

GLOBAL NEWSLETTER ON *UNDERUTILIZED* *CROPS*



May 1999

Editorial

Welcome to the second Global Newsletter of Underutilized Crops. I am sorry, although we planned to publish two issues per year, we could not produce this in time due to shortage of funds. We have plenty of publishable materials but available funds restricted us for an extended newsletter. For the same reason, we could not produce a glossy edition. However, we are pleased to say that FAO has agreed to fund the 3rd issue of the Newsletter.

ICUC has been working on various projects now. Details of these are in the leaflets enclosed in this Newsletter. We do not want to repeat them here. We hope we will be able to inform you of the expansion of ICUC's activities in the next issue with extended programmes and an extended Newsletter. For this, we must have your co-operation for the next issue. PLEASE SEND ARTICLES AS SOON AS POSSIBLE to be published in December 1999. We look forward to your co-operation.

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Mission Statement

Food Security, improved nutrition and economic welfare of human beings raised through sustainable and increased economic production of food and industrial raw materials. This to be achieved by developing and utilising the untapped biological diversity of underutilized crops.

ICUC's Global Newsletter on Underutilized Crops is compiled by
ICUC Staff.

If you have any queries or material which could be included in
the next newsletter please send to:

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The University of Southampton, Highfield,
SOUTHAMPTON, SO17 1BJ, UK

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Email: haq@soton.ac.uk

Charity no: 1015696

ICUC

*announces an
International
Conference:*

*‘New Crops: a
decade of
achievements and
the way forward’*

*to be held in April 2001.
Please contact ICUC for
further information.*

Organizations Concerned with Underutilized Crops

ICUC News

ICUC operates on the basis of programmes. Recent work has concentrated on two programmes: (a) Fruits and Nuts and (b) Vegetables, pulses, roots and tubers. **Fruit and Nuts Programme**
Genetic Diversity and Development of Propagation techniques for Jackfruit and Pummelo are research projects funded by DFID. Both vegetative and in vitro (tissue culture) propagation methods for jackfruit have been established. The genetic diversity for both crops has been determined through farmers' survey and characterization of collections of germplasm made in Bangladesh and Nepal. Molecular evaluation has been carried out only on the samples where diversity has been recorded from survey and field characterization and final results

assembled. DFID has now asked ICUC to transfer these technology for farmers' use and contacts have been made to stipulate a developmental project to use propagation methods by farmers. **Jackfruit Product Development** project has been coordinated by ICUC during this year. The project was carried out by the Institute of Food Science & Technology, Bangladesh Council of Scientific and Industrial Research and funded by CSC. Several products, toffees, biscuits, drink, dry pulps in syrup have been successfully produced. BCSIR has now found interested entrepreneurs to market the products.

Fruits for the Future: a New Project. A grant from DFID-FRP has been obtained to produce 5 monographs (details on page 4). This project is being carried out in collaboration with IPGRI and ICRAF. ITDG and CARE International will be acting as partners for preparation of Extension materials. This is a Global Project. **Vegetables, pulses, roots and tubers programme**

Homestead farming: ICUC in collaboration with CARE, Bangladesh. Bangladesh has developed a project and hopefully the project will start soon. 'Diversity of homestead farms in Bangladesh', a project funded by CSC, is carried out at Bangabandhu Agricultural University in Salna (formerly known as Institute of Postgraduate Studies in Agriculture (IPSA), near Joydebpur, Dhaka. The objectives of the project are (a) to identify superior types of individuals through farmers' survey and evaluation (b) multiplication of these species (c) on-farm vegetable seed production to rehabilitate superior types in home farm systems. Initial results have shown the diversity of species on home farms (both fruit trees, timber species, vegetables and medicinal species) and work is progressing to establish diversity within the species. The project will then select superior types for production of planting materials. **Indigenous vegetables project** is a collaborative project with the

University of Fort Hare (UFH), South Africa funded by the Office of Science & Technology, UK. The characterization of germplasm of Amaranths, Tylosoma, Chenopods and Cleome have been completed. The results have been analysed using SPSS. However, selections through farmers' survey and greenhouse study have been used for molecular characterization study at Southampton. The results are being assembled and the establishment of the genetic diversity has been completed. It is hoped that the thesis will be submitted November 1999. **Indigenous vegetables:** a New Project. The National Lottery Charities Board UK has awarded a grant to follow up work in South Africa and Tanzania. This project is a part of the project agreed by SEANUC steering committee. Unfortunately it was not possible to include more countries of SEANUC due to shortage of funds. **Safflower:** an evaluation project, funded by CSC initially, has been carried out as a follow up project on recommendation of Pakistan meeting on 'Underutilized Crops of Pakistan'. The objective of this project is to select suitable type(s) to grow under rainfed conditions of BARANI areas of Pakistan. 268 accessions were evaluated in 1997-1998 season and a large variability was recorded in several agronomic traits. 462 single plants were selected for further evaluation. Experimental trials were carried out on sowing dates, spacing and fertilizer applications. It was found that accession no. 307539 gives higher yield (1978kg/ha) if sown in early part of November. Variety Gila gave higher yield at a spacing of 30 X 15cm when NPK rate was 120:60:0. It is hoped that funding would be available to continue these experiments in three different sites. **Cicer, Lupins, Rice and Sheanut** tree are also being researched by 4 students for Ph.D degrees.

Networks

Africa

SEANUC

No fund was available to implement projects already identified by the Steering committee this year. This is partly due to absence of the Chairperson of SEANUC. However, a small fund was available from CSC for Country Status Reports and Malawi, Zambia, Tanzania, Kenya and South Africa have already submitted their reports. SEANUC needs to be revitalised.

WAFNET

This was formally constituted during the Regional Technical Meeting organised by the ICUC in collaboration with the Plant Genetic Resources Institute of Bunso, Ghana and the FAO, and held in the FAO Regional Office of Accra, Ghana from 15-16 October 1998. The network is placed under the aegis of FAO and addresses all countries in West and Central Africa who are interested in tropical and sub-tropical fruit germplasm conservation and utilization. The network functions on a voluntary basis and involves national institutions, as well as associations and Non-Governmental Organizations (NGOs) dealing with tropical and sub-tropical fruit genetic resources, conservation and utilization. ICUC acts as a facilitator to establish the secretariat and assist in the implementation of the network in close consultation with the FAO.

A clear programme to document, collect and conserve wild edible and useful TSTF germplasm is needed in developing countries, especially in Africa, tapping indigenous knowledge as much as possible.

There is a need for training in methods of identification, conservation characterisation and utilisation of TSTF genetic resources, including training in preparation of high quality spawn.

The network will link with different initiatives in different parts of the world dealing with TSTF genetic resources exploration; conservation and utilization and will encourage participation of any West and Central African countries/institutions/NGOs/organizations that are interested to collaborate in this area.

IRAD of Cameroon will explore the possibility to develop a sub-network on TSTF addressed to Central African countries that are not included in the present exercise. IRAD will contact countries/institutions in order to ascertain their willingness to develop a Central African Network on TSTF genetic resources. In line with the above assessment, IRAD will take initiative in order to promote a technical meeting inviting interested countries/institutions for constituting a Central African Network. It was also requested that FAO should explore the possibility to support the cost for this meeting.

