SEED INFO

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ICARDA

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EDITORIAL NOTE

Seed Info aims to stimulate information exchange and regular communication among seed staff in the Central and West Asia and North Africa (CWANA) region and beyond. Its purpose is to help strengthen national seed programs and thus improve the supply of high-quality seed to farmers.

The WANA Seed Network provides information on activities relating to global and/or regional cooperation and collaboration to facilitate the development of a vibrant regional seed industry. In this issue of *Seed Info*, we report on the regional seed courses organized by the International Center for Agricultural Research in the Dry Areas (ICARDA) and the activities of the FAO sub-Regional Office for Central Asia's (FAO-SEC's) project, *Seed Sector Development in Azerbaijan.*

In the **NEWS AND VIEWS** section, Niels Louwaars from the Dutch Seed Association, Plantum, presents an article entitled *Biodiversity and Seeds*. The article highlights the important role of biodiversity and elaborates how this affects the seed industry. Crop improvement requires both genetic resources and knowledge of breeding and seed technology to serve farmers with better varieties and seeds. However, the flow of and access to germplasm are constrained through different international undertakings. He explains the intricacies of these international undertakings including the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture (IT-PGRA) and how they affect the seed sector. The introduction of the Nagoya Protocol adds a new dimension to this debate. Therefore, seeds men and women must be aware of this and engage policy makers in this debate to ensure the flow of germplasm and facilitate farmers' access to the latest technologies. Other news in this section comes from regional and/or international organizations, such as the International Seed Federation, African Seed Trade Association, International Union for the Protection of New Varieties of Plants, and the International Potato Center.

The section on **SEED PROGRAMS** includes news from Ethiopia, Pakistan, and Senegal. Ethiopia is a major producer of faba bean and wheat in sub-Saharan Africa, but Orobanche in the northern part of the country and rusts in major wheat growing areas are major challenges for crop production. The report from Ethiopia includes the release of Orobanche-resistant faba bean by Alamata Agricultural Research Center (ARC) and rust resistant varieties by Kulumsa ARC and Sinana ARC. There are also reports from Pakistan on the recommendation for release of hybrid maize varieties and research against Cotton Leaf Curl Virus, a major impediment to increased cotton production. It is expected that seed of these new high yielding and (a)biotic stress tolerant varieties will soon be available to farmers at large and help increase agricultural production and productivity, and ensure food and nutritional security in the respective countries. From Senegal, we report on the initiative of the country in joining the OECD seed scheme based on the decision of the member countries. The effective accession, on 1 January 2016, will make the country the 59th member of the OECD seed scheme. Senegal is thus the first country of West Africa whose seed control and certification scheme is recognized on international markets and is able to bring the guarantees required by the customers – Senegal joins, from sub-Saharan Africa, Kenya, South Africa, Uganda, and Zimbabwe.

Seed Info encourages the exchange of information between the national, regional, and global seed industries. We encourage our readers to share their views and news through this newsletter. Your contributions, in Arabic, English, or French, are most welcome.

Have a nice read

Zewdie Bishaw, Editor

WANA SEED NETWORK NEWS

This section presents information on the WANA Seed Network, including network activities and reports from meetings of the Steering Committee and the WANA Seed Council.

ICARDA Organizes Seed Courses

ICARDA continues to provide short-term and long-term seed courses to strengthen the capacity of the human resources of the national seed sector through special projects. These regional and in-country courses bring together staff from the various sub-sectors of the national seed system.

Variety maintenance and community-based seed production and marketing

Introduction

ICARDA is implementing several research-for-development projects such as food legumes initiatives in Morocco (Office Chérifien des Phosphates Foundation), Conservation Agriculture in Iraq (ACIAR), wheat–legume based cropping systems (EU-IFAD), Food Security for Arab Countries (Arab Fund), Support to Agricultural Research-for-Development on Strategic Commodities in Africa (African Development Bank), and the CGIAR Research Programs.

