



# SEED INFO

Official Newsletter of the WANA Seed Network



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## EDITORIAL NOTE

**S**eed 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 this issue of Seed Info we present a lead article on Genetically Modified crops—Patents, Licenses and Liability by N.P. Louwaars our regular contributor from Wageningen University and Research Center, Wageningen, The Netherlands. He explores the existing arrangements of patent protection and options for licensing the technology and the emerging issues of liability with particular reference to plant breeding and commercial seed production in developing countries. We are also bringing you news from the African Seed Trade Association (AFSTA), International Seed Testing Association (ISTA), the International Seed Federation (ISF) and the International Union for Protection of New Plant Varieties (UPOV).

The section on **SEED PROGRAMS** includes news from Afghanistan, Ethiopia, Iran, Pakistan, Turkey and Yemen. Abdurahman Beshir from Ethiopia presents the activities of the farmer-based seed production and marketing activities being undertaken by the Ethiopian Seed Enterprise (ESE) to meet farmers' demand for quality seed in less accessible and remote areas of the country. Mohammed Sallam describes efforts undertaken and implemented by the Agricultural Research and Extension Authority (AREA) in improving the informal seed supply system in Yemen. The country reports include the Regional Workshop on Plant Variety Protection held in Iran and varietal releases of legume and forage crops in Ethiopia, Mexico and Turkey from germplasm supplied by ICARDA.

In the **HOW TO** section, your regular contributor, Abdoul Aziz Niane describes the sources of contamination and procedures to maintain varietal purity and identity during seed production.

The **RESEARCH** section is aimed at capturing information on adapted research or issues relevant to seed program development in the region or elsewhere. Anders Borgen from Denmark describes a promising method of removing common bunt spores from wheat seed lots using a brush cleaner.

*Seed Info* encourages exchange of information to broaden our understanding of issues that affect the global, regional and national 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.

Have an enjoyable read.

*Zewdie Bishaw, Editor*

## WANA SEED NETWORK NEWS

**T**his 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.

### Workshop on Policy and Regulatory Reforms

A Regional Workshop on Seed Policy and Regulatory Reforms was organized on 13-17 February 2005 in Aleppo, Syria. The Japan International Cooperation Agency funded the workshop through the Third Country Training Project for participants from Afghanistan and Syria. A total of 24 policy makers and senior managers attended the workshop representing various stakeholders of the seed industry including ministries of agriculture, agricultural research, public and private sector seed companies from 12 member countries of the WANA Seed Network.

Based on the key presentations, country reports and ensuing working group sessions, the meeting prepared recommendations and action plans to be taken both at national and regional levels in three particular areas, *viz*; (a) harmonization of policies, laws, rules, regulations and procedures relevant to plant genetic resources, varieties and seeds; (b) privatization of the seed sector; and (c) support for the informal seed sector. The working group sessions identified common constraints and made recommendations for improvements.

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### 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 and WANA Seed Directory have been updated regularly and are available on the website. For more information or access to the network publications, you may visit the website at <http://www.icarda.org/seed>. 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](mailto:z.bishaw@cgiar.org)

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## 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.

### Genetically Modified Organisms (GMOs)— Patents, Licenses and Liability

The application of biotechnology is growing rapidly in plant breeding and the seed industry. At present, there is significant commercial production of transgenic crop varieties with herbicide tolerance (e.g. maize, soybean, canola in the Americas) and insect resistance (e.g. cotton in China, India, USA). In some countries of Central West Asia and North Africa (CWANA), a number of agricultural research institutions have developed the technical and human resource capacity to experiment different biotechnological tools and have started using them in plant breeding.

It is important to note that, however, many aspects of biotechnology are protected by patents including genes, gene manipulation technologies, laboratory tools and in some countries even the whole varieties or groups of varieties. In patent protection the originator of the invention has the right to decide who is allowed to use the technology. Therefore, agricultural researchers, plant breeders and seed producers need to have a license to use the innovation. This new development will change the present situation in most CWANA countries where government agricultural research institutions produce varieties which are of 'public good' i.e. freely available for whoever wants to use them. It is even different from situations where Plant Breeder's Rights (PBR) are operational, since patents have a much greater 'reach' and provide stronger rights than PBR where breeders are exempted for using the new variety for breeding purposes. Whether patents are actually very restrictive depend on a number of issues.

First, currently most public research institutes in developing countries potentially have a relatively easy access to patent-protected inventions. In patents, the protection is territorial, which means that a patent holder must specifically apply in each country where he wants to protect his right. Most biotechnology companies focus on big markets in North America, Europe and possibly developing countries like Argentina, Brazil, China, India, and South Africa. Therefore, most relevant patents on biotechnology are not yet operational in CWANA countries and researchers may use them freely

within the borders of their country where protection is not yet available.

Second, research institutions can easily get a so-called research license, which specifies a freedom to use for such purposes, but also the rules that may apply when a commercial product is developed using the invention. Thus, the license issue becomes important in the final stages of plant breeding and in commercial seed production. Plant breeders and seed producers have to have a valid license from the holder of the patent right (often a company or institution in America or Europe) in order to develop and use the variety. The license agreement is likely to stipulate the markets in which the seed may be sold, the quantities to be sold, and determines a royalty payment to the inventor.

Third, there is the possibility to negotiate what are called 'humanitarian licenses'. These are license agreements that stipulate the boundaries of free use of the invention for a 'humanitarian cause'. This is commonly the case where protected technologies or information can be used for poverty alleviation or nutritional security. This option is not likely to extend to large-scale commercial seed production, but more specifically to public or participatory seed programs directed to improve livelihoods of resource-poor farmers. When researchers have negotiated such an agreement, seed producers have to carefully study the agreement in order to establish their 'freedom-to-operate'.

The examples of such licenses relevant to seeds is the one offered by Monsanto about 10 years ago for the use of virus resistance genes in potato varieties for smallholder farmers in Mexico (while the patent remained valid for big commercial variety in the same country), and a license by Syngenta on the Golden Rice technologies, that allow rice breeders to introduce high levels of pro-vitamin A in the grain. One could consider the agreement between the Agricultural Genetic Engineering Research Institute in Egypt and Pioneer for the introduction of Bt insect resistance to local maize varieties as humanitarian license, but the fact that Pioneer gains access to Egyptian Bt strains and information makes it more like a business deal.

There are several examples of large multinational companies providing access to protected technologies to developing countries on a preferential basis, but recent developments may change their willingness to enter such agreements. Seed producers are used to different levels of liability in different countries. In some cases the seed producers or seed dealers have to replace the seed free if the commercial seed that was sold

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proved to be of poor quality, but in some countries (e.g. India) seed suppliers run the risk of much higher penalties, because they have to pay the total value of the crop that a farmer lost by planting poor quality seed.

With genetically modified crops, the liabilities are getting even tougher. Whether or not GM crops can cause physical harm, there is a perception that GM products may be unsafe for consumption, ecologically undesirable, or creating certain economic risks. An example is the recent US litigation over Starlink maize, in which the unintentional commingling of GM maize, which was unapproved for human consumption, with conventional maize, exposed Aventis CropScience to millions of dollars in liabilities.

Article 27 of the Cartagena Protocol calls upon the parties to that agreement to investigate the 'elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements' of GMOs. There is a fear that liability issues become overriding arguments for the limitation of humanitarian licenses, i.e. when the originator of a technology may be held responsible for damages caused by the products irrespective of how these products were handled.

It is important for Seedsmen, both in the public and the private sector to acquaint themselves with liability matters, when they start dealing with transgenic varieties and seeds. *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*

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### **Global Status of Commercial Biotech Crops**

In ISAAA Brief 32 released in January 2005 the global status of commercialized transgenic or genetically modified (GM) crops, now collectively called 'biotech crops', confirms that the global area continued to grow for the ninth consecutive year at a sustained double-digit rate.

