



SEED INFO

Official Newsletter of the WANA Seed Network



Seed Info No. 28

January 2005



EDITORIAL NOTE

Seed Info aims to stimulate information exchange and communication among seed staff in the Central and West Asia and North Africa (CWANA) region. The purpose is to contribute towards the development of stronger national seed programs which supply quality seed to farmers.



In the last issue of Seed Info we featured Intellectual Property Rights (IPRs) on Seeds with emphasis on patents and breeders' rights reflecting the views of breeders. In this issue we continue with our coverage of IPR from farmers' perspectives. Your regular contributor N.P. Louwaars from Wageningen University and Research Center, The Netherlands, will present an article on Farmers' Rights and Seed Programs from its inception and the challenges ahead for its application. We also bring you news from the International Seed Testing Association (ISTA) about the current changes in issuing the International Seed Lot Certificates and the new membership of the International Union for Protection of New Plant Varieties (UPOV).

The section on **SEED PROGRAMS** includes news from Afghanistan, Cyprus, Egypt, Ethiopia, Iran, Lebanon and Syria. From Afghanistan we continue to report on the FHCRAA activities dealing with demonstration and technology transfer, establishment of village-based seed enterprises, potato seed production and the introduction of protected agriculture. From Ethiopia we present the reorganization of the National Agricultural Input Authority, once a policy and regulatory body of agricultural inputs. Country reports from Iran and Lebanon provide information on varietal releases of cereal and legume crops.

In the **HOW TO** section, your regular contributor, Abdoul Aziz Niane presents the procedures for maintaining the independence of the ISTA accredited seed testing laboratories and the means of verifying it by system auditors.

The **RESEARCH** section is aimed at capturing information on adapted research or issues relevant to seed program development in the region or elsewhere. Steven Groot and colleagues from Plant Research International, Wageningen University, explores the status, challenges and prospects of producing certified organic seeds.

Seed Info encourages exchange of information to broaden our understanding of issues that affect the global seed industry. We encourage our readers to take the opportunity to share their views through

this newsletter. Your contributions are most welcome in English, French or Arabic.

Happy New Year!

Zewdie Bishaw, Editor

WANA SEED NETWORK NEWS

This section presents information related to the WANA Seed Network. It provides updates on the progress of Network activities and reports on the meetings of the Steering Committee and WANA Seed Council.

Visit the Seed Unit Website for Updates

The WANA Seed Network continues to implement its primary function: the exchange of information through various publications. The WANA Variety Catalogue, WANA Seed Directory and WANA Catalogue of Field and Seed Standards have been updated regularly and available on the website. For more information or access to the network publications, you may visit the website at <http://www.icarda.org/seed> (note the new changes). If you need hard copies of the publications, please contact the WANA Seed Network Secretariat, Seed Unit, ICARDA, P. O. Box 5466, Aleppo, Syria; Fax: ++963-21-2213490; E-mail: z.bishaw@cgiar.org

Change of Country Representatives

Ethiopia

The National Agricultural Input Authority (NAIA) was officially representing Ethiopia to the WANA Seed Network. However, NAIA is now reorganized into the Agricultural Inputs Certification Department under the Ministry of Agriculture and Rural Development. The contact person is: Mr Zelleke Desalegn, Head, Agricultural Inputs Certification Department, Ministry of Agriculture and Rural Development, P.O. Box 9197, Addis Ababa, Ethiopia; Tel: ++ 251-1-514600; Fax: ++ 251-1-519051; E-mail: naia@telecom.net.et

Iran

In 2003, the Seed and Plant Certification Research Institute (SPCRI) was established to replace the Seed Quality Control Department of the Seed and Plant Improvement Institute. Dr Majid Dehghan Shoar was appointed as a founding director and took over as Country Representative of Iran to the WANA Seed Network. His contact address is: Dr Majid Dehghan Shoar, Director General, Seed and Plant Certification Research Institute, P.O. Box 31535-3383, Shahid Fahmideh Avenue, Karaj, Iran; Tel: ++98-261-2716795; Fax: ++98-261-2716794; E-mail: dehghanshoar2003@yahoo.com

Saudi Arabia

Mr Ibrahim Al-Hazzani appointed General Manager of the National Seed and Agricultural Service Company. He agreed to be the Country Representative of Saudi Arabia to the WANA Seed Network. His contact address is: Mr Ibrahim Al-Hazzani, General Manager, National Seed and Agricultural Service Company (Buthor), P.O. Box 16453, Riyadh 11464, Saudi Arabia; Tel: ++966-1-4958118; Fax: ++966-1-4958447; E-mail: buthore@hotmail.com

NEWS and VIEWS

News, views, comments and suggestions on varieties and seeds are included in this section. It is also a forum for discussion among professionals in the seed sector.

Farmers' Rights and Seed Programs

In the last issue of Seed Info we presented the Intellectual Property Rights on Seeds focusing on plant breeders' rights. The next article will discuss the concept of farmers' rights, its interpretations, implications and challenges. It may be interesting to see how this concept may influence the seed sector in developing countries including the CWANA region.

The concept of Farmers' Rights

For over two decades, the concept of Farmers' Rights has been part of the international debate on genetic resources and seed policies. The discussion about Farmers' Rights was galvanized in the early 1980s by the recognition of imbalanced benefits between providers of genetic resources (farmers) and the users in commercial breeding programs (breeders). Farmers' Rights were meant to balance Breeders' Rights that were introduced in some developing countries at the time. However, it was only in 1989 that the concept of Farmers' Rights was defined in an official document (Resolution 5/89 of FAO) as '*rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly in the centers of origin/diversity.*' Even though Resolution 3/91 of FAO talks about a funding mechanism to support Farmers' Rights, it remained quite unclear what exactly constitutes these rights.

The concept continued to surface in the Convention on Biological Diversity and has particularly raised by NGOs. Farmers' Rights are centered on a basic right of farmers to save, exchange and sell seed and as such countering the privatization of genetic

resources through intellectual property rights where these practices are restricted for protected varieties by Breeders' Rights and patents.

In 1996, FAO once again made an important step in defining the concept further under the International Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA) which provides more details. Its definition is, however, prone to different interpretations and the debate is likely to continue in the Governing Body of the PGRFA.

Currently, Farmers' Rights are implemented through (Article 9 of PGRFA) an obligation of countries to protect:

- traditional knowledge relevant to PGRFA
- the right to participate in sharing benefits arising from the use of PGRFA
- the right of participating in making decisions related to the conservation and sustainable use of PGRFA

The following section of Article 9 states that the article "*should not be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material subject to national law and as appropriate.*"

Interpretation of Farmers' Rights

The above clauses require countries to make arrangements for participation of farmers in policy formulation relevant to seed systems, to be party in benefit sharing arrangements (e.g. CBD) and that their traditional knowledge be protected.