ICARDA in collaboration with its national partners organized a training course on variety maintenance and community-based seed production and marketing. The course provided the participants with practical experiences on (a) accelerated early-generation seed multiplication of newly released and promising varieties of food legumes and cereals and (b) community-based seed enterprise development and management for seed production and marketing.

Course objectives and contents

The course consisted of two modules of one week each. The first on variety maintenance and quality seed production ran during 4–8 May 2015. The first module targeted technical staff from research and seed production and certification departments in the partner institutes, and pioneer farmers. The course content covered introduction to variety improvement, techniques of variety evaluation, variety maintenance, and certified seed production by public and private seed producers. It also considered quality seed production and marketing by pioneer farmers or farmer groups for accelerated variety dissemination and adoption.

The second module addressed community-based seed production and marketing during 11–15 May 2014. This was designed to provide pioneer farmers and the technical staff supervising them with necessary skills in business planning, bookkeeping, seed marketing and promotion, and the profitability and sustainability of seed enterprises.

The course comprised classroom lectures, group sessions, and technical visits to variety development, evaluation, and release facilities; seed quality control, quarantine, and certification laboratories; seed processing, storage, and marketing facilities; farmer cooperatives; and farmer-based seed multiplication fields.

Course participants

Twenty-four participants attended the seed course and were drawn from 13 countries: Afghanistan, Algeria, Djibouti, Egypt, Eritrea, Iraq, Jordan, Lebanon, Mauritania, Morocco, Somalia, Sudan, and Tunisia. The participants were research staff involved in crop improvement; technical staff in seed production, processing, and certification; or lead farmer seed producers.

Participants of seed course (above) and during field visit (below)

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Community-based seed production and marketing in Ethiopia

Introduction

Lack of quality seed of improved varieties and limited access to associated technologies are among major bottlenecks to increasing production of faba bean, chickpea, and malt barley in Ethiopia. Addressing the seed shortage through integration of community-based seed production with technology scaling-out can enhance the overall production and productivity.

ICARDA is implementing two projects: *'Deployment of malt barley and faba bean varieties and technologies for sustainable food and nutritional security and market opportunities in the highlands of Ethiopia'* and *'Better livelihoods for smallholder farmers through knowledge based technology interventions in the highlands of Ethiopia: Increasing the productivity of chickpea in wheat-based cropping system'* with financial support from USAID. Both projects involve scaling-out improved technologies and vigorous community-based seed production and marketing implemented in four regional states of Amhara, Oromiya, Southern Nations, Nationalities and Peoples (SNNNPR), and Tigray. The course ran on 12–13 June 2015 at Kulumsa Agricultural Research Center (ARC), Asella, Ethiopia.

Course objectives and contents

The course was aimed at creating awareness of available faba bean, chickpea, and malt barley technologies and introducing the framework of community-based seed production within the technology scaling-out activities of the two projects integrated into to the district development work plan.

The course program was participatory, in which resource persons introduced the subject and were followed by discussions for sharing practical experience with participants. A practical display of different options for of treating faba bean seed with bio-fertilizer was also presented. Moreover, leaders of Borru Seed Producers' Cooperative and Ketar Seed Producers' Cooperative were given the opportunity to share their experiences of a community-based seed production system and seed marketing. The presentations of the course and the guidelines and standards for seed production of faba bean were available to trainees for their reference. The major emphasis of the course was to give trainees knowledge of available technologies and their utilization, community-based seed production, and technology scaling-out that finally facilitated the project implementation.

Course participants

The training course was organized for researchers from ARCs (Areka, Debre Birhan, Debre Zeit, Holetta, Kulumsa, Sinana, and Worabe), subject matter specialists/experts, and leaders of seed-producing cooperatives from selected districts of three regional states (Amhara, Oromia, and SNNPR) in the central and southern highlands of Ethiopia. Moreover, five researchers (one each from Adet, Alamata, Gondar, Mekele, and Srinka ARCs) in northern parts of Ethiopia were also invited to get feedback about implementation progress of planned activities of the two projects and establish linkages. All trainees were selected based on their direct involvement in community-based seed production and scaling-out activities. About 22 participants attended the course: NARS, development agents, and seed producers.