The network will be an active component of the REMUFRUT and will be represented in the board of co-ordinators of these global network on TSTF genetic resources conservation and utilization. The network will also promote new undertakings; in different West and Central African Regions and will develop activities in collaboration with existing regional and inter-regional TSTF networks in the world, such as SEANUC, UFTANET, RELAFRUT, MESFIN and those under constitution in South Pacific in line with the activities of the REMUFRUT.

FAO will assist in strengthening the capacity of this new regional network. The possibilities of simultaneous interpretation English/French in future meetings of the network are being investigated in order to facilitate communication between scientists coming from English and French speaking countries.

The network has the acronym **West Africa-Tropical and Sub-tropical Fruit Genetic Resources NETWORK (WAFNET)**.

NETWORK CO-ORDINATION STRATEGY

Working Group 1 - Under-utilized tropical and sub-tropical fruit crops

Sub-coordinator: Prof. CPE Omaliko, Director, Department of Agriculture & Natural Sciences, Federal Ministry of Science & Technology, Abuja, Nigeria

Working Group 2 - Utilized tropical and sub-tropical fruit crops

Sub-coordinator: Mr. Demba Sidibe, Researcher, Ministry of Agriculture Ziguinchor, Senegal.

The regional coordination will be provided by:

Plant Genetic Resources Centre, Bunso, E/R, Ghana

The sub-coordinators and the regional coordinator will meet at least once per year in order to harmonise activities and to define a common workplan and assess achievements and results. The first general meeting of the network will be convened every 2 years and subsequently in every 2-4 years according to the need of network.

The first general meeting will be held preferably in combination with any forthcoming scientific event on tropical and sub-tropical fruits in Africa. The working groups will organise meetings on specific technical topics. Associating these meetings with other national and international workshops; symposia or conferences will be pursued as a means of facilitating participation.

The role and function of the regional coordinator:

- Guarantee divulgation of information among members
- Guarantee regular publication of a newsletter and other instruments (e.g. website/webpages) for enhancing information dissemination and exchange.
- Promote co-ordinating meetings of the working groups; as well as specific meetings on technical subjects.

- Promote efforts to obtain funding assistance from donors and financing agencies for strengthening network activities

The role and functions of the working group coordinators:

- Develop and guide activities appropriate for the working group
- Prepare and disseminate annual progress report on working groups activities
- Promote specific meetings of technical subjects in his area of activity
- Facilitate sharing of information among network members

The role and functions of the Regional Coordinator and the Working Group Coordinators will be assessed and renewed every two years and in the occasion of the general meeting of the Regional Network.

The specific task to be addressed by the network are the following:

- Exploration and collection of genetic variability
- Evaluation and characterisation.
- Conservation.
- Documentation and Information.
- Germplasm exchange.
- Utilisation.
- Training and transfer of technology
- Public Awareness.

IMMEDIATE TASKS:

The Regional Coordinator in cooperation with the working group Coordinators and the Network Secretariat will prepare a work plan and a list of priority activities to be undertaken for the next two years.

Asia

UTFANET: The 4th Steering Committee was held in April and focused programmes for next 3 years were identified. Funding is needed to implement these programmes and discussion is in

progress with IFAD and ICRAF for a joint submission to IFAD.

The Proceedings of the 1996 meeting on Domestication, Production and Utilization of New Crops was published in December 1998. The proceedings of Underutilized Crops of Pakistan has been published.

Crops News

TAMARIND (*Tamarindus indica* L.)

The Tamarind (*Tamarindus indica* L. syn. *T. occidentalis* and *T. officinalis*) belongs to the family Leguminosae, subfamily Caesalpinioideae and is a monotypic genus. It is thought to have originated in tropical east Africa from where seafaring Arabian traders spread seeds to Southeast Asia. Today tamarind is cultivated in India, Africa, Southeast Asia, Australia and southern USA. A truly pantropical tree, tamarind performs well in both semi-arid and humid monsoonal climates.

Tamarind is best known for its fruits which are marketed worldwide in sauces, syrups and processed foods. Products also include medicines, paint, varnish, adhesives and wood. Drought resistant and strong, it performs well as a windbreak, preventing soil erosion and protecting people, crops and animals in harsh environments. Tamarind also provides a handsome element in many parks, gardens and roadside landscapes.

There is a great amount of genetic diversity in tamarind with respect to sweetness of fruit, size of fruit and fruit chemical composition. Since cultivation has been through seed, no standard cultivars are available. Vegetative propagation produces trees with superior fruiting characteristics. Trees started from branch cuttings often produce more and better-quality fruit than those propagated by seed, they also remain smaller - a trait that facilitates fruit harvesting. Superior

clones can also be grafted onto seed propagated rootstock. Such trees will usually fruit within 3-4 years.



BER or JUJUBE (*Ziziphus mauritiana* Lam.)

The ber or Indian jujube (*Ziziphus mauritiana* Lam. Syn. *Z. jujuba*) belongs to the family Rhamnaceae. It consists of about 170 species, which are mainly distributed in the tropical and subtropical regions. The plant is native to Asia and grows wild, particularly in sub-Himalayan hill country. It is now found in many parts of Asia, Australia, the West Indies, Tropical America and Africa.

Ber is an important fruit crop of the arid regions and is often called "king of the arid fruits". It is very nutritious and richer than apple in protein, phosphorous, calcium, carotene and vitamin C. The fruits are usually eaten fresh but also in other forms, such as dried, candied, pickled, as juice or as ber butter. The tree is used for fodder and the wood makes good charcoal, timber and firewood.

The tree can withstand severe heat, frost, waterlogging and drought and is planted in dry areas unfit for other crops. Commercial cultivation of ber usually extends up to 1,000m beyond which the trees do not perform well and cultivation becomes less economical. Because of its wide adaptability and higher economic return, the cultivation of ber has received a great impetus as a commercial crop in northern India. The crop is highly cross-pollinated in nature forming a rich genepool. Natural reproduction is through seed, stump or root suckers and coppice, however budding is the easiest method of propagation for improved cultivars. More than 300 varieties have been listed; as maintained in several field genebanks in India, but only a handful are commercially important.

Major emphasis in terms of improvement was laid on clonal selections and it is believed that most of the present day commercial varieties have evolved as a result of such selections.



AFRICAN PEAR/PLUM (*Dacryodes edulis* (G Don) H J Lam.)

The African pear or plum (*Dacryodes edulis* (G Don) H J Lam. syn. *Pachylobus edulis*, *P. saphu*, *Canarium edule* and *C. saphu*) belongs to the family Burseraceae. The genus *Dacryodes* has 34 species divided into three geographical sections, America, Indo-Malaysia and Africa containing by far the most. The African pear is a forest tree indigenous to the humid lowlands of West Africa and is thought to have originated in the Congo, Nigeria and Cameroun. It has remarkable genetic diversity, which is reflected in the wide variety of morphological characters shown in this region. It is one of the most widely planted indigenous species in the area and is found as a garden tree in and around villages.

The African pear is most well known for its fruit, which is edible after cooking or scalding and it has a high food value. The fresh pulp is rich in fat with a considerable amount of palmitic acid and linoleic acid. The resin is used medicinally by local people and the wood is used to make tool handles. The tree is usually grown from seed, sown either in open ground or in long polythene bags. Apart from layering, vegetative propagation gives poor results. Although not grown on a commercial basis, domestication of the African pear would ease propagation for use on farms and would help to develop a higher value fruit with more pulp, fetching more in a local market.

BAOBAB (*Adansonia digitata* L.)

