Fruits for the Future

R7187: Promoting selected tropical fruit trees

Indigenous fruits play an important role in the nutrition of children in rural and urban areas alike. However, they are often undervalued and underutilised, as more exciting exotic fruits become accessible. And since most indigenous fruit trees in the developing world have never been cultivated on-farm, there is only scant and dispersed knowledge about their production, propagation and processing.

Researchers of the Southampton-based International Centre for Underutilized Crops (ICUC) and local and regional partners have taken on the mission to study the cultivation and processing of a number of underutilised fruits in sub-Saharan Africa and Asia and of promoting this knowledge to the local people. Through a series of peer-reviewed monographs, technical notes, posters in local languages and training courses for farmers and extension officers, the team is in dialogue with stakeholders at several levels.

Two of the most important ingredients of ICUC's success are the communication in local languages and the field testing of materials with a select group of stakeholders. For the West African fruit safou

A safou stall in Makenene, Cameroon. Photo: Hannah Jaenicke

A fruit market in West Africa. Photo: Elke Peiler

(*Dacryodes edulis),* known as the African plum, the team organised both a French and an English language workshop to accommodate the two language groups in Cameroon. During the workshops, the participants – farmers, NGO staff and radio and newspaper journalists – discussed the extension materials that the team had produced: a colourful poster, and a training manual consisting of ten easy-to-use training sheets. To get some hands-on experience themselves, the participants had a go at various vegetative propagation methods, which back home, they can use for other species as well.

The *Dacryodes edulis* poster in English.

"The poster is colourful and uses simple language. It summarises the different propagation methods well and can also be used for training people who cannot read."

Workshop Participant, Bamenda, Cameroon

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R7187 Forestry Research Programme.

The tale of Cinderella's slippers

R7295: *Prosopis juliflora* and related arboreal species: a monograph, extension manual and database.

"Cinderella species" is the term that has been used to describe trees with a multitude of hidden valuable uses that are not appreciated by the wider community. As researchers widely introduced Cinderella species, they seem to have forgotten what happened to Cinderella after midnight when the spell broke: she turned from the belle of the ball back into the unsightly maid she was before. A similar spell seems to prevail amongst the introduced tree species; as their magic wears out, many of the Cinderella species have become invasive menaces, impossible to eradicate. Being aggressive pioneer species they have been accused of lowering groundwater, reducing livestock forage and even causing animal deaths.

"The story of Cinderella did have a happy ending, as can the story of invasive *Prosopis* in Africa. This will come not by magic, but from commitment and hard work. [In the Cinderella fairy tale,] the prince tried the lost slipper on the feet of every girl in the kingdom, and we must be willing to work with all involved, until we too will find the perfect fit."

Nick Pasiecznik, HDRA

Participants in a training course in Tamil Nadu, India learn how to convert a weedy *Prosopis* thicket into a productive stand. Photo: HDRA

A majestic *Prosopis pallida* in Peru. Photo: Gaston Cruz

Tackling the problems of invasive species, as well as their misunderstood and underappreciated values, has been greatly assisted by the research team from the UK's Henry Doubleday Research Association (HDRA), the Indian Central Arid Zone Research Institute (CAZRI) and partners in Argentina, Mexico and Peru who teamed up to collate information on one Cinderella species, *Prosopis juliflora*, and its relatives. Through a variety of tools for improved management, including a database and field guide, the research will help local people to make the most of Cinderella's magic. The guide was distributed in February 2004, just as the Kenyan government announced its support for a major effort to control invasive species. Timely enough, the FRP-funded researchers are now producing a series of policy briefs about the species for six countries; one is especially targeted to the situation in Kenya, where, we are sure, officials await the publication with eager anticipation.

"The core problem is uncontrolled aggressive invasion of *Prosopis* species into natural habitats due to inadequate information towards its utilization, management and control. We want our people to benefit from this vast resource and to alleviate poverty in a truly big way!"

Simon Choge, KEFRI, Nairobi, Kenya

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R7295 Forestry Research Programme.