In many developing countries including the CWANA region, farmers are somehow represented in national seed boards and/or variety release committees, but this now seems to become compulsory under the convention. More importantly, however, a question may arise as to whether the farmers' organizations in these committees sufficiently represent all the diverse interests of (smallholder and commercial) farmers.

The last sentence of the article is more contentious. It confirms the traditional rights that farmers have (or 'law of the land') over the seeds that they use. It makes, however, the right to save, exchange and sell seed 'subject to national law and as appropriate.' 'Subject to national law' may imply that if countries have laws that forbid saving, exchanging and/or selling seed that these laws prevail over the Farmers' Rights. This could be similar to clauses in conventional seed laws that prohibit the marketing of non-certified seed of non-registered varieties as well as to protect breeders' rights or patent laws. It is completely unclear what the term 'as appropriate' would mean in practice.

Therefore, countries have to design their own laws to accommodate private (intellectual property) rights, Farmers' Rights and possibly also the rights of indigenous communities. Will countries with already operating intellectual property rights systems open the debates to accommodate this aspect of Farmers' Rights? The fact is that some other issues are currently under discussion including the compulsory declaration of the (country of) origin of the materials used, for all who apply for the protection of inventions based on living organisms (under the patent and breeders' rights systems). Most countries, however, would consider the Farmers' Right to sell seed as undermining the rights of plant breeders and at the same time weakening private sector investment in plant breeding.

Some developing countries are currently seeking a feasible solution for the Farmers' Rights to save, exchange and sell seeds. Under the 1991 Convention, UPOV member countries have the option to allow seed saving for crops of their choice. Providing the flexibility of exchanging and selling seed, as was possible under the older 1978 Convention is not allowed any more. Even then, however, it is more a privilege rather than a right for farmers to save seed for own use. Countries that choose to apply the TRIPs agreement have more options and broader flexibility. In India, the Protection of Plant Varieties and Farmers' Rights Act (2001), for example allow farmers to save, exchange and sell seed but not commercial seed sales under brand names. These clauses are backed by a stronger seed law which comes into force in 2005 to tighten controls in variety release and the seed market. The African Union model law also has provisions towards meeting Farmers' Rights but few countries have yet taken the model law to enact national legislation. In both cases the protection to breeders is reduced considerably through these clauses. Neither of these systems (India or AU) is operational yet. However, experience will show whether this level of protection will at all stimulate private sector plant breeding.

Impact on breeding and seed production

The right to save, exchange and sell seed is an integral part of farmers' seed systems. Farmers improve varieties through selection; and the seed move from farmer to farmer through local exchange. Moreover, such farmers' seed systems are essential in creating a reasonable level of seed security at household and community levels. In commercial farming systems, where farmers produce predominantly or exclusively for the market and high level of inputs are used to

optimize the output, viable and sustainable formal seed systems are needed. The system takes the responsibility of developing adapted varieties and of securing the seed supply by the private sector or through public-private partnerships. The main argument against the right to save, exchange and sell seed is that this would undermine the viability of such formal seed systems, especially where the private sector needs to get interested in investing in either breeding and/or seed production. Without restricting especially seed sales through conventional seed laws or breeders' rights, the demand for seed is erratic and anti-cyclic, i.e. fluctuates based on good or bad season. Similarly, the incentive to invest in breeding is low when anyone can commercialize seed of a new variety that the breeder has painstakingly developed over a period of 10 years.

The strategy

A wide interpretation of the right to save, exchange and sell seed thus leads to a continued task of the public sector to invest in developing new varieties and producing seed, unless appropriate boundaries can be defined to this right. The boundaries may differ among countries, and also within one country for different crops, depending on the shape of the seed sector and the preferred development strategy.

A country may choose to have no restrictions on farmers selling seed for less commercial crops such as legumes and barley for which a formal seed system is presently not viable. At the same time these countries may restrict seed selling of non-branded seed for crops like wheat for which a formal seed industry is emerging. Third, these countries may want to block even seed saving for export crops like flowers and some vegetables.

The implementation of such regulations may be enforced through national seed quality control agencies that are monitoring the seed market. The control on seed saving (e.g. horticulture) may be best regulated by the industry in the export chains, in order not to overload the government system.

The coming into force of the International Treaty will thus not be the end of the debate on Farmers' Rights and will continue to put pressures on Governments to take a diversity of issues and interests into account when they design their national seed policies and regulatory frameworks. *N.P. Louwaars, Center for Genetic Resources, Wageningen University and Research Center, P.O. Box 16, 6700 AA Wageningen, The Netherlands; E-mail: niels.louwaars@wur.nl*

New Staff Member Joins Seed Unit

Dr Koffi N. Amegbeto, a national of Togo, joined the Seed Unit of ICARDA as an Agricultural Economist on 3 September 2004. He obtained his PhD and MSc degrees in Agricultural Economics from the University of Illinois and Kansas State University, respectively, and a BSc in Agronomy from the Université du Bénin in Togo.



Dr Amegbeto was employed at the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria from September 2000 to July 2004 as Principal Economist in charge of designing scenarios for appropriate technology development and

adoption of yams, roots and tuber crops as well as contributing to food security projects.

Between 1998 and 2000 Dr Amegbeto was the Program Officer for the Foundation for Sustainable Food Security in Central West Africa in Togo. He also worked as Assistant Professor in the Department of Agricultural Economics and Rural Sociology at the University of Benin (Togo) from 1996 to 2000, and provided numerous consulting services to international organizations including the World Bank, IFAD, and UNEP from 1992 to 2000.

International Seed Testing Association (ISTA) Amends Constitution

After the 27th ISTA Congress 2004, the International Seed Testing Association issued two press releases on authorization to issue ISTA certificates and the completion of its experiment on accreditation and authorization of company seed testing laboratories. According to the first press release (01/2004), member governments of ISTA approved a constitutional change and decided that accreditation of a seed testing laboratory including authorization to issue ISTA International Seed Lot Certificates as purely a technical task and authorization through the national Designated Authorities unnecessary. With immediate effect seed testing laboratories could issue ISTA International Seed Lot Certificates once they have met all requirements of the ISTA Quality Assurance Program. The right to issue ISTA Certificates could be given to any successful seed testing laboratory by the ISTA Executive Committee as per its Constitution [Article VII (c) (15)].