In 2004, the global area of biotech crops continued to grow at a substantial rate of 20%, compared with 15% in 2003. The estimated global area of approved biotech crops for 2004 was 81 million ha up from the 67.7 million ha in 2003. In the same year, from 1.5 billion ha cultivable cropland worldwide, biotech crops occupied 5% of the area. About 8.25 million farmers in 17 countries grew biotech crops up from 7 million farmers in 18 countries in 2003 of which

90% of the farmers were from developing countries.

The increase in biotech crops area between 2003 and 2004, of 13.3 million ha, is the second highest on record. In 2004, there were fourteen (nine developing countries and five industrial countries) biotech mega-countries ( $\geq 50,000$  ha), compared with ten in 2003; they were, in order of area USA, Argentina, Canada, Brazil, China, Paraguay, India, South Africa, Uruguay, Australia, Romania, Mexico, Spain and the Philippines.

The continuing rapid adoption of biotech crops reflects the substantial improvements in productivity, the environment, economics, and social benefits realized by both large and small farmers, consumers, and society in both developed and developing countries. During the nine-year period from 1996 to 2004, the global area of biotech crops increased more than 47 fold, from 1.7 million hectares in 1996 to 81 million ha in 2004, with an increasing proportion grown by developing countries. More than one-third of the global biotech crop area of 81 million ha in 2004, equivalent to 27.6 million ha, was grown in developing countries where growth continued to be strong.

The increased area and impact of the five principal developing countries (Argentina, Brazil, China, India and South Africa) growing biotech crops, is an important trend with implications for the future adoption and acceptance of biotech crops worldwide. In 2004, the number of developing countries growing biotech crops (11) was almost double the number of industrial countries (6) adopting biotech crops.

The first decade of the commercialization of biotech crops (1996-2004), during which double-digit growth in global area of biotech crops has been achieved every single year, shows confidence in the technology from the 25 million farmers who have consistently chosen to plant an increasing area of biotech crops year after year.

There is cautious optimism with the global area and the number of farmers planting biotech crops expected to continue growing in 2005 and beyond. In 2004, there were signs of progress in the European Union with the Commission approving, for import, two events in biotech maize (Bt 11 and NK603) for food and feed use, thus signaling the end of the 1998 moratorium. The Commission also approved 17 maize varieties, with insect resistance conferred by MON 810, making it the first biotech crop to be approved for planting in all 25 EU countries. The use of MON 810 maize in conjunction with practical co-existence policies

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opens up new opportunities for EU member countries to benefit from the commercialization of biotech maize, which Spain has successfully deployed since 1998.

In the near future, the one single event that is likely to have the greatest impact is the approval and adoption of Bt rice in China, probably in 2005. The adoption of biotech rice by China not only involves the most important food crop in the world, but the culture of Asia as well. It will provide the stimulus that will have a major impact on the acceptance of biotech rice in Asia and, more generally, on the acceptance of biotech food, feed and fiber crops worldwide. Taking all factors into account, the outlook for 2010 points to continued growth in the global area of biotech crops, reaching 150 million ha, with nearly 15 million farmers growing biotech crops in about 30 countries. ISAAA predicts that by the end of the decade up to 15 million farmers will grow biotech crops on 150 million ha in almost 30 countries. *Source: CropBiotech Update Special Edition 14 January 2005*

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#### **European Union Lists Accepted GM Products**

The European Commission has recently released a list of 26 genetically modified products that have legally been on the European market, even before the European Union's new legislative framework for authorizing GM food and feed went into effect. The list aims to clarify exactly which GM products are legally permitted to be sold in the EU, and includes products that may continue to be marketed because they fulfilled the notification requirements under Regulation (EC) No 1829/2003. The approved list includes 12 maize varieties (12), oilseed rape (6), cotton (5), soybean (1), one biomass and one yeast cream. Existing products on the EC register are subject to the strict labeling and traceability rules for all GMOs under new EU legislation. Since the implementation of Regulation 1829/2003, all GM food and feed entering the EU market have to undergo thorough safety assessments. Once on the market and in the EC register, existing products can be sold for three to nine years, and may stay for a much longer time if an application for renewal of the authorization is submitted.

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#### **AFSTA Congress 2005, Yaoundé, Cameroon**

The African Seed Trade Association (AFSTA) Annual Congress 2005 was held from 16-18 March 2005 in Yaoundé, Cameroon. The congress has attracted 97 delegates from 35 countries, among

others, the regional and international seed and research organizations. It was an excellent opportunity for the participants to discuss and exchange views on the main issues facing the seed industry at regional and/or global levels. The main topics discussed include: vegetable seed trade in Africa, Intellectual Property Rights, Material Transfer Agreement under the FAO multilateral system, accreditation of seed companies for certification, testing and phytosanitary issues, arbitration in international seed trade, biosafety regulations and stewardship and coexistence of GM and non-GM seeds. All the technical sessions were well attended. The congress was preceded by each half-day workshops on plant variety protection facilitated by UPOV and on cotton seed facilitated by Syngenta Agro.

The AFSTA General Assembly adopted a position paper on Intellectual Property Rights. More position papers will be drafted, among others, on Material Transfer Agreements and on Coexistence of GM and non-GM seeds. A new strategy to address the challenges of the African seed industry was also adopted. AFSTA will continue to actively support the harmonization of seed legislation in the various sub-regions.

Training and building capacity of its members remains as one of the main objectives of AFSTA. It is planned to organize one-day courses on Material Transfer Agreements and Coexistence of GM and non-GM seeds, respectively, on 17 and 18 October 2005 in Nairobi, Kenya.

The next AFSTA Annual Congress 2006 will be held from 28-31 March 2006 at the Imperial Resort Beach Hotel in Entebbe, Uganda. *Justin Rakotoarisaona, AFSTA, P.O Box 2428-00202 KNH, Nairobi, Kenya; Fax: ++ 254-2-727-861; E-mail:insight@kenyaweb.com; http://www.afsta.org*

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#### **ISF World Seed Congress 2005**

Chile hosted the annual World Seed Congress from 30 May to 1 June 2005. A total of 1071 persons attended the congress representing members of the seed industry in 55 countries, including a sizeable number from Latin America. International organizations such as FAO, ISTA, OECD and UPOV, and regional seed associations such as AFSTA, APSA, ESA and FELAS were represented and participated in the debates.

The topics of the various crop sections and technical committees included the Chilean seed industry, trends in GM crops in Chile and other

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Southern American countries, essential derivation, traceability, seed health testing and pathogen coding including industry wide position papers.

During the congress three position papers were adopted:

- Plant Genetic Resources for Food and Agriculture: Use and Conservation
- Genetically Modified Crops and Plant Breeding
- Essential Derivation from a Not-yet Protected Variety and Dependency

For the implementation of the concept of essential derivation, the General Assembly adopted a Regulation for the Arbitration of Disputes concerning Essential Derivation (RED), which in the case of a dispute between two parties concerning an essentially derived variety provides a basis for a balanced procedure tailored to the specific (technical) aspects of the case. This was a breakthrough as the subject has been under consideration for several years. This document along with the position papers can be found on the ISF website.

In his opening speech Selwyn Manning, President of ISF highlighted the major issues facing the industry worldwide. The challenges themselves, *viz*; protection of intellectual property, adventitious presence of GM material in non-GM seeds, phytosanitary restrictions as a barrier to trade and harmonization of seed treatment regulations, he said, were not especially new. In fact, they had been discussed many times before but in presenting them again he asked for a renewed appreciation of their importance. In speaking of the evolution of the seed industry Bernard Le Buanec, Secretary General emphasized the need for it to be structured at the national, regional and international levels.

The next annual World Seed Congress will be held in Copenhagen, Denmark on 29-31 May 2006. *Radha Ranganathan, ISF, Chemin du Reposoir 7, 1260 Nyon, Switzerland Fax: ++41-22-3654421; E-mail: r.ranganathan@worldseed.org; Website: <http://www.worldseed.org>*

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#### **Azerbaijan Accedes to UPOV Convention**

According to press releases issued in November 2004, Azerbaijan becomes the 58th member of the International Union for the Protection of New Varieties of Plants. This brings the number of countries which are members of UPOV to five in CWANA region. Jordan, Kyrgyzstan, Tunisia and Uzbekistan 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 important tools to enhance food production in a sustainable way, to increase income in the agricultural sector and to contribute to overall economic development.

