ICT Update
a current awareness bulletin for ACP agriculture

Traditional plants

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features

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editorial

People, plants and ICTs

Recent years have seen a marked interest in the use of traditional plant species around the world. As well as the herbs used in traditional medicines, other useful plants - trees, shrubs, fruits or vegetables - are being rediscovered as sources of drugs, vegetable oils, spices or natural dyes. This issue of *ICT Update* takes a look at projects that combine new technologies with traditional knowledge to provide scientific credence to herbal medicines, find new markets for traditional plant products, give 'forgotten' crops a new lease on life, or to conserve threatened local varieties.

In the ACP-EU Update, Jan Siemonsma reports on the Plant Resources of Tropical Africa (PROTA), a project that brings African and European scientists together in a collaborative effort to document information on 7000 African plants. This projectis relevant because of the growing popularity of African herbal products among health-conscious customers in the US and Europe.

In Asia, as well as in many ACP countries, people continue to use indigenous plants as medicines either because modern synthetic drugs are too expensive or simply because these herbal remedies work. Therefore, these plant species need to be classified and information on their traditional uses recorded. From Ghana, George Owusu-Afriyie describes BG-BASE, a database program that has been designed to manage information on botanical collections, and is helping in the conservation of medicinal plants in West Africa.

Many herbal remedies are sold as food supplements are not recognized by regulatory authorities as medicines or drugs and therefore urgently need to be properly analyzed. Robert Lancashire tells the story of the JCAMP-DX Data Viewer, a computer program developed at the University of the West Indies at Mona, Jamaica, that is being used by organic chemists worldwide to do just that.

Also in this issue, Simon T. Gichuki and Robert J. Hijmans report on a project in East Africa that collects germaplasm samples and local knowledge of sweet potato varieties using DIVA-GIS, a free geographic information system (GIS). Steve Hurt talks about his online business, selling South African herbs over the Internet. Finally, in the Q&A, Tony Cunningham explains how People and Plants International (PPI), a global network of ethnobiologists and ecologists, is working in partnership with communities in ACP countries to ensure the sustainable use and conservation of plants in areas of high biological diversity. ■

ACP-EU update

Plant Resources of Tropical Africa (PROTA)

Tropical Africa is home to about 30,000-35,000 higher plant species, an estimated 7000 of which are used by man in many different ways. Information about these useful plants is dispersed over several hundred thousands of different publications. Due to Internet access and good library facilities in the developed world, it is often easier for researchers, lecturers or industry in the North to find publications on African plants than it is for researchers, lecturers or extension workers in Africa itself.

Plant Resources of Tropical Africa (PROTA) is a collaborative effort involving African and European scientists working at 10 research institutions (seven in Africa, three in Europe) to bring information on African plants into the public domain. PROTA will result in a collection of about 7000 standardized, illustrated review articles at the species level, in English and French, covering all aspects of existing knowledge - botany, geography, utilization, trade, properties, ecology, cultivation, management, improvement and conservation.

The PROTA collection will be made available through a freely accessible online database (www.prota.org), and a series of books and accompanying CD-ROMs (in English and French). For the book and CD-ROM series, the 7000 useful plants are subdivided into 16 commodity groups, including 'cereals and pulses', 'vegetables', 'dyes and tannins', 'forage crops', 'fruits', 'timber' and 'medicinal plants'.

The collection of information on the first commodity group - African vegetables - was completed late 2004, and includes 275 review articles that can be accessed via the Internet. The print and CD-ROM versions (published by Backhuys Publishers, Leiden, the Netherlands, www.backhuys.nl) are available to users in ACP countries from CTA (www.cta.int) at a reduced price.

PROTA cooperates with PROSEA (Plant Resources of South-East Asia), an initiative to bring up to date outdated information on thousands of useful plants in Indonesia. Both projects receive core funding from the government of the Netherlands. It is hoped that PROSEA and PROTA will be followed by PROLAC (Plant Resources of Latin America and the Caribbean). Thus a standardized synthesis of knowledge of 25,000 useful tropical plants will soon be within the reach of all researchers in ACP countries. ■

Jan Siemonsma (prota@wur.org) is head of the PROTA Network Office Europe at Wageningen University, the Netherlands.

