



## The CABI Development Fund (CDF) Report to DFID 2008

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**CABI** improves people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment



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For further information about any of the projects outlined in this report, or to request the more detailed reports available for some of our activities, please contact Janet Stewart, Project Development Director (j.stewart@cabi.org T: +44 1491 829464)

## about CABI

CABI is a not-for-profit international organization that improves people's lives by providing information and applying scientific expertise to solve problems in agriculture and the environment.

Its mission and direction is influenced by its member countries who help guide the activities undertaken. These include development projects and research, scientific publishing and microbial services. CABI's activities contribute directly to achieving global development objectives, particularly those concerned with poverty reduction, environmental sustainability and partnership for development.

**Development projects and research** – Our staff research, and find solutions to, agricultural and environmental problems. We use science, information and communication tools to solve the issues which affect people's lives.

We particularly focus on: alleviating poverty and improving food security by improving crop yields and safeguarding the environment by combating invasive plants, diseases and insects and finding natural alternatives to pesticides.

**Publishing** – We produce key scientific publications, including the highly respected CAB Abstracts database. We also publish multimedia compendia, books, e-books and internet resources.

**Microbial services** – We manage one of the world's largest and most unique genetic resource collections holding over 28,000 live and 400,000 dried organisms.



## the CABI Development Fund

The CABI Development Fund (CDF) is used to implement scientific research and development projects that respond to the needs of CABI's member countries, with the aim of working towards the Millennium Development Goals and therefore the aims of the Fund's supporters.

The Fund enables CABI to directly support the priority initiatives of our 46\* Member Countries, which were articulated during the regional consultations CABI held with members in 2007 and 2008. Areas where support is needed are outlined below:

- Trade development and markets (good agricultural practices for market access)
- Institutional capacity strengthening and knowledge management
- Biofuels and climate change
- Microbial collections: use and management
- Information communication technologies and enterprise development
- Integrated pest management and invasive species management in relation to high value crops
- Technology transfer and facilitating expert exchange between CABI member countries (Australia and China)

CDF funding may be leveraged and is often co-financed through commitments from institutions in our Member Countries, thereby creating active partnerships to deliver our joint goals. This 'seed' funding has enabled CABI to leverage around £6 for every £1 given to the fund. The Fund provides a cost-effective and transparent basis for CABI's work.



### 2008 initiatives:

This report covers activities funded by the CABI Development Fund during 2008. The Fund is treated as a single entity supported by the three contributing donor organisations so the work described here is the composite output from all three funding sources.

#### currently the fund is supported by:

the Department for International Development in the UK the Australian Centre for International Agricultural Research the Swiss Agency for Development and Cooperation

\*Grenada, Rwanda and DPR Korea to be formally ratified as members at the CABI Review Conference in October 2009.

## helping DFID work towards its objectives

CABI is a science-based development organization. We undertake research to find new answers to agricultural and environmental problems, as well as ensuring that people are using existing research and knowledge to maximum effect and benefit.

It's about using research and knowledge to enable farmers to grow healthy crops for their family and for sale at market, ensuring farmers have the knowledge to adapt to the changes climate change will bring and protecting biodiversity for the future.

The goal of improving lives is one that CABI and DFID share. What CABI offers DFID through the funds it contributes to is the expertise and capacity to deliver on a number of the areas outlined in the 2008-2013 research strategy

Our areas of expertise relate to the DFID focus research areas of **Sustainable agriculture**, **Climate change** and **Future challenges and opportunities**. We have therefore structured this report by DFID research areas (and sub areas) to show how the CABI Development Fund projects fit within them.





### sustainable agriculture

CABI's work is all about improving crop yields and quality, and reducing the losses faced by farmers due to pests and diseases. We recognise that improving agriculture is key to alleviating poverty in Africa and South Asia, as well as being vital to providing enough food for the world in the future.

This year we have focussed some of the CABI Development Funds on controlling the pests of coffee and cocoa in Asia. Farmed by smallholders and key export crops, coffee and cocoa farming has the potential to provide a good living for those living in rural communities while providing an essential source of foreign exchange earnings for countries. Pests and diseases have proven to be a significant constraint to increasing yields – coffee berry borer, green scale and pod borer are three we have focussed on controlling in Vietnam, Laos and Papua New Guinea.

We've also used funds to support high value horticulture in northern Pakistan, where a new insect was causing large losses in yield. Mulberry, apricot, apple and almond trees were affected; less produce was reaching the market and farmers were earning less from their crops. Our intervention has led to the pest being identified and a pest management programme developed.

Recognising that trade is vital to countries and responding to requests from our member countries we have been working with African countries, giving technical advice on their plant health processes with the goal of ensuring the easy trade of agricultural produce. Other market-based work has included a value chain analysis of the cotton production system in Pakistan, highlighting constraints to top quality cotton which can now be addressed. Given the importance of cotton to Pakistan's economy, these findings could have huge implications for the country.

### climate change

Climate change is likely to affect those least equipped to deal with the impacts of it – developing countries. CABI is looking at the potential impacts of climate change on agriculture – in particular the likely spread of plants, pests and diseases due to changes in temperature and precipitation.

Money from the CABI Development Fund has been used to look into the related issue of biofuel production, a 'hot topic' in the race to secure and provide energy in the future. This year we have begun research into the agronomy and economics of Jatropha, to provide a sound evidence base to inform the current debate on biofuels.

## future challenges and opportunities

CABI is well placed to develop new information and communication technologies given its history in making agricultural and environmental research outputs available through its renowned database CAB Abstracts. This knowledge management expertise has been put to use this year with funds from the CDF to develop an eLearning resource that will enable users around the world to work safely and effectively with microbes. We have also been finding out how information and communication technologies are currently used in Pakistan, China and India so that we can put them to best use in the future to get information to those who need it.

Funds have also been used this year to look at the research knowledge that Malawi, the Philippines and Pakistan have stored in various formats with a view to digitising it to make it widely available in the future, so that a wider audience can benefit from the findings. CDF Projects



#### **DFID** research area

New agricultural technologies to maintain and improve agricultural productivity

Country/Region Papua New Guinea, East New Britain

CABI centre CABI Southeast Asia

#### Partners

Faculty of Agriculture, Food and Natural Resources, University of Sydney

Cocoa and Coconut Institute (CCI), PNG

National Agricultural Quarantine and Inspection Authority, PNG

## Introduction/Background information

Cocoa Pod Borer (CPB) was first observed in PNG in 2006. CPB can result in 80-90% losses if not managed properly

#### **Project objectives**

- reduce constraints for smallholder farmers
- monitor and manage CPB
- carry out trials and recommend practical solutions

#### Target group

Smallholder cocoa farmers

#### **Future actions**

Farmer Field Schools and furthe publicity will be run by 'Master Facilitators'

## technical support and capacity building to address the threat of Cocoa Pod Borer in Papua New Guinea

Cocoa Pod Borer (CPB), which can cause losses of 80-90%, was first observed in Papua New Guinea in 2006. Though it is not present in all cocoa growing areas, it represents a very significant threat in the main production area in East New Britain.