The Baobab (*Adansonia digitata* L. syn. *A. sphaerocarpa*, *A. sulcata*, *A. somalensis*, *A. baobab*, *A. situla*, *A. integrifolia*, and *A. digitata* var. *congolensis*) belongs to the family Bombacaceae. The genus *Adansonia* contains 10 species, 8 in Madagascar, and 1 in Australia. The baobab is found throughout tropical and subtropical Africa, from Senegal to Botswana and frequently in the vicinity of villages. It has been introduced to many parts of the tropics and is found principally in dry formations near the coast, where there is a long dry season.

A great deal of folklore and mythology together with superstition is attached to the tree probably because of its obesity. Regarded as one of the most useful trees in the Sahel, it is used for fuelwood, dune control, charcoal, shade, timber, pesticide, agroforestry, fruit, medicine, hedging and forage. It serves as a landmark and meeting place in villages and the tree trunk is frequently used for water and food storage. The value of the tree rests primarily in its fruit, bark and roots.

The baobab is not often grown or planted due to difficulties associated with germination and the maturation period, which precedes fruit production or leaf harvest. It is however easy to propagate in the nursery. As a result of the breakdown in the regeneration process, there is a scarcity of young baobabs and mainly older specimens remain. Failure to regenerate has been a result of intense use by Man, foraging by livestock and partly due to poor natural germination. Domestication of this species may allow more natural regeneration of the wild specimens yet also provide a resource for farmers.



ANNONAS (*Annona spp*)

Annonaceae is commonly referred to as the Custard Apple family; it consists of approx. 75 genera and is widely distributed. The genus *Annona* is the most important within the family Annonaceae, since among its 100 or more species seven and one hybrid are grown commercially. The important commercial species are Cherimoya (*A. cherimola* Mill.), Ilama (*A. diversifolia* Saff.), Pond apple (*A. glabra* L.), Mountain soursop (*A. montana* Magfady), Soursop (*A. muricata* L.), Custard apple (*A. reticulata* L.), Sweetsop (*A. squamosa* L.) and Atemoya (*A. squamosa* x *A. cherimola*). All of the species are thought to have originated in the American tropics ranging from the foothills of western Mexico, through the Caribbean to the highlands in Peru and Equador. Although originating in the American tropics, *Annona* is now widespread, following the distribution route of the early traders from America to the coastal areas of Africa and the pacific region. Ilama, pond apple and mountain soursop are however not as common or widespread as the other species. Research has been carried out on the genus with the production of the hybrid atemoya, combining the desirable characteristics from cherimoya and sweetsop. There is considerable variation among seedlings and a number of cultivars have been produced and are grown commercially in Israel, Australia, California, Florida and Hawaii and in other countries for domestic consumption. Cultivars are also available for Cherimoya and Sweetsop.

The Annonas are usually consumed as desert fruit. Puree can be used to prepare iced soursop drink or mixed with other juices, or it can be made into sherbets and gelatin dishes. The fruit is the major commercial product for the genus, however when used domestically other products are obtained such as medicines, pesticides and timber. Species other than those listed above have commercial potential for

example the Abo (*A. senegalensis*), which is indigenous to Africa. Propagation is usually by seed but vegetative propagation is also carried out and is successful to different degrees with each species.



The major constraints to the effective use of these crops are access to information on use, production and processing and ineffective marketing. Fruits for the Future is a three year project which aims to redress this balance and facilitate technology transfer to farmers through media, by distributing extension manuals emphasising products, marketing and processing as well as production. Monographs and annotated bibliographies will be produced to collect and summarise existing research, in order to make better use of existing research results and identify possible gaps in the knowledge base for further research.

Recent Meetings

Regional workshops on medicinal plants and traditional medicine in Africa

Two regional workshops on medicinal plants and traditional medicine were held in Conakry, Republic of Guinea, from 17-21 November 1997 and in Cape Town, South Africa, from 14-18 April 1998 respectively. They were organised by the Environment Liaison Centre International (ELCI Kenya) in conjunction with the International Development Research Centre (IDRC, Canada). The two workshops took place within the framework of the Medicinal Plants and Local Communities Programme

(Africa) being implemented by ELCI with support from IDRC and DANIDA.

Participants presented papers focusing on their own work and on the status of traditional medicine and medicinal plants in their respective countries. The workshops laid the groundwork for a continuing dialogue among key stakeholders in the effort to conserve medicinal plants and promote traditional medicine. They were an excellent occasion to build bridges between researchers, traditional healers and NGOs so that collaborative efforts can be initiated for future work in the area.

The workshop proceedings are available from:

Ernest Rukangira, Medicinal Plants and Biodiversity Project, Environment Liaison Centre International (ELCI), PO Box 72461, Ndemi Road off Ngong Road, Nairobi, Kenya.
Tel: ++254/2/5761-14; -25; -54
Fax: ++254/2/572175
Email: erruka@elci.org

5th General Assembly of APAARI and the Expert Consultation on Research Management Mechanisms of National Agricultural Research Systems (NARS)

The Fifth General Assembly of the Asia-Pacific Association of Agricultural Research Institutions (APAARI) was held at Suwon, Republic of Korea from 13-15 October, 1998 in conjunction with the Expert Consultation on Research Management Mechanisms of NARS. It was co-sponsored by ACIAR, ISNAR and FAO.

The deliberations of the Expert Consultation on Research Management Mechanisms of the National Agricultural Research Systems (NARS) was held in four Technical Sessions: International Initiatives, National Initiatives, Network Initiatives and Group discussions on addressing some of the challenges faced by NARS such as setting priority directions, sharing

management experienced, human resource development and impact assessment and evaluation. The Network Initiatives session mainly highlighted the role of crop/commodity and regional PGR networks as examples of successfully operating activities in the region.

The presentations of Dr S K Vasal, Dr C L L Gowda and Dr Ken Riley dealt with the success of Tropical Asia Maize Network (TAMNET), the Cereals and Legumes Asian Network (CLAN) and Plant Genetic Resources - crop and sub-regional networks respectively.

More collaboration with APAARI was stressed for these and other networks such as on Information Networking and on Group on Fisheries and Aquatic Research (GoFAR). Among others, APAARI is already associated with activities of the Underutilized Tropical Fruits Asia Network (UTFANET). (ICUC is the executive agency for UTFANET) Dr R S Paroda, Executive Secretary, briefed the members and other participants on the action taken on various activities by the APAARI Secretariat, since October 1997:

- APAARI Publications
- Information Networking
- ICRISAT- ICARDA-APAARI proposal to support CLAN
- collaboration with ICLARM, IPGRI, ASPNET, GFAR
- APAARI's representation in regional activities
- APAARI Secretariat
- Future Meetings
- New APAARI Executive Committee

Contact: APAARI Secretariat, FAO Office in India, 55 Max Muller Marg, New Delhi 110 003
Email: FAO-IND@field.fao.org

The Gmunden Conference

Austria, October 1998

400 delegates attended 'Crops for a Green Industry', a European conference held as part of the

Austrian EU Presidency. Major themes were:

- The European agenda
- Wood, fibres, pharmaceuticals and chemical materials
- Oils and fats
- Energy
- Carbohydrates

The conference concluded with the 'Gmunden Declaration for the encouragement of sustainable resources'. Commissioner Fischler emphasised the advantages to the European Union of non-food crops:

- Reduced consumption of mineral oils i.e. the opportunity to extend petrochemical reserves for future use
- climate protection (Kyoto)
- new opportunities/product innovations
- new agricultural income and production possibilities

Further details can be obtained from ACTIN Newsletter Number 11 February 1999

Tel: +44 1372 802054
Email: info@actin.co.uk
Web: <http://www.actin.co.uk>

Vth International Bamboo Congress and VI International Bamboo Workshop 2-6 November 1998, San Jose, Costa Rica

The above Congress, organized by the Bamboo Foundation of Costa Rica, was supported by the National Government, International Network on Bamboo and Rattan (INBAR), International Bamboo Association, Dutch Government and others. 420 delegates from 37 countries participated.