TechTip: FloraMap™

FloraMap™ is a software tool for botanists and biodiversity specialists that can be used to predict the geographic distributions of plant species in the wild. The program, developed at the International Centre for Tropical Agriculture (CIAT) in Colombia, is especially useful to plant breeders, who are increasingly looking to wild species as sources of new genetic material.

FloraMap™ works on the assumption that climate characteristics are good indicators of the environmental range of wild plants. All that is needed to run the program is the latitude, longitude and altitude of the location where a particular species is known to grow. The On the basis of these data, the program produces a probability map showing other sites where the species might be found and conserved. FloraMap™ predicts these sites with the aid of an extensive geographically referenced climate database developed over many years by CIAT, covering most of Africa, Asia and Latin America. ■

FloraMap™ is available on CD-ROM in English and Spanish. For further information, visit www.floramap-ciat.org

Mapping sweet potato in Eastern Africa

Simon T. Gichuki and Robert J. Hijmans report on a project that is collecting germplasm samples and local knowledge of sweet potato varieties in Eastern Africa with the help of DIVA-GIS, a free geographic information system (GIS).

In their quest to obtain samples of sweet potato varieties and record their location, researchers at the Kenya Agricultural Research Institute (KARI) rely on both the knowledge of local farmers and modern technology. Using participatory rural appraisal (PRA) methods, they collect information about local varieties, including current production constraints, and germplasm samples. They compile these data using DIVA-GIS, a software package developed at the International Potato Center (CIP) in Bolivia. The package also enables them to store information about individual samples collected at particular locations and then to analyze the spatial distribution of the different varieties across the region.

Analyzing data with DIVA-GIS

DIVA-GIS is a geographic information system (GIS) application that can be used to view and analyze spatial data. It is particularly useful for mapping the distribution of species, and for many other purposes. With DIVA-GIS, researchers can map the locations of sites where populations of plant or animal species have been observed, and the different characteristics of these populations that have been recorded. Other geographic data, such as rivers or national boundaries, can also be mapped and linked to satellite images.

Some features of DIVA-GIS make it particularly suitable for scientific research. With the program, researchers can query global climate databases to obtain assessments of local climates anywhere on earth, predict and produce grid maps of species distributions, and identify 'hotspots' and areas with complementary levels of diversity.

To date, the KARI researchers have conducted PRAs in 15 rural communities in Kenya and 10 villages in Tanzania. During the PRAs, sweet potato growing farmers were asked to list and prioritize the production constraints they experience. These include pests and viral diseases, insufficient rainfall in drought-prone areas, and the lack of arable land. Many farmers also reported declining soil fertility and dwindling water resources.

Generally, it was found that sweet potato production is the main source of household income (50% or more) in rural communities. The introduction of improved high-yield varieties, along with better marketing, may contribute significantly to efforts aimed at raising household incomes in East Africa's rural areas.

The project also recorded the farmers' knowledge of local sweet potato varieties. This knowledge was used in the planning of seed collection, serving as clues to identify areas of high genetic diversity. So far, 679 accessions have been collected in Kenya and Tanzania.

While commercial GIS software can often be expensive and difficult to learn, DIVA-GIS offers a simple interface that can help users get started with GIS. The package is under continuous development, has an enormous potential for compiling data and analyzing spatial distributions of crop varieties other than those of sweet potato varieties and is freely available from www.diva-gis.org.

To share their findings with a wider audience, the KARI researchers have set up a publicly accessible website (www.viazivitamu.org), where the project's database can be accessed through a DIVA-GIS viewer that has been adapted specifically for this purpose. ■

Simon T. Gichuki (stgichu@yahoo.co.uk) is a senior scientist with KARI and coordinator of the East African Sweetpotato Germplasm Project.