Cashing in on the harvest

R7925: Commercialisation of non-timber forest products in Mexico and Bolivia: factors influencing success

What do rubber gloves, embroidered belts and a mushroom soup have in common? The answer is that these are all made from non-timber forest products: latex from the rubber tree (*Hevea brasiliensis*), fibre from a bromeliad (*Achmea magdalenae*) and, well, mushrooms. These products are all harvested, processed and marketed by marginalised forest communities in Mexico and Bolivia.

Research teams in the two countries, led by the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP) and in close collaboration with the Overseas Development Institute have studied cottage industries, and analysed the factors that contribute to overall success.

> "Those of us who earn enough money from the forest products to be able to stay in the community and not have to migrate to look for work, consider it a huge success."
>
> *Community member, Topiltepec, Guerrero, Mexico*

The sale of mushrooms can provide enough income to send the children to school with books and other essentials and comes just at the right time of the year. Photo: Elaine Marshall

Two contrasting examples involve rubber traders. In one village, Tomachi, a few rubber concessionaires harvest from such large areas that the large volume produced means they can make a profit from tapping and trading unprocessed latex. In a neighbouring community, Santa Rosa Challana, the individual supply of trees is too low to make latex sales viable under any kind of institutional arrangement. So, the majority of people who collect rubber in this community choose to add value by processing the latex and carefully marketing it.

The social, economic and biophysical data that the teams have gathered have been fed into a prediction model (a 'Bayesian Belief Network'). This model shows which factors need to be in place for market strategies to be successful. The benefit of the research is in understanding the impact of different marketing strategies on livelihoods and how different underlying factors interrelate in the rural communities and along the trading chain.

Natural latex from the rubber tree (*Hevea brasiliensis*) is used to waterproof ponchos traditionally worn by miners when searching for gold. They are still used by other outdoor workers. Photo: Elaine Marshall

> "We are realising that to be successful in the rubber trade has meant needing to innovate and diversify our products, and trying to respond to new customer demands."
>
> *Community member, Santa Rosa Challana, Bolivia*

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R7925 Forestry Research Programme.

A brick cannot die!

R7937: Catchment management and poverty alleviation: the role of economic instruments and compensation mechanisms in water resource and forest management

A communal pump is not as attractive as a tap at home. Photo: Rob Hope

> "Gardening is common, chickens are difficult but a brick cannot die!"
>
> *Mr Richard Ransan, small-scale brick maker from Mangaya community, South Africa in summing up how the limited water resources in remote rural communities limit development opportunities*

Water – or the lack of it – will be the cause of major violent conflicts in the twenty-first century with increasing demands on limited water resources for domestic use, agriculture, industry and the environment. New thinking for watershed management and the stewardship and allocation of water resources are therefore urgently needed.

Researchers from the University of Newcastle, the South African Centre for Science, Industry and Research (CSIR-Environmentek) and the University of Durham have contributed significantly to water allocation reform in South Africa. Through rigorous field studies in South Africa, Grenada and Tanzania, they have come up with reliable, and rather surprising, data. The researchers point out that more water alone does not improve welfare for the poor, although it does improve people's livelihoods in general. Upgrading rural water supplies from groundwater pumps to a communal street tap results in no livelihood improvement. Instead, householders prefer the convenience of a private house tap.

Close collaboration of the research team with officials at the South African Department for Water Affairs and Forestry (DWAF) has helped promote a new perspective on water resource management. Unless land and water resources are managed in a more integrated way and take into account the needs and priorities of the rural poor, it is likely that interventions to reduce poverty will waste scarce funds and fail millions of marginalised households in rural areas.

> "The crux of the water allocation reform programme is not necessarily to allocate water to the rural poor, but more importantly to make sure we use water to improve the livelihoods of all South Africans."
>
> *Gavin Quibell, consultant to DWAF's Water Allocation Directive.*

Conflicting enterprises, such as fisheries, agriculture and industry are competing for clean water. Photo: Rob Hope

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R7937 Forestry Research Programme.

The head in the clouds?