CDF funds are linked to an ACIAR-funded project in PNG which aims to strengthen CPB surveillance and monitoring efforts in the country. It also works to enhance CPB management through development of IPM programmes together with a participatory programme for farmers, enabling them to effectively implement IPM of CPB through increased knowledge and awareness.

During 2008, we held an inception workshop (23-24 April) to establish work plans and timelines of deliverables for the various activities. Replicated spraying trials were initiated on three sites in order to make recommendations on spraying regimes to the producers. Three replicated "demonstration plots" were also initiated, master facilitators were identified for future farmer training, and publicity material (for raising awareness) was reviewed.

Follow up visits were undertaken in August and November to review these activities. Good progress was made in obtaining baseline information towards the development of a statistically valid and practical CPB sampling methodology, and in refining of the role of pheromone trapping as a tool for monitoring CPB. Trials to screen insecticides for target pod spraying were also conducted.

In addition to these technical inputs, CABI supported capacity development through a detailed training programme developed in partnership with CCI. In November, this trained 21 participants from CCI, Department of Primary Industries and the private sector, all of whom were chosen based on their commitment to organizing training for facilitators and farmer field schools. This comprehensive course provided background information on CPB, participatory introductions, and the roles and responsibilities of master facilitators, facilitators and farmers. Technical support and special topics on CPB incidence, biology, ecology, symptoms of damage and management were also included.

Photographs and video footage of CPB management procedures, including pruning, complete and frequent harvesting, the bagging and burying of pod husks, target pod spraying, fogging, mist-blowing and pheromone trapping, were made for use with CPB publicity materials and DVDs.



#### **DFID** research area

New agricultural technologies to maintain and improve agricultural productivity

**Country/Region** Papua New Guinea

CABI centre CABI Europe – Uk

#### Partners

University of New South Wales Coffee Industry Corporation (CIC), PNG

## Introduction/Background information

The main pest of coffee in PNG is Coffee Green Scale (CGS). Current average losses due to CGS are estimated at around 10%, but it could be as much as 50%. Prior to this project farmers knew little, if anything about CGS and its economic impact

#### **Project objectives**

- document information on distribution, biology and <u>control</u>
- improve local knowledge, facilities and quarantine procedures for the control of CGS
- evaluate control methods and develop control strategies

#### Target group

National research staff and smallholder coffee farmers

## improved quarantine facilities in Papua New Guinea for biological control of Coffee Green Scale

Coffee is the largest earner of foreign exchange in Papua New Guinea (PNG). It is primarily produced by smallholder farmers in the highlands (which accounted for approximately 85-90% of coffee production in 2003). However, productivity has been hindered by poor pest and quality management, and poor marketing.

The main pest of coffee in PNG is Coffee Green Scale (CGS), a complex which includes *Coccus celatus* and *Coccus viridis*. Current average losses due to CGS are estimated at around 10%, but could be as much as 50%.

In 2007 and 2008, CDF co-funded a project with ACIAR, in line with their requirements. The project aims to:

- provide baseline information on the distribution, impacts, biology and control of Coffee Green Scale (CGS) in PNG
- improve local knowledge, facilities and quarantine procedures to control CGS
- evaluate biological control methods of CGS, taking into account grower information
- develop regional and national strategies for wider evaluation and implementation of CGS control.

During 2008, a research station study showed that excluding ants reduces CGS infestation rates over time. CGS related mortality is higher in young coffee trees and shoots than in mature infested trees. But the effect on young trees is compounded when affected trees also have ants, as they can prevent the build-up of populations of natural enemies of CGS. A survey conducted throughout the Eastern Highlands Province has shown that native ant species do not appear to be a major issue. Exotic invasive species appear to be the problem. However, the role of ants in the spread of the pest needs further study.

Extensive reconstruction of PNG's rearing and quarantine facilities was undertaken, providing structural and procedural changes which significantly improved the whole quarantine facility in PNG. There is now increased appreciation of the importance of standard operating procedures in quarantine systems. The overall outcome of the project is a much improved facility and knowledge of quarantine procedures.

The project has been extremely successful in strengthening CGS bio-control and quarantine capacity in Papua New Guinea. A major recruitment drive for high quality staff has also taken place, complemented by new policies implemented at CIC.

Prior to this project, farmers knew little, if anything, about CGS. Now, however, they are aware of the pest, how it spreads and of its potential economic impacts.

# sustainable agriculture



#### **DFID research area**

New agricultural technologies to maintain and improve agricultural productivity

**Country/Region** Laos. Vietnam

CABI centre CABI Southeast and East Asia

#### Partners

Plant Protection Research Institute (PPRI), Vietnam Institute for Agricultural Environment (IAE), Vietnam Department of Agronomy and Agricultural Land Improvement (DAALI), Laos

### Introduction/Background information

The Governments of Laos and Cambodia are deeply concerned about constraints to coffee production, especially their adverse effects on the livelihoods of the rural poor

#### **Project objectives**

- investigate major pest constraints
   for coffee farmers
- identify opportunities for interventions to improve productivity whilst reducing the use of chemical inputs, thereby mitigating negative environmental impacts

#### Target group

Smallholder coffee farmers

#### Future actions

Future projects to include farmer participatory training and research (FTPR) to address CBB and CLR

## identification of pest and disease constraints to coffee production in Vietnam and Laos, and development of control options, particularly for Coffee Berry Borer

Working with the major partners listed (left), this project investigated the main pests constraining the production of coffee in Laos and Vietnam, where coffee is a very important crop for huge numbers of resource-poor smallholders. This work also aimed to identify opportunities for future interventions to address these constraints, and included action to contact partners, and devise, translate and implement questionnaires and in-country surveys.

The governments of Vietnam, Laos and Cambodia are all deeply concerned about constraints to coffee production, which can damage national economies and the livelihoods of the rural poor. Coffee production in Vietnam has increased exponentially in recent decades, with markets in Europe (especially Germany), the US and Japan, although a moratorium on expansion is now in place until 2010.

The current focus is on improving productivity, although yields are already high (averaging 2 tonnes/hectare). However, this is characterized by high usage of chemical inputs and water, with associated negative environmental impacts.

In the Central Highlands of Vietnam, IPM to control Coffee Berry Borer (CBB) and the management of Coffee Leaf Rust (CLR) and nematodes were identified as important opportunities for future CABI collaboration. In Son La province, CBB and Coffee Berry Disease (CBD) were the most serious constraints. This is an area of new planting with high water usage, so in addition to CABI's expertise in IPM, we can help with farmer field schools to improve water management of crops, and farmers' understanding of coffee quality.

In Laos, coffee production is restricted to the Boloven Plateau. With the introduction of the Catimor variety, production has increased and farmers are focusing on quality: niche market production (16,000-18,000 tonnes per annum) is mainly by smallholders. Since 2004, CBB has become the most important constraint to coffee production in Laos.

In both countries, the governments are encouraging programmes to address these problems. They have been seeking technical support to develop cost-effective management, particularly for CBB but also for CLR in Vietnam. CABI is therefore now working with partners to develop projects for future funding including improved management of CBB using farmer participatory training and research, biopesticides, biocontrol and IPM.