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#### **Harmonization of Phytosanitary Regulations in Asia**

According to the International Plant Protection Convention (IPPC), every country has a sovereign right to protect its environment and food security and take appropriate measures. The purpose of the treaty is to secure a common and effective action to prevent the spread and introduction of pests in plants and to promote appropriate measures for their control. Seed is a potential carrier of pests and a risk for introducing them into new areas or countries. A quarantine pest (QP) is a pest of potential national economic importance to the country endangered thereby and not yet present there, or present but not widely distributed and being actively controlled. The SPS agreement of WTO encourages member countries to use international standards or even higher standards based on appropriate pest risk analysis (PRA). However, this should be based on scientific principles and enforced in a transparent manner. These standards should not be misused for protectionist purposes and should not result in unnecessary barrier to international trade.

The SPS agreement encourages developing international phytosanitary standards on scientific grounds and member countries are encouraged to harmonize them at regional level. Thus, the Asia and Pacific Seed Association (APSA) took an initiative to harmonize phytosanitary regulations in Asia within the framework of IPPC and SPS agreement. Initially five countries, which are major agricultural economies of Asia were included, namely; India, Indonesia, Thailand, the Philippines, and Vietnam. In view of their importance in international seed trade, 10 agricultural and horticultural crops were selected such as maize, rice, sunflower, cabbage, cauliflower, cucumber, eggplant, hot pepper, tomato and watermelon.

The plant quarantine authorities of the five countries, APSA and Iowa State University participated in this task. A survey was conducted in

the five countries to analyze the constraints to be addressed in the harmonization process. In all, eight major constraints were listed related to administrative and technical issues.

#### *Administrative and technical constraints*

The administrative constraints include delays in issuing import permits, high fees, inadequate storage facilities at ports, and lack of clear and transparent information of procedures. The technical constraints include unnecessarily regulated pests, regulations limiting imports/exports, lack of clear information on pest lists and undue sampling at entry ports. A systematic discussion on Quarantine Pests (QP) was made by scientists and the executives of the Plant Quarantine Authorities of the participating countries in six consecutive workshops held in Thailand (17-18 February and 6-10 October 2003); Indonesia (26 April –1 May 2004); in the Philippines (14-18 June 2004); Vietnam (18-20 August 2004); and Thailand (16-20 November 2004).

#### *Quarantine pest and pest risk analysis*

Pest Risk Analysis is the process of evaluating biological or otherwise scientific and economic evidence to determine whether a pest should be regulated. Three major parameters to decide the QP are as follows:

- Whether or not the pest is reported to be already present in the country. This is based on scientific publications
- Whether or not the pest is transmitted through the seed
- What is the economic importance of the pest?

In view of the above, CABI Crop Protection Compendium 2003 was used for deciding the quarantine pests of designated crops in participating countries. The participating countries submitted original list of QP in the first workshop and this is summarized in Table 1.

It is important to note that the total number of QP for the designated crops in participating countries was 241. Based on scientific analysis and discussions, the QP lists of the participating countries were reviewed and unnecessary pests were deleted (Table 2). From a total of 241 pests in the participating countries 182 pests were deleted whereas 59 pests were retained as QPs.

The QP list was, thus, drastically pruned and this made the task of authorities easier in monitoring only 59 pests as against 251 monitored in the past.

#### *Time frame for phytosanitary procedures*

The participating countries decided the maximum time for completion of issuing seed import permit, seed export clearance, issue of phytosanitary certificate for export as shown in Table 3.

Table 1. Original list of QP in five countries

Crop	Countries <sup>a</sup>					Total (crop)
	1	2	3	4	5	
Maize	12	15	14	8	2	51
Rice	4	12	8	2	2	28
Sunflower	1	4	2	6	1	14
Cabbage/ Cauliflower	4	5	3	2	0	14
Cucumber	6	7	3	6	2	24
Eggplant	3	7	4	11	2	27
Hot pepper	4	6	0	3	0	13
Tomato	9	17	11	11	5	53
Watermelon	4	3	3	4	3	17
Total (country)	47	76	48	53	17	241

Note: <sup>a</sup>1 = India; 2 = Indonesia; 3 = Philippines; 4 = Thailand; and 5 = Vietnam

The Plant Quarantine Authorities also accepted to make a provision for appeals and also decided the time frame for taking decision on this matter. Furthermore, seed export/import manual was developed for each participating country and it will be made available to anyone interested in seed export/import. This will undoubtedly not only increase transparency and awareness of phytosanitary procedures, but eventually help in promoting trade in participating countries. The five countries are committed to implement the recommendations of workshops on Harmonization of Phytosanitary Regulations in Asia, latest by 30 July 2005.

Table 2. List of quarantine pests of 10 crops

Crop	Original pest list	Deleted unnecessary pests	Final pest list
Maize	51	42	9
Rice	28	24	4
Sunflower	14	11	3
Cabbage/ Cauliflower	14	9	5
Cucumber	24	18	6
Eggplant	27	18	9
Hot pepper	13	9	4
Tomato	53	41	12
Watermelon	17	10	7
Total	241	182	59

In another development a series of workshops are being planned for 2005 for the harmonization of the phytosanitary rules of seven other Asian

countries, namely: Bangladesh, Cambodia, Laos, Malaysia, Myanmar, Pakistan and Sri Lanka.

Table 3. Agreed time line for phytosanitary procedures (number of working days)

Procedures	Timeline of each country <sup>a</sup>				
	1	2	3	4	5
Seed import permit	3	10	5	25	10
Seed import clearance	10	14	12	14	10
Seed export	10	14	12	15	10
Appeals	10	10	10	10	10

Note: <sup>a</sup>1 = India; 2 = Indonesia; 3 = Philippines; 4 = Thailand; and 5 = Vietnam

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### ISTA Announces Proficiency Test on GMO Testing

The International Seed Testing Association (ISTA) announces the 5th ISTA Proficiency Test on GMO Testing to all laboratories which participated in a previous round or are interested in the fifth round. The aim of the proficiency test is to check the ability of individual laboratories to detect the presence or absence of GM seeds and to quantify their presence in samples of conventional seed of soya bean (*Glycine max*).

The results of the proficiency test rounds are intended for use by the laboratories for their internal performance assessment. At present the performance, based on voluntary participation, will bear no consequences for the participating laboratories. However, once GMO testing is included in the ISTA Accreditation Program and become part of laboratory's intended scope of accreditation, the results from voluntary proficiency tests may be taken into account. This will speed up the accreditation process for laboratories that have performed satisfactorily. Laboratories interested in participating should contact the ISTA Secretariat as soon as possible.

For details visit the announcement posted on the ISTA Web. For more information contact: Bettina Kahlert, Head of Technical Committee, ISTA, Zürichstrasse 50, P.O. Box 308, 8303 Bassersdorf, Switzerland; Fax: ++41-1-8386001; E-mail: [ista.office@ista.ch](mailto:ista.office@ista.ch); Website: <http://www.seedtest.org>

## 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.

### National Seed Policy Forum held in Afghanistan

A National Seed Policy Forum was held from 13-14 April 2005 in Kabul, Afghanistan. The workshop was organized by FAO under the auspices of the Ministry of Agriculture, Animal Husbandry and Food (MAAHF). The Forum was a consultative meeting for stakeholders of the seed sector to discuss the latest draft of the National Seed Policy with a view to reach a consensus on the content and agree on appropriate measures for effective resolution of these issues. The 2005 Seed Policy draft by MAAHF and FAO is consistent with a draft prepared by the Future Harvest Consortium and ICARDA in 2002.

A total of 82 participants attended the Forum who were drawn from the entire spectrum of the seed industry including the Agricultural Research Institute of Afghanistan (ARIA), the public sector Improved Seed Enterprise (ISE), seed producing NGOs, new private sector seed enterprises, farmers and international agricultural research centers.