In another press release (02/2004) ISTA finalized its Experiment on the Accreditation and Authorization of Company Seed Testing Laboratories from 1999 to 2004 and presented the results to the members. The data obtained from the ISTA Proficiency Tests, the ISTA Audit Program and monitoring data from some member countries showed that there is no difference between company and non-company laboratories. The member countries accepted the recommendation of ISTA to finalize the experiment and establish it as a permanent regime. Therefore, company seed testing laboratories can become accredited ISTA members, and authorized to issue ISTA Certificates. *ISTA, Zürichstrasse 50, P.O. Box 308, 8303 Bassersdorf, Switzerland; Fax: ++41-1-8386001; E-mail: ista.office@ista.ch; Website: <http://www.seedtest.org>*

Jordan and Uzbekistan Accede to UPOV Convention

According to press releases issued in September and October 2004, Jordan and Uzbekistan have become the 56th and 57th members of the International Union for the Protection of New Varieties of Plants (UPOV), respectively. This brings the number of countries who are members of UPOV to four in CWANA region. Kyrgyzstan and Tunisia have already acceded to the UPOV Convention. The purpose of the UPOV Convention is to encourage the development of new varieties of plants by granting breeders an intellectual property right on the basis of a set of clearly defined principles. To be eligible for protection, varieties need to satisfy certain conditions, such as being distinct from existing, commonly known varieties and sufficiently uniform and stable. New varieties of plants are one of the most powerful tools to enhance food production in a sustainable way, to increase income in the agricultural sector and to contribute to overall development.

CONTRIBUTIONS from SEED PROGRAMS and PROJECTS

In this section we invite national seed programs, projects, universities, regional or international organizations to provide news about their seed related activities.

Rebuilding Sustainable Agricultural Production in Afghanistan

A CGIAR Future Harvest Consortium to Rebuild Agriculture in Afghanistan (FHCRAA) is implementing four projects, namely: (a)

demonstration and technology transfer, (b) village-based seed enterprise development, (c) potato seed production and (d) protected agriculture. These four projects are part of the Rehabilitation of Agricultural Markets Program (RAMP) operating in the provinces of Ghazni, Helmand, Kunduz, Nangarhar and Parwan.

Demonstration of new agricultural technologies

The objective of the project is to increase crop production and improve rural livelihoods through demonstration of improved technologies of agricultural and horticultural crops and their management practices. In 2004, a total of 341 on-farm demonstration trials were conducted in 27 districts within the five target provinces covering six main crops (wheat, rice, mung bean, potato, onion and tomato). The project also trained 110 Ministry of Agriculture and Animal Husbandry (MAAH) staff and 1957 farmers during the same period.

Establishment of village-based seed enterprises

The Village-based Seed Enterprises (VBSE) are farmer-led seed production and marketing units helping farmers to get rapid access to quality seed of improved crop varieties. ICARDA is responsible for organizing the farmer groups, providing technical support in preparing business plans, providing high quality source seed for multiplication, monitoring and evaluation of VBSE activities and capacity building of farmers and staff of partner organizations. ICARDA also assists in sourcing fertilizers, equipment and credit.

A train-the-trainer course for subject matter specialists of FHCRAA and partner organizations (MAAH, Extension service, NGOs) and two follow-up courses for VBSE member farmers were organized on seed production technology and enterprise management in February and May 2004, respectively. The first course was organized in Kabul whereas the two follow-up courses were held in Jalalabad and Kunduz. Moreover, two refresher courses were organized in financial accounting and enterprise management in Jalalabad and Kunduz in December 2004 for VBSE members.

During the first year of the project, 15 potential districts were identified in target provinces. In each district one VBSE was established and engaged in seed production and marketing. The enterprises produced 813 tonnes of wheat, rice, chickpea and mung bean seed and marketed to NGOs and/or exchanged with other farmers. A total of 113 VBSE members along with 187 partners (extension staff, MAAH staff, NGOs), were trained in technical seed production operations and enterprise management

and financial accounting. Fifteen mobile seed cleaners are being manufactured in Syria for delivery in 2005 harvest season.

Potato seed production and marketing

The project aimed at quality seed multiplication and marketing to increase potato production. The activities included organizing demonstration trials and field days, construction of stores, formation of seed production groups, and training of farmers and staff of partner organizations. A total of 152 demonstration trials and 35 field days were organized as well as the construction of 15 potato storage facilities and establishment of 19 seed production groups in 23 districts of five target provinces. About 803 farmers and 166 partner organizations were trained in potato production technology. Moreover, one tissue culture laboratory and one screen house have been established in Kabul.

Introducing protected agriculture for cash crops

The project will promote the adoption of low-cost and sustainable protected agricultural systems to produce high value cash crops. The project established a Protected Agriculture Center and greenhouse-manufacturing workshop in Kabul, conducted a baseline survey and benchmark study with participating farmers and is collecting daily vegetable markets data on demand and supply. So far, nine greenhouses were installed and 49 farmers trained in protected agriculture technology. *J. Rizvi, ICARDA, Kabul, Afghanistan; E-mail: j.rizvi@cgiar.org and T. van Gastel, Seed Unit, ICARDA, P.O. Box 5466, Aleppo, Syria; E-mail: a.vangastel@cgiar.org*

Changes in Cyprus Seed Program after Joining the European Union

Cyprus became a full member of the European Union on 1 May 2004. Since then, a new seed law and corresponding implementing regulations have been enforced by which seed activities are fully harmonised with the *Acquis Communautaire*. The new legislation laid down provisions for licensing seed producers and seed traders as well as for the admission of the varieties of agricultural and vegetable crops to the National Catalogue of Varieties and the EU Common Catalogue. It also sets out provisions for seed certification and control within the EU principles. The Seed Production Center of the Department of Agriculture is operating as an independent organization similar to other private sector seed enterprises. A Seed Certification and Seed Testing Laboratory has been established as an independent entity for quality assurance. The commercial barley seed, which was

provided regularly to the farmers in drought years, has to be replaced by farm-saved seed or should be met through certified seed.

Cyprus will become a member of UPOV through the EU Community Plant Variety Office based in Angers, France. The Registrar of Companies and Official Receiver's Office of the Ministry of Commerce, Industry and Tourism will implement the Plant Breeders' Rights.

The EU has granted Cyprus a transitional period of five years during which existing varieties not listed in the Common Catalogue can be freely marketed locally. Moreover, during the transition period, Cyprus will be allowed to market lower standards of barley certified seed produced locally, due to some technical difficulties presently to meet EU standards. *Petros Xystouris, Seed Certification and Seed Testing Laboratory, Department of Agriculture, Nicosia, Cyprus; Fax: ++357-22-343419; E-mail: pxystouris@da.moa.gov.cy*

Egypt Taps into New Technology

The Agricultural Genetic Engineering Research Institute is one of the leading biotechnology research centers in Egypt and the region. The institute has developed transgenic drought-resistant wheat. The wheat, which contains the HVA11 gene from barley, needs one irrigation compared to eight for conventionally bred varieties. The wheat has had field trials over three seasons and if biosafety testing proves it to be safe it could be the first GM product on the market. Scarce water is an increasingly important constraint to agriculture around the world, and drought-resistant varieties hold great promise. At present Egypt grows 38% of wheat needs because of scarce water. *Source: New Agriculturalist; Website: <http://www.new-agri.co.uk/04-6/newsbr.html>*

Ethiopia Reorganizes the National Agricultural Input Authority

In Seed Info No 25 we reported the activities of the National Agricultural Input Authority in Ethiopia (NAIA) an agency responsible for policy and regulatory matters for all agricultural inputs including seeds and planting material, fertilizers and pesticides. However, following the current reforms NAIA has been dissolved and reorganized into a department within the Ministry of Agriculture and Rural Development. The Ministry

has three main agricultural departments (sectors) and three autonomous organizations.