The main theme of the congress (the largest so far organized in a Central American Country) was Bamboo for Sustainable Development. Items discussed included:

- *Guadua angustifolia*
- Micropropagation of bamboo
- Safe movement of bamboo germplasm

The congress provided a good opportunity to foster international collaboration between various bamboo organisations actively functioning in various continents. Further details can be obtained from: IPGRI Newsletter No 27, December 1998.

Web: <http://www.cgiar.org/ipgri>

Forthcoming events

1st International Conference on the Behavior of Pesticides in Soils, Ground & Surface Water

21st-22nd June, 1999. Maritim Rhein-Main Hotel, Am Kavalleriesand 6, 64295 Darmstadt

- Behaviour of Pesticides in Soils
- Post Application Monitoring
- The German Pesticide Monitoring Programme compared to those implemented by other countries
- The use of different modelling tools to predict pesticide behaviour

Contact Mrs Petra Backhoff
Tel: +49 (0) 2 31 / 7 58 96~50
Fax: +49 (0) 2 31 / 758 96 ~70

3rd International Symposium NOVEL and Non-Conventional Plants: Prospects of their Practical Uses

To be held in Puschino, Russia 21-25 June 1999 including sessions on Genetics, breeding and seed-growing; adaptive farming and cultivation technologies; and the processing of non-conventional raw material for medicine and healthy food industry.

Contact: Dr VK Gins, Symposium Secretary, s 265, A N Bakh Inst. of Biochem. Leninskii prospect, 33, Moscow 117071, Russia.
Tel: (095) 954 31 26
Fax: (095) 954 27 32
Email: INBIO@GLAS.APC.ORG

The Industrial Applications of Bioplastics

24 June 1999. Bonn, Germany.

Please contact Mrs B Pullens de Witt, Europoint BV
Tel: + 31 30 6933489
Fax: + 31 30 6917394
Email: info@europoint-bv.com

9th International Lupin Conference

20-25 June 1999.

The conference will be held at Klink (Müritz), Germany

The conference will cover:

- On-farm production and utilization
- Utilization
- Plant protection
- Plant breeding
- Economy
- Lupins in ecological agriculture

For details please contact:
German Lupin Association,
Gesellschaft zur Förderung
Der Lupine (G.F.L.) e.V.
Im Rheinfeld 1-13
D-76437 Rastatt, Germany.

Organic and Herbal Show in Asia

24-27 June 1999

This exhibition will be held at the Philippine Trade Training Centre, Pasay City, Philippines

For details please contact:
Center for International Trade Expositions and Missions (CITEM),
Department of Trade and Industry,
International Trade Center, Roxas Blvd., 1300 Pasay City, Metro Manila, Philippines
Fax: +632 831 2483
Email: citemdo@info.com
Web:
<http://www.info.com.ph/~citem>

Conferences on the Conservation and Cultivation of Native Medicinal Plants of North America

23-25 July 1999, Florida
8-10 October 1999, Ohio
28 December - 2 January 2000, Hawaii

These conferences are hosted by United Plant Savers. They focus on the sustainable cultivation of medicinal plants, identification of wild medicinal plants, ecological herbalism, plant conservation principles and techniques and bioregional herbalism as a healthy way of living.

Contact: United Plant savers, PO Box 98, East Varre, VT 05649
Email: info@plantsavers.org

International Ginseng Conference '99

8-11 July 1999, Hong Kong.

The conference is organised by the Chinese Medicinal Material Research Centre and will be chaired by Dr. Paul But. It will bring together Ginseng professionals and experts of all fields, including biotechnology, medicinal applications and marketing aspects. Next to oral and poster presentations, various exhibitions will be displayed.

Contact: IGC '99 Secretariat, International Conference Consultants Ltd, Unit A, 3/F Eton Building, 288 Des Voeux Rd. Central Hong Kong.
Tel: ++852/2559/9973
Fax: ++852/2547/9528
Email: icc@asiaonline.net
Web: <http://www.emmrc.cuhk.edu.hk/ginseng>

Off-forest Tree Resources of Africa Workshop

12-16 July 1999 Arusha, Tanzania.

Contact: Prof Roger Malimbwi,

Faculty of Forestry, Sokoine University of Agriculture, PO Box 3009 Chuo Kikuu, Morogoro, Tanzania
Fax: 255-56-4648
Email: forestry@sua.ac.tz

16th International Botanical Congress

1-7 August 1999

Saint Louis, USA.

The conference is held every six years and consists of invited oral presentations (plenary sessions, keynote symposia, general symposia) and contributed poster sessions. The scientific program will be subdivided in the following sections: a) Botanical diversity - systematics and evolution, b) Ecology, environment, and conservation, c) Structure, development, and cellular biology, d) Genetics and genomics, e) Physiology and biochemistry, and f) Human uses of plants - Economic botany and biotechnology. Among others, a symposium on 'Economically Important Plants: Use and Conservation Issues' will be held.

Contact: Secretary General. XVI IBC, Missouri Botanical Garden, PO Box 299. Saint Louis, MO 63611-0229, USA
Fax: ++1/314/577-9589
Email: ibc16@mobot.org

Global Soy Forum

4-7 August 1999

Sheraton Towers, Chicago, Illinois, USA.

Web: <http://www.gsf99.uiuc.edu>

AIC Annual Meeting

8-10 August, 1999

Charlottetown, Prince Edward Island.

Web: <http://www.upei.ca/~aic99>

Conference on Food & Forestry: Global Change and Global Challenges

20-23 September, 1999

University of Reading.

Contact email: sm.wilkinson@elsevier.co.uk

Forest Conservation Genetics: Principles and Practice

20 Sept - 1 Oct 1999
Canberra, Australia.

This course aims to give participants: an understanding of plant population genetics principles; an appreciation of the role of population genetics in forest biodiversity conservation; an awareness of the impacts of human interventions on forest genetic structure; and a capacity to apply this understanding to conserve forest biodiversity. Cost AUD\$2,500.

Contact: Jenny Clement, ANUTECH Development International, GPO Box 4, Canberra ACT 2601, Australia
Fax: 61-2-6249 5875
Email: jenny.clement@anutech.anu.edu.au

Conference on Desert Technology: Deserts in Changing Climates

3-8 October, 1999

Sparks, NV, USA.

Web: <http://www.engfind.org>

National Small Farm Conference

12-15 October 1999

Regal Riverfront Hotel, St Louis, MO, USA.

Contact: Troy Darden
Tel: 573/681-5587

Seminar on Concepts for Modernization of Irrigation Water Delivery Systems and Workshop on Modernization of Irrigation Water Delivery Systems

17-21 October 1999. Phoenix, AZ

Contact:

Email: stephens@uscid.org

6th International IFOAM Trade Conference on organic products. Year 2000: The development of markets and the quality of organic products?

20-23 October 1999, Florence, Italy.

Contact: SANA - Fieri e Comunicazioni srl, Via San Vittore, 14-20123 Milano, Italy.