During the plenary session on the first day, resource persons covered all aspects of the seed sector with the view of enabling the participants to have full understanding of pertinent issues in the seed industry to enable a lively debate and constructive exchange of views. The second day was devoted to a step-by-step review of the draft policy where both the English and Dari versions of the policy were discussed in detail while corrections and modifications were being made at the same time.

The national seed policy defined appropriate strategies including seed legislation, agricultural research and variety development, seed production, processing and storage, seed marketing and distribution, quality control and certification, plant quarantine, private sector participation, human resource development, informal seed sector, seed security, emergency seed interventions, credit and financial assistance, oversight arrangements and international cooperation.

#### Key discussion points

Several issues were raised and discussed during the plenary session on the first day, but the main focus

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was on thorough review of the draft seed policy for strategies, clarifications, inconsistency, ambiguity, and omissions. Some general points of discussion relating to the seed policy, its relevance, effects and implementation are as follows:

- There was unanimous agreement on the need for a formal seed policy in Afghanistan, which would serve as regulatory framework to implement and enforce the Seed Law and guide seed industry development
- The seed policy should make it possible to exercise control over undesirable activities in the seed industry such as the import and distribution of non-adapted varieties and poor quality seed to farmers
- The seed policy should be suitable to the conditions in Afghanistan and should be informed by and closely related to the national agricultural policy and the seed law
- The seed policy would help focus government's attention on key areas that need urgent attention such as variety development research and plant quarantine
- Formulation of the seed policy would help in prioritizing and defining strategies for short, medium and long-term consideration
- The seed policy could be a useful tool for attracting donor support and attention to important but neglected areas in the seed industry

The need for quick action in approving both the seed policy and seed law was emphasized.

#### *Review of final draft*

The English version of the final draft from the Forum was submitted to key officials in MAAHF for further review. When available, the approved final draft will be translated and presented to the Minister of Agriculture, Animal Husbandry and Food. *Sam Kugbei, FAO, Kabul, Afghanistan; E-mail: samuel.kugbei@fao.org*

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### **Farmer-based Seed Production an Alternative for Seed Security: The Ethiopian Experience**

#### *Introduction*

The Ethiopian Seed Enterprise (ESE), established in 1979, is the sole public enterprise responsible for production and distribution of seeds of improved varieties to farmers. ESE receives breeder seed from the Ethiopian Agricultural Research Organization, Regional Agricultural Research Institutes and Agricultural Colleges/Universities and multiplies it further to basic seed on its own

seed farms. The basic seed then multiplied on contract with state farms or farmers to produce certified or commercial seed for distribution. Currently, ESE produces more than 25,000 tonnes of seeds, which include over 100 varieties of 22 crop species and distributes the seeds through strategically located 6 main centers in the country.

In Ethiopia the use of commercial seed, however, is estimated to cover about 10% of the total cultivated land each year. Since the formal seed system has started relatively recently, the informal sector is still playing a significant role in the Ethiopian agriculture. With exceptions of some crops, the informal seed supply and use of local varieties is predominant. Informal seed production by farmers themselves or exchange through local channels is responsible for disseminating both local and improved varieties of the country's diverse crops. The informal seed sector consists diversity of traditional knowledge in local crop improvement and seed management including farmer managed seed production and local seed exchange mechanisms.

#### *Objectives of farmer-based seed production*

Formal sector seed production is by far lower than the farmers demand. In order to bridge the gap between seed demand and supply, a farmer-based seed production and marketing scheme was started as a new strategy in 1997 with the support of the government. The project was initially implemented and coordinated by the now defunct National Seed Industry Agency and the regional agricultural bureaus and financed by the World Bank through IFAD, which was concluded in 2001. In 2002, ESE took over the responsibility of farmer-based seed production in order to meet the seed needs of farmers.

The main purpose of farmers' involvement in seed production is to:

- Contribute to quality seed supply for use in the national agricultural development through participation of smallholder farmers in seed production
- Motivate farmers to organize themselves as a group for sustainable production and income generation
- Ensure seed security by building local seed supply capacity through production and distribution of preferred varieties on timely basis at affordable price
- Facilitate the participatory approaches in seed production and extension
- Encourage and provide incentives for private investors to enter the seed business



**Traditional seed cleaning practice**  
(Photo: ESE)

#### Arrangements for farmer-based seed production

The project was originally designed where farmers are grouped into clusters of 20 to 10, respectively, each contributing a minimum of 0.5 to 1 ha for seed production. Farmers are trained in techniques of quality seed production. Farmers are supplied with seed of improved varieties and inputs on credit with 25% down payment. Previously, the district agricultural bureau was responsible to provide technical support in on-farm seed production. Wheat, lentil, chickpea, haricot bean and linseed are priority crops for the on-farm seed production.

Since 2002, ESE is responsible for farmer-based seed production. At present, based on a contractual agreement, ESE supplies the basic seed on payment to interested farmers for further multiplication on their own land. ESE provides the technical support and seed packaging materials free of charge. The seed quality is controlled by the ESE and by the Agricultural Quality Control Department of the Ministry of Agriculture and Rural Development.

The ESE buys the seed that is produced by farmers and meets minimum requirements set in the contractual agreement. The existing grain price is used as a basis with an additional premium of 15% when purchasing the seed from farmers to cover the costs incurred for quality seed production. A committee formed from the representatives of ESE, farmers cooperatives, agricultural bureau and the farmer, will set the ESE purchase price based on the market survey within the vicinity where the seed is produced.

ESE collects the seed from the farmers, using its own transport free of charge. After processing the seed is distributed at a reasonable price back to other farmers where the seed was originally produced. The participating farmers are allowed to keep 10% of the seed harvest for their own use or for local exchange or sale to ensure the seed security of participating farmers and enhance the

informal diffusion of improved varieties and seeds within the locality.

In 2004/05 crop season, there was a sharp increase both in area and seed production (Table 4). The share of on-farm produced seed was about 25% of the total certified seed produced by the ESE. Since the main emphasis of ESE is to increase on-farm seed production, this trend is expected to increase in the coming years. The number of participating farmers in the seed production increased from 695 farmers in 2002/03 to 6,679 farmers in 2004/05 (Table 5).

Table 4. The quantity of seed produced from 2002 to 2005

Region	2002/03		2003/04		2004/05	
	Area (ha)	Yield (t)	Area (ha)	Yield (t)	Area (ha)	Yield <sup>1</sup> (t)
Oromiya	124	1717	546	1204	860	1883
South	46	811	122	163	1342	3485
Amhara	73	1096	310	598	1268	1088
Tigray	20	332	260	426	728	1474
Total	263	3956	1238	2391	4198	7929

Source: ESE annual reports; <sup>1</sup> Estimated production

Table 5. Number of farmers participating in seed production

Region	2002/03	2003/04	2004/05
Oromiya	245	768	1206
South	275	900	3109
Amhara	137	388	1046
Tigray	38	485	1318
Total	695	2541	6679

Source: ESE annual reports

#### Constraints implementing on-farm seed production

Some of the major problems associated with the farmer-based seed production include the following:

- Poor infrastructure (rural roads, transport facilities) greatly hinders efforts to reach more farmers and ensure seed quality control in remote villages
- Lack of efficient and effective provision of credit for the participating farmers
- High seed quality standards, particularly the problem to meet required isolation distances
- Low grain price at harvest discouraging farmers to sale seed at 15% premium despite early agreement to sale seed at a fixed rate
- Low return from the scheme and the volatility of the seed demand
- Limited training and lack of experience both at farmers and technical levels



**Field day for on-farm seed production**  
(Photo: ESE)

In the coming years, the number of ESE centers and sales units is planned to expand to 20. This will broaden the smallholders' access to high quality seed of improved varieties. The decentralization effort combined with the strategy to work through farmers will accelerate the local skills and capacity for sustainable seed production at the community level. In order to respond to changing demands and government policies ESE is currently under the Ministry of Agriculture and Rural Development. The Ministry is an umbrella organization consisting of various interrelated executive organs and public organizations that help to promote sustainable agricultural development in the country. *Abdurahman Beshir, ESE, P O. Box 2453, Addis Ababa, Ethiopia; Fax: ++251-1-613388; E-mail: abdubeza@yahoo.com*