The Agricultural Marketing and Input Sector has seven departments and three autonomous organizations including the Agricultural Inputs Certification Department. The main activities of the Agricultural Inputs Certification Department are:

- Provide quality assurance certification for seed producers, processors, importers, exporters, retailers and laboratory service providers
- Quality control of seed based on national standards
- Quality control of imported fertilizers based on national standards
- Issue import permits for seed (including flower cuttings) and specialized fertilizers
- Provide capacity building (training, etc.) to seed producers, regional seed laboratories, etc.
- Advisory service to public and private seed producers

At present, only seed and fertilizers are controlled but in the future the responsibility will expand to other agricultural inputs. Seed quality control will be conducted both at federal and regional seed testing laboratories equipped with the necessary facilities and trained manpower. The quality of fertilizer is monitored at the distribution stores and if necessary samples will be sent for testing to the laboratory of the Quality and Standard Authority. The Agricultural Inputs Certification Department is operating from the same office of NAIA. *Aynew, Arega, AIQCD, P.O. Box 9197, Addis Ababa, Ethiopia. E-mail: aynew2001@yahoo.com*

Iran Achieves Self-sufficiency in Wheat Production

In Iran, cereals are the most important crops where wheat and barley alone occupy about 8 million ha each year. In November 2004, the country announced self-sufficiency in wheat production, which was marked at a national ceremony. ICARDA received a letter of appreciation from the Ministry of Jihad-e-Agriculture for its outstanding contribution towards these noble endeavors.

Release of wheat, barley and maize varieties

The Seed and Plant Improvement Institute (SPII) is leading a very strong plant breeding program on cereals. In 2002/03, SPII released eight wheat and one barley varieties for cultivation. The durum wheat cultivars *Arya* and *Karkheh* are spring types released from breeding materials introduced from ICARDA. The other six are bread wheat varieties which are

winter type (*Shahriyar*), facultative (*Toos*) and spring types (*Dez*, *Shiraz*, *Pishtaz* and *Hamoon*). *Toos* and *Dez* are derived from ICARDA and CIMMYT breeding materials, respectively. However *Shiraz*, *Pishtaz*, *Hamoon* and *Shahriyar* are selected from national crossing blocks. The barley variety *Sahra* is a facultative type and derived from breeding material supplied by ICARDA.

A hybrid maize variety released in Iran



Maize production is also growing fast in the country. According to the maize production plan the area will increase to 425,000 ha by the end of five-year plan. The introduction of maize as a second crop during summer requires hybrids with early to medium maturity. The SPII also released two new single cross hybrid maize varieties. *KSC 700* is a high yielding late maturing hybrid whereas *Karaj 500* is a medium maturing hybrid with acceptable yield during second cropping season.

Participation of private sector in wheat seed marketing
Privatization is one of the major goals of the government in its 4th five-year national development plan. Article No 11 of the 'Plant Variety Registration, Seed and Planting Material Certification' Act stipulates privatization as one of the priorities for seed sector development. Although, the Ministry of Jihad-e-Agriculture is providing policy support for its implementation, privatizing the seed sector of self-pollinated crops remains difficult. In 2003, however, about 32,000 tonnes of wheat seed was produced, processed and marketed by private seed companies mainly in Fars and Khorasan provinces competing with a subsidized public sector, the Agricultural Support Services Company. In 2004, private companies planned to market an estimated 50,000 tonnes of wheat seed which is equivalent to 18% of total national seed requirement.

The major characteristics of these new hybrids are shown in the table below.

	Varieties	
	KSC 700	Karaj 500
Maturity group	FAO 700	FAO 500
Days to maturity	125-140	125-130
Plant height (cm)	210	208
Ear length (cm)	110	110
Recommended plant density per /ha	65000-75000	75000
Tolerance to diseases	Ear rot	-
Cob color	Pink to red	Red
Kernel type	Dent	Dent
Kernel color	Yellow	Yellow
No. of kernel rows/ear	18	20-22
No. of kernels/row	45	45
1000 seed weight (g)	330	298
Grain yield (tonnes/ha)	12.8	9-10

Samad Mobasser, Seed and Plant Certification and Research Institute, P.O. Box 31535-3383, Karaj, Iran; Fax: ++98-261-2716794; E-mail: Sa_mobasser@yahoo.com

Lebanon Releases Cereal and Legume Varieties

The Lebanese Agricultural Research Institute (LARI) has had a long-standing and fruitful collaboration with ICARDA since the inception of the Center in the 1970s. In October 2004, LARI has released one variety each of durum wheat and chickpea selected from breeding lines supplied by ICARDA for general cultivation in Lebanon.

A durum wheat line (Lahn/Hcn), a cross between *Lahn* and *Haurani* (a local landrace widely grown throughout the countries of the region) was released as *Lahn 2*. The variety was tested in various locations in Lebanon as part of the joint LARI/ICARDA On-farm Trials over the last four years. The results showed that it had a good yield potential under rainfed conditions with average grain yield between 3300 to 3430 kg ha⁻¹. The variety performed very well over the last 3 seasons particularly, in the coastal areas and ranked first in 2003/4 trials across all locations. The average 1000 kernel weight ranged from 40 to 50g depending on the location; largest seeds were obtained in the coastal areas.

A chickpea line FLIP 86-5 was released under the name of *Balila 2*. It was also tested in the LARI/ICARDA On-farm Trials over the last four years and proved to be a high yielder under all climatic conditions of Lebanon. In the last three seasons, it ranked first at the coast (2400-2500 kg ha⁻¹) under rainfed conditions. It had a good seed size comparable to *Balila* (45 g/100 seeds) and average plant height of 43 cm across locations.

Farmer's field day at Akkar, Lebanon



Hassan Machlab, Research and Development Manager, Debbané Frères SAL, P.O. Box 11-9666 Beirut, Lebanon; E-mail: hmachlab@hotmail.com

* * *

Syria Exports Over Ten Thousand Tonnes of Wheat and Barley Seed to Iraq

In the 1990s, there was strong government support to the seed sector in Iraq to increase agricultural production to offset the effect of international sanctions. In the pre-war situation the country had an organized public sector involved in seed production and distribution of cereals and legumes. The Iraqi Seed Production Company, the Mesopotamia Seed Company and the Seed Technology Center played a major role in seed production and distribution. These seed companies altogether managed 18 processing plants and each year produced on average over 25, 000 tonnes of wheat and barley seed for distribution to farmers. The State Board for Seed Testing and Certification (SBSTC) is responsible for seed quality control and certification.