Robert J. Hijmans, an associate specialist at the Museum of Vertebrate Zoology, University of California at Berkeley, USA, was one of the developers of DIVA-GIS. Please email questions and suggestions to info@diva-gis.org.

Sweet potato (*Ipomoea batatas*) is the world's seventh most important food crop, after wheat, rice, maize, potato, barley and cassava. Considered a 'small' farmer's crop, sweet potato grows well in many farming conditions. The crop has relatively few natural enemies, which means that pesticides are rarely used to produce it - and it can be grown in poor soils with little fertilizer.

Although the sweet potato originates from South America, because of its adaptability the species has spread around the world. In East Africa, where it is the main food crop in many rural areas, sweet potato has been cultivated for centuries. Over the last decade, when diseases ruined other crops, the sweet potato remained a reliable source of food.

Because of its importance for food security throughout the region, in 2004 a group of researchers led by the Kenya Agricultural Research Institute (KARI) launched a project to locate, document and conserve the genetic diversity of the East African sweet potato. With this project, the researchers hope to be able to find varieties that could help them further improve the crop's resilience to pests and drought as well as to enhance its nutritional value.

Sweet potato can be bred for high levels of vitamin A. Therefore, the crop has the potential to help reduce the dietary deficiency of this vitamin, which is a leading cause of blindness and deaths among children throughout sub-Saharan Africa. One of the challenges facing the KARI researchers is to find local varieties that are rich in vitamin A and are well adapted to the growing conditions in East Africa.

feature

Conserving medicinal plants in Ghana

George Owusu-Afriyie describes how BG-BASE, a database program designed to manage information on botanical collections, is helping to conserve medicinal plants in Ghana.

In Ghana, traditional healthcare practices rely almost entirely on herbal medicines. Even in urban areas where modern synthetic drugs are readily available, many people continue to use traditional herbal remedies as these are less expensive. However, the high demand for medicinal plants, which are collected from the wild, is gradually exhausting some local species populations.

Increasingly, herbalists are turning to botanic gardens with requests to harvest medicinal plants from their collections or to obtain information about threatened species. In Ghana, in response to the growing demand for medicinal plants in the 1990s, one of the country's most important botanic gardens, the Aburi Botanic Garden (ABG), decided to look into the possibility of setting up a medicinal plant project.

The ABG was founded in 1980 with a national mandate to explore wild plant species in Ghana with a view to identifying those suitable for agricultural development or for export to overseas markets. Today, the Garden's mandate emphasizes its role in the conservation of biological diversity and in promoting sustainable methods of developing Ghana's plant resources.

The medicinal plant conservation project

Following discussions with officials of Botanic Gardens Conservation International (BGCI), the ABGdecided to launch a project to promote the sustainable use and conservation of medicinal plants in Ghana. Two joint applications for funding were submitted - one (with BGCI) to the National Lottery in the UK, and the other (with the World Conservation Monitoring Centre in Cambridge, UK), to the Darwin Initiative for the Survival of Species. Both were approved in 1999.

Project activities, which started in 2000, included the development of a 50 acre medicinal plant garden at Aburi, where 1361 seedlings were planted in 50 separate plots, separated by walkways. The garden has a nursery, including a lath house to provide shade for tender young seedlings, where plants are propagated for distribution to communities and individuals interested in developing their own medicinal plant gardens.

One of the project's priorities was to develop the capacity of ABG staff to manage information about the plants in the collection, in particular the newly planted herbs. All new seedlings were clearly labelled with their scientific name, family, local name and accession number, and the data were stored on a computer using BG-BASE.

BG-BASE

BG-BASE is database application designed to handle the information management needs of organizations that hold collections of biological materials, such as botanic gardens, zoos, herbaria and horticultural societies. BG-BASE is now used by more than 160 organizations in 26 countries worldwide.

With this program users can document and manage information about their collections, including taxonomic data, bibliographic references, images and geographical information. Instead of having separate databases for each of these types of data, BG-BASE incorporates all of them in a single system. All data are stored in a format that is fully compatible with international data standards for species collections, such as the International Transfer Format for Botanic Garden Records (ITF 1).