R7991: Hydrological impacts of converting tropical montane cloud forest to pasture with initial reference to northern Costa Rica

When was the last time you have experienced a power cut? If you live in Europe, the likelihood is, rather a long time ago. However, if your country is relying on well-filled dams to generate hydropower, power cuts might be a more common occurrence and you might have another look at the clouds.

Central America is not a region usually associated with droughts. Yet, in many countries in the region, water supplies are in danger of being depleted, leading to an unreliable supply of electricity through the countries' national grids. This change has come about as cloud forest areas are increasingly converted into agricultural lands for more "economical" enterprises, in particular coffee plantations or pasture for cattle.

A research team led by Amsterdam's Free University in close collaboration with King's College London and various institutions in Costa Rica is using advanced technology to measure differences in the levels of water flowing from forested and deforested areas and develop a prediction model. "Cloud catchers" are installed high up in canopy towers, together with rain and stream water level gauges and computer equipment on the ground.

Measuring rainwater throughfall under the canopy. Photo: Arnoud Frumau

The canopy tower reaches 20 metres into the tree crowns and carries measuring equipment at various heights. Photo: Arnoud Frumau

The extremely wet conditions of the Costa Rican jungle put a strain on the modern equipment, and on the researchers. When doing their daily round to check equipment on the ground and in the canopy towers, Arnoud Frumau, Conrado Tobon and their team put up with wet boots from the moment they step out of the door, and with snakes, scorpions and wild bees who chose to colonise the (dry) dataloggers. But despite these difficulties, the team is collecting unique data, which demonstrates for the first time the importance of the cloud forest to national and regional water supplies. The researchers are urging policy makers and users in the region to put the cloud forest under protection so that future power cuts will be few and far between.

Sensitive electronic equipment needs daily checking. Photo: Arnoud Frumau

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R7991 Forestry Research Programme.

We are the forest

R8101: Review of participatory forest management support processes

Mr Bhimdu is hoarse from talking and arguing. He has just returned from a meeting with District Forest Office and World Bank officials. Mr Bhimdu is the chairman of a tribal rights activist group in the Paderu region of India's Andhra Pradesh. This group is devoted to defending the rights of the tribal community against relentless exploitation from outside its remote home.

The tribal people of the Paderu region traditionally rely on *podhu*, a form of shifting cultivation in extensive upland "forest fallows" areas. However, a well-intended, but ill-developed "Joint Forest Management" project, which the World Bank funded with over US$180 million, is threatening this traditional way of life. As part of the project, the Andhra Pradesh Forest Department, assisted by co-opted local elites, is imposing plantation-oriented forest management plans in traditional lands which increasingly obstruct *podhu* and fragment communities. Although the World Bank project was developed to help the poorest in the communities, it is in fact undermining traditional livelihoods and making poor people the losers. The project has now been approved for a second phase and has been renamed the "AP Community Forest Project" , apparently without reference to these adverse impacts.

Mr Bhimdu's story is one of over 1,000 recorded by a team of researchers from the University of East Anglia, the Environment and Resource Development Centre in Nepal, the Centre for Economic and Social Studies in India and many others. The team is studying how the implementation of participatory forest management systems affects the livelihoods of poor people in local communities and has recorded examples of best and worst practice in over 70 villages in India and Nepal. With this information, the team aims to develop recommendations for different situations.

The people of Bolangir District, Orissa, have initiated their own forest management groups to protect and regenerate forests, and regulate their use. They illustrate that communities can and do manage their own forests sustainably with little external institutional support when their livelihoods are concerned. Photo: Oliver Springate-Baginski

Traditional forest uses (including the collection of Sal (*Shorea robusta*) for making leaf plates play a major role in livelihoods in Eastern India. Photo: Oliver Springate-Baginski

Identifying the problems is, however, only part of the solution. Sympathetic forest officials also need backing from higher political levels. The team has therefore begun intensive dialogue with policy makers and is developing a video and policy briefs to illustrate their findings.