The course was organized in close collaboration with Kulumsa ARC of Ethiopian Institute of Agricultural Research, which provided facilities such as a fully equipped conference room and transport bus in addition to facilitating accommodation, meal, and refreshment arrangements. The training course was funded from the USAID-supported malt barley–faba bean project of ICARDA.

Participants of the training course on community seed production and marketing

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FAO Launches Seed Sector Development Project in Azerbaijan

National governments are giving increasing importance to seed security within the framework of food security to meet farmers' annual seed requirements, in times of normality or natural disasters. The Government of Azerbaijan demonstrated its commitment to seed sector development by providing substantial subsidies to seed-producing farms. The Ministry of Agriculture (MoA) requested FAO to support the development of the seed sector in Azerbaijan and FAO and MoA launched a Technical Cooperation Program project *'Support to Seed Sector Development in Azerbaijan'* for implementation. The project aimed at developing a seed sector operating at internationally accepted norms and procedures in variety testing and registration; seed production, processing, and marketing; and quality assurance. FAO will provide technical support in establishing variety testing, release mechanisms, and seed certification schemes. The project will also establish a close cooperation with the World Bank-funded Agriculture Competitiveness Improvement Project that intends to provide investment support in strengthening the infrastructure of the national variety registration and seed certification agencies.

There will be a series of workshops and training during the project where a selected group of technicians and farmers will receive training in various aspects of seed production, processing, and marketing. The project inception workshop was held on 22 May 2015, in Baku, Azerbaijan, to discuss the project objectives with a wide group of stakeholders. During the workshop, all project activities were discussed and experiences shared. The inception workshop was an important milestone in the process of defining the shape of the new seed sector to be developed within this project.

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NEWS AND VIEWS

News, views, and suggestions relating to the seed industry are included in this section, which is a forum for discussion between seed sector professionals.

Biodiversity and Seeds

Why should seeds men and women bother about biodiversity? What is our role in the debate about rights over genetic resources? Should we pay for the use of genetic resources or should we be paid for maintaining them through their use? While breeders may know about this debate, the average seed producer may not have been involved. We may, however, be forced to be involved following recent developments in international political debates.

National rights on biodiversity were introduced in the International Undertaking on Plant Genetic Resources for Food and Agriculture in the late 1980s and followed by the Convention on Biological Diversity (CBD) in 1992. Since 1993, countries have had sovereign rights over their genetic resources. Some countries have devolved some of these rights to some extent to rural communities. According to the CBD, countries have the important obligation to conserve biodiversity and to promote sustainable use. At the same time, they have the right to make access to their genetic resources subject to 'mutually agreed terms'. Expectations of some are that these 'agreed terms' create benefits that allow countries to conserve and promote use. Others expect these benefits to resolve all problems related to rural poverty.

Seeds men and women need a flow of new genetic diversity to provide the best seeds to farmers. New varieties need to respond to old and newly-emerging threats, such as diseases and drought, and increase yield and yield stability to feed the region. At the same time, seeds men and women distribute genetic diversity. Where breeders use distant crosses to produce new varieties, seeds men and women enrich agriculture in their region with this new diversity.

Following the entering into force of the CBD in 1993 it has been quite complicated for breeders

to access new materials as parents for their breeding work. Apart from the CGIAR system of gene banks, exchange has been difficult, particularly because countries find it difficult to organize systems to provide approvals for scientists and commercial users to collect and use new diversity. The position of the CGIAR gene banks and exchange of materials of the most important food crops was facilitated in 2004 through the International Treaty negotiated at the FAO. This means that for most crops, seeds men and women in the CWANA region may not have noticed much of this international diplomatic debate.