Following the war, the formal seed supply has been disrupted and the entire infrastructure has been destroyed with little/no functional organization in the seed sector. As a result it is impossible to meet farmers demand for quality seed from local production. In an effort to stabilize and increase crop and food production the Transitional Iraqi Government has sought for an alternative solution to import seed from neighboring countries. Syria stands a natural choice given the similarities in agroecology and farming systems as well as in crops and varieties which are adaptable to Iraqi condition. Above all, the availability of seed of acceptable quality and quantity; the geographic proximity and good on-land transportation links; and the need for a reliable partner make the General Organization for Seed Multiplication in Syria the main supplier for wheat and barley seed.

ICARDA, having a longstanding working relationship with NARS from Iraq and Syria, was contacted by the Iraqi Ministry of Agriculture to assist in identifying wheat varieties adaptable to Iraqi conditions and make contacts with the General Organization for Seed Multiplication in Syria to facilitate the purchase of wheat and barley seed. ICARDA played a key role in bringing together the clients and helping them negotiate the deal. Following the discussion between the Iraqi technical delegation and the management of GOSM an agreement has reached on terms and conditions of delivery by September 2004. In early December 2004 a total of 10, 600 tonnes of bread wheat seed variety *Cham 6* and 110 tonnes of barley seed variety *Furat 2* was delivered to Iraq for distribution and planting by farmers. The understanding reached between the Iraqi and Syrian counterparts in removing the barriers to allow the movements of varieties and seeds between the two countries is a classic example of responding to emergency situations. *Moustapha Dawalibi, General Organization for Seed Multiplication, P.O. Box 5857, Aleppo, Syria; E-mail: dawalibi@scs-net.org*

HOW TO

In this section we provide technical/practical information that seed sector staff may find useful. The guidelines are simple instructions for technical staff involved in seed production and quality control.

How to No 30: Maintaining the Independence of Accredited Seed Testing Laboratories

The independence of seed testing laboratories is a basic requirement for obtaining and maintaining ISTA accreditation. The main purpose is to counteract any potential negative influences of external factors on test results. To satisfy the ISTA accreditation for independence, the seed testing laboratories seeking to obtain ISTA accreditation have to provide the ISTA auditors with evidence on:

- Autonomy of the laboratory with a very clear organizational chart including its affiliations
- Cost of services provided by maintaining a published price list
- Non-discrimination of customers by having and abiding by a clear policy for fair client treatment
- Procedures of handling gifts and promotional presents by having and abiding by a clear code of conduct
- Clear staff remuneration policies by maintaining salary scales for all staff

- Clear rules for changing priorities of work by having well established procedures for planning
- Centralized contact with clients clearly stated in job descriptions of staff members

The auditors will check whether the laboratory adheres to the principles of independence by checking the documents mentioned above and verifying through error surveys, customer complaints and correction action files. *Abdoul Aziz Niane, Seed Unit, ICARDA, P.O. Box 5466, Aleppo, Syria; E-mail: a.niane@cgiar.org*

RESEARCH NOTES

Short communication of practical oriented research or relevant information in agriculture or seed technology are presented in this section.

Production of Organic Seeds: Status, Challenges and Prospects

by

Steven P.C. Groot, Ruud W. van den Bulk, W. Joost van der Burg, Henk Jalink, Cees J. Langerak and Jan M. van der Wolf¹

Organic Crop Production Requires Use of Certified Organic Seeds

To maintain long-term food production there is a need for sustainable agricultural practices. This is one of the aims of organic farming and consumers are prepared to pay higher prices for certified organic products. In many developing countries agriculture is still largely based on low inputs, because farmers cannot afford the high costs of chemical fertilizers and pesticides. For such farmers, organic farming can provide a better economic alternative, especially if they are able to sell their products on the European and North American markets. For certification of organic products, it is important that the entire production process conforms to the rules for organic production. Although there are some minor differences between the regulations for the European and the North American market, both require that whenever available, organic seeds or plant material should be used.

However, this is not as simple as it looks. First, organically produced propagation material is not available for all crops or there are no appropriate varieties. Second, to produce seeds under organic conditions and to obtain seeds of the same quality similar to conventionally produced seeds may often prove more difficult. Third, for several crops

organically produced seeds are more expensive and in practice farmers may choose the cheaper conventional seeds. Fourth, seeds may be obtained through farm-saved seeds or through exchange within the community which are not always from a certified organic production. The latter can especially be the case in developing countries, where seed quality can be a serious problem compared to that of organic seeds supplied by major seed companies.

Availability of High Quality Organic Seeds

Organic crop production may demand even higher quality propagation material compared to conventional farming. Farmers should rely on the quality of the seeds they are using. Preventive measures using chemicals are prohibited and competition with weeds requires high vigor planting material. Moreover, for organic farmers, seed health and the absence of genetically modified (GM) contamination is also very important.

Several seed companies have invested heavily in the production of high quality organic seeds and planting material for the main production areas in Europe, North America, New Zealand, etc. There, organic seeds are available for a number of food crops. However, for some vegetable or agricultural crops it is very difficult to produce organic seeds of the same quality standards as for conventional farming, while for ornamental crops there is hardly any organically produced propagation material available. For biennial vegetable crops, such as cabbages, carrot and onion, it is even more difficult to produce high quality organic seeds because the two seasons required for seed production increase the risk of diseases and pathogen contamination. In cereals, organically produced wheat seed is available, but seedling emergence is often less than conventionally produced fungicide treated seeds mainly due to seed-borne fungal infections.

In the EU the use of organic produced propagation material is obligatory and permission for derogation should be requested for the use of non-organically produced material. However, there are still large variations in seed availability and the regulation was adjusted where three categories are defined. The first category includes crops where no derogation is allowed because enough organically produced propagation material is available. EU member states produce a national list of these crops. For example, crops such as cucumber, garlic, potato, wheat and barley are listed for the Netherlands. A second category includes crops where hardly any organically produced propagation material is available and there is at present no obligation to request for derogation. The list includes ornamental crops and trees, but also

strawberry, sweet corn, asparagus and hemp. For the third category, derogation can still be requested and granting depends on the availability of organically produced propagation material of the crop, which may vary between countries. The permission for derogation is the responsibility of the national authorities.

In other parts of the world the availability of certified organically produced seeds and plant material is even less, and serious difficulties are encountered to obtain organic seeds of a guaranteed high quality. For organic farmers in these areas the challenges may even be greater.

Challenges Encountered

In addition to the difficulties in production and availability of organic propagation material, organic farmers encounter other problems compared to conventional crop production. Since chemicals cannot be used during seed production, organic seed has a greater risk of contamination, both with weed seeds and with seed borne pathogens. Moreover, sowing of seeds in soils with organic manure, that has slower mineralization rate in cold spring, and a stronger competition from weeds may require high seed vigor and seedlings with a faster developing root system. Also, the guaranteed non-GM nature of organically produced products is an important marketing strategy to the consumers. With the global increase of GM crops, there is a risk of increased GM contamination. Discussions are underway at international level whether organic seeds need lower thresholds for contamination with GM seeds than non-organic seeds.