"If Indian Forest Departments are to help alleviate poverty they must now reverse habits of a century. ... They must instead empower rural communities and support their livelihood-oriented forest management planning processes. ... Substantial reorientation of forest bureaucracies remains essential and if donors have a role to play they must challenge rather than entrench the current power asymmetries."

Dr Oliver Springate-Baginski, University of East Anglia

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R8101 Forestry Research Programme.

Vote for water!

R8171: Low base-flows and livelihoods in India

The old people in Jhaniari village in India's Himachal Pradesh still remember the times when you could go to the well and draw water when you needed it – for free. The young ones today only know the water tanker which comes once a week to sell water for more than a rupee per 20-litre bucket! In the State of Tamil Nadu, to raise this issue to the attention of officials at the highest levels, farmers even fielded a "Water Candidate" in the recent election campaign. The wells are dry, and so are the hill slopes. Better go and plant trees?

No, say the researchers from Newcastle University and the Indian Institute of Technology in Delhi who are studying the effects of trees on water in Himachal Pradesh and Madhya Pradesh. The researchers have found that too many trees on the hill slopes – and elsewhere in the catchment – actually reduce the water output of the wells. And too many deep wells have been drilled already. What is needed more than anything else is good governance of the area, keeping the water barons at bay and allowing the poor access to water at affordable prices.

People of Jhaniari village in Harmirpur District wait for the water tanker to arrive. Photo: PTI/ The Tribune, India

This project is contributing to the national debate on trees and water. It is supplying geo-referenced information and a simple modelling tool that show how water tables have changed over past years in relation to deforestation and afforestation measures, groundwater mining for dry-season irrigation and other watershed interventions.

A recent workshop, organized by the project team in collaboration with the Overseas Development Institute's RAPID (Research and Policy in Development) project, demonstrated the need for better communication between policy makers and researchers. The workshop was seen as the start of a powerful relationship that can change policy and make things happen, based on solid research evidence.

Cartoon from Hindustan Times 15 March 2004

"Every State has its own water laws, but what we need is coherence, so that we can make a real difference on a much larger scale."

Professor Ashvin Gosain, Indian Institute of Technology, Delhi

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R8171 Forestry Research Programme.

A healthy harvest

R8295: Methodology for planning the sustainable management of medicinal plants in India and Nepal

Everybody in the Savandurga area of Karnataka in India knows Mr Muthaiah. And everyone remembers the time when he cured a cow after the vet had given up on her.

Mr Muthaiah is a botanist and uses herbal medicines. He is also a member of a local research team in India, partnering with a group of researchers from Oxford University, the Foundation for the Revitalisation of Local Health Traditions in India, ForestAction in Nepal and others. Together with local communities, the researchers are developing protocols that will help villagers avoid emptying the local chest of valuable natural medicines. At the heart of the project is not the development of a standard "recipe" for sustainable harvesting, but rather a methodology for helping communities to develop action plans and techniques tailored to their own social, cultural, institutional and economic characteristics.

"The village was formed during the 1960s, and people here come from around 10 different districts in the hills. The plants here are very different, and we don't know much about them. What we know we have learned from heresay and word of mouth. We want to learn what plants have uses in our forest, and how to use them."

Local healer, Amaripuri village, Nepal

The president of Savandi Village Farmers Committee, Mr Jayadevaiah (with umbrella) explains to Oxford researchers the positions of the experimental plots that the villagers have set up in the forest. Photo: Utkarsh Ghate

The village botanist Mr Muthaiah in front of his shop. Photo: Sarah Gillett

In areas where most communities use the local herbal resource for domestic use, interest in the project is high. Elsewhere, villagers are excited to learn about neglected medicinal plants and have whole-heartedly embraced the opportunity to collaborate with the research team. In Amaripuri village in Nepal, for example, the community had concentrated on the production of the valuable timber species, Sal (*Shorea robusta*) and had lost sight of valuable non-timber forest products, including local medicines.

It is not only botanical knowledge that is important for the success of this project. Land ownership – or rather the lack of it – is one of the major factors contributing to unsustainable harvesting. The researchers have therefore ensured good contact from the outset of the project with both local and national government offices.