Tel: +39-2-86451078

Fax: +39-2-86453506

Email: fierecom@starlink.it

Web: <http://www.sana.it>

BGCI 4th International Congress on Education in Botanic Gardens

9-13 November 1999.
Thiruvananthapuram, India

Non Indian contact:
Lucy Sutherland, 4th BGCI International Congress on Education in Botanic Gardens, BGCI, Descano House, 199 Kew Road, Richmond, Surrey TW9 3BW, UK

Tel: 00 44 181 332 5953/4/5

Fax: 00 44 181 332 5956

Email: bgci@rbgkew.org.uk

Indian contact:

Dr Jacob Thomas, 4th BGCI International Congress on Education in Botanic Gardens, Tropical Botanic Garden and Research Institute, Pacha-Palode, Thiruvananthapuram 695 562

Tel: 91 472 869 246

Fax: 91 471 431178

Geospatial Information in Agriculture and Forestry

10-12 January 2000

Florida, USA

Contact: El Conferences, PO Box 134008, Ann Arbor, MI 48113-4008, USA

Fax: 1-734-994 5123

International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century

14-18 February 2000.

ICAR, New Delhi

The major themes of the conference include:

- Agro-biodiversity
- Agro-forestry
- Soil Management
- Water Management
- Weather and Climate Management Socio-Economics
- Integrated Resource Management Energy Management.

For further details please contact: Dr A K Singh, Secretary General, International Conference on Managing Natural Resources, Indian Society of Soil Sciences, Indian Agricultural Research Institute, New Delhi 110 012, India

Fax: +91 11 575 5529

Email: icmar@bic-iari.ren.nic.in

XXI IUFRO World Congress

7-12 August 2000

Kuala Lumpur, Malaysia

Contact: XXI IUFRO World Congress Organising Committee, Forest Research Institute Malaysia, Kepong, 52109 Kuala Lumpur, Malaysia

Fax: 60-3-6367753

Email: iufroxxi@frim.gov.my

10th ASOMPS (Asian Symposium on Medicinal Plants, Spices and other Natural products): Research and Development of Natural Products for Human Survival in the 21st century

19-23 November 2000

Dhaka, Bangladesh.

Contact: Prof. Nilufar Nahar, Secretary Organising Committee ASOMPS X, Room 305, Khundkar Biggan Bhavan, Dept of Chemistry, University of Dhaka, Dhaka-1000, Bangladesh

International Symposium on Tropical and Subtropical Fruits

27 November -1 December 2000

Cairns, Queensland, Australia

The major theme of the symposium will be the conservation of genetic resources and the facilitation of regional and global networks for the conservation of tropical and subtropical fruit germplasm.

For details please contact: Dr Rod Drew, International Society for the Horticultural Science (ISHS) Fruits Symposium, School of Bimolecular & Biomedical Science, Faculty of Science, Griffith University, Nathan Qld 4111, Australia

Fax: +617-3875 7656

Email: R.Drew@sct.gu.edu.au

New Crops: a Decade of Achievements and The Way Forward

April 2001

Contact:

Dr Nazmul Haq

Tel: 01703 594229

Fax: 01703 677519

Email: haq@soton.ac.uk

Publications of Interest

ICUC Publications

Anon (1997) **Annotated Bibliography of Jackfruit, Pummelo and Mangosteen.** ICUC, Colorline Printers, Dhaka. 68p.

Anthony K. Haq N. Cilliers B. (eds.) (1995) **Genetic Resources and Utilization of Underutilized Crops in Southern and Eastern Africa. Proceedings of Symposium held at the Institute for Tropical and Subtropical Crops Nelspruit, South Africa, August 1995.** FAO, ICUC & CSC. Dynamic Ad CC, Nelspruit. 175p. (ISBN: 0-9529572-05)

Anthony K., Haq N. (eds.) (1997) **Underutilized Tropical Fruits in Asia Network (UTFANET).** 60 p.

Anthony K., Haq N., de Groot P. (1992) **Underutilized Tropical Fruits in Asia.** ICUC/CSC, London.

Anthony K., Meadley J., Röbbelen G. (1993) **New Crops for Temperate Regions.** Chapman & Hall, London. 280p.

de Groot P., Haq N., (eds.) (1995) **Promotion of Traditional and Underutilized Crops.** Report of a workshop held in Valletta, Malta, June 1992. Series No. CSC(95)AGR23 Technical Paper 311. ICUC/CSC, London. 173p.

Haq N, Anthony K, Sarwar M and Ahmad Z (1998) **Underutilized Crops of Pakistan -** Proceedings of a Symposium held at the Plant Genetic Resources Institute, National Agricultural Research Centre, Islamabad, Pakistan - May 28-29, 1997. (ISBN 969-409-124-1)

Potulski N. (1995) **Alternative Crops for Drug Growing Areas in Asia.** ICUC. 175p.

Potulski N. (1995) **Alternative Crops for Drug Growing Areas in Latin America.** ICUC. 155p.

Quah S.C., Kiew R., Bujang I., Kusnan M., Haq N., de Groot P. (eds.) (1996) **Underutilized Tropical Plant Genetic Resources, Conservation And Utilization.** Universiti Pertanian Malaysia Press, Kuala Lumpur. 353p.

Smartt J, Haq N, (eds.) (1997) **Domestication, Production and Utilization of New Crops.** ICUC, Colorline Printers, Dhaka. 298p.

Wickens G.E., Haq N., Day P. (1989) **New Crops for Food and Industry.** Chapman & Hall, London. 444p.

Williams J.T. (1993) **Pulses and Vegetables.** Chapman & Hall, London. 264p.

Williams J.T. (1996) **Cereals and Pseudocereals.** Chapman & Hall, London. 280p.

General Publications

Connors T **Agro-Tourism in Australia - A Potential Success Story.** Asia-Pacific Association of Agricultural Research Institutions (APAARI) FAO Regional Office for Asia & the Pacific, Bangkok. The Executive Secretary, Asia-Pacific Association of Agricultural Research Institutions, FAO Office in India, 155 Max Mueller Marg, New Dehli 110003.

de Guzman Dr C C and Siemonsma Dr J S (eds) **Spices Plant Resources of South East Asia 13**

de Padua, Prof L S (ANWAP), Bunyapraphatsa Dr N and Lemmens Prof R H M J (eds) **Medicinal and Poisonous Plants Plant Resources of South East Asia 12(1)**

Fereday N, Gordon A, Oji G (1997) **Domestic market potential for tree products from farms and rural communities: experience**

from Cameroon. 28 p, Natural Resources Institute (NRI), Central Avenue, Chatham Maritime, Kent, ME4 4TB, UK, NRI Socio-economic series, (ISSN 0967-0548; 13) GBP 5.00, (ISBN 0-85954-489-3)

Gleisman S R (1997) **Agroecology: ecological processes in sustainable agriculture.** 357 p, Ann Arbor Press, 121 Main Street, Chelsea, MI 48118 USA, USD 49.95, (ISBN 1 57504)

Haverkort B and Hiemstra W (eds) (19..) **Food for thought: ancient visions and new experiments of rural people.** P 237/ +col illus, Leusden: ETC/COMPAS; Bangalore Books for Change; London: Zed Books, (ISBN 1-85649 722 4) hb, (ISBN 1-85649-723) pb

Kendall B and van Houten H (eds) **Using the Wild Sunflower, Tithonia, in Kenya** 11p, International Centre for Research in Agroforestry, PO Box 30677, Nairobi, Kenya

Keshavarz A & Mirhadi M J **Wheat Production in Iran - A Success Story** Asia-Pacific Association of Agricultural Research Institutions (APAARI) FAO Regional Office for Asia & the Pacific, Bangkok. The Executive Secretary, Asia-Pacific Association of Agricultural Research Institutions, FAO Office in India, 155 Max Mueller Marg, New Dehli 110003.