#### **DFID** research area

High value agriculture in areas of medium to high agricultural potential.

**Country/Region** Pakistan

CABI centre CABI South Asia

Partners Ministry of Environment (MOE) Pakistan Pakistan Forest Institute

## Introduction/Background information

Mealy bug is causing severe damage to forests and fruit trees in northern Pakistan.

#### **Project objectives**

evaluate damage and local
 management strategies
 determine possible interventions

Target group MOE Pakistan and smallholder fruit

#### **Future actions**

- further identification of biological samples
- identify biocontrol agents
- build capacity for pest management in farming community

## assessment of a serious pest outbreak on forest and fruit trees in Pakistan, as a basis for recommendations on integrated pest management (IPM)

The Ministry of Environment (MOE) in Pakistan requested CABI's help to evaluate a mealy bug outbreak, which has caused widespread damage to forest and fruit trees in high altitude areas of Northern Pakistan. We held meetings with stakeholders, where we asked about the history of the pest's spread, its preferred hosts, type of damage caused, local management strategies and the involvement of government.

The bug severely infests willow, poplar and apricot trees over a wide area. At all locations, willow was most severely infested followed by poplar, apricot, apple, mulberry and almond, with abundant egg masses of the pest being recorded at every survey spot.

Stakeholders have tried using gunny bag bands on the tree trunks to manage the pest population, but with such a vast host range this option seems to be practically ineffective. Recently pesticides have been used; however, the reported results are not promising as pest populations have increased in sprayed areas. The pest species is of the Margarodidae family and samples have been sent to the Natural History Museum in the UK for identification.

As this pest is relatively unknown, we need to conduct studies on pest biology and ecology. Surveys of its natural enemies will also have to be conducted to select biocontrol agents. In the short term, a comprehensive pest management programme, including work to develop the pest management capacity of local farmers, needs to be instigated.



**DFID research area** 

**Country/Region** 

**CABI** centre

#### Introduction/Background information

#### **Project objectives**

#### **Target group**

#### **Future actions**

work with IAPSC

- maintain links with IPPC bodies

## input to initiatives to strengthen phytosanitary capacity

CABI representatives at the General Assembly of the Inter-African Phytosanitary Council (IAPSC) of the African Union provided expert inputs on the question of how African delegates can operate more effectively within the International Plant Protection Convention's Commission on Phytosanitary Measures (IPPC/CPM). Issues raised included the need for African countries to be represented in the development of the capacity development strategy.

Working jointly with IAPSC, CABI developed a proposal to the Standards and Trade Development Facility (STDF) to enable IAPSC to engage with the CPM capacitydevelopment strategy process. STDF approved the request, resulting in an STDF workshop in Kampala on SPS capacity development needs in East Africa. At the meeting, CABI's STDF-funded project on a Phytosanitary Centre of Excellence in Kenya received good coverage.

CABI representatives also attended a workshop in Zambia held by the US-funded East African Pest Information Committee (EAPIC), which aims to compile pest lists for participating countries. An email survey of official IPPC contact points and others in Africa resulted in a low response rate. The project also found that countries do not regularly update data on the International Phytosanitary Portal. This could be because they are reluctant to publicize information that might be trade sensitive, or because they lack the capacity, consider the task low priority, or lack available/reliable data. All these constraints highlight the urgent need for capacity development in this sector in Africa.

#### Participation in international processes

CABI was also represented at the 3rd Commission on Phytosanitary Measures (CPM3) in Rome and at a meeting at the World Trade Organization on Good Practice in SPS Technical Assistance. CPM3 adopted CABI's recommendation to develop a strategy for phytosanitary capacity development. IPPC set up an open-ended working group (OEWG) to take action on this and CABI helped draft its terms of reference. CABI was one of the few organisations other than the contracting parties to be invited by OEWG to the December 2008 meeting, and we presented a discussion paper dealing with a number of conceptual issues relating to capacity and its development. On the strength of this, OEWG invited CABI to assist with the completion of the group outputs.

Overall, this work has enabled IAPSC to obtain support from STDF that they would not have received otherwise, and this has encouraged them to embark on developing a continental phytosanitary capacity-building strategy. CABI has made significant input into the development of IPPC's draft capacity-building strategy and operational plan. Future plans are to work with IAPSC to implement the STDF project preparation grant and to develop the full proposal. CABI has maintained its close links with IPPC, and aims to participate in new IPPC bodies that will continue to develop and implement the phytosanitary capacity-building strategy.



**Country/Region** Pakistan

CABI centre CABI South Asia

## Introduction/Background information

Pakistan loses up to 3 billion US\$ in cotton revenue annually. Skills gaps, environmental factors and bad storage practices contribute to this.

#### **Project objectives**

- identify knowledge gaps and constraints in the cotton value chain in Pakistan
- raise the issue at a government level to start addressing some of the key constraints identified

#### Target group

Small-scale cotton producers and processors

## value chain studies for cotton in Pakistan

Complementing our CABI Development Fund-supported work on knowledge constraints among cotton producers in Pakistan in 2007, CABI has made a comprehensive study of knowledge flow, skills and skills gaps in sectors further along the cotton value chain (ginning and textile manufacture).

This work found that the manufacturing sector had skills gaps in IT, and marketing and technical gaps in dyeing and quality issues. We identified three major problems in the ginning subsector. The primary issue was the quality of cotton arriving at the ginneries. Other problems were the lack of skilled labour and power cuts.

Quality problems included varieties not being separated and so losing individual characteristics, and middlemen storing cotton in the open exposed to dust, heat and rain. Pakistan loses an estimated US\$1.4 to 3 billion annually due to contamination of cotton in these ways. CABI is now working with the Government of Pakistan to obtain funding to address key constraints, including stakeholder training to help improve quality.

CDF funding allowed participation by CABI and two cotton scientists from India and Pakistan (underlining our commitment to our Member Country partners) in the 4th Asian Cotton Research and Development Network meeting at An Yang, China in September 2008. This meeting was an ideal opportunity to build on work previously funded by CDF to develop links with Chinese partners. In 2007, resistance to Bt cotton (cotton plants that have been genetically modified to produce insecticidal proteins) in China was identified as an area for China and CABI to work on together, including the adoption of IPM methods and capacity development and education for smallholder farmers. In 2008, we broadened these discussions to include Pakistani and Indian partners. ICAC has now invited us to submit a regional proposal (China, India and Pakistan) on the development of resistance to Bt cotton to the Common Fund for Commodities.



#### **Country/Region** Pakistan

CABI centre CABI South Asia

## Introduction/Background information

Banana is cultivated on 34,900 hectares in Pakistan with 90% of production in Sind Province. However, there is a lack of knowledge and skills in banana management and poor communication between researchers and extension workers. A comprehensive effort is needed to build capacity in quality production for bananas

#### **Project objectives**

- identify knowledge gaps and constraints to banana production
- provide the Ministry of Food, Agriculture & Livestock (MINFAL), Pakistan, with a proposal for possible interventions

#### Target group

MINFAL, Pakistan and small holder banana farmers

#### **Future actions**

Proposal for funding from MINFAL to strengthen research systems and introduce innovations in extension services

## technological and social constraints to banana production in Pakistan

Banana is grown on 34,900 hectares in Pakistan, with 90% of production in Sind Province. This project aimed to identify technological and social constraints to banana production and then to develop a project proposal for the Ministry of Food, Agriculture & Livestock. We identified banana bunchy top virus (BBTV) as the main constraint.