#### **EARO Designates 300 ha for Tree Seed**

Ethiopia is endowed with rich natural forests, but this resource is fast disappearing due to population pressure and rapid deforestation. EARO has designated 300 ha of land for the production of various seeds of trees in different agroecologies of the country. The organization is currently collecting and distributing 8,000 tonnes of seeds from the trees in the designated areas, but this only covers 39% of the total demand. It is also introducing various seeds of trees used for fuel and construction purposes from abroad and called on the private sector to participate in the expansion of the trees. The organization is undertaking research on two species of eucalyptus trees on 28 ha of land in Mankusa, and on 12 types of fig trees in Agewawi Zone of the Amhara State in northwestern parts of the country. It was urged that the public participate in rescuing various indigenous and exotic trees threatened to extinction by planting them in urban and recreational areas. *Source: Walta Information Center 11 July 2004*

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#### **Pakistan Approves Biosafety Rules**

The Ministry of Environment in Pakistan has approved and put into law the country's biosafety guidelines. The rules apply to the manufacture, import and storage of microorganisms and gene technology products for research; all work involved in the field trial of genetically manipulated plants, animals (including poultry and marine life), microorganisms and cells; and import, export, sale and purchase of living modified organisms, or substances or cells and products for commercial purposes.

The government directed the Ministry of Agriculture, Livestock and Food to adopt biosafety measures in the agriculture sector to grow disease-free crops and boost agricultural production. The approved biosafety rules follow a three-tier safety mechanism system composed of the National Biosafety Committee, Technical Advisory Committee and Institutional Biosafety Committee that control and monitor the whole range of activities from the laboratory to the field. For more details of this approval please contact: Ijaz Ahmad Rao at [luckystarpk@yahoo.com](mailto:luckystarpk@yahoo.com). *Source: Crop Biotech Update 27 May 2005*

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#### **Improving Traditional Seed Systems in Yemen**

##### *Introduction*

Through out history, the Yemeni farmers are producing their own seed for planting. Despite the introduction of formal seed sector 25 years ago, yet traditional varieties still cover more than 90% of cereal, legume and oilseed crops. A pilot outreach program was designed to sustain and improve the long tradition of community seed production and was implemented by the Agricultural Research and Extension Authority (AREA), in collaboration with General Seed Multiplication Corporation (GSMC).

The pilot project was started in December 2002 and completed in June 2004. In the long-term, the program is expected to improve agricultural productivity of rainfed crops such as wheat, barley, maize, sorghum and millet by strengthening sustainable traditional seed systems.

The approach to improve the traditional seed system was based on the results of survey from ten governorates which generated the basic information and recommended to implement a pilot program in five primarily rainfed localities in the country: Qa'a Balasan (Dhamar), Shamat (Mahweet), Turaibah (Zabed), De-sufal (Ibb) and Al-Araes (Lahj). The

success achieved in these localities will be extended to other areas in the country.

*Approaches in implementing the outreach program*  
AREA was awarded a contract by the World Bank to implement the program. A special task force was appointed to promote the idea of village seed production with emphasis on:

- Organizing local communities to handle seed production of indigenous landraces, ecotypes and local materials
- Training of local communities in simple variety selection and bulking; techniques in seed production; recognition of offtypes and rouging seed fields; harvesting techniques to avoid mechanical damage; and methods of seed cleaning, storage and treatment
- Selecting and training extension staff to work with farmers and provide technical support
- Providing local farmer groups with simple equipment for threshing, cleaning, treatment, packaging, storage, and seed quality tests
- Diffusing and accessing information on better management of seed at village levels
- Encouraging sustainable activities related to farmers groups while documenting their practices

The activities implemented and progress achieved by the project is described below.

#### *Formation of farmers' groups*

Farmers' groups or communities were formed in all five pilot sites including the farmers' leadership. These were followed by selection of extension staff to provide assistance in project implementation and facilitate exchange of local knowledge and experience among communities. The local varieties, initially collected from the communities were reintroduced to the farmers, after initial testing of the ecotypes by AREA and the universities.

#### *Organizing demonstration plots*

The crop varieties were planted under rainfed conditions when and where appropriate using farmer's practices. For comparison some of the varieties introduced to the region were also planted under traditional practices and improved methods of fertilizer application. Intensive field activities were conducted with collaborating farmers to improve and purify local varieties by random selection of fields planted by farmers. Regular visits were made to all sites and basic crop husbandry techniques were applied.



**Demonstration field for sorghum seed production**

#### *Training farmers and extension staff*

Training of extension staff was conducted to enable them work with various communities. Later on the communities were trained on their premises with the participation of the extension staff. The training was focused on the importance and practices of improving traditional seed systems and on the activities to be implemented to ensure sustainability. Several extension materials were produced (e.g. leaflets, posters and video training shots) about each variety and practices being used by local communities.



**Field training session on rouging wheat seed**

#### *Introducing appropriate technologies*

Appropriate technologies that help farmers maintain their own traditional seed systems were introduced. These technologies include provision of agricultural inputs and equipment such as threshers, seed drying, seed cleaning, seed treatment, seed quality testing tools, and storage facilities.



**Locally manufactured threshing machine**

### *Extension campaigns and evaluation*

Short training sessions, traveling workshops and field days were conducted in the presence of researchers and extension staff, to give local communities the opportunity to evaluate the performance of the introduced varieties or technologies. All activities implemented at village level were documented by means of video shots and photographs. The development and manufacture of appropriate technologies were also followed up during the program.



### *Main achievements, constraints and prospects*

A total of 41 local or improved varieties suitable for rainfed areas were improved or purified by the program. Although the project implementation period was limited, farmers showed keen interest for the newly introduced varieties and purified local varieties and seeds. About 20 contact farmers and more than 150 other farmers benefited from the program.

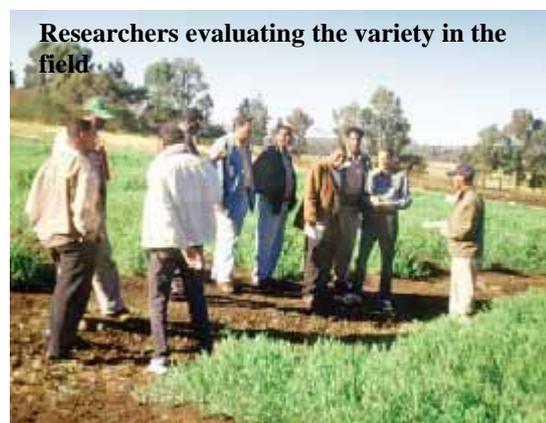
The main constraints of the program are the low interest of the private sector in establishing small-scale seed enterprises, shortage of rainfall in some of the pilot sites, reluctance of small farmers to pay for some equipment (e.g. threshing machine) delivered and limited timeframe allocated for its implementation.

The most important challenges are the need to create a local seed marketing system for materials best suited to drier conditions. Moreover, capacity building of both formal and informal groups to sustain their activities and compete in the market is critical for further success of the program. *Mohamed N. Sallam, Outreach Program, AREA, Dhamar, Yemen, P. O. Box 87148; Fax: ++967-6-509414; E-mail: sallam2003@yemen.net.ye and Abdul B. Al-Aghbary, GSMC, Dhamar, P. O. Box 87282; Fax: ++967-6-509449; E-mail: g.s.m.c@yahoo.com*

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### **Variety Releases Across CWANA and Beyond *Ethiopia***

The Ethiopian Agricultural Research Organization (EARO) released its first low neurotoxin variety of grass pea, safe for human consumption. The new variety, 'Wasie', is derived from grass pea germplasm supplied to EARO as International Lathyrus Adaptation Trials (ILAT) in 1999/2000. 'Wasie' yields 1.67 tonnes ha<sup>-1</sup> without any inputs, is moderately resistant to powdery mildew disease, and matures earlier than local varieties. The variety's low neurotoxin content (0.08%), compared with 0.4% in the local check, will reduce the number of lathyrism cases, an irreversible paralysis of the lower limbs that occurs when grass pea is consumed as a major portion of the diet over a 3-4 month period. The variety is recommended for cultivation in mid- to high-altitude areas (1700-2800 masl).