BG-BASE can be used on stand-alone computers or as part of a local area network (LAN). Based on feedback from users, the software is regularly updated and improved at two development and support centres, the Royal Botanic Garden Edinburgh (UK) and BG-BASE, Inc., in Topsham, Maine (USA).

The medicinal plant database at Aburi

At Aburi, the entire medicinal plant collection is now managed with the help of BG-BASE. The database contains detailed information about each accession, including scientific name, local name, taxonomic classification, place of origin, date of acquisition, and location in the garden. It also records which species are currently under cultivation in the plant nursery.

The database has not only helped ABG staff to manage the medicinal plant collection but has also made information about the collection more easily accessible to visiting researchers. Since its inception, the database has been consulted by thousands of visitors, including botanists and herbalists from China, Germany, the Netherlands, Nigeria, South Africa, Switzerland, the United States and Zimbabwe. ABG staff also use the database to prepare presentations, complete with statistics and graphics, for conferences and in its outreach work, promoting the conservation and sustainable use of medicinal plants at schools and in rural communities.

The Aburi Botanic Garden is committed to keeping the medicinal plant collection open to the public, so that visitors can stroll along the walkways and read the labels to learn about the plants on display. Thanks to BG-BASE, however, it is actually much easier to find information about the medicinal plants conserved and propagated at Aburi by consulting the garden's database. ■

George Owusu-Afriyie (georgeoa@idngh.com) is Director of Aburi Botanic Garden, Ghana.

For further information about the 'Sustainable use and conservation of medicinal plants in Ghana' project (completed in 2002), visit www.unep-wcmc.org/species/plants/ghana/content.htm. For information about BG-BASE, visit www.bg-base.com.

African herbs for global 'wellness'

Steve Hurt talks about Afrigetics, a web shop that offers a wide range of Southern African medicinal herbs to customers worldwide.

Health Synergetics is a Johannesburg-based company specialising in Southern African medicinal herbs. The herbs, which are sold under the brand name Afrigetics, can all be purchased online (www.afrigetics.co.za). Steve Hurt explains: 'When I looked into the possibility of adding medicinal plants to the product list, I found that there was a worldwide niche market for African herbs. I therefore decided that to 'go online' would be the most effective way to reach customers overseas.'

The Kalahari - home of the Hoodia

Booming business

Afrigetics is just one of growing number of web shops selling African herbs. Although the majority are operated by retailers based in the US, a number of South African suppliers have recently opened their own web shops offering herbs, herbal teas and other plant products directly to consumers.

Spurring the online trade in African herbs is a booming global market for natural health and lifestyle products, including herbal supplements, weight loss products and vitamins. In the US, consumer spending in this 'wellness' sector has grown by almost 8% per year, reaching $68 billion in 2004.[1] Sales of vitamins, herbs and dietary supplements in Europe and Japan have shown similar increases.

The entry of African herbs into this market was led by a herbal tea made from Rooibos (*Aspalathus linearis*), a shrub that grows in the Cedarberg mountains of South Africa's Western Cape. According to Steve, 'the farmers there have done a lot to popularize Rooibos tea, so it was only a matter of time before they began to offer other locally grown herbs for this niche market'.

Web-based marketing

At present, the company's core business is supplying herbs from Southern Africa to wholesale clients in Europe and the US, mostly bulk resellers and manufacturers that use the herbs as ingredients in their own products. These are not the kind of customers that shop online, but the company's web presence has generated many queries from abroad. 'The Afrigetics web shop provides detailed information about the various herbs we sell, so that clients can make an informed choice of products that would suit their customers.'