Other significant constraints include lack of knowledge and skills, a lack of certified healthy planting material, a shortage of irrigation water and poor communication between researchers and extension workers. We need to build capacity in quality production for bananas, post-harvest technologies 0and market interventions.

A short- to medium-term strategy should include systems for BBTV management, development of good agricultural practice for banana production, germplasm units to supply certified disease-free planting material, and the introduction of marketing information. A longer-term strategy would involve strengthening research systems and introducing innovations in extension services.



**Country/Region** Uganda, Ethiopia, Sierra Leone

CABI centre CABI Africa

## Introduction/Background information

Diversification of agricultural production is essential to reduce overdependence on a few commodity crops and to generate a regular, stable household income throughout the year

#### **Project objectives**

- develop model sustainable value chains for selected high value spices
- identify constraints and opportunities for intervention to increase production through improved agronomic practices and supply of superior planting materials

#### Target group Smallholder farmers

#### Future actions

Intensified training and betterorganised input systems were identified as key action points. A major project will be developed for CFC funding in 2009

## developing value chains for spices in Africa

Over-dependence on a few commodity crops to generate foreign exchange often works against the efforts of African (and other) countries to fight against extreme poverty and achieve MDG 1. Price volatility in international commodity markets results in income insecurity and unpredictable livelihood patterns, and erodes the ability of resource-poor smallholder farmers to meet their basic needs such as food, health, housing and education. Diversification of agricultural production to complement traditional income-generating crops such as coffee, provides a buffer against the price fluctuations which are a common feature of most commodities.

A diversified household income base also provides a stable income through the year. Under rain-fed agriculture, commodity crops come into the market at specific times depending on the rainfall patterns of the producing countries. A well-diversified production system can ensure phased production with different crops reaching the market throughout the year. The combination of crops should be designed so that produce continues to reach the market even when the traditional income-generating commodities are not producing. In India, for example, nutmeg producers diversify their income by also producing black pepper. These two commodities come to the market at different times, providing the farmers with a continuous income.

This pilot project developed model sustainable value chains for selected high-value spices in Uganda and Ethiopia. We used a value chain approach to get information on the "best bet" spice sub-sectors for further development. Data from both primary and secondary sources, and key informant interviews, generated additional information. We identified several constraints including poor agronomic practices, inadequate supply of seeds, lack of quality control, limited credit availability, and a long and disorganised market chain. Opportunities to increase production were also identified, including improved agronomic practices and superior planting materials. On-farm processing should also be investigated further. Improvements in agronomic practice depend on the skill and knowledge base of the farmers as well as effective access to inputs. Training to build capacity among producers, as well as establishment of a better-organised input system, are therefore key to sustainable improvement in spice production, particularly in Ethiopia. In Uganda, pest and disease problems were also identified as a constraint, compounded by the high cost of pesticides; post-harvest losses are also a significant problem.

This study will form the basis for a submission of a project proposal to the Common Fund for Commodities in 2009.



**Country/Region** Costa Rica

#### **CABI centre**

CABI Europe – UK & CABI Caribbean and Latin America

## Introduction/Background information

Consumers are keen to support coffee that is produced in a sustainable manner which takes into account environmental, economic and social issues

#### **Project objective**

 help smallholder farmers by determining a set of objective and scientifically-based indicators of sustainability, as the basis for credible certification schemes

Target group

Smallholder coffee farmers

## evaluation of potential sustainability indicators for coffee in Central America

Recently, sustainable coffee production (i.e. production taking environmental, economic and social issues into account) has become popular with consumers, so the corporate sector is keen to market its coffee brands as being produced in a sustainable way. There is therefore a need to define objective, scientifically-based indicators for sustainability which, once validated, can be added to the criteria which form the basis for credible certification schemes.

A long-term coffee experiment in Turrialba, Costa Rica, containing plots with different combinations of sun and shade and different levels of conventional and organic fertilizer, provided the opportunity to examine soil health bio-indicators, and to evaluate arbuscular mycorrhizal fungi (AMFs) and nematode diversity under various coffee management systems.

Nematode studies showed that different treatments could affect the types of nematodes present. For example, a difference in decomposition pathways in organic and conventional blocks indicated the possible presence of different nematodes. However, the presence of K strategists in all samples (which indicates that populations are very constant and close to the maximum that the environment can bear) suggested stable food webs in all treatments. There was no correlation between AMF spore numbers and agronomy.

This small trial therefore suggests that neither AMF nor nematodes would meet the requirements for good soil health bio-indicators, although nematode diversity might merit further study.



#### **DFID research area**

Reducing the impact of climate change and promoting low carbon

Country/Region

CABI centre CABI Europe – UK

## Introduction/Background information

There are conflicting views about the potential of Jatropha as a biofuel crop, but little information is available about its agronomy and its potential economic and social impacts

#### **Project objectives**

- capture the views and perceptions of farmers and scientists in India who are working with Jatropha
- identify knowledge gaps where further research is needed

#### Target group

Small scale farmers in developing countries

## research into the agronomy and economics of Jatropha, to inform the current debate on biofuels

Crops providing a renewable alternative to fossil fuels have gained international prominence as fuel prices rise and concerns about climate change grow. Increasing demand for biofuels on international markets may lead to conflict with food production, and/or act as a driver of deforestation if large businesses buy land and begin large-scale land conversion.

An alternative hypothesis is that smallholders would not jeopardise their own food security and would grow biofuels alongside food crops, increasing cash flow and permitting them to purchase inputs to intensify food production. The outcome will depend on land tenure systems, the policy framework and how much stakeholders know about market opportunities for biofuel production.

CABI and partners from Belgium, Spain, Mexico and India developed and submitted a proposal on the threats and opportunities of two bioenergy crops, *Jatropha curcas* and *Elaeis guineensis*, for smallholder communities in India and Mexico. CABI staff also visited biofuel projects in India to gather views and perceptions on Jatropha from farmers and the scientific community in areas representing a range of rainfall conditions. Jatropha grows successfully in sites with less than 300 mm annual rainfall, on marginal lands with sandy soils, low soil organic matter content and low water-holding capacity. It is one of the few species to thrive under such conditions, producing fruits within two years of planting. Jatropha also thrives in areas of higher rainfall, with severely physically degraded soils. However, little yield data is available and even that is limited to young stands less than five years old.

There is substantial divergence of opinion on the threats and opportunities posed by Jatropha. Overall, growth rates of Jatropha under arid conditions on wastelands are impressive, so given local processing facilities, this technology would be worth exploring, although there is still little information available on yields and productivity over time. However, profitability is constrained by subsidies on substitutes like palm oil and kerosene.