Where the obligation to develop approval systems was initially the task of governments providing the genetic resources, through the Nagoya Protocol, it is now also the obligation of user countries to oversee or control the legal use of genetic resources. The EU implementation of the Nagoya Protocol puts the burden on the user of genetic resources, the breeders. They have to prove the origin of all genetic resources they use, show that they have all the documents on all these materials, and prove that they comply with the benefit-sharing arrangements in these documents. Expectations are that, this way, funds may start flowing towards the countries of origin of our crops. Such funds may thus come from the sales of seed and, there, seeds men and women get directly involved. How the international rules will be implemented remains the sovereign right of countries, and to what extent seed sales of publicly or privately bred varieties will be affected remains to be seen. Crops based on CGIAR materials may be exempt to some extent under the International Treaty, but also in that forum, where governments were considered pivotal in providing benefits to be shared, expectations for payment from the sales of seed are increasing as well.

When benefit-sharing funds need to come from seed sales, what will a top-up of seed prices do to the seed systems that we want to promote? Will it affect the distribution of better seed varieties to farmers? Will it increase the use of farm-saved seed? All these questions remain to be answered. From a policy perspective, other questions may arise. Will the requirement to generate benefits to share with other countries reduce the ability of breeders to use 'new' genetic resources? If it does, what will be the effect of the obligation of countries to support the use of genetic resources? Will the well-meant policies in the end promote or rather restrict (agro)biodiversity?

This is a complex debate in which most seeds men and women will not have time to be involved. It may, however, be useful to show national policy makers how breeding and seed systems actually contribute to rural development and food security. Invite them to your institutes and seed production facilities to make sure that they value the contributions that seeds make to their policy priorities. When you do, please also include policy makers of the ministry of environment as these may have an important stake in the international negotiations and national implementation.

Seeds men and women are promotors, users, and distributers of genetic resources. Think twice before taxing the seed systems.

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Sharing Experiences and Good Practices in Production of Quality Sweetpotato Planting Material

Sweetpotato seed system practitioners met on 28–29 April 2015 in Kigali, Rwanda, to share experiences on sustainable production of quality sweet potato planting material. The Sweetpotato Seed Systems Community of Practice (CoP) organized the meeting and brought together 40 participants from 11 countries: Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Tanzania, Uganda, and Zambia.

The CoP is a platform within the Sweetpotato for Profit and Health Initiative aimed at facilitating networking, exchange of experiences, and learning in order to generate new knowledge about how to tackle crucial constraints in sweetpotato seed systems across sub-Saharan Africa.

The meeting, whose theme was '*the Business Case for Sweetpotato Seed*', sought to trigger discussions that would lead to an understanding of the financial aspects of sweetpotato seed multiplication and development of business plans. Participants also had the opportunity to share updates on sustainable pre-basic seed production and productivity-enhancing technologies such as sand hydroponics, net tunnels, and Triple S (sand, storage, and sprouting).

The Director General of the Rwanda Agricultural Bureau opened the meeting and noted the importance of quality seed in successful

agricultural production and emphasized the need for a functioning sweetpotato seed system that will contribute towards food security and income generation, especially for female farmers who are the majority of growers of the crop. The Director General also highlighted quality assurance and the need for developing seed standards but cautioned against over-regulation and bureaucracy that could stifle emerging seed entrepreneurs.

This was the third sweetpotato seed systems consultation since 2012. It is expected that regular exchange of ideas (face-to-face and online) among CoP members will lead to increased visibility and spread of good sweetpotato seed system technologies and practices across the Eastern, Western, and Southern African sub-regions. Sweetpotato is an important food crop in all these regions but production is constrained by limited supply of quality planting materials. This is compounded by high prevalence of viruses in single or complex infections and insect pests such as weevils (*Cylas punctolis*).

There is need to identify, develop, and implement low cost and sustainable options for production of clean planting materials. This will require understanding farmers' willingness to invest in clean planting materials and efficient coordination of demand and supply. Participants noted the importance of creating awareness among farmers about the benefits of clean planting material and promoting sweetpotato as a priority crop for health, nutrition, and food security. This will contribute towards increased demand for quality planting materials.