Although retail is currently a subsidiary aspect of the company's business, the Afrigetics web shop offers a selection of ten popular African herbal products. The herbs are carefully packaged and branded in a way that customers expect to find in a European or American health store. The reason for this, Steve explains, 'is to assure people that, just like the herbs they already buy in their own health store, African herbs are safe and useful products'. Likewise, the web shop offers secure, encrypted payment transactions certified by Thawte, a security certificate provider. Orders received through the web shop are mailed directly from South Africa. A freight agent in the UK handles bulk orders.

Best sellers

At the moment, the company's best-selling product is derived from the Hoodia (*Hoodia gordonii*), a succulent plant that grows in the Kalahari desert and has been used by generations of San Bushmen to stave off hunger during long hunting trips. In 1996, when scientists identified the ingredient that suppresses the appetite, this led to a rush on the plant and a lively trade in Hoodia on the Internet. Afrigetics obtains supplies of Hoodia from farmers who have been granted permission by South African nature conservation authorities to cultivate this protected species.

Two other herbs from Southern Africa that are growing in popularity abroad are Kanna (*Sceletium tortuosum*), traditionally used as a mood enhancer and now hailed by some as 'nature's prozac', and Buchu (*Agathosma betulina*), a shrub used by herbalists to treat urinary tract infections.

The growing demand for African herbs has created an incentive for Southern African farmers to conserve and cultivate indigenous plants. Health Synergetics is actively involved in helping them develop markets for their products. 'While we help our customers discover Africa's treasures, we seek to do business in a way that is good for the environment and the local economy. So when you next visit the Afrigetics web shop, treat yourself to a packet of Rooibos tea or a bottle of Sceletium. We will deliver it in less than four days.'

Thanks to the Internet, Africa's treasures are no longer so far away. ■

Steve Hurt (steve@afrigetics.co.za) is director of Health Synergetics CC. To find out more about the products, visit www.afrigetics.co.za. For information about other South Africa based web shops that offer herbal products, visit www.ananzi.co.za/catalog/HealthandBeauty/HealthandMedical/Nutrition

[1] *Health and Wellness Trends Report 2005*, National Marketing Institute, March 2005.

feature

Caribbean software for natural products chemistry

Robert Lancashire tells the success story of the JCAMP-DX Data Viewer, a computer program developed in Jamaica that is now being used by organic chemists worldwide

Caribbean islands are endowed with a rich diversity of fruits, vegetables, spices and herbs. It is therefore hardly surprising that many of the region's chemists are involved in natural products research to identify compounds in indigenous plants that could have commercial applications.

At the Chemistry Department of the University of the West Indies at Mona (UWI Mona), Jamaica, natural products chemistry has deep roots. The Department's first Chair, Cedric Hassall, devoted much of his career to exploring the chemical composition of Jamaican fruits and vegetables. For example, he traced the cause of a severe vomiting disease to the consumption of a toxin in unripe ackee (*Blighia sapida*), the island's national fruit.

More recently, the Department's chemists isolated the active compound from a plant known locally as spirit weed (*Eryngium foetidum*), which is traditionally used as a remedy against intestinal worms in humans and cattle. UWI Mona has already acquired patents on the compound in both the USA and Jamaica.

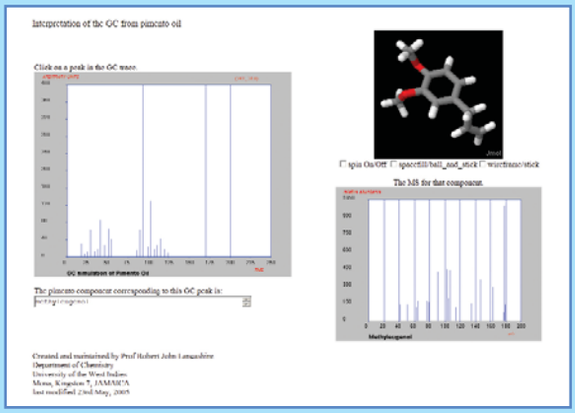
The JCAMP-DX Data Viewer

Arguably a less spectacular but nonetheless important contribution to the advancement of applied organic chemistry at UWI Mona is the JCAMP-DX Data Viewer, a computer program developed by staff members in 1988. With this program chemists can display data generated by a spectrometer, an instrument that is used to isolate and identify active compounds in a sample.