The release of 'Wasie' is a breakthrough in helping the poor who rely on this crop as their key source of dietary protein, not only in Ethiopia but also in other grass pea growing countries (Bangladesh, China, Eritrea, India, Nepal, and Pakistan). *Source: The Week at ICARDA No 187, 1 May 2005*

### *Turkey*

In Turkey, the Field Crops Central Research Institute (FCCRI) announced the release of one new variety of grass pea and five of vetch in Turkey. All six varieties were derived from ICARDA materials provided through the international trial nurseries between 1991 and 1994.

'Gürbüz-2001', the new grasspea variety is recommended for seed and straw but is not tolerant to cold. 'Tarman-2002', a narbon vetch variety is recommended for seed and straw and is tolerant to cold.

'Baydurbey-2002' and 'Segmen-2002' are both cold tolerant woolly-pod vetches, and can be used for hay making and seed and straw, respectively.

'Anadolu pembesi-2002' and 'Oguz-2002' are winter hardy, red-flowering Hungarian vetch varieties. Both are recommended for seed and straw. All five vetch varieties are recommended for planting in autumn. *Source: The Week at ICARDA No. 850, 23 December 2004*

#### *Mexico*

A faba bean variety, 'San Isidro', was selected from ICARDA's international nursery and released by the Institute of Agricultural, Water, and Forestry Research and Training of the State of Mexico (ICAMEX). The variety possesses several desirable traits that are not found in local varieties. The variety is tolerant to chocolate spot and has desirable agronomic characteristics like short stature, lodging resistance, earliness, uniform maturity and high yield potential. 'San Isidro' seeds are suitable for consumption both fresh and dry; this gives producers the flexibility to adapt to the market demands. *The Week at ICARDA No. 848, 9 December 2004.*

## 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 31: Maintaining Varietal Purity and Identity During Seed Production**

Genetic purity is a major seed quality component. Almost all seed certification schemes have field and laboratory standards for varietal purity. During seed multiplication there are at least three sources of contamination affecting seed quality: genetic, mechanical and pathological. The former two have significant effects on varietal purity.

*Genetic contamination:* The major sources of genetic contamination are:

- Out crossing which is difficult to avoid in large-scale crop production involving a wide range of varieties within the same geographic area
- Volunteers from the previous crop which can be controlled by proper rotation
- Mutation which may occur at lower rate, but is difficult to control
- Genetic shift in cross pollinated crops which can be minimized by proper site selection

*Mechanical admixture:* The risk of physical admixture is very high in mechanized operations,

the potential sources are being the seed drills, irrigation facilities, combine harvesters, trailers, trucks, seed cleaning machines, old, damaged or used bags and containers.

To minimize the risks of multiple sources of mechanical admixtures:

- Separate varieties based on crop species such as (bread and durum wheat, kabuli and desi chickpea) or clearly visible morphological characters such as ear rows in barley; maturity class; plant height; seed color
- Arrange the varieties in the field and storage facilities based on different characters
- Try to carry out operations prone to mechanical mixing are handled in a sequence that avoids closely related varieties are handled following each other

Following these procedures any mechanical admixture can be easily detected in the subsequent generations of seed multiplication to take appropriate action. The morphological and phenological differences can be corrected by rouging whereas differences in size and shape can be corrected by cleaning. *Abdoul Aziz Niane, Seed Unit, ICARDA, P.O. Box 5466, Aleppo, Syria; Fax: ++963-21-2213490; 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.

### **Removal of Common Bunt Spores from Wheat Seed Lots by Brush Cleaning**

by  
*Anders Borgen<sup>1</sup>*

#### *Abstract*

A brush air cleaner can be used to remove spores of common bunt from wheat seed lots. It is demonstrated that a combined use of conventional cleaning followed by brush cleaning removes 99.8% of the spores in a seed lot. The efficacy of the treatment is comparable with the best chemical treatments available on the market to prevent seed-borne transmission.

#### *Introduction*

Common bunt caused by *Tilletia caries* or *T. foetida* is the most commonly prevalent seed-borne disease of wheat worldwide. The pathogen infects wheat seedlings just after sowing before the plant emerges from the soil. The wheat seed *per se* could

be healthy at the time of sowing, but could be infected from spores resting on the seed surface or in the soil. Seed contamination, however, is found to be by far the most significant source of infection (Borgen, 2000).

The common bunt in infected seed lots can be controlled by killing the spores with chemicals or heat treatment, by preventing infection using different agronomic practices (use of resistant varieties, adjusting sowing time) or by removing the spores from the seed lot through cleaning (Borgen, 2004).

In another study, Bechel *et al* (1998) reported that only a small fraction of the spores of the closely related bunt species (*T. contraversa*) end up in the flour, while the majority are removed when cleaning the seed before or during milling process. However, there is little information available about the fate of the spores during seed cleaning for sowing purposes. This article reports the results of an experiment dealing with cleaning of a seed lot contaminated with common bunt spores.

#### Materials and Methods

A field containing one common bunt (*T. tritici*) infected plant  $1\text{m}^{-2}$  was harvested with a combine harvester. After harvest the seed lot was cleaned using three treatments: (i) air screen cleaner, (ii) brush cleaner ( $\phi=400\text{mm}$ ) (Anonymous, 2005), and (iii) combined air screen cleaner and brush cleaner. After air screen cleaning the seed lot still contained weed seeds and inert matter which could be improved by cleaning with a second air screen cleaner or gravity table

The air stream in the brush cleaner was modified during the experiment compared with the standard operation and the data presented shows the optimal adjustment. The contamination of bunt spores was estimated by counting spore in a haemocytometer as described by Keitrieber (1984). The effect on seed vigor was estimated by the emergence of 200 seeds, germinated in a sand test planted at  $10^{\circ}\text{C}$ . The emergence was assessed on the 13th day after sowing.

#### Results and Discussion

After harvest, the contamination of bunt spores in the seed lot was  $230,000\text{ spores g}^{-1}$ . The cleaning of the seed lot with the air-screen cleaner alone reduced the number of spores by 69.4% whereas in comparison the brush cleaner alone reduced the number of spores by 83.9%. However, if the seed lot was first cleaned by air screen cleaner, and then cleaned by the brush cleaner the effect was significantly improved.

Figures 1 and 2 show the results of an experiment, where the seed was treated in a batch and the treatment duration was controlled precisely. Figure 1 shows that the longer the seed is treated, the higher the effect of the treatment on reducing the spore contamination (15 vs 60 seconds). However, it shows that the larger the quantity of seed, the lower the efficacy in removing the spore contamination (1 versus 4 kg seed).

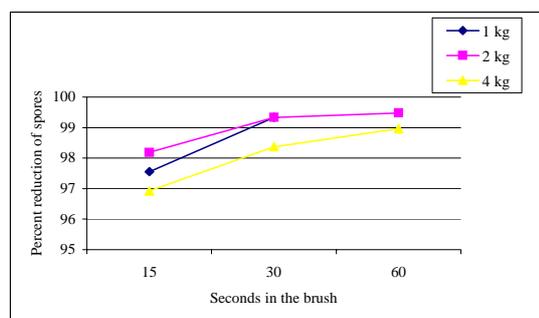


Figure 1. The effect of brush cleaning on bunt spore contamination in a batch treatment

Figure 2 shows that the effect of the treatment on seed vigor mainly depends on the duration of treatment, but not on the amount of seed in the brush. Therefore, to be effective the seed should be treated within a short period of time with a low quantity of seed.