The introduction of any new high-value crop at a commercial level where there are national or international interests involved carries a high risk of the exploitation of resource-poor farmers. Land tenure rights of smallholders need to be secure to ensure that benefits are accrued by them and not solely by entrepreneurs. Furthermore, there need to be strict controls on what type of land can be converted to Jatropha to avoid a reduction in agricultural land.

CABI launched a Biofuel Information Exchange Portal in November 2008 as a contribution to the biofuel agenda for our Member Countries. CDF funds have commissioned papers for this information exchange from CABI authors discussing second generation biofuels and the potential invasiveness of some biofuel crops.

## future challenges & opportunities



**DFID research area** New and emerging technologies

## **Country/Region**

**CABI** centre CABI Europe – UK

#### Introduction/Background information

Production of biofuels by the the social and environmental issues

#### **Project objective**

CABI genetic resources collection for potential biofuel production

#### Target group

## using plant wastes for second generation biofuel production

The worldwide desire for biofuels has put pressure on agricultural systems. The impact for some CABI Member Countries is likely to be great, as biofuel crops such as Jatropha curcas and Elaeis guineensis grow best in tropical and sub-tropical climates. Second generation biofuels offer an alternative. These fuels do not have a direct impact on agriculture and the environment because they depend on biodegradation to produce the fuel. Biotechnology continues to offer a future beyond depletion of our natural resources and can provide a basis for a bioeconomy.

Two approaches involving the harnessing of microorganisms for biofuel production are possible: (1) finding enzymes to break down cell walls, so releasing sugars from crop wastes for conversion to biofuel; and (2) discovering organisms that we can use in bioconversion to directly produce the fuel.

The CABI Development Fund project therefore selected a group of organisms from the CABI genetic resources collection with the potential to produce cellulase and/or ligninase. To identify candidates for future development, these promising organisms were then cultured and used to carry out tests for ligninase and cellulase enzyme activity and to establish which organism would be suitable for use together in a fermentation system.

High levels of enzymes were produced by 46 strains. Of these, 36 produced cellulase and 18 ligninase, with nine producing both enzymes. Eight of the nine were basidiomycete wood rotting fungi (4 Phanerochaete sp. and a Pleurotus, Trametes, Polyporus and Ganodema sp) and one was an ascomycete fungus (Aspergillus sp.). Compatibility tests showed that all eight basidiomycete strains grew synergistically and have the potential to be scaled up for biofuel production.

Associated work using GC mass spectrometry has shown that a strain isolated from the Antarctic has a fatty acids profile that makes it a candidate for the direct production of biodiesel. This, associated with the ligninase and cellulase producers, puts CABI in a unique position to be able to develop second generation biofuels from numerous sources. Development of these leads will facilitate the process of reducing the pressure on agricultural systems throughout the world, particularly in developing countries.

## future challenges & opportunities



**DFID research area** New and emerging technologies

**Country/Region** Pakistan, China, India

CABI centre CABI South Asia and CABI Southeast and East Asia

## Introduction/Background information

ICTs need to be better used to deliver agricultural information to farmers

#### **Project objectives**

- evaluate readiness and technical literacy in Pakistan
- analyze ICT adoption for rural knowledge services in China
- investigate role of ICTs in mango value chain in India
- support and improve provision of agricultural information to farmers

Target group Smallholder farmers

#### Future actions

- develop 0800 Q&A service for citrus farmers in Pakistan
- identify potential donors for followon projects in China
- develop a business plan to deliver agricultural advisory services in India

## information and communication technology in agricultural knowledge

Studies in three of CABI's Member Countries have explored the use of information and communication technologies (ICTs) in rural areas to deliver agricultural information to farmers. We are investigating capacity development using e-learning modules to support best practice and provide a continuing professional development toolkit.

**Pakistan**: With CABI Development Fund support, we evaluated the use of ICTs in rural Pakistan and the country's readiness and level of technical literacy for delivering e-advisory services. This will lead to the development of an ICT-based knowledge transfer system for farmers there. The possibility of converting 'technical' information resources into a form that can be used by farmers is also being explored. This study follows on from the studies completed in 2007 in India and Western China.

The project focused on knowledge needs in citrus production and marketing systems in the Sarghoda and Toba Tek Singh region of Pakistan. A survey of 200 farmers analyzed their knowledge gaps and e-readiness. Several information resources in Pakistan indicated a need for real-time information in the citrus value chain, that mobile phones are ubiquitous, and that farmers recognize that these ICT tools could be useful in the growing and marketing of citrus. This combination of an identified information gap and a readily available means of meeting it, hold great promise for mobile-based initiatives. The idea of developing an 0800 Question and Answer service was suggested and will be explored further in 2009.

**China**: CABI worked with Chinese partners to identify sites in Western China for in-depth situation analysis on ICT adoption for rural knowledge services. The first site selected was Yongning County of Ningxia Province. In response to the call for participation in post-earthquake development, we have been in discussion with the Agricultural Information Institute of the Chinese Academy of Agricultural Science (AII/CAAS) and the Sichuan Academy of Agricultural Science (SAAS) to identify one site in Sichuan province for an in-depth situation analysis. These discussions have continued very positively during 2008.

**India**: Meetings with knowledge management stakeholders and with the farming community in Lucknow investigated the mango value chain and the role of ICTs. The outcome of these meetings was an initial assessment of e-readiness and relationship-forming with some key stakeholder organizations.

Other activities in India followed on from those begun in 2007. We have drawn up a shortlist of potential partners who already deliver ICT-based knowledge services to the rural population. In particular, relationships are being strengthened with the Swaminathan Research Foundation (an NGO) and Tata (an organization with commercial roots). Discussions have identified mechanisms by which CABI can best support the improved provision of agricultural information to farmers. In 2009 we will develop a business plan to deliver agricultural advisory services, aiming to reach six million farmers, in association with local telecom and service partners

## future challenges & opportunities



**DFID research area** New and emerging technologies

**Country/Region** Global

**CABI centre** Publishing

Introduction/Background information eLearning tools offer a cost-effective alternative to face-to-face training

#### Project objective

Build capacity within CABI to deliver knowledge as digital learning modules

#### Target group

Scientists & genetic resource managers in developing countries

Future actions

- develop sustainable business models
- complete modules and marke research

## development of a prototype eLearning resource

CABI Development Fund is contributing to the development of digital learning objects in topics where there is consistent demand for further training. Training in face-to-face environments is costly, and many people have been unable to attend training courses because of lack of funding. The aim of this project is to build capacity within CABI to deliver these modules in a digital format and make them available in a variety of dissemination models.

The first e-learning resource being developed is Managing Microbes, a topic chosen because there is a wealth of content available in one place in CABI, as well as ongoing requests for face-to-face training. We engaged a company based in Mumbai, India to develop our learning path and instructional design. During the reporting period, market research was carried out to test the relevance of the modules we had identified. Feedback indicates that the content of the learning resource is highly relevant but further work on a sustainable business model is needed.

Plans for 2009 include completion of the modules and market research. We will also be working closely with FAO to extend eLearning modules on agricultural research for development. The Managing Microbes modules will be made available free at the point of use in developing countries.