To ensure regular communication and information sharing the CoP registered a Google Groups D-List (sweetpotato-seed-system-aficionados-community-of-practice@googlegroups.com) to facilitate online discussions. Four topics have been discussed so far using the D-List on the following issues:

- The use of positive and negative selection in the production of clean planting material
- Seed degeneration through accumulation of virus diseases and the potential of reversion in some varieties
- Phyto-sanitation practices and seed system innovations
- Packing and transporting sweetpotato cuttings

In addition to the D-List, CoP members and other stakeholders can share information and exchange ideas on sweetpotato seed systems and other production practices at www.sweetpotatoknowledge.org

Members of Sweetpotato Seed Systems CoP in Kigali (top); and members of CoP during field inspection of sweetpotato Quality Declared Seed in Muhanga district (bottom),Rwanda

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Scaling Seed and Technologies Partnership Project in Africa

The Alliance for Green Revolution in Africa (AGRA) has started a partnership project called *Scaling Seeds and Technologies Partnership in Africa (SSTP)* in Africa, working in six countries that have joined the New Alliance: Ethiopia, Ghana, Malawi, Mozambique, Senegal, and Tanzania. In each of these countries, AGRA/SSTP will help governments strengthen their seed sectors and promote the commercialization, distribution, and use of improved seeds and other key technologies through grant funding. The Partnership is managed from Nairobi, Kenya, with country teams in each of the six countries. Because crops are bounded within specific agro-ecologies, the geographic areas for project implementation will follow similar patterns. Major activities include consultation in seed production, support for on-farm demonstrations of new technologies, and

support for improved seed marketing channels and adoption.

In Ethiopia, the project is funded by USAID as part of the feed the future (ftf) initiative, a three-year partnership intended to accelerate smallholder farmer access to transformative agricultural technologies. The project will enhance production and productivity of wheat, maize, barley, teff, chickpea, and sesame in the major production areas of Amhara; Oromia; Southern Nations, Nationalities and People's (SNNP); and Tigray regional states.

Capacity building in quality seed production of both public and private sectors will be undertaken throughout the project implementation in each selected area. The seed regulatory functions will need upgrading in line with the new legal framework and the project will contribute to this effort through capacity building.

The project also includes support to improve systemic seed issues such as variety development, release, early-generation seed supply, and regional harmonization of quality seed production and marketing. SSTP/Ethiopia is operating in line with the following objectives:

- Improve the capacity of the sector to deliver quality seeds and other technologies to smallholder farmers
- Improve the capacity of smallholder farmers to adopt quality seeds and technologies
- Support the government's policies in regulatory mechanisms for the delivery of quality seeds and technologies to smallholder farmers

SSTP is a project where partners are working together to benefit the smallholder farmers where several technology multipliers, governmental and non-governmental agencies, are actively participating. Additionally, the strong partnership between SSTP and the Digital Green ICT Extension Challenge helps in the dissemination of new crop varieties and other technologies among the smallholder farmers.

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Report Forecasts Global Seed Market Trends to 2020

The global seed market is expected to reach USD 92.04 billion in 2020, at a compound annual growth rate of 9.4% from 2015 to 2020, according to the Markets and Markets report on *Seed Market by Type, Seed Trait and Region – Global Trends & Forecast to 2020*.

It was also reported that in 2014, the global seed market was dominated by North America, accounting for around 32.6% of the total share. The Asia Pacific region is projected to be the fastest growing market due to high population, which calls for more food products and advanced farming technologies to attain higher productivity and profits.

Furthermore, India is projected to be the fastest growing market for seed, followed by China because of the government initiatives in promoting technology-driven agriculture practices. The cereals and grains segment is projected to be the biggest market for seed in the world from 2015 to 2020.

For more details about the report, visit Markets and Markets.

Source: Crop Biotech Update 17 June 2015

ISF Nurtures Strategic Approach at 2015 World Seed Congress

Global collaboration is the key to creating the best possible environment for sustainable agriculture and food security, a record attendance at the World Seed Congress was told. The 2015 International Seed Federation (ISF) Congress attracted 1600 delegates from 64 countries to Krakow, Poland – the highest number in its 66-year history.