Ojha E R (1997) **Agricultural terracing: development perspectives.** 77 p, Ratna Pustak Bhandar, PO Box 98, Kathmandu, Nepal, 77p

Pretty J N (1998) **The living land: agriculture, food and community regeneration in rural Europe.** 324 p, Earthscan Publications, 120 Pentonville Road, London N1 9JN, UK, GBP 18.99, (ISBN 1-85383-516-1)

Rai M **Oilseeds in India - A Success Story in a Mission Model.** 50 Years of Crop

- Science Research in India.** The Executive Secretary, Asia-Pacific Association of Agricultural Research Institutions, FAO Office in India, 155 Max Mueller Marg, New Delhi 110003.
- Reijntjes C, Minderhoud-Jones M and Laban P **LEISA - JUBILEE EDITION - Leisa in perspective 15 years ILEIA** Main distributor: TRIOPS - Tropical Scientific Books (ISBN: 90-804349-1-4) Email: Triops@booksell.com
- Roeling N G and Wagenmakers MAE (1998) **Facilitating sustainable agriculture: participatory learning and adaptive management in times of environmental uncertainty.** 318 p, Department of Communication and Innovation Studies, Wageningen Agricultural University, Wageningen, The Netherlands. (ISBN 0-521-58174-5), Cambridge University Press, The Edinburgh Building, Cambridge, CB2 2RU, UK
- Rohrbach D D, Bishaw Z, van Gastel A J G (eds) Patancheru: ICRISTAT 1997 **Alternative strategies for small-holder seed supply: proceedings of an international conference on options for strengthening national and regional seed systems in Africa and West Asia, 10-14 March 1997, Harare, Zimbabwe.** 281 p, International Crops Research Institute for the Semi-arid Tropics (ICRISTAT), Patancheru, 502 324, A.P., India, (ISBN 92-9066-380-4)
- Seeland K (ed.) (1997) **Nature is culture: indigenous knowledge and socio-cultural aspects of trees and forests in non-European cultures.** 152 p, Studies in Indigenous Knowledge and Development series). Intermediate Technology Publications (ITP), 103-105 Southampton Row, London, WC1B 4HH, UK, GBP 15.95, (ISBN 1-85339-410-6)
- Vetter S (1997) **Geisho: its uses,**

production potential and problems in Northern Tigray, Ethiopia. 46 p, Institute for Sustainable Development (ISD), PO Box 30231, Addis Ababa, Ethiopia: Food Agricultural Research Management (FARM) Africa, CORDEP Axum, PO Box 5746, Addis Ababa, Ethiopia.

Interesting Books & Publications

- Arora, R K and Ramanatha Rao V (eds) (1998) **Tropical Fruits in Asia: Diversity, Maintenance, Conservation and Use.** Proceedings of the IPGRI-ICAR-UTFANET Regional Training Course on the Conservation and Use of Germplasm of Tropical Fruits in Asia, Held at Indial Institute of Horticultural Research, 18-31 May 1997, Bangalore, India. IPGRI Office for South Asia, New Delhi, India. 271p (ISBN 92-9093-366-3)
- Chweya J A and Muzava N A (1997) **Cats Whiskers *Cleome gynandra L* Promoting the Conservation and Use of Underutilized and Neglected Crops 11.** Institute of Plant Genetics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute, Rome, Italy, 54 p (ISBN 92-9043-303-5).
- Cowling W A, Beavan J B and Mario E T (1998) **Lupin *Lupinus L.* Promoting the Conservation and Use of Underutilized and Neglected Crops 23.** Institute of Plant Genetics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute, Rome, Italy, 105 p (ISBN 92-9043-372-8).
- Devra I, Jarvis and Toby Hodgkin (eds) (1998) **Strengthening the Scientific basis of In Situ Conservation of Agricultural Biodiversity On-farm - Options for Data Collecting**

and Analysis. Proceedings of a workshop to develop tools and procedures for in-situ conservation on-farm, 25-28 August 1997, Rome, Italy: International Plant Genetic Resources Institute, Rome, Italy. 104 p (ISBN 92-9043-370-1)

- Mathew P and Sivadasan (eds) **Diversity and Taxonomy of Tropical Flowering Plants (Professor K S Manilal Commemoration Volume).** Mentor Books, Calicut 1998 (ISBN: 81-900324-3-7) Professor M Sivadasan, Department of Botany, University of Calicut, Calicut University PO Box 673 635, Kerala, India. Email: siva@unical.ac.in
- Said H M (ed) **Essays on Science - Felicitation Volume** Hamdard Foundation Press Pakistan Hamdard Centre, Nazimabad, Karachi-18 Pakistan.
- Partap T and Sthapit B (Eds). **Managing Agrobiodiversity - Farmers' Changing Perspectives and Institutional Responses in the Hindu Kush-Himalayan Region.** Published by International Centre for Integrated Mountain Development, 4/80 Jawalakhel, GPO Box 3226, Kathmandu, Nepal. (ISBN 92 9115 841 0) Tel: (977-1) 525313 Fax: (977-1) 524509 Email: distri@icimod.org.np
- Puzone L and Hazekamp Th. (Compilers) **Characterization and Documentation of genetic resources utilizing multimedia databases** - Proceedings of a Workshop 19-20 December 1996. University of Naples Federico II, Naples, Italy. International Plant Genetic Resources Institute (IPGRI), Via delle Sette Chiese 142, 00145 Rome, Italy. (ISBN 92-9043-388-4)
- Tej Pratap, Joshi B D and Galway V W (1998) **Chenopods *Chenopodium spp* Promoting the Conservation and Use of Underutilized and Neglected Crops 22** Institute of Plant

Genetics and Crop Plant
Genetics and Crop Plant
Research,
Gatersleben/International Plant
Genetic Resources Institute,
Rome, Italy, 67 p (ISBN 92-
9043-369-8)

Vivekanandan K, Rao A N and
Ramanatha Rao V (eds) (1998)
**Bamboo and Rattan Genetic
Resources in Certain Asian
Countries** IPGRI Regional
Office for Asia, the Pacific and
Oceania (APO), Serdang,
Malaysia. 29 p (ISBN 92-9043-
364-7)

**All India Co-ordinated Research
Project on Underutilized Crops -
Progress Report (1996-1998)**
National Bureau of Plant Genetic
Resources, Pusa Campus, New
Delhi - 110 012 (India)
Email: nbpgr@X400nicgw.nic.in

**Andean Root and Tuber Crops: A
Report on Collaborative Research
in Biodiversity, (1993-97)**
Published by International Potato
Center (CIP), Apartado 1558, Lima
12, Peru

Newsletters & Journals of Interest

**ACTIN News (Alternative Crops
Technology Interaction Network)**
Newsletter Number 11 February
1999
Tel: +44 1372 802054
Email: info@actin.co.uk
Web: <http://www.actin.co.uk>