"In some places, the harvesting rights for resources with commercial value are auctioned to the highest bidder, and community members watch their resources being taken away by strangers."

Sarah Gillett, Oxford University

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R8295 Forestry Research Programme.

Speaking with the world

ZF0147E: Communication methods and scientific advocacy

The government minister is sitting behind his large polished desk and has five minutes' time for you, the humble petitioner. How do you ensure he, or she, listens to what you have to say? And acts on your recommendations? How can you bring your belief about how to combat poverty across to someone who doesn't have any time, money or, indeed, interest invested in you and your research?!

This was the challenge put to 18 researchers participating in a training course on communication methods and scientific advocacy organised by Brighton-based IMA International. In these role plays, the researchers tried their best with politeness and persuasion, and afterwards discussed how to engage with stakeholders at all stages of a project, from inception to promotion.

It was this connection between researchers and non-researchers that was central to the training. A one-off meeting with a government minister, journalist or funder is most likely insufficient for success, but constant engagement is necessary, and beneficial, in both directions. The training course participants did not all agree that advocacy is part of their role and that it is the researchers, not intermediaries, who should get off the fence and become involved in policy dialogue in order to change the livelihoods of the poor. The debate about whether "advocacy" is a dirty word signifying brown envelopes in swish hotels, or a lawful fact of life, was very heated indeed, and ended without being resolved.

Participants discuss promotion uptake pathways. Photo: Hannah Jaenicke

"I realised that we have to drastically simplify research messages to get them across."

Training course participant

Participants are using their skills in role play. Photo: IMA International

The pilot training course in Brighton in January 2004 was a successful platform for researchers to discuss and learn from each other's experience. It is now being followed by locally adapted courses in three other continents. By the end of the year, 80 researchers will be more skilled in engaging successfully with the non-scientific community at large, thus making a difference to the world's poor.

"I now agree that promotion and advocacy are important components of our research project."

Training course participant

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ZF0147E Forestry Research Programme.

Slimming the burden of responsible forest management

ZF0178: Increasing access to certification for small/low intensity managed forests

"I think we still have some way to go in reducing the cost barriers to those small woodland owners who wish to remain independent."

Mrs Webb, Woodland owner, Herefordshire, UK

Mrs Webb owns a 37-acre woodland in Herefordshire. She has realised that forest certification is a way of demonstrating adherence to a global code of conduct of responsible forest management. Timber from a certified forest sells better and at higher prices. However, the certification process is costly and for a small forest like Mrs Webb's, the costs are more that the extra market is worth.

To support small woodland owners like Mrs Webb and millions of households in the developing world, where over 22 per cent of forests are managed by communities or small family operators, the Forest Stewardship Council (FSC) has set up the Small/Low Intensity Managed Forests Initiative (SLIMF). Through SLIMF, a research team has investigated how the FSC certification criteria could be changed to make certification accessible to small-scale operators.

Health and safety is one aspect considered for successful FSC certification of this forest in Brazil. Photo: Hannah Jaenicke

Everyday products are made from certified timber harvested from certified forests. Photo: Hannah Jaenicke

The researchers studied examples from boreal, temperate and tropical forests. The trials covered large and small community management groups, single small forests and low intensity operations. The SLIMF team then produced a comprehensive report and convinced the FSC International Board of Directors to approve the recommendations in November 2003. The streamlined procedures are now incorporated into the FSC Accreditation Standards and were approved by the FSC International Board of Directors in March 2004. Thus, responsible forest management and markets for certified forest products will become more accessible to the estimated 200 million people involved in small-scale forestry worldwide.

"We have been able to approximately halve the cost. ... The biggest saving to the woodland owner will be in the years after the main assessment. Previously we would have been required to visit every year, and go through a process similar to the main assessment. Under the new rules we ... will probably visit only once more during the lifetime of the certificate."

Kevin Jones, UK Soil Association

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ZF0178 Forestry Research Programme.