**DFID research area** New and emerging technologies

**Country/Region** Philippines, Malawi, Pakistan

CABI centre Global

## Introduction/Background information

A global repository of agricultural research information is needed to assist developing countries with the development of local agricultural solutions

#### **Project objectives**

- make institutional and national knowledge visible to all in a cost effective way by making content digitally accessible
- investigate methods and processes for collection and collation in Member Countries
- provide guidance and mentoring in process and project management requirements

#### **Target group**

Agricultural research and development communities

#### **Future actions**

- digitized documents to be presented as Global Repositories Subset of CAB Abstracts
- work toward open access for developing world

## development of a global repository for agricultural research information

Many developed world institutions are building their own electronic knowledge management resources to capture important files, documents, images, emails, reports, and spreadsheets. In the specific area of agricultural research for development, CABI has helped DFID to digitize its 10-year history of investment in research. CABI also built the web site **www.research4development.info** to make this information available to the public worldwide.

In 2008, CABI started working on a proposal for digitally capturing agricultural research information and creating knowledge repositories for developing countries. This is particularly useful for countries where agriculture-related knowledge is lost in the manual archives of their research institutions and universities and where archives are lost due to disasters and conflict. Besides preserving the agricultural knowledge produced in developing countries, such a repository can provide information for generating usable (i.e. re-written for different audiences) content for other grassroots level stakeholders such as extension workers and farmers.

Over the last few years, the Government of Pakistan has shown exceptional commitment to the improvement of ICTs. There are, however, only a few current initiatives on building repositories in Pakistan. One is the Higher Education Commission of Pakistan's *Pakistan Research Repository*, where PhD theses from all Pakistani universities will be published. The other is the *Pakistan Petroleum and Production Data Repository*, which is being built by LMKR, a private company which provides IT services to the oil industry.

In 2008, CDF-funded activities focused on working with local partners and developing a project management approach to their involvement. An in-country project manager was identified in Malawi to collate all relevant documents for digitization. These will contribute to a Global Repositories subset of CAB Abstracts. Lessons learnt in the first part of the project in Malawi were shared so that the most value could be obtained from the institutional discussions in Pakistan and the Philippines.

In 2009 CABI will make these articles available in a global repository database, with access open to the developing world. In addition, we will be working with FAO to bring coherence to our approaches and to identify what worked well and what not so well in our different approaches.

The short term impact will be the presentation of a national collection of agricultural research for development investments. The opening of access to these documents and heir enhanced searchability will add value to the development of local agricultural solutions



CABI research area Knowledge management

#### **Country/Region** Global

CABI centre Global

#### Partners

FAO, GFAR, CGIAR, ICT/KM, FARA and others

## Introduction/Background information

There is a need for CABI to contribute its expertise, influence and understanding for the benefit of global initiatives such as CIARD and IAALD

#### **Project objectives**

- develop R&D community's understanding of new communication channels
- create checklist and pathways toolkits
- ensure wider dissemination of research products

#### **Target group**

Agricultural research and development communities

## participation in global agricultural knowledge fora

CABI has contributed understanding, expertise and influence in global fora by joining with partners planning an advocacy programme to highlight investment needs and returns for agricultural information systems at global, national, regional and organizational levels. We have been active in the Coherence in Agricultural Research for Development (CIARD) advocacy initiative, alongside FAO, GFAR CGIAR ICT/KM, FARA, DFID's Policy and Research Communications Team and others.

This initiative focuses on developing toolkits for information systems development, accessing and sharing knowledge, and making it usable. One of the guiding principles is to focus on open access to publicly-funded research and development programmes. The short term impact will be a better understanding, by agricultural research for development communities, of the communication channels now available.

One of the first outcomes will be checklist and pathways toolkits. The medium and longer term outcomes will be that research products will be disseminated more widely to farmers throughout the developing world.

CABI has also been supporting the International Association of Agricultural Information Scientists (IAALD) by planning and participating in meetings. The regional meeting in Japan was attended by three CABI staff, presenting two papers, chairing two sessions and authoring one of the conference outputs. CABI sponsored a booth, helping the conference to offset its costs.

The next IAALD regional meeting will be held in 2009 in Ghana, and the world conference will be held in France in 2010. This conference is one of the few that address the knowledge needs for agricultural research for development. It supports information scientists through creating networks and sharing experiences to help infomediaries working in agricultural research for development to keep abreast of ever-changing technology and user expectations.

CABI research area Knowledge management

**Country/Region** Global

CABI centre Global

## Introduction/Background information

In addition to addressing production constraints, smallholder farmers also require the knowledge and tools to enable them to effectively manage their crops

#### **Project objectives**

- develop centralized knowledge tools for use in training and capacity building
- collate CABI work on cotton projects
- edit and publish a book on Coffee
   Wilt Disease

#### Target group

Policy makers, practitioners and researchers

Future actions
New data collection project for
Oil Palm

## knowledge tools for smallholder commodity farmers

CDF support in 2007 led in 2008 to a project funded by the Better Cotton Initiative (BCI). This is a global partnership of traders, producers, civil society, manufacturers and retailers which aims to promote more sustainable cotton production worldwide. In 2008, CABI assisted BCI in the definition of what constitutes "better cotton" and assembled a global collection of cotton knowledge particularly concentrating on validated tools for more sustainable practices in cotton. CDF funding in 2008 supported the collation of all outputs from cotton projects from CABI authors worldwide. This information has been stored on a database and can be used to develop various knowledge tools for use as part of the curriculum for training and capacity building. A draft version of the *Discovery Learning Manual for Cotton* was produced and will be validated with cotton farmers in Pakistan in 2009.

CDF funding also allowed staff time for the scientific editing of a book on Coffee Wilt Disease. This will be one of the main outputs from the Coffee Wilt Disease Regional Programme which was funded by CFC, the EU and DFID. It also enabled CABI participation at the Roundtable for Sustainable Palm Oil (RSPO) in Indonesia in November 2008. Here, discussions were finalized about the funding of CABI to conduct a data collection project on "Integrated Weed Management Strategies for Oil Palm". That project started in January 2009 and the information collected will be disseminated via the RSPO web site and on CD.

CABI research area Innovations systems

**Country/Region** Global

#### CABI centres

CABI South Asia, CABI Europe – UK, CABI Southeast and East Asia, CABI Africa and CABI Europe – Switzerland

## Introduction/Background information

CABI Member countries have requested that we assist them in the creation of a framework using an innovation systems focus to improve the application of knowledge, thereby developing ownership and building capacity in post conflict countries

#### **Project objectives**

- facilitate the application of knowledge in development projects to achieve social and economic benefits
- support the development of local capacity to identify and solve problems

#### **Future actions**

Continue to work on strategy for member countries based on innovation systems principles

## development of new initiatives with an innovation systems focus

CDF funds were invested in two key activities:

- A workshop held in Pakistan in May 2008 with approximately 20 participants from the CABI South Asia regional centre
- An expanded workshop with participants from five CABI regional centres (UK, South Asia, Southeast and East Asia, Africa and Switzerland) held in Switzerland in July 2008

The workshops introduced the participants to the concept of innovation systems (IS), describing the evolution of IS approaches to research and development and defining key terms. The groups also discussed the importance of IS to CABI. A key point is that the innovation systems framework is seen by a number of donors as a means to address criticisms that much research in the past has had no tangible impact. It is important for CABI to understand the principles of IS, so as to work in ways which improve impact and uptake of research outputs.