At the opening ceremony, ISF Secretary General Michael Keller unveiled the federation's revised vision, mission, and values, which will form the basis of its five-year Strategic Plan as follows:

- Vision: A world where the best quality seed is accessible to all, supporting sustainable agriculture and food security
- Mission: To create the best environment for the global movement of seed and promote plant breeding and innovation in seed
- Values: Collaboration, integrity, innovation, sustainability

'ISF is changing – the environment in which we operate is not the same as it was 50, 20, or even 10 years ago,' he said as he paid tribute to the 90 years of work his predecessors have contributed to the seed industry.

Illustrating the global movement of seed with a self-penned sketch, he said that seed was moving around the world more than ever before, and that plant breeding was becoming increasingly efficient and effective. 'We have a lot of challenges,' he said, 'and the role of ISF is to turn these challenges into opportunities'.

Since his appointment in June 2014, he has implemented a strategic approach across ISF's committees, sections, and groups whose action plans focus on tackling some of the key issues including plant breeding and innovation, harmonization of phytosanitary measures, intellectual property protection, and seed applied technologies.

The importance of fostering global collaboration and building alliances with stakeholders worldwide to create the best possible environment for sustainable agriculture and food security was emphasized.

In his keynote address, the ISF President brought to life the Congress theme of 'Sharing Passion for Nature', describing the shared passion, pride, and purpose across the seed sector.

Representing the host nation, Director of the Department for Plant Breeding and Plant Protection welcomed delegates, expressing his certainty that the Congress would help establish and strengthen relationships between global representatives of the seed sector and the Polish seed industry. Contact: Jennifer Clowes, ISF, Reposoir 7, 1260 Nyon, Switzerland; tel: +41-22 3654420; fax: +41-223654421; e-mail: j.clowes @worldseed.org.

AFSTA Seed Congress 2015

The African Seed Trade Association (AFSTA) Seed Congress was held in Victoria Falls, Zimbabwe, on 3–5 March 2015. The congress took place against the background of a sterling performance of AFSTA and its affiliate national seed trade associations over 15 years. It brought together 327 delegates from 19 African and 20 European, Asian, and North American countries and, once again, provided a platform for great interactions and networking for the good of the seed industry.

The Zimbabwean Minister of Agriculture, Mechanization, and Irrigation Development officially opened the congress and stressed his government's appreciation of the tremendous role that AFSTA plays in enhancing efforts to ensure the continent of food security through the provision and promotion of trade in quality seed in Africa. He also emphasized the role of the forums such as the congress, which also critically look at how best the seed industry can improve access to affordable and reliable quality seeds and in increasing the number of profit-making domestic seed companies that offered farmers with suitable and relevant seed to their farming environments.

The AFSTA President also noted that huge opportunities exist for expanding agriculture, boosting employment and foreign currency earnings in Africa, and the big role AFSTA has to play in this pursuit. He encouraged the delegates to recognize that together with AFSTA, they are one critical link in a chain where every link must be strong to achieve the greater good.

The congress was preceded by a half-day workshop, which demonstrated areas of cooperation and how the International Seed Testing Association (ISTA), the International Union for the Protection of New Plant Varieties (UPOV) and the Organization for Economic Cooperation and Development (OECD) work together to provide a framework for sustainable development of the seed sector.

The congress discussed various important items for the African seed industry with a view to analyzing the current situation and charting out the way forward for seed sector development. Some of the topics covered were use of new technologies for enhanced seed productivity, progress on implementation of harmonized seed regulations at regional economic communities' level for the Common Market for Eastern and Southern Africa (COMESA), Economic Community of West African States (ECOWAS), and the Southern Africa Development Community. Other topics included the strengthening of the national seed trade associations in Africa, the role of the African seed industry in making the African green revolution profitable for farmers, and the proposal for automating seed import/export documentation to facilitate seed trade.