Natural products chemists engaged in pharmaceutical or agrochemical research employ a variety of spectroscopic techniques to identify organic compounds. These techniques are designed to measure the response of a sample molecule to radiation, whether in the form of a light wave, an electron beam or a radio wave. A spectrometer yields a unique response chart or spectrum of the sample that can be compared to a library of spectra of known materials or analyzed to determine its chemical composition.

Using the JCAMP-DX Data Viewer, chemists can instantly reproduce a spectrum from a dataset stored on a computer. They can also compare and analyze spectra, and use them to illustrate presentations or scientific publications.

The Data Viewer, which I co-authored with Debbie-Ann Facey and two other colleagues from the Department of Computer Science and Mathematics, was conceived at UWI Mona in 1988 in the aftermath of hurricane Gilbert. The hurricane destroyed the Department's old infrared spectrometer, but the new one unfortunately did not have any provision for data storage. To address this problem, I wrote two programs: one to capture and transfer data from the spectrometer to an external hard disk, and another to display the data files stored on the disk. I chose to write the Data Viewer in JCAMP-DX, a non-proprietary format for exchanging spectroscopic data that is widely accepted by all users and instrument manufacturers.



Chime

Some years after the program's first release, we rewrote the Data Viewer as a 'plug-in' for web browsers, enabling users to display spectra posted on websites. In 1996, we licensed the program's code to MDL Information Systems Inc., a chemistry software developer, which is now a subsidiary of Reed Elsevier, a leading scientific publisher.

The company incorporated the code in MDL Chime, a program designed to display 2D and 3D graphics of molecules directly within a web page. The molecules are 'live', meaning they are not just static pictures, but chemical structures that scientists can rotate, reformat, and save in various file formats for use in modelling or database applications. The merger of the spectroscopic data viewer with the molecular graphics viewer means that chemists can now combine displays and observe interactions between them.

First released in 1996, Chime has always been free for academic use. This certainly contributed to its appeal: over 2 million copies have been downloaded from the MDL site to date. Another factor contributing to the popularity of Chime is that, for years, it was one of the few viewers that could display JCAMP-DX files.

JSpecView

Our contract with MDL will expire at the end of 2005. A new, Java-based JCAMP-DX viewer called JSpecView is currently being developed and should be released soon. It has many features that are not available in MDL Chime, including the ability to display multiple overlays of different types of spectra. With JSpecView, I expect that chemical research in general and natural products research in particular can continue isolating active compounds from plants that can be used as natural remedies for diseases in humans and cattle. I hope that the patents on these compound will generate additional funding for future explorations of the chemical composition of Caribbean fruits and vegetables. ■

Robert Lancashire robert.lancashire@uwimona.edu.jm) is Professor of Computational Chemistry at the Department of Chemistry of UWI Mona, Jamaica.

For more information about the JCAMP-DX viewer and natural products research at UWI Mona, visit wwwchem.uwimona.edu.jm. A free copy of MDL Chime can be downloaded from www.mdl.com/products/framework/chime

Projects and initiatives

This section lists key projects in the field of traditional plants and ICTs.
Additional information is available from the web magazine at http://ictudate.cta.int.

AFRICA

Agribusiness in Sustainable Natural African Plant Products (ASNAPP)

www.asnapp.org

ASNAPP is a non-profit organization that is helping to create and develop successful agribusinesses in the natural plant products sector. These include herbal teas, culinary herbs and spices, essential and press oils, as well as medicinal plants. The ASNAPP team operates in five countries (South Africa, Ghana, Rwanda, Senegal and Zambia), where they are working with 25 enterprises representing more than 2000 small-scale suppliers of natural plant products.