Two case studies illustrated how IS could be used in practice. The first showed how IS principles were used to turn a research output into an innovation and illustrated the importance of changing habits and practices, considering the policy and institutional environment, identifying and working with key stakeholders, and developing new ways of doing things. The second represented an example of building innovation capacity. The case material centred on activities in Bolivia to build plant health services to allow local stakeholders to respond to problems farmers were experiencing, through an approach that linked plant doctors from mobile plant health clinics with external expertise and diagnostic facilities to facilitate identification of problems and solutions.

It was agreed that a strategy should be developed at CABI based on innovation systems principles and outlining how initiatives would be developed within this framework. The strategy document would describe areas of activity and cluster projects according to type. Two clear areas that emerged were a) facilitating application of knowledge to achieve social and economic benefits ('research into use') and b) supporting development of local capacity to identify and solve problems.



CABI research area Innovations systems

**Country/Region** Regional

CABI centre CABI Africa

## Introduction/Background information

CDF funding was used to support development of projects which incorporate aspects of innovation systems, including those aiming to extend the Global Plant Clinic (GPC) concept to wider plant healthcare networks

#### **Project objective**

- Develop partnerships and a project to address seed systems in Mozambique
- Develop concept notes based on innovations systems principles for for projects in Uganda, Ethiopia and Kenya
- Support the development of a national innovation system in Sierra Leone
- Develop a proposal to extend
   Global Plant Clinic concept to wider
   plant healthcare networks

#### Target group

Potential donors: EU, DFID, FAO and Bill & Melinda Gates Foundation

#### Future actions

Continue to seek fundin opportunities

### supporting national innovation systems

A second CDF-funded project on innovation systems explored ways to respond to requests from our Member Countries for (a) creation of a platform/framework to bring actors together to develop ownership, and (b) capacity strengthening in post-conflict countries. This was addressed by using CDF funding to support development of projects which incorporate aspects of innovation systems. A number of key activities were funded:

Development of a proposal to address seed systems in Mozambique: CABI and ICRISAT staff worked together to develop a joint proposal which was submitted to the EU for funding. CABI staff visited Mozambique, establishing local partnerships and carrying out a brief analysis of value chains as a basis for the proposal. Although the proposal was not funded, the activities consolidated a strong working relationship with ICRISAT partners and funding opportunities continue to be sought.

Development of concept notes in Uganda, Ethiopia and Kenya: Staff from CABI Africa developed a set of concept notes, based on innovation systems principles, for submission to the DFID Research into Use programme. CDF funds allowed CABI staff to engage with partners, seek their input, plan potential activities and prepare draft budgets. Proposals included work to scale up SDC-funded activities in the Good Seed Initiative in Kenya and Uganda; and use of a range of communication approaches to provide dynamic market information in Kenya.

Supporting development of national innovation systems in Sierra Leone: CDF funds enabled CABI Africa staff to join a representative of CABI's Global Plant Clinic (GPC) on a visit to Sierra Leone to deliver a course to plant clinic doctors and to pursue ideas to link GPC and farmer field school (FFS) activities. The Sierra Leone government has already invested funds to support plant health clinics in the country and GPC staff have been supporting the process. Although operational funds in Sierra Leone are limited and diagnostic support non-existent, clinics already operate in every district and staff are dedicated to making the clinics work to help farmers tackle plant health problems as the country recovers from conflict. The team visited a group of FFS trainers supported by an FAO project to introduce the idea of clinics and discuss how the two initiatives could be integrated.

Development of a proposal on plant healthcare networks: CDF funds were used to support the development of a large proposal to the Bill & Melinda Gates Foundation (BMGF) by GPC and CABI Africa staff, extending the GPC concept to wider plant healthcare networks for Africa. As part of the process, a trial clinic was organized in a market with staff from the local extension office. Discussions on content and budget were pursued and the activities outlined. The proposal was given the amber light within BMGF for funding but was unfortunately stalled because of the economic downturn, resulting in a strategy to focus on existing areas of funding rather than initiating new areas. However, BMGF remains extremely interested in the proposal and it is hoped that it will be reconsidered for funding in 2010.

CABI research area Biodiversity

**Country/region** Global

CABI Centre CABI Africa

Partners IUCN, SANBI, TNC

## Introduction/Background information

The Global Invasive Species Programme's mission is to conserve biodiversity and sustain livelihoods by minimising the spread and impact of invasive species

#### **Project objectives**

Supporting GISP to raise awareness of the issues of invasive alien species around the world

## input to the Global Invasive Species Programme (GISP), supporting the implementation of CBD commitments on invasive species

CDF funding has enabled CABI to continue to provide technical support to international instruments on IAS, with a significant proportion of funds being provided for the Global Invasive Species Programme (GISP) Secretariat in Nairobi. CABI staff participated in the Convention of Biological Diversity (CBD) 9th Conference of Parties ("COP9") in Bonn in May 2008. CABI was also invited to join the Group of Experts on Biodiversity and Climate Change of the Council of Europe, held in Strasbourg.

CABI continued its representation on the Technical Panel on Diagnostic Protocols (TPDP), established to oversee the development of standard diagnostic protocols for specific pests. The 2008 meeting was held in Braunschweig, Germany; it provided updates on the Standards Committee (SC), the Commission on Phytosanitary Measures (CPM) and the work of the EPPO Diagnostic Panel; reviewed changes to TPDP procedures following CPM decisions; and updated draft diagnostic protocols on some emerging pest problems.

CABI research area Biodiversity

**Country/region** Global

**CABI Centre** Global

#### Partners

IUCN, Council of Europe, Regional Council of La Reunion, Chinese Academy of Agricultural Sciences

#### **Project objectives**

Providing scientific input into key international fora

## participation in high level policy processes including the CBD 9th Conference of Parties, and the Group of Experts on Biodiversity and Climate Change of the Council of Europe

CABI staff participated in a meeting in La Réunion, *The EU and its Overseas Entities; Strategies to counter Climate Change and Biodiversity Loss.* This included a workshop, coordinated by the Council of Europe (CoE), IUCN, and the Regional Council of La Réunion, on strategies to counter IAS and develop recommendations to strengthen action and policies to address IAS threats in the Overseas Entities of the European Union. CABI was also invited as an expert to the CBD capacitybuilding workshop for the Caribbean region for National Biodiversity Strategies and Action Plans (NBSAPs), held in Trinidad in November 2008.

An international meeting was held at CABI's Swiss Centre (CABI E-CH) between delegates from four CABI centres and the Chinese Academy of Agricultural Sciences (CAAS) on invasive species management. The aims included project proposal development for potential allocation of seed funding from the recently opened joint lab initiative in China between CABI and CAAS. Concept notes included IPM of the Bt cotton pest *Apolygus lucorum* using European parasitoids; sharing resources, information and research on pest risk analysis (PRA) techniques in China and Europe; and sustainable management of common ragweed in China and Europe.