Seed Research

These challenges call for solutions, which can only be obtained through research. Appropriate methods for the detection of pathogens and determination of critical control points during seed production will provide the basis for disease monitoring activities and treatments. New seed sanitation treatments need to be developed that should not only be effective in the elimination of pathogens, but should also maintain the viability of the seeds. Such new treatments should meet both the standards for organic farming and international regulations for use of crop protection agents. Novel seed sorting techniques may also be of use by removing diseased seeds from contaminated lots or less vigorous seeds. Plant Research International is involved in a national research program on organic seeds funded by the Dutch government and in two EC funded projects; and collaborates with the seed industry, organic farmers and policy makers, to guarantee that results from research are acceptable to the organic sector and implemented in practice.

Some examples of this research are presented below.

Healthy organic seed production

Prohibiting chemicals in organic crop production increases the risk of diseases of some crops where resistant varieties are not available especially for biennial crops, which are exposed to infection during two subsequent seasons. To find alternative measures for optimizing organic seed production, we focused on gathering knowledge on critical control points during seed production. The host-pathogen combination *Daucus carota* - *Alternaria radicina* was chosen as a model. Several field experiments were carried out under organic conditions, using basic seeds of six different cultivars with various levels of *A. radicina* contamination. Disease transmission was studied and measured in all crop production stages, from seed to seed. Minor seed infections, which could only be detected with a sensitive method, seem to be responsible for non-visible latent infections in the crown part of the carrot root. These infections may become visible as black rot either at a high temperature above 20°C during maturation of the carrots or during cold storage of the harvested carrots. When young carrot plants or mature roots are vernalized to induce flowering, latent infections mostly remain unnoticed. Such infections can finally result in infected flowers and diseased seeds, and may form a source of inoculum for secondary infection of seeds developing on healthy plants. Consequently, organic carrot seed production requires a high degree of sanitation such as disease free basic seed, roguing at any stage of plant growth and a stringent isolation of production fields from other umbellifers. Besides, experiments have shown that hot water treatment of basic seed could be a good disease management practice.

Natural compounds for seed treatment

In Europe, most commercially produced seed is presently treated with (synthetic) crop protection agents, in order to eliminate seed-borne pathogens and to protect emerging seedlings from soil- and air-borne pathogens and insects. For organic agriculture, physical treatments such as hot water treatments are being used, but they involve the risk of seed damage. We are trying to avoid this problem by developing a combination treatment using milder physical treatments with compounds of natural origin.

Within this concept, different natural compounds were tested, including essential oils and organic acids. From 30 essential oils tested, thyme oil exhibited the highest *in vitro* inhibiting activity against two bacterial and two fungal seed-borne pathogens. It is important that these natural agents

are permitted for use on seeds according to the national and international regulations for crop protectants. Products that are not yet registered for use as a crop protectant will need the submission of new reports, often requiring costly toxicological studies that are not feasible for the small market of organic seed treatment. Besides, they should also be allowed for use in organic crop production (EEC regulation 2092/91 and FAO Codex Alimentarius). In the Netherlands, thyme oil fits both criteria and may be used for treatment of seeds when mixed with water.

Seed priming

When using organic manure, the microbial activity is very important for the release of nutrients. In the cold spring soil, microbial activity is low and nutrients become less readily available in comparison with the use of synthetic fertilizers in conventional farming. A vigorous seedling with a fast growing root system may improve the uptake of minerals and improve the establishment of the crop. In this respect vigorous, healthy seedlings may be even more important for the organic than for the conventional farmers. Moreover, faster growing seedlings can improve competition with weeds for nutrients and light. The latter is relevant, because manual and mechanical weed removals are major costs in organic farming. Seeds can be primed by imbibing them for a limited time prior to sowing. Mostly the primed seeds are dried so radicle protrusion during the priming process is avoided, to circumvent loss of desiccation tolerance. Primed seeds germinated faster in the field and this may contribute to an improved competition with weeds. Our research shows that plants derived from primed seeds show a faster initial growth and an earlier ground cover. It is interesting to note that farmers in India, Zimbabwe and several other countries obtained large increases in yield in low input farming systems, by using on-farm seed priming in wheat, rice and chickpea. Use of primed seeds can therefore be interesting for organic farming, especially in those areas where it is combined with low-input farming.

New seed sorting technologies

Alternative sanitation treatments (e.g. hot water treatment) require a high degree of tolerance of the seeds. During maturation, seeds reach their optimal physiological quality. Seeds which are not completely mature, germinate more slowly, have a lower germination capacity, produce less normal seedlings, can have higher contamination levels with pathogens, and can be more sensitive to diseases and to alternative sanitation treatments. Seeds of many crops are green during the first phase of their development, and the breakdown of chlorophyll is inversely correlated with seed

maturity. A technique has been developed to sort seeds on the basis of their level of chlorophyll fluorescence (CF). The most mature cabbage seeds, with the lowest level of CF, had highest percentage germination, more uniform and higher speed of germination and lower amount of infected seedlings. Less mature seeds showed a lower germination capacity and were more heavily infected than seeds from the low CF fraction. They are also more sensitive to hot water treatments, indicating the need for harvesting at full maturity for seed production. For barley seeds, a relationship was established between the strength of the CF signal and the level of contamination with *Fusarium* spp. Seeds from the fraction with the highest CF signals were always the most heavily infected. CF sorting of barley seeds improved their physiological quality by removing less mature seeds and those with the largest fungal infection levels. Therefore, the technology can contribute to improve the quality of organic seeds.



Future Prospects

The need for sustainable agriculture is acknowledged worldwide and many governments support research on organic farming. This provides prospects for improving organic seed production. The spin-off will also provide options to reduce pesticide use in conventional seed and crop production whereby organic seed research acts as a pioneer. Seed companies invest in organic seed production, despite the fact that the organic seed market is hardly interesting for major seed companies from the commercial perspectives. Collaboration between private and public institutions is increasing, both at the national and international levels.

The International Federation of Organic Agricultural Movements, the Food and Agriculture Organization and the International Seed Federation organized the 'First World Conference on Organic Seed' from 5-7 July 2004 in Rome, Italy. The meeting attracted over 270 participants from 57

countries, showing the worldwide interest in organic agriculture and the importance of seeds in organic food production. The diversity of participants was also reflected in the mix of farmers, seed company staff, small-scale seed producers, scientists and policy makers. ISTA also took part in this conference as a key player in seed research and analysis of seed quality.

The field of organic production and the use of organic seeds are rapidly evolving. Training of farmers, extension staff, researchers and policy makers needs attention. Several organizations such as IFOAM and ISTA can contribute to this need. Apart from pioneering research on organic seeds, the Wageningen University and Research Center also provides courses, both on seed technology and organic farming (<http://www.seedcentre.nl>).