African Herbal Standards Project (AHSP)

www.underutilized-species.org/the_latest/background_info/AMPS%20summary.pdf

Sponsored by the ACP-EU Centre for Development of Enterprise (*www.cde.int*), the AHSP is working to establish around 50 product standard specifications for key African medicinal plants. The complete set of standards will cover most of the important plants currently traded or considered as having potential both within Africa and in international trade. The product specifications will combine some of the information usually found in scientific monographs, trade specifications and quality control sheets.

African Journal of Traditional, Complementary and Alternative Medicines (AJTCAM)

www.africanethnomedicines.net/journal.php

AJTCAM is a peer-reviewed web-based journal that publishes research in applied medicinal plant science, including traditional and alternative medicines, food and agricultural technologies. AJTCAM is a member of the World Association of Medical Editors (WAME), and is abstracted by African Journals Online (AJOL) and Chemical Abstracts. All full-text articles are freely available online from www.ajol.org.

Southern Africa: PhytoTrade Africa

www.sanprota.com

PhytoTrade Africa is a non-profit trade association that helps poor farmers in Southern Africa supplement their incomes from the sale of natural plant products. Phytotrade provides support for the development and marketing of products for export. The organization is also a clearinghouse for research and development information on a variety of African natural plant products.

Eastern Africa: Natural and Traditional Pesticides (NTRAP) Database

www.ippc.orst.edu/ipmafrica/db/index.html

The NTRAP database covers natural products, including plants traditionally used for crop pest control in sub-Saharan East Africa. For each entry, information can be searched by English name, local name, scientific name, family name, country, crop and keywords. It also contains a bibliography on worldwide indigenous pest control practices and natural products.

South Africa: Traditional Medicines (TRAMEDIII) Database

www.mrc.ac.za/Tramed3

TRAMEDIII is a database developed by the South African Traditional Medicines Research Unit of the Dept. of Pharmacology, University of Cape Town. The database consists of five searchable sections containing information on traditional plants, treatments, toxicology, pharmacology and chemistry.

CARIBBEAN

Caribbean Medicinal Plant Database (CMPD)

http://funredes.org/tramil/english

The CMPB is a searchable database on traditional medicinal plants of Latin America and the Caribbean established by TRAMIL, an ethno-pharmacological research programme of Environmental Development Action (ENDA Tiers Monde). The database includes botanical descriptions, chemical constituents, drawings and medicinal applications, and can be searched through an index of species, locations, botanical families, health problems and synonyms.

PACIFIC

Regional Germplasm Center (RGC)

www.spc.int/rgc/

The RGC was established in 1997 to assist Pacific Island countries to conserve the region's genetic resources, and to access improved crop germplasm. The Centre is using *in vitro* conservation techniques, and is currently giving priority to taro, yam, and sweet potato, as well as to other crops such as kava, breadfruit and traditional leafy vegetables. For regular updates on the activities of the Center and the associated Pacific Plant Genetic Resources Network (PAPGREN), visit the PAPGREN weblog at *http://papgren.blogspot.com*.

Seed Savers' Network

www.seedsavers.net

Based in Australia, the Seed Savers' Network is a non-profit organization that promotes the preservation, free distribution and exchange of open-pollinated seeds. Seed Savers' activities include a newsletter, seed exchange, seed bank, frequent workshops and the publication of a best-selling handbook. Seed Savers' has helped to establish Seed Networks in countries in the Pacific, including Solomon Islands, East Timor and the Philippines, as well as in Cambodia, Ecuador and India.

GLOBAL

The Global Facilitation Unit for Underutilized Species (GFUUS)

www.underutilized-species.org

GFUUS is an international project to exchange information and knowledge in the field of underutilized and neglected species. The GFUUS website provides access to a range of information resources, including details of specific crops, events, underutilized species, and relevant publications.

PROMETRA

www.prometra.org

PROMETRA is an international NGO dedicated to the preservation and restoration of African traditional medicine and indigenous science. With headquarters in Dakar, Senegal, it has 22 chapters throughout Africa, Europe, the Caribbean and the USA. Its website includes links to conference proceedings and documents about African traditional medicine.