CABI research area Biodiversity

#### **Country/region** China

#### **CABI** Centre

CABI Southeast and East Asia and CABI Southeast and East Asia – China

#### Partners

Chinese Academy of Agricultural Sciences (CAAS), Fujian Agriculture and Forestry University (FAFU), Agriculture and Agri-Food Canada (AAFC), Commonwealth Scientific and Industrial Research Organization of Australia (CSIRO), Kansas State University (KSU), Fujian Academy of Agricultural Sciences (FAAS) and Global Invasive Species Programme (GISP)

## Introduction/Background information

A conference to be held in South East China in November 2009

#### **Project objective**

- Raising awareness of the issue of invasive alien species
- Informing scientific research on invasive alien species
- Enabling countries to effectively tackle invasive species problems

## central role in organising the International Congress on Biological Invasions, to be held in China in 2009

In response to the global challenge of IAS, CABI is working together with Chinese Academy of Agricultural Sciences (CAAS), Fujian Agriculture and Forestry University (FAFU), Agriculture and Agri-Food Canada (AAFC), Commonwealth Scientific and Industrial Research Organization of Australia (CSIRO), Kansas State University (KSU), Fujian Academy of Agricultural Sciences (FAAS) and Global Invasive Species Programme (GISP) to organize an International Congress on Biological Invasions (ICBI), which will be held in Fuzhou, SE China in November 2009.

This congress will be a platform for the exchange of research developments and tracking of technical progress in multidisciplinary topics dealing with IAS, targeting the needs of IAS management at national, regional and international levels. It will address gaps between research and field applications related to biosecurity, quarantine and international trade as well as the linkages and impact of climate change on biological invasions.

In March and September 2008, CDF funding enabled CABI to participate in meetings of the co-organizers held in Fuzhou to define and clarify the congress theme, symposia topics, programme outline, and website contents. The Chinese Ministry of Agriculture, the Chinese Ministry of Science and Technology, the National Natural Science Foundation of China, CABI, GISP, The Nature Conservancy (TNC) and other international organizations have been approached for sponsorship. Ten thousand hard copies of the ICBI 2009 First Announcement were printed with financial support from CAAS. These have been widely distributed at various conferences and to IAS experts. Thirteen symposia are planned, covering important IAS issues from laboratory research to field implementation.



CABI research area Biodiversity

#### **Country/Region** Caribbean

CABI centre CABI Caribbean and Latin America

#### Partner

GEF (project preparation grant)

## Introduction/Background information

The Caribbean needs a regional approach to tackle IAS. CABI organized and facilitated a regional stakeholder workshop with representatives from five countries, focusing on communication, capacity building plans and national logical frameworks

#### **Project objectives**

- raise awareness of the issues and facilitate workshops with experts
- assist countries to define national pilot projects including producing national and international legislative framework for the management of IAS
- develop a full size project proposal for GEF

#### Target group

Potential donor - GEF

#### **Future actions**

Implement GEF FSP if application is successful

# preventing and managing biological invasions in the Insular Caribbean and South Asia

**Insular Caribbean**: The need for a regional approach to tackle Invasive species in the Caribbean region has been endorsed by Caribbean nations and pan-Caribbean organizations. CDF funding provided co-finance for the GEF-funded Project Preparation Grant which enabled CABI to develop a proposal for a GEF Full Size Project (FSP) "Mitigating the Threat of Invasive Alien Species in the Insular Caribbean", to be implemented by the Bahamas, Dominican Republic, Jamaica, St Lucia and Trinidad and Tobago. This was completed and submitted to UNEP-GEF in January 2009.

CABI staff attended regional meetings to discuss the proposed initiative with stakeholders which included a meeting with the Caribbean Plant Health Directors in Guyana, a workshop on Managing Avian Influenza Challenges in the Caribbean Live Bird Market System, the Tropical and Subtropical Agricultural Research Invasive Species Symposium, and the annual meeting of the Caribbean Invasive Species Working group.

CABI organized and facilitated a regional stakeholder workshop with representatives from the five countries to further develop the proposal, focusing on communication, capacity building plans and national logical frameworks. CABI staff were also responsible for producing national and international legislative frameworks for the management of invasive species in the insular Caribbean, as well as assisting countries to define national pilot projects, providing technical inputs for tentative project design and activity costing at national level, including suggestions for coordination and monitoring and evaluation plans. We also moderated the Caribbean\_IAS\_Threat Yahoo group: membership has increased by 11% through 2008, and message frequency has doubled.

**South Asia**: With CDF support we have worked to develop a regional proposal, including finding potential co-financing partners, identifying sites within selected countries where invasive species threaten biodiversity, and collating currently available information on invasive species in these areas. We have held meetings with representatives of the Ministry of Environment (MOE) in Pakistan, who have expressed a strong interest in supporting CABI to prepare an proposal in partnership with the Pakistan Forest Institute, and in allocating funding through the Public Sector Development Programme (PSDP) in three phases. For each phase, approximately GBP 285,000 would be allocated by the Ministry, potentially in 2009.



CABI research area Biodiversity

#### **Country/region** Global

CABI Centre CABI Europe – UK

#### Partners

World Federation of Culture Collections, EMbaRC, Kew Gardens

#### **Project objectives**

Build capacity for countries to manage and utilise their microbial resources

## conservation and utilization of microbial biodiversity

During our regional consultations in 2007-2008 China, Pakistan and Sri Lanka indicated that they wanted support to better conserve and utilise their genetic resources. Microorganisms have the potential to provide solutions to national economic, environmental, food and healthcare problems, but countries need the human resource facilities and technologies to harness the potential of this hidden resource.

Biological Resource Centres (BRC) are key to the preservation and conservation of microorganisms, a vital component of the world's biodiversity and the tools for biotechnology. To underpin the understanding and use of microbial diversity it is essential that in-country BRCs are established. Low funding and the low numbers of practising taxonomists has threatened the future capacity to fully utilise and benefit from this enormous resource in developing countries.

With CDF funding CABI has initiated several activities which range from networking through capacity building to development of instruments or tools to help develop knowledge. Some of the activities have already secured external funding whilst others are in developmental stages. In 2008, CDF funds were used to support the development of funding proposals with the aim of establishing a better understanding of microbial diversity in CABI Member Countries and its use in resolving problems; developing mechanisms to underpin the national bio-economy; strengthening national, regional and global networking; and providing in-country capacity to exploit microorganism potential. Specific activities would include:

- establishing the Global Biological Resource Centre Network (GBRCN) and implementation of best practice and developing a common operational legal framework
- capacity building through CABI partnerships, projects and initiatives e.g. EMbaRC, European Microbial Resource Centre project, World Federation of Culture Collections
- development of the CABI natural product business to enable Member Countries to learn from experiences and eventually engage in mutually beneficial partnerships
- establishing a taxonomic platform with partners e.g. Kew Botanical Gardens

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