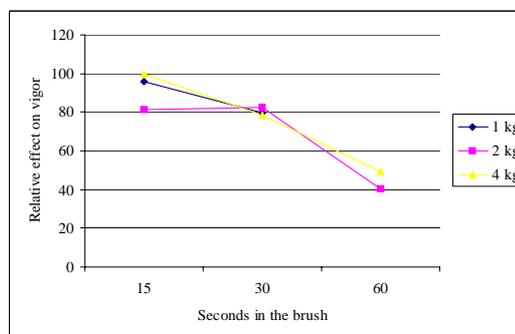


Figure 2: Effect of brush cleaning on seed vigor

Figure 3 shows the result of an experiment where the seed lots were treated in continuous flow. The figure shows that 97% of the spores in the seed lot was removed by most treatments, but if the capacity of the cleaner exceeds  $750\text{ kg h}^{-1}$ , the effect of the treatment decreases. Air screen cleaning combined with brush cleaning reduces the number of spores in the raw seed lot by 99.5%. None of the treatments with continuous flow significantly affected the vigor of the seed lot (data not presented).

Brush cleaners are normally installed at the beginning of the cleaning line in seed plants, as the normal function of the brushes are to release the

true seed from husk and stalk. Bunt spores can be found in the seed lot both as free spores and in bunt balls (sori), each containing millions of spores. These bunt balls can be gently removed by air screen cleaning as the density is lower than true seed. However, without air screen cleaning, the bunt balls present in the seed lot will brake by the brush cleaner, releasing myriad of spores, which also need to be removed by the brush. This is the likely explanation why the efficacy of the brush cleaner increases considerably after the air screen cleaning. Therefore, it is essential that the brush cleaner is installed at the end of the cleaning line, if the purpose is to remove spores from the seed lot.

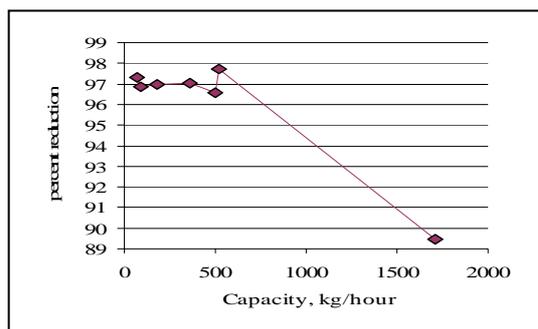


Figure 3. The effect of brush cleaning on bunt spore contamination in a continuous flow treatment

In Denmark, the threshold for bunt contamination in untreated seed lots is 10 spores  $g^{-1}$  (~0,5 spore seed<sup>-1</sup>) which is quite low compared to other European countries. In the experiment presented in Figure 1, the number of spores was reduced from 230,000 spores  $g^{-1}$  in the raw seed lot to 1,356-2,067 spores  $g^{-1}$  after the seed is cleaned by an air screen cleaner and brush-cleaner which could still exceeds the current Danish threshold for bunt contamination. The efficacy of the cleaning is difficult to assess at the low contamination rates, as the threshold is close to the detection level. If the cleaning efficacy of 99.8% is achieved by combined air screen and brush cleaning and is assumed to be independent of contamination level, it means that theoretically seed lots with contamination of less than 5,000 spores  $g^{-1}$  can be expected to meet the current Danish threshold level after cleaning, while seed lots above 5,000 spores  $g^{-1}$  is still likely to exceed the threshold after treatment. The same principle goes for other seed treatments, and cleaning seems to have the same or better efficacy than most chemical treatments. In Sweden, for example seed lots exceeding 1,000 spores  $g^{-1}$  cannot be certified for sowing, even with a chemical treatment.

The technology is likely to have a similar effect against seed pathogens contaminating the seed

surface. These include smut diseases like dwarf bunt (*T. contraversa*) in wheat, covered smut (*Ustilago hordei*) in barley, and stem smut in rye (*Urocystis occulta*), and contaminations of witch weed (*Striga hermonthica*). However this needs to be confirmed in future.

#### Conclusion

The air screen cleaning combined with brush cleaning can reduce the number of bunt spores in a seed lot by 99.8% without reducing the seed vigor. Therefore, seed lots contaminated with a limited number of bunt spores can be cleaned and used without chemical treatment and still produce a healthy crop. This will be of special interest in organic farming and other systems where chemical treatment is not possible due to legal, environmental or economic reasons.

#### Acknowledgement

The author wishes to thank Westrup A/S for providing the equipment for the experiments and DARCOF for financial support.

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- Kietreiber, M. 1984. *ISTA Handbook on Seed Health Testing: Working Sheet no. 53*. Bundesanstalt für Pflanzenbau, Vienna, Austria.

Note<sup>1</sup>: *Agrologica, Houvej 51, DK-9550 Mariager, Denmark; Tel: ++4555813518; E-mail: borgen@agrologica.dk, Website: <http://www.agrologica.dk/>*

#### 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.

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## Conferences

### **Asian Seed Congress 2005, Shanghai, China:**

The congress will be organized by the Asia and Pacific Seed Association in collaboration (APSA) with the Ministry of Agriculture and China National Seed Trade Association from 7 to 10 November 2005. The venue of the Congress will be the Shanghai Everbright Convention and Exhibition Center International Hotel, 66 Cao Bao Road, Xuhui District, Shanghai 200235, China. Tel: ++86-21-64842500; Fax: ++86-21-64545595; Email: hotel@secec.com

The Congress offers an opportunity to meet and interact with key persons in the global seed industry where 500 delegates from more than 50 countries are expected to participate. The Congress will address issues such as seed industry in China, vegetable seed industry in Asia, achievements and future prospects of hybrid rice in Asia, and germplasm acquisition and IPRs under the International Treaty on Plant Genetic Resources.

Special Interest Groups on hybrid rice, vegetables and forages will convene and trade exhibits and business meetings will be arranged. For details and registration, please visit the website: <http://www.apsaseed.com/asianseed/Shanghai05/index.html>

## Courses

**Seed Health Master Class: Advanced Professional Training Course, May – June 2006, Copenhagen, Denmark.** The Danish Seed Health Center for Developing Countries each year offers a six weeks training course on seed health. The aim of the course is to offer professional seed technologists, biotechnologists, plant breeders and other specialists the possibility to further strengthen their skills and expertise. The training is an opportunity to update and refresh issues in seed pathology and seed health, to be introduced to new technologies, to discuss and to work with fellow professionals and the scientific staff of the Danish Seed Health Center.

The Advanced Professional Training course is open only to specialists working actively in seed health. The course curriculum comprises elements of general interest to all participants, such as new development in diagnostic technologies, recent trends in international seed trade and quarantine issues. It also includes individual training assignments, which could be, for example introduction to a specific technology, coupled with hands-on laboratory training or issues of particular interest to the participant.

The following subjects will be treated in depth through lectures, exercises and discussions:

- Importance of seed-borne disease in national, regional and international perspectives, recent developments and mitigation options
- Diagnostics, transmission and identification of fungal, bacterial and viral seed-borne pathogens
- Latest developments in international efforts, ISTA Seed Committee activities, ISF, ISHI Initiative, WTO Protocol on Sanitary and Phytosanitary measures, EU plant quarantine and seed certification
- Seed trade and intellectual property rights
- New developments and problems in sampling, seed quality testing, seed production, conditioning, biocontrol agents, seed health in integrated disease and pest management

The application forms should be sent to DSHC before 1 March 2006. For more information and application forms, please contact: Henriette Westh, Information Secretary, KVL 40, Thorvaldsensvej, DK-1871, Frederiksberg C, Copenhagen, Denmark; Fax: ++45-35-283701; E-mail: [hew@kvl.dk](mailto:hew@kvl.dk); Website: <http://www.shc.kvl.dk>

## 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*.

**Louwaars, N.P., R. Tripp, D. Eaton, V. Henson-Apollonio, R. Hu, M. Mendoza, F. Muhhuku, S. Pal and J. Wekundah. 2005. Impacts of Strengthened Intellectual Property Rights Regimes on the Plant Breeding Industry in Developing Countries: A Synthesis of Five Case Studies. Report Commissioned by the World Bank. Wageningen UR, Wageningen, The Netherlands. 177 pp.** The study commissioned by the World Bank explores the Intellectual Property Rights experiences of developing countries: China, Colombia, India, Kenya and Uganda. The study found that the most common mechanism in five countries to protect varieties in the plant breeding industry is hybridization where other mechanisms include seed laws, contract law, brands and trademarks.