Two special interest groups on Vegetables and Field Crops also made presentations on their work since their launch in 2013. A colloquium on vegetables was organized and discussed how to harness the potential of the vegetable seed industry in Africa – locally developed vs. imported varieties; and how to expedite commercialization of new varieties and the role of agro-dealers/businesses in

vegetable seed markets and the critical linkages in sustainable seed supply.

Several representatives of regional and international organizations attended the congress: COMESA, ECOWAS, FAO, ISF, ISTA, OECD, UPOV, Asia Pacific Seed Association, West and Central African Council for Agricultural Research and Development, and African Regional Intellectual Property Organization. The next AFSTA Congress 2016 will be held during 1–3 March 2016 in Nairobi, Kenya.

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News from UPOV

Decision on the draft law of Egypt

The Council of the International Union for the Protection of New Varieties of Plants (UPOV) at its 32nd extraordinary session held in Geneva on 27 March 2015, took a positive decision on the conformity of the 'Draft provisions of Book Four 'Plant Variety Protection' of Law No. 82 of 2002 pertaining to the Protection of Intellectual Property Rights' (Draft Law) of Egypt within the provisions of the 1991 Act of the UPOV Council. This allows Egypt, once the Draft Law is adopted with no changes and the Law is in force, to deposit its instrument of accession to the 1991 Act.

Adoption of documents

The UPOV Council adopted the following two revised documents: (i) Financial Regulations and Rules of UPOV (UPOV/INF/4/4) and (ii) Guidance for Members of UPOV (UPOV/INF/15/3). All adopted documents are included in the UPOV collection (http://www.upov.int/upov_collection/en/).

Test guidelines

The Technical Committee adopted 12 new Guidelines for the Conduct of Tests for Distinctness, Uniformity, and Stability (Test Guidelines) and 14 revised Test Guidelines. UPOV has now developed 313 Test Guidelines, all of which are freely available on the UPOV website (http://www.upov.int/test_guidelines/en/).

Experience of UPOV members in examination of new plant varieties

The number of genera and species for which UPOV members have indicated their practical experience in the examination of distinctness, uniformity, and stability (DUS) increased from 3305 in 2014 to 3382 in 2015 (+2.3%). The information on UPOV members with practical experience in DUS examination is freely accessible via the GENIE database

Video on Plant Variety Protection (PVP) in Uruguay

UPOV recently posted a video on its website (http://www.upov.int/about/en/benefits_upov_system.html) on the Use of PVP by the Faculty of Agronomy of the 'Universidad de la Republica' of Uruguay.

For more information about UPOV, please contact the UPOV Secretariat: Tel: +41-22-3389155; Fax: +41-22-7330336; e-mail: upov.mail@upov.int; Website: www.upov.int

Global Status of Commercialized Biotech/GM Crops in 2014

Introduction

A record 181.5 million ha of biotech crops were grown globally in 2014, at an annual growth rate of 3–4%, up 6.3 million ha from 175.2 million ha in 2013. The global area of biotech crops increased more than 100-fold from 1996 to 2014 going from 1.7 to 181.5 million ha, making it the fastest adopted crop technology in recent times.

A new and rigorous 2014 comprehensive global meta-analysis, of 147 published biotech crop studies over the last 20 years, confirmed the significant and multiple benefits that biotech crops have generated over the past 20 years. The meta-analysis used primary data from farm surveys or field trials worldwide and reported impacts of GM soybean, maize, or cotton on crop yields, pesticide use, and/or farmer profits. The meta-analysis concluded that on average GM technology adoption reduced chemical pesticide use by 37%, increased crop yields by 22%, and increased farmer profits by 68% with higher yield and profit gains in developing than in developed countries.

Millions of risk-averse farmers worldwide adopted biotech crops

In the 19-year period of 1996–2014, millions of farmers in almost 30 countries worldwide, adopted biotech crops at unprecedented rates. The most compelling and credible testimony for biotech crops is that during the 19-year period, millions of farmers in ~30 countries worldwide, elected to make more than 100 million independent decisions

to plant and replant an accumulated area of more than 1.8 billion ha for the first time in 2014. Comprehensive analytical studies by many organizations including a 2011 EU study confirmed that biotech crops are safe and deliver substantial agronomic and environmental benefits, with significant reductions in pesticide usage.

