calicut based `Creative Management Consultants' to gauge the feasibility of starting such an enterprise. With the study revealing that the time is right for such a step, and with adequate support from Department of Science and Technology (DST), the Market Outlet was opened by an SHG facilitated by CABc in September 2007.

The Market Outlet aims to be a single window system for purchase, sale and information on organic agricultural produce. Organic vegetables and fruits are supplied by farmers registered under INDOCERT, Nadavayal and other identified organic farmers. Apart from this, honey, traditional rice, coffee, turmeric, pepper (white & black); dried ginger, cardamom, arrowroot powder, nutmeg, pickles, tea, cloth bags etc are sold in the outlet. Technical information on various products is also provided to the needy people.







## PROMOTING EDUCATION AND COMMUNICATION

Focus: Imparting Knowledge In  
Conservation & Sustainable Living

## Every Child a Scientist Movement

Children of the district, particularly those from the tribal communities use the biodiversity around them in different ways. Even though they live in and around diverse kinds of species and genetic diversity, appreciation for conserving such diversity is not very evident in them since their very survival is a daily issue. In this setting, the activity of "*Every Child a Scientist*" is getting implemented in order to improve the quality of student learning through an integrated bio-resource based vocational and computer-aided training. This initiative, links non-traditional subjects such as information technology and biodiversity, by providing a unique setting for children to gain knowledge and deepen their understanding of nature.

The on-going activities are:

- Promoting knowledge and appreciation on biodiversity among children and youth
- Improving the quality of student learning through diverse innovative methods
- Promoting vocational trainings with an aim of improving the livelihood options of the children.

## Establishing Village Knowledge Centres

With a specific aim of providing need based knowledge to local communities, CABc has joined the nationwide campaign of Village Knowledge Centres (VKC). Content is being created on subjects like eco-friendly and productive agriculture, bio-resource based income generation, human and animal health care needs and agricultural marketing. VKC intends to provide, strengthen and consolidate awareness among farming communities of their own rights and responsibilities as conservers, breeders, cultivators and producers of commodities for commercialization. VKC also provides a forum for communities to avail knowledge, develop discussion habits, consolidate and tone up their tradition on sharing of benefits and gender equity. The activities are:

- Developing user - driven contents in the area of sustainable resource utilisation
- Capacity building of local community men and women to use computer aided knowledge facilities

## Barwale Chair in Biodiversity

This Chair was established in honour of Dr. B R Barwale, father of the Quality Seed movement in India and World Food Prize laureate. This initiative, started in May 01, 2005 aims for educating the key stakeholders about the importance of biodiversity and tribal related legislation. This is to help protecting the Farmers' Rights in conservation and enhancement of biodiversity. Traditional Knowledge (TK) of local communities pertain to wild biodiversity, is a topic of wider discussion in the context of the intellectual property regime, mainly because of the increasing threat of 'piracy' of Traditional Knowledge. The local communities in Wayanad possess tremendous knowledge and skills in the sustainable use of biological diversity for their way of life. CABIC uses every occasion to support the efforts of local communities to counter the increasing threat of "bio piracy", by providing the rights options to them under the two Indian Acts - Biological Diversity Act 2002 and Protection of Plant Varieties and Farmers' Rights Act 2001. The actions proposed are:

- Educating local communities and local Institutions the relevant Biodiversity legislation
- Establishing the prior-art of Knowledge in conservation and enhancement of biodiversity
- Help in recognition of the innovations and IPRs established by such prior-art of knowledge.

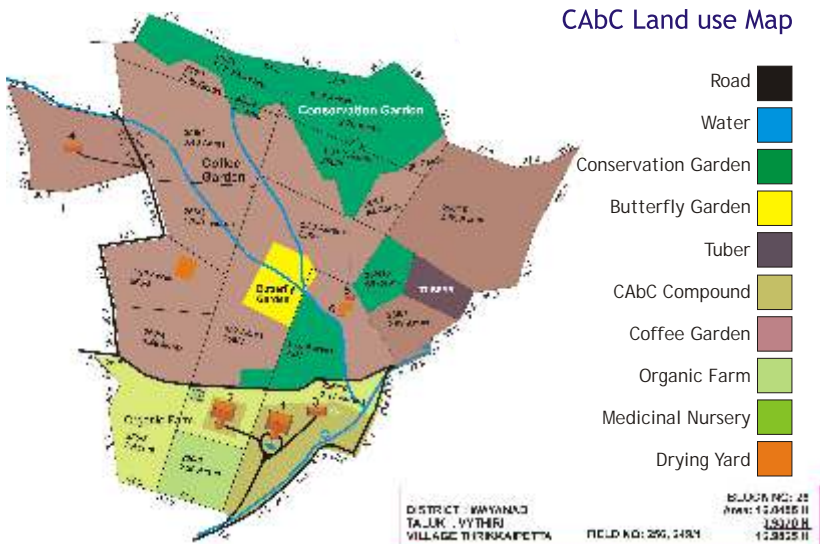


## THE STAFF, FARM AND INFRASTRUCTURE

As on January 2009, the organization's staff strength is 35, of which 15 are qualified researchers whose expertise ranges from biodiversity conservation to socio-economic issues and the rest belongs to different areas of administration and management. The day-to-day administrative responsibility currently lies with the Director, who coordinates the organization's activities through three programme cells- *Conservation, Education and Livelihoods*. The organization has two committees for advice comprising of the expertise available in the State, in policy, technical and management issues of sustainable agriculture and rural development.