The study assessed initial experiences with strengthened IPRs in developing country agriculture. It analyzed the design, management and impacts of various IPR instruments applied to plant breeding in five developing countries.

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Various issues were covered such as the implementation of IPR regimes, changes in public and private plant breeding, and changes for farmers. For more details, please visit the website: <http://www.cgn.wageningen-ur.nl/pgr/images/IPR%20in%20breeding%20industry.pdf>

**Sperling, L., T. Osborn and D. Cooper (ed). 2004. Towards Effective and Sustainable Seed Relief Activities. FAO Plant Production and Protection Paper 181.** This is a proceeding of the workshop on effective and sustainable seed relief activities held from 26-28 May 2003 at FAO headquarters, Rome, Italy. The aim of the workshop was to improve the effectiveness of seed relief interventions and the contribution they can make to sustainable improvements in seed, food and livelihood security. The workshop brought together over 70 stakeholders from FAO, relief agencies, donors, technical organizations and emergency-prone countries to exchange lessons learned in the area of seed relief, to identify gaps and needs in the development of tools and guidance and methodologies and to agree on recommendations for further collaborative work. FAO, Rome Italy 94 pp.

**Sperling, L., T. Remington, J. M Haugen, and S. Nagoda (eds.) 2004. Addressing Seed Security in Disaster Response: Linking Relief with Development.** The book contains eight case studies managed by CIAT, CRS, and CARE Norway in a project entitled, *Assisting disaster-affected and chronically stressed communities in East, Central and Southern Africa: Focus on small farmer systems*. The case studies were undertaken to evaluate various forms of emergency seed aid and to couple these with analyses of the broader seed and crop systems. The objectives were to understand if and how vulnerable farmers are being helped by the kinds of assistance they receive—and how to move forward on improving the practice. Also available on-line at <http://www.ciat.cgiar.org/africa/seeds.htm>. CIAT, Cali, Colombia. 178 pp.

**Sachs, J. 2005. The End of Poverty: How We Can Make it Happen in Our Lifetime.** It is nearly five years since The Millennium Development Goals were set out, to eradicate extreme poverty and hunger, yet the progress has been disappointing. This book by Jeffrey Sachs the Director of the Millennium Project and a passionate advocate of ending world poverty tries to put the rich countries back on track. He is very successfully transmits his passion through these pages where practical solutions do exist, if implemented in the right places and on the right scale. The end of poverty is a powerful combination of motivating prose and practical

strategies for rising to this most important of all challenges. Penguin Books Ltd; Price £8.99; ISBN 0141018666; 416 pp; Website: <http://www.penguin.com>

**Lipton, M. 2005. The Family Farm in a Globalizing World: The Role of Crop Science in Alleviating Poverty. 2020 Discussion Paper 40. IFPRI, Washington DC, USA.** Family farms are operated units that derive most labor and enterprise from the farm family. They have proved resilient, even in the rich world, and small family farms dominate agriculture in East and South Asia and Sub-Saharan Africa. Yet these are areas of concentrated poverty: in 2004, they contained over 92 percent of the world's 1.1 billion "dollarpoor" (households consuming less than one U.S. dollar's worth of a world average consumption bundle, per person per day, at 1993 purchasing-power-parity values). Kick starting the reduction of mass dollar poverty normally requires accelerated growth of staples output on family farms. Whether this is feasible and sufficient depends on national political and economic incentives and institutions to create and apply appropriate crop science, land and water access, and open markets in the context of appropriate state-led provision of public and merit goods. Many Asian and Latin American countries have gone a long way on this path, but they still have far to go. Much of Africa has hardly started. Progress is made possible by new science and by a crucial demographic shift—but is handicapped by rich-world policies towards agriculture, trade, and science. IFPRI, Washington, USA. 44 pp. Also available at <http://www.ifpri.org/2020/dp/vp40.pdf>

### Useful Internet Websites

**African Journals Online (AJOL).** You can access or order full text articles in 197 scientific journals through the African Journals Online website, <http://www.ajol.org>. AJOL is a database of African-published journals that gives greater visibility to the participating journals, and to the research they convey. Funded by UNESCO, the National Academy of Sciences (USA), the Norwegian Agency for Development Cooperation (NORAD), the Swedish International Cooperation Agency (SIDA) and the United Kingdom Department for International Development (DFID), AJOL has grown from 10 science and 4 medical titles to hosting over 195 journals from 21 countries. There are currently more than 13,000 article abstracts available on the website.

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## **Final Announcement International Seed Trade Conference 2005**

### **The Conference**

The International Seed Trade Conference is aimed at exploring and promoting seed trade within the CWANA region. The Seed Trade Conference will provide a forum to promote business interactions and alliances among seed companies within and outside the region and to share experience in seed trade among seed industry stakeholders in the region. Conference participants will come from private sector (seed companies, agricultural input suppliers, seed equipment manufacturers), public sector, international/regional/national seed trade associations and international/regional development organizations working on seeds.

Apart from business interactions, the conference program includes key presentations covering policy, regulatory, institutional and technical issues currently affecting the seed industry development at global, regional and national levels and include: (i) Impacts of International Treaties and Agreements on Seed Trade; (ii) The Status and Prospects of Seed Industry in CWANA Region; (iii) The Status and Prospects of Vegetable Seed Market in CWANA Region; (iv) Public-Private Sector Partnership in Seed Sector Development; (v) Regulatory Choices to Support Seed Sector Development; and (vi) Plant Variety Protection and its Impact in Seed Sector Development. The Conference will also explore opportunities for the formation of a regional seed association to encourage or stimulate seed trade among countries in the Central and West Asia and North Africa Region.

### **Exhibitions and Trading Rooms**

A booth (2.4m x 1.5m with one table and two chairs) is available for companies (seed companies, seed equipment manufacturers, agricultural input providers, agricultural machinery manufacturers/suppliers, etc) who wish to exhibit their products. The fee is 500 Euros for members of the Turkish Seed Industry Association and 750 Euros for non-members. The fee includes the registration fee for one person to attend the conference. During the conference, trading rooms will be specifically set aside for business dealings. For more details please contact the Conference Secretariat.

### **The Venue**

The conference will be held in Cornelia De Lux Resort, Antalya, Turkey. Cornelia is a luxurious hotel with spacious rooms, conference rooms and equipped with all modern amenities including water sports, health club, movie theatres, and shopping center.



**The views published in Seed Info are those of the contributors and do not imply the expression of any opinion on the part of the Editor, WANA Seed Network or ICARDA**



**Conference Registration/Exhibition Fees** (to be paid in full with registration in net Euros)

Registration		Delegates	Accompanying person
Early registration (until 16 September 2005)		150 Euros	75 Euros
Late registration (after 16 September 2005)		200 Euros	75 Euros
Exhibition fee	Members (TürkTed)	500 Euros	Fee includes registration for one person
	Non-members	750 Euros	

Registration fee includes: (i) Transfer between hotel and Antalya Airport, (ii) Coffee breaks, (iii) Lunches (29 & 30 November and 1 December), (iv) Conference cocktail and Gala dinner, and (v) Conference tour.

**Conference Website**

For more information on the conference, please visit the conference website at:  
[http://www.icarda.cgiar.org/announcement/seedtradeconf\\_nov-dec05.htm](http://www.icarda.cgiar.org/announcement/seedtradeconf_nov-dec05.htm) (English)  
<http://www.turkted.org.tr> (Turkish and English)

**Conference Secretariat**

For any further information about the conference, trade exhibitions and registration please contact the Conference Secretariat at the following address:

Conference Secretariat, Ayhan Elçi, General Secretary,  
 Turkish Seed Industry Association, Mithatpaşa Caddesi Fazilet  
 Apt. No: 50/4, Yenışehir, Ankara, Turkey;  
 Tel: +90-312-432 00 50, 432 26 50; Fax: +90-312-432 00 50;  
 E-mail: ayhane@turkted.org.tr; Website: <http://www.turkted.org.tr>