**Action Africa - A British Council
Africa Newsletter.** Published
quarterly.
Contact: Gillian Fernandes
Fax: (000) (254) (2) 334875
Email: Gillian.Fernandes@bc-nairobi.bcouncil.org
or Barbara Stock
Tel: 0171-389-4831
Fax: 0171-389-4758
Email:
Barbara.Stock@britcoun.org

**Affinities - Bulletin about co-
operation in Agricultural
Research.** Contact: CIAT
Communications Unit A.A. 6713,

Cali, Colombia
Web: <http://www.ciat.cgiar.org>

**Agricultural News: Official
newsletter of the National
Department of Agriculture.**
Newsletter of the National
Department of Agriculture, Private
Bag X 250, Pretoria 0001. Published
and printed by National Department
of Agriculture, Private Bag X 144,
Pretoria 0001.
Tel: (012) 323 3380
Fax: (012) 323 2516

**Agro-Processing - Annual Report
1996/7** - Intermediate Technology
enables poor people in the South to
develop and use skills and
technologies which give them more
control over their own lives and
which contribute to the long term
sustainable development of their
communities. Contact: Intermediate
Technology Development Group
Ltd., Myson, Railway Terrace,
Rugby, CV21 3HT, UK
Web:
<http://www.oneworld.org/itdg>

APAARI Newsletter - APAARI
Secretarial, FAO Office in India, 55
Max Mueller Marg, New Delhi
110003
Email: FAO-IND@field.fao.org
Web:
<http://www.cgair.org/isnar/hosted/apaari/index1.htm>

**Botanic Gardens Conservation
News** - Magazine of Botanic
Gardens Conservation International,
Volume 2, Number 9, December
1997. (ISSN 0965-2582)

COMPAS newsletter - Bi-annual
newsletter which covers the culture,
indigenous knowledge and
cosmopolitanism in agriculture and rural
development.
Please contact ETC Compass, P O
Box 64, 3830 A S Leusden, The
Netherlands
Fax: +31 33 494 0791
Email: compas@etcnl.nl

**Considering nutrition in National
Forestry Programmes** - Food &
Nutrition Division Nutrition and
Programmes Service. Food and
Agriculture Organization of the
United Nations

**Development & Co-operation
(D&C)**
Published by Deutsche Stiftung für
internationale Entwicklung (DSE)
B.P. 30 32 10, D-10729 Berlin
Tel: (+49) (30) 254 33-0
Fax: 2 54 33-3 75
Web: <http://www.dse.de>

Developments - published
quarterly. For further information
contact: Jayne Hindle, Institute
Administrator, Institute for
Development Policy & Management
(IDPM), University of Manchester,
Crawford House, Precinct Centre,
Oxford Road, Manchester, M13
9GH, UK
Tel: +44-(0)161 275 2812/2800
Fax: +44-(0)161 273 8829
Email: jayne.hindle@man.ac.uk
Web:
<http://www.man.ac.uk/idpm/>

**Growing Affinities - A Bulletin
about Co-operation in
Agricultural Research.** Published
bi-annually by CIAT
Communications Unit, A.A. 6713
Cali, Colombia
Tel: (57-2)445-0000
(1-650)833-6625 (via USA)
Fax: (57-2)445-0073
(1-650)833-6626 (via USA)
Web: <http://www.ciat.cgiar.org>

ICAR News - published quarterly
by Dr R D Sharma, Director
(DIPA), Directorate of Information
and Publications of Agriculture,
Indian Council of Agricultural
Research, Krishi Anusandhan
Bhawan, Pusa, New Delhi 110 012

ICAR Reporter - copies available
from The Business Manager, Indian
Council of Agricultural Research,
Krishi Anusandhan Bhawan, Pusa,
New Delhi 110 012

IENICA Newsletter - produced
regularly to disseminate information
on matters concerning the IENICA
project (an Interactive European
Network for Industrial Crops and
their Applications).
Please contact: Melvyn F Askew,
Central Science Laboratory, Sand
Hutton, York YO41 1LZ, UK
Fax: +44 1904 462 029
Email: m.askew@csl.gov.uk

International Development Magazine - Developments (IDPM)
<http://www.man.ac.uk/idpm>

International Plant Genetic Resources Institute Newsletter -
Produced tri-annually with a mission to encourage, support and engage in activities to strengthen the conservation and use of plant genetic resources world-wide with special emphasis on the needs of developing countries.
Please contact IPGRI Regional Office for Asia, the Pacific and Oceania, P O Box 236, UPM Post Office, 43400 Serdang, Selangor Darul Ehsan, Malaysia
Fax: (603) 948 7655
Email: ipgri-apo@cgair.org
Web: <http://www.cgair.org/ipgri>

International Centre for Research and Training on Seabuckthorn (ICRTS) Newsletter - Produced bi-annually with a mission to promote and harness seabuckthorn's potential in combating resources degradation and in furthering rural development and human health with special emphasis on the following activities: guidance, co-ordination and carrying out of research activities, development of an international network, project proposal development and project management, technical and managerial training, international co-operation and information exchange, technology transfer, and periodical publications.
Please contact ICRTS at Jia 11, Yuetan Beixiaojie, Beijing 100037
Fax: +86 10 63204032
Email: icrts@public.east.cn.net

KEW Scientist - News from The Living Collections, The Herbarium and The Laboratories at Kew & Wakehurst Place. Published in April and October. Please contact Geoffrey Kite, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB.
Tel: +44-(0)181-332 5000
Fax: +44-(0)181-332 5310
Email: G.Kite@rbgkew.org.uk
Web: <http://www.rbgkew.org.uk>

LEISA - ILEIA Newsletter for low external input and sustainable agriculture Contact PO Box 64,

3830 AB Leusden, Kastanjelaan 5, Leusden, The Netherlands
Tel: +31 (0)33 494 30 86
Fax: +31 (0) 33 495 17 79

Medicinal Plant Conservation Vol 5 - Newsletter of the Medicinal Plant Specialist Group of the IUCN Species Survival Commission. 1 March 1999. Edited and produced by Bundesamt für Naturschutz, Ralf Ohlemüller, Konstantinstraße 110, D-53179 Bonn, Germany. (ISSN 1430-953X)

Multipurpose Tree Species Network News (MPTS) - Sri Lanka. Available free from Prof. H P M Gunasena, Director, Postgraduate Institute of Agriculture, Old Galaha Road, Peradeniya, Sri Lanka.
Tel: 94-8-388318/389205
Fax: 94-8-388318

NANMAP - A Bimonthly Newsletter of the Asian Network on Medicinal and Aromatic Plants.
Editor Narong Chomchalow, ANMAP Secretariat, FAO Regional Office for Asia and the Pacific, Maliwas Mansion, Phra Atit Road, Bangkok 10200, Thailand
Tel: (66-2) 281-7844
Fax: (66-2) 280-0445
Email: Narong.Chomchalow@fao.org

National Department of Agriculture (Pretoria/SA): @Agricultural News
Published and printed by the Directorate Communication, Private Bag X 144, PRETORIA 0001.