It is very stimulating to see that the solutions proposed for organic seeds receive greater attention from the conventional seed sector. Conventional farmers are also interested in reducing the amount of chemicals used. In this way the challenges for the organic seed sector will provide prospects for more sustainable conventional agriculture.

Note¹: Plant Research International, Wageningen University and Research Centre, P.O. Box 16, 6700 AA Wageningen, Netherlands, e-mail: steven.groot@wur.nl

MEETINGS and COURSES

Announcements of meetings, seminars, workshops and training courses appear in this section. Please send us national, regional or international announcements for workshops, seminars and training courses organized in your country for inclusion in the next issue.

Conferences

AFSTA Annual Congress 2005, 16-18 March 2005, Yaoundé, Cameroon. The Cameroonian Seed Trade Association (ACOSEC) under the aegis of the African Seed Trade Association (AFSTA) will organize the AFSTA Annual Congress 2005. The congress will bring together seed people from Africa and the rest of the world and provide an excellent opportunity to create or strengthen business linkages. The AFSTA Annual Congress 2005 will be organized under the theme: *'Problems of Profitability of Seed Activity in Africa.'* However, other sub-topics and specific seed problems for the continent will be discussed. The

venue for the congress is Djega Palace hotels in Yaoundé. The registration form and the program along with all the details are available at <http://www.afsta.org>. For more information, contact: AFSTA Secretariat, P. O. Box 2428 KNH, Nairobi, Kenya; Fax: ++ 254-2-727-861; E-mail: afsta@kenyaweb.com; Website: <http://www.afsta.org>

ISTA Ordinary Meeting 2005, 25-28 April 2005 Bangkok, Thailand. This meeting will discuss and decide the proposals for changes to the ISTA International Rules for Seed Testing and the business of the Association, with the international participation of ISTA delegates and representatives from both the seed industry and governments, including experts in seed technology, scientific research and laboratory accreditation. The meeting will also discuss the ISTA Technical Committees and Task Forces (2004-2007); Rules Chapter for GMO testing; results of the ISTA GMO proficiency tests; accreditation of seed testing laboratories to issue ISTA Certificates for GMO testing; the new layout of ISTA rules; and the seed lot size for cereals. For more information contact: ISTA, Zürichstrasse 50, P.O. Box 308, 8303 Bassersdorf, Switzerland. Fax: ++41-1-8386001; E-mail: executive.office@ista.ch; Website: <http://www.seedtest.org>

West and Central Asian Regional Workshop on Plant Variety Protection Under the UPOV Convention, 8-10 May 2005, Karaj, Iran. The workshop will be organized by the International Union for the Protection of New Varieties of Plants in cooperation with the Ministry of Jihad-e-Agriculture of Iran, the Food and Agriculture Organization and the International Center for Agricultural Research in the Dry Areas with the financial assistance by the Ministry of Agriculture, Forestry and Fisheries of Japan. The participants are government officials responsible for plant variety protection system invited from Azerbaijan, Jordan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan where funding is already available from Japan. However, the workshop is open to other interested countries from the region that wish to participate provided that they can cover their travel costs and daily allowances. The Seed and Plant Certification and Research Institute will cover all local costs including accommodation and meals. If you are interested to participate please contact: A.J.G. van Gastel, Seed Unit, ICARDA; E-mail: a.vangastel@cgiar.org

8th International Workshop on Seeds: Germinating New Ideas, 8-13 May 2005, Brisbane Australia. The International Society for Seed

Science announced that the 8th International Workshop on Seeds will be held from 8-13 May 2005 in Brisbane, Australia. The workshop will cover a diverse range of topics of interest to those in seed science research and in the seed industry. The papers cover the following topics: (i) Seed development; (ii) Seed germination and dormancy; (iii) Seed desiccation and conservation; (iv) Seed ecology; (v) Seed biotechnology; and (vi) Seed biology of Australian native species. The deadline for payment of workshop registration is 4 March 2005.

The trade exhibition will include leading service providers and will be held concurrently with the workshop. The exhibition aims to provide an extension of the conference experience and an opportunity to promote products, meet suppliers, delegates and speakers and extend the networks with the leaders in the industry. All enquires should be addressed to: Krys Henshaw or Alison Carney, 8th International Workshop on Seeds, c/o Organizers Australia, P.O. Box 1237, Milton QLD 4064, Australia; Fax: ++61-7-33710555; Email: info@seedbio2005.asn.au; Website: <http://www.seedbio2005.asn.au>

ISF 2005 Annual Congress, 30 May to 1 June 2005, Santiago, Chile.



The ISF congress brings together the largest number of seed people from all over the world and provides a forum for discussion on topics ranging from crop specific issues to trade and arbitration to intellectual property and plant breeding. It is a meeting place for colleagues to exchange scientific, technical and commercial information related to seed production and the trading floor provides commercial opportunities for seed and planting material. Topics on the agenda of the various crop sections and technical committees will include, among others:

- Essential derivation in cotton, oilseed rape and maize, codes of conduct and an arbitration procedure in case of disputes
- GM crop trends for various crops in Chile and other Southern American countries
- Presentation of the Chilean seed industry and the tropical grass and forage, and vegetable seed markets in Latin America
- Traceability, seed health testing and pathogen coding
- Industry wide position papers on agrobiodiversity, protection of hybrid parental lines, terminology for abiotic stresses and others

For the second time, the Seed Treatment and Environment Committee will organize a seminar on Seed Treatment on 2 June 2005. The full

information package on the congress and seminar will be available by January 2005 on the congress website: <http://www.worldseed2005.com>. For more information contact: ISF, Chemin du Reposoir 5-7, 11260 Nyon, Switzerland. Fax: ++41-22-3654421; E-mail: isf@worldseed.org; Website: <http://worldseed.org>

InterDrought-II: The 2nd International Conference on Integrated Approaches to Sustain and Improve Plant Production Under Drought Stress, 26-30 September 2005, Rome, Italy.

InterDrought-II follows the first symposium held in 1995 in Montpellier, France, which provided an excellent platform for presenting, discussing and integrating results of both basic and applied research towards the development of solutions to crop production under drought-prone conditions. The objective of InterDrought-II is to serve as a platform for presenting and debating key issues and strategies relevant for increasing yield and stability of crops under drought conditions through genetic improvement and crop management approaches. For more information and for registration visit the website at <http://www.plantstress.com/id2/>

Courses

Agrobiodiversity, Biotechnology, Plant Breeding and Seed Sector Development, 25 April to 1 July 2005, Wageningen, The Netherlands. The ten-week course on agrobiodiversity, biotechnology, plant breeding and seed sector development aims to enhance participants' capabilities to implement international agreements, policies and regulations, to deal with new issues and problems in the management of seed and plant breeding programs, and to manage participatory approaches and new technical developments of strategic importance for the sustainable use of genetic resources. For further information on the courses, contact: International Agricultural Center, P.O. Box 88, 6700 AB Wageningen, The Netherlands; Fax: +31-317-495395; Email: training.iac@wur.nl

Global Open Agriculture and Food University

The Global Open Agriculture and Food University is a CGIAR initiative for open distance learning and capacity strengthening that serves traditional and open universities throughout the world. The university's goal is to strengthen the capacity of postgraduate students, researchers, and other professionals in food and agriculture (including livestock, forestry, fishery) to enhance agricultural development, poverty reduction, and food security.