Centre for International Ethnomedicinal Education and Research (CIEER)

www.cieer.org

CIEER is an education and research organization that promotes the exchange of ethnomedicinal knowledge worldwide. The CIEER website offers links to bibliographies, publications, research projects and events, and provides access to an international network of ethnobotany researchers.

FAO´s Non-Wood Forest Products Database

www.fao.org/forestry/index.jsp?lang=1

This database is one of the priority areas of FAO´s Forestry Department and provides a useful inventory of resources about non-timber forest products, including medicinal plants and other non-wood products.

Q&A: People and Plants International

People and Plants International (PPI) is a global network of ethnobiologists and ecologists that was registered as a charity in New York in 2004. Tony Cunningham, one of the founders, explains why PPI still has no office.

How did PPI come about?

PPI builds on the People and Plants Initiative, a partnership of UNESCO, WWF and the Royal Botanic Gardens, Kew, which ended in December 2004. From this initiative, PPI inherited a unique foundation of expertise, cutting-edge methodologies, and a global network of practitioners dedicated to the managed use and conservation of plants in areas of high biological diversity.

Many research organizations are involved in the conservation and sustainable use of plant resources in ACP countries. How would you characterize PPI?

In our work but also as an organisation, PPI is an experiment in doing things differently. PPI may be seen as a 'knowledge network' whose work is partly 'virtual', via the Internet, and partly hands-on, with field-based research and training courses. We do not have an office, buildings, vehicles or large overheads. Our assets consist of the knowledge and experience of our members.

Essentially, PPI is a project-driven network of over 40 highly qualified practitioners operating in Africa, Australasia and Latin America, with a minimal operational structure. We are small and want to stay that way. Rather than spend our time and effort building up an organization, we prefer to help partner institutions and communities to obtain the resources they need to conduct sustainable resource management, training and local conservation work.

Could you give an example of the PPI approach in practice?

A good example of the type of partnership we are developing is PhytoTrade Africa, the Southern African Natural Products Trade Association (www.phytotradeafrica.com). The members of this network, across seven countries, focus on improving local livelihoods through trade in indigenous plant resources. Representing 20,000 rural resource users, PhytoTrade Africa is committed to the development of a Fair Trade and environmentally sustainable natural products industry. They have excellent business skills but lack experience with sustainable harvesting and monitoring of plant resources. PPI is now assisting them with advisory support and training in these areas.

Some time ago, you reviewed the use of handheld computers by local people involved in one of your projects. Can ICTs contribute to the sustainable use and conservation of traditional plant resources?

The computer system we used, CyberTracker (www.cybertracker.co.za), is unique in that it has been designed to enable people with low literacy skills to record field observations. We tested the CyberTracker system in Zimbabwe, where we worked with basket makers who harvest the bark of the bird plum tree (*Berchemia discolor*) as a source of dye. The challenge was to develop a practical method to enable the basket makers to monitor the impact of harvesting on the health of the trees.

We designed a set of icons, each illustrating a different degree of impact, which we transferred to a handheld (PalmPilot) computer. Using the touch-sensitive screen of the computer, people could record their observations by pointing to the appropriate icon. The advantages of the CyberTracker system are that it is quick and easy to use, and it allows for rapid processing, storage and retrieval of large amounts of data over long time periods.

Compared with manual data collection (using pen and paper), however, CyberTracker does have some disadvantages. The handheld sets are relatively expensive, and users need regular access to a power supply to recharge the batteries, and to a PC to download data for further processing and analysis.

Are organizations other than PPI doing enough to support projects that combine traditional knowledge with modern science?

There are well designed projects out there, but over many years we have observed that large donor organizations frequently spend huge amounts of money on projects to address complex problems over timescales that are far too short (3-5 years). Projects that draw on indigenous or local knowledge or attempt to produce and market products that will contribute to local livelihoods over the long term are rare.

Rarer still are grants and university courses in developing countries where young professionals are trained to carry out academically sound, applied problem solving on resource management issues in their own countries. It is these young people who are the future. ■

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