Refining the Fats of Life - An Introduction to Roche Lipid Technologies. The increasing nutritional value of lipids or fats is now widely recognised and a more balanced intake of fat is considered desirable and often, necessary. More specifically, certain fats are now accepted as playing an important role in cardio-vascular health and in the optimal development of infants. Part of the Vitamins and Fine Chemicals Division of Hoffmann-La Roche, Roche Lipid Technologies (RLT) specializes in processing oils containing physiologically active

and beneficial long chain polyunsaturated fatty acids (PUFA) and in developing new processes and products in this highly specialised field. Working in partnership with its customers in the world's food manufacturing and cosmetics industries, RLT formulates a range of oils which are tailored for a wide variety of customer product applications. Products developed by RLT in both main PUFA families, n-3 and n-6, bear the ROPUFA trade name, ROPUFA n-6 products are derived from the oil contained in Borage and Evening Primrose seeds. ROPUFA n-3 products are obtained from the oil of cold water fish. F Hoffman-La Roche Ltd, Vitamins & Fine Chemicals Division, CH-4002 Basel (Switzerland)

Sesame and Safflower Newsletter - Published by Institute of Sustainable Agriculture (IAS), CSIC Apartado 4084 - Córdoba, Spain
Tel: 957 49 92 00
Fax: 957 49 92 52

SPORE - Information for Agricultural Development in ACP Countries bi-monthly publication by Technical Centre for Agricultural and Rural Co-operation (CTA) - ACP-EU Lomé Convention. Postbus 380, 6700 AJ Wageningen, The Netherlands.
Tel: +31 317 467100
Fax: +31 317 460067
Email: cta@cta.nl
Web: <http://www.cta.nl>

Tanzania Journal of Agricultural Sciences (TAJAS) Published twice yearly - first issue published June 1998.
Available from TAJAS, Sokoine University of Agriculture, PO Box 3001, Chou Gikuki, Morogola, Tanzania

The New York Botanical Garden Press 1999/2000 200th Street and Kazimiroff Boulevard, Bronx, NY 10458-5126
Web: <http://www.nybg.org>

TRAFFIC Bulletin - The Journal of the TRAFFIC Network disseminates information on the trade in wild animal and plant resources.

Published by TRAFFIC
International. 219c Huntingdon
Road, Cambridge, CB3 0DL, UK
Tel: (44) 1223 277427
Fax: (44) 1223 277237
Email: traffic@wcmc.org.uk
Web: <http://www.traffic.org>

TRAFFIC Dispatches - published
three times yearly by TRAFFIC
International. 219c Huntingdon
Road, Cambridge, CB3 0DL, UK
Tel: (44) 1223 277427
Fax: (44) 1223 277237
Email: traffic@wcmc.org.uk
Web: <http://www.traffic.org>

Tropical Fruits Newsletter -
produced quarterly, is a medium to
disseminate technical and general
information on pre-production,
production, harvesting, post-harvest
handling, and marketing of tropical
fruit crops among Caribbean
professionals, producers and
processors working in these areas.
The editors welcome the submission
of articles and news covering these
subjects.

Inteere-American Institute for
Cooperation on Agriculture. 3
Herbert Street, Newtown, Port of
Spain, Republic of Trinidad and
Tobago, PO Box 1318

Tel: (868) 628-4403/4078-9
Fax: (868) 628-4562
Email: iicatt@iicacarc.org

Tropical Forest Update - A
Newsletter from the International
Tropical Timber Organization to
Promote Conservation and
Sustainable Development of
Tropical Forests. The Editor,
Tropical Forest Update,
International tropical Timber
Organisation, International
Organisations Center - 5th Floor,
Pacifico-Yolohama, 1-1-1 Minato
Mirai, Nishi-ku, Yokohama 220,
Japan.

Tel: 81-45-223 1110
Fax: 81-45-223 1111
Email: itto-tfu@mail.itto-UNET.ocn.ne.jp

**Using the wild sunflower, tithonia,
in Kenya for soil fertility and crop
yield improvement** - International
Centre for Research in Agroforestry

(ICRAF) United Nations Avenue,
PO Box 30677, Nairobi, Kenya

Tel: +254 2 521450
Fax: +254 2 521001
Email: icraf@cgnet.com
Web: <http://www.cgiar.org/icraf>

**UTFANET Newsletter
(Underutilized Tropical Fruit
Trees in Asia Network)**
UTFANET Secretariat, ICUC,
Institute of Irrigation &
Development Studies, University of
Southampton, Highfield,
Southampton, SO17 1BJ, UK

Tel: 01703 594229
Fax: 01703 677519
Email: haq@soton.ac.uk

Underutilized Crops and the Internet

There are a growing number of sites
for those working on underutilized
crops, assuming you have access to
an internet linked computer. The
following is a summary of some
sites that may be of interest. This
is not an exhaustive list, but many
bigger sites have useful links to
related pages. Some sites also have
interactive databases, such as the
Center for New Crops & Plant
Products, NewCROP database. Also
offered at this site is information on
how to join the Discussion list for
New Crops – an email based bulletin
board.

**Emcapa: Technical solutions for
sustainable development** -
currently focusing on the following
area: coffee, fruit, organic
agriculture, animal production, food
crops, agroforestry, natural
resources

<http://www.emcapa.es.gov.br>

**Guidelines for Good Agricultural
Practice (GAP) of Medicinal &
Aromatic Plants** - are intended to
apply to the growing and primary
processing of all such plants traded
and used in the European Union.

The complete document is available
on the IENICA website on the
Contacts/Speciality Chemicals
pages:

<http://www.csl.gov.uk/ienica>

Index on Africa - offering more
than 2000 links to other sites world-
wide

<http://www.africaindex.africainfo.no/>

**Information Network on Post-
Harvest Operations (INPhO)** -
launched by FAO

<http://www.fao.org/inpho>

**International Centre for Research
in Agroforestry**

<http://http://www.cgair.org/icraf>

**SADC Plant Genetic Resources
Centre (SPGRC)**

<http://www.ngb.se> (search under
NEW for SPGRC databases)

**The Soil Association, The Organic
Food & Farming Centre:**

<http://www.earthfoods.co.uk>

Some Useful Addresses

It is hoped that a directory of
scientists; organizations; and private
and public enterprises with interests
in underutilized crops, will be
published in forthcoming issues as a
regular feature. The following have
expressed an interest in, or are
already involved with, research on
underutilized crops. Please feel free
to offer any contributions or
corrections for the next newsletter.

Aalpol, Mr R J P, PUDOC,
Wageningen Agricultural
University, P.O.Box 4, 6700 AA
Wageningen, Netherlands.

Aarts-v.d.Bergh, Mrs M H,
PROSEA Regional Office South-

East Asia, Herbarium Bogoriense,
P.O.Box 234, Bogor 16122,
Indonesia.

Abadi, Mr. Haswanto Pramita, PT.
Jamu Air Mancur, Jl Raya Solo-
Sragen Km 7, Palur, Solo,
Indonesia.

Abbas, Dr M F, College of
Agriculture, Basrah University,
Basrah, Iraq.

Abid, Dr. Habib, Ingenieur
Principal, Chef de Service des
Amenagements, Direction General
des Forets, Tunis, Tunisia.

Agbahungba, Dr G, L'Unite
Recherche Forestiere, Cotonou,
Benin.

Ahlawat, Dr V P, Dept. of
Horticulture, Haryana Agricultural
University, Hissar 125004, Haryana,
India.

Ahmad, Dr Z, Dept. of Botany,
Aligarh Muslim University, Aligarh-
202 002, Uttar Pradesh, India.

Al-Niami, Dr J H, College of
Agriculture, Basrah University,
Basrah, Iraq.

Ali, Dr M S, Hej Res Inst Chem,
University of Karachi, Karachi
75270, Pakistan.

Ali-Diallo, Dr B, Laboratoire de
Biologie, Faculte des Sciences,
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