A range of distance education technologies shall be used to fill knowledge gaps, improve existing

postgraduate agriculture and natural resources degree programs in the developing world, and offer high-quality degree programs. The university will use: Web-based materials, CD-Rom, traditional text, and other technologies in a variety of languages so that participants from all regions of the developing world may benefit. The university plans to provide course content based on CGIAR research and professional and applied academic teaching in partnership with regional and national institutions. By complementing and leveraging existing distance education courses, the university could provide flexible, affordable, and accessible postgraduate education while rapidly building high-quality capacity for agricultural development. For more information, contact: Michael Rubinstein, Tel: ++1-202-8625670; E-mail: m.rubinstein@cgiar.org or Sarwat Hussain; Tel: ++1-202-473-5690; E-mail: s.hussain@cgiar.org; Website: <http://www.openaguniversity.cgiar.org>

LITERATURE

Literature, books and journal articles of interest to readers are presented here. Please send lists of seed publications on policy, regulation and technology to the Editor for inclusion in *Seed Info*.

McDonald, M.B. and F.Y. Kwong. (eds.) 2004. Flower Seeds: Biology and Technology. The floral industry represents a significant proportion of agricultural income in several developed countries, particularly the USA, the Netherlands and Japan. The book provides a unique and much-needed source of information on the biology and technology of flower seeds. It presents in-depth information on the history and evolution of the ornamental and wild flower seed industry followed by recommendations for successful breeding and production programs. A comprehensive coverage of the biology of flower seeds is considered as well as appropriate technologies associated with germination, vigor and viability testing. CAB International, Wallingford, Oxfordshire, OX10 8DE, UK; E-mail: orders@cabi.org; Website: <http://www.cabi-publishing.org/bookshop>; 400 pp; Price: \$175.

Miller, H. I. and G. Conko. 2004. The Frankenfood Myth: How Protest and Politics Threaten the Biotech Revolution. The development and distribution of genetically altered foods have inspired much international furor and misinformation. In this book, the authors trace the

origins of gene-splicing, its applications, and the backlash from consumer groups and government agencies against so-called 'frankenfoods'. A variety of business and policy reforms have been proposed that can unlock the potential of this cutting-edge science, while ensuring appropriate safeguards and moving environment friendly products into of farmers and consumers. Praeger Publishers, Greenwood Publishing Group; Website: <http://www.greenwood.com>; Price: \$39.95.

Koo, B., P.G. Pardey and B.D. Wright. 2004. Saving Seeds: The Economics of Conserving Crop Genetic Resources Ex Situ in the Future Harvest Centres of CGIAR. The book reports on a series of detailed economic studies, led by IFPRI, in collaboration with five CGIAR centers: CIAT, CIMMYT, ICARDA, ICRISAT and IRRI. It discusses key policy and management issues—usually with economic dimensions—of *ex situ* storage of various crops and its implications. CAB International, Wallingford, Oxfordshire, OX10 8DE, UK; E-mail: orders@cabi.org; Website: <http://www.cabi-publishing.org/bookshop>; 232 pp; Price: \$90.

Useful Internet Websites

Online Biological and Social Science Journals
Access to Global Online Research in Agriculture is a new Internet gateway that provides eligible institutions, mainly national agricultural organizations and universities in 69 low-income countries free access to over 500 international journals in agriculture, both in the biological and social sciences. AGORA is a collaborative initiative led by the Food and Agriculture Organization in partnership with the world's leading academic publishers, Cornell University and the World Health Organization. To access the journals and more information on eligible countries, visit the website at: <http://www.aginternetwork.org>. For countries which are not eligible under the AGORA gateway visit: <http://www.ifpri.org/library/journals.htm>

Website for West Africa Seed and Planting Material Network (WASNET)

A website is set up for the West Africa Seed and Planting Material Network (WASNET) as planned during the strategic workshop held in September 2002 in Accra, Ghana. The website can also link up with the website of each institution of the Board of Directors through their respective logo. The website can be viewed at: <http://www.wasnet.org>.



Turkish Seed Industry Association



**International Center for Agricultural
Research in the Dry Areas**

**International Seed Trade Conference in CWANA Region
29 November to 1 December 2005, Antalya, Turkey**

First Announcement

The countries of Central Asia and the Caucasus (Azerbaijan, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) and West Asia (Afghanistan, Cyprus, Iran, Iraq, Jordan, Lebanon, Saudi Arabia, Yemen, Turkey) and North Africa (Algeria, Egypt, Libya, Morocco, Tunisia) have many similarities in terms of climate, farming systems, crop varieties and seeds, forming a basis for a strong regional seed market, linked to the global seed market. However, national seed industries are largely fragmented and nationally focused with no linkages both among public and/or private sector companies. Moreover, the national seed industries face policy, regulatory, institutional and technical constraints which serve as impediments for regional integration. While there is huge potential for a regional market, recent seed trade statistics showed that the West Asia and North Africa region alone imports seed worth more than \$200 million per year and exports a tiny fraction of that amount (nearly \$25 million) from the region. Despite the availability of a suitable environment, expertise for seed production of certain crops, low production costs and proximity to Europe, which provides a comparative advantage, few private companies take the opportunity to capture the potential commercial seed market within the region and beyond.

Trade exhibitions

During the conference there will be trade exhibitions by (a) seed companies, (b) seed equipment manufacturers, (c) agricultural input supply companies, and (d) agricultural machinery manufacturers. Companies interested are requested to contact the National Organizing Committee.

Information on the conference

For more information about the conference objectives, themes and trade exhibitions please contact the Secretariat of the conference, Ayhan Elçi, General Secretary, Turkish Seed Industry Association, Mithatpaşa Caddesi Fazilet Apt. No: 50/4, Yenisehir, Ankara, Turkey. Tel: ++90-312-4320050, 4322650; Fax: ++90-312-4320050; E-mail: ayhane@turkted.org.tr; E-mail: turkted@turkted.org.tr; Website: <http://www.turkted.org.tr> or visit the ICARDA website (http://www.icarda.org/announcement/seedtradeconf_Nov-Dec05.htm).

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Fax: ++ 963-21-2213490; E-mail: z.bishaw@cgiar.org; Website: <http://www.icarda.org/seed>

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