The Organization possesses 16 hectares of fertile land where integrated coffee farming, Natural Resource Management (NRM) and biodiversity conservation aspects have been demonstrated in an effective manner. The building complex comprises the newly built training complex cum Every Child A Scientist, the Administrative Office cum Scientist's facilities, a Guest-house, and a Farm house, Shade houses, plant growth chambers, plant nurseries are placed aesthetically in the campus. It has got fairly a good live collection of plant species collected from different areas of the Wayanad. An *Orchidarium* that consist of a collection of over 150 species of wild orchids, arboretum with several rare native trees, wild food plants, butterfly host plants, and collections of over 400 species of medicinal plants are a major attraction for visitors. A herbarium and a museum, containing seeds and raw drugs, have added value to the collections. Another key attraction is the collection of 200 odd germplasm accessions belonging to 25 taxa of wild and 13 cultivars of *yam*.

CAbC Land use Map





## ABOUT M S SWAMINATHAN RESEARCH FOUNDATION

The M. S. Swaminathan Research Foundation (MSSRF) was established in July 1988 as a non-profit and non-political trust committed to a mission of harnessing science and technology for environmentally sustainable and socially equitable development. MSSRF's research, training, communication, extension and networking programmes, in the fields of agriculture and rural development, seek to link ecological security to livelihood security in a mutually reinforcing manner through a 3 pronged strategic approach given below.

*Pro-nature:* To serve as a center for research and training for the conservation of biodiversity, with an emphasis on its role in human food and livelihood security.

*Pro-poor:* To add value to the work of the poor and create innovative income opportunities through the blending of traditional and frontier technologies, and to promote the recognition and reward of tribal and rural people for their contributions to the conservation and the enhancement of biodiversity.

*Pro- women:* To catalyse active participation of women in development and to enable them derive full benefit from technological progress.



## Staff list as on 31 December 2008

1	Anil Kumar	Director
2	Anish K.G.	Research Assistant
3	Anitha K.	Field Assistant
4	Anu K.V.	Field Assistant
5	Archana D.	Research Associate
6	Binesh M.K.	Technical Assistant
7	Dhanya C.S.	Research Fellow
8	Elsy Mathew	Asst. Manager (Administration)
9	Girigan G.	Senior Scientist
10	Lidith N.M.	Research Fellow
11	Manoj Kumar T.	Asst. Manager (Accounts)
12	Manjula. C	Principal Scientist
13	Manudev K.M.	Field Investigator
14	Prajeesh P.	Project Associate
15	Rasheed K.	Driver
16	Rasheed P.A.	Field Assistant
17	Ratheesh Narayanan M.K	Senior Scientist
18	Raveendran T.	Field Assistant
19	Rohan Mathew	Technical Assistant
20	Salim. P.M.	Farm Assistant
21	Saraswathy K.	Cleaning Assistant
22	Saraswathy Neelakantan	Guest House Keeper
23	Satheesh K.	Research Fellow
24	Satheesh K.T.	Field Supporting Person
25	Shajahan P.T	Technical Assistant
26	Shaji K.V.	Technical Assistant
27	Shyja. K.N.	Library Cum Computer Assistant
28	Sivan.V.V	Research Associate
29	Smitha S. Nair	Research Fellow
30	Sreevidhya V.P.	Technical Assistant
31	Sujana K.A.	Research Fellow
32	Sujanapal P.	Scientist
33	Surabhi K.S.	Research Fellow
34	Thejos Piyooosh	Research Fellow
35	Vasantha V.	Field Assistant



## Arani

The newly established Community Training Centre (CTC) at CABc campus, was built with partial support from the People and Government of Japan. The Training Centre was established to respond to the training needs of various stakeholders in the area of sustainable agriculture, especially farmers, including tribal families involved in the collection, use and sale of non-wood forest produces. The CTC is also to lead MSSRF-CABc's Every Village A Knowledge Centre programme that aims to provide ICT based community training and input services to stimulate socio-economic well-being of the farmers. The Every Child A Scientist programme of CABc is also being brought under the umbrella of CTC.





Diversity in wild Yams in Kerala