Twenty-eight countries grew biotech crops

Of the 28 countries that planted biotech crops in 2014, 20 were developing (including Bangladesh) and only eight were industrialized countries. Each of the top 10 countries, of which eight were developing, grew more than 1 million ha providing a broad-based worldwide foundation for continued and diversified growth in the future. More than half of the world's population, ~60% or ~4 billion people live in these 28 countries.

Eighteen million farmers benefit from biotech crops

In 2014, approximately 18 million farmers, the same as in 2013, grew biotech crops – remarkably, about 90%, or 16.5 million, were risk-averse small, poor farmers in developing countries. In China, 7.1 million small farmers benefited from biotech cotton and in India there were 7.7 million beneficiary farmers cultivating a total of more than 15 million ha of Bt cotton. The latest provisional economic data available for the period 1996–2013 indicates that farmers in China gained USD 16.2 billion and in India USD 16.7 billion. In addition to economic gains, farmers benefited enormously from at least a 50% reduction in the number of insecticide applications, thereby reducing farmer exposure to insecticides, and importantly contributed to a more sustainable environment and better quality of life.

Developing countries planted more biotech crops than industrial countries

Latin American, Asian, and African farmers collectively grew 96 million ha or 53% of the global 181 million ha compared with industrial countries at 85 million or 47%, equivalent to a gap of 11 million ha in favor of developing countries. In the long term this trend is expected to continue despite the fact that in 2014 the US had the highest increase (3 million ha), whereas Brazil (an increase of 1.9 million ha) had the highest year-to-year increase for the last five years. The higher acreage in developing countries is contrary to the prediction of critics and skeptics, who prematurely declared that biotech crops were only for industrial countries and would never adopted by small-scale farmers in developing countries.

During 1996–2013, cumulative provisional economic benefits in industrial countries were USD 65.2 billion compared to USD 68.1 billion generated by developing countries. In 2013, developing countries had 49.5%, equivalent to USD 10.1 billion of the total USD 20.4 billion gain.

Stacked traits occupied 28% of global 181million ha

Stacked traits continued to be an important and growing feature of biotech crops – 13 countries planted biotech crops that included two or more traits in 2014, of which 10 were developing countries. About 51 million ha, equivalent to 28% of over 181 million ha, were stacked in 2014, up from 47 million ha or 27% of the 175 million ha in 2013; this steady and growing trend of more stacked traits is expected to continue. In 2014, 5.8 million ha of HT/Bt soybean were grown in Brazil, Argentina, Paraguay, and Uruguay in Latin America.

The five lead biotech developing countries in the three continents of the South – Brazil and Argentina in Latin America, India and China in Asia, and South Africa on the continent of Africa – grew 47% of global biotech crops and represent ~41% of the world's population.

Status of approved events for biotech crops

As of the end of October 2014, 38 countries (37 + the EU) have granted regulatory approvals to biotech crops for use as food, feed, or for environmental release since 1994. From these countries, competent authorities have issued 3083 regulatory approvals across 27 GM crops and 357 GM events.

Global value of biotech seed was USD 15.7 billion in 2014

Global value of biotech seed alone was ~USD 15.7 billion in 2014. A 2011 study estimated that the cost of discovery, development, and authorization of a new biotech crop/trait is ~USD 135 million. In 2014, the global market value of biotech crops, estimated by Cropnosis, was USD 15.7 billion (up slightly from USD 15.6 billion in 2013); this represents 22% of the USD 72.3 billion global crop protection market in 2013, and 35% of the ~USD 45 billion commercial seed market. The estimated global farm-gate revenue of the harvested commercial 'end products' (the biotech

grain and other harvested products) is more than ten times the value of the biotech seed alone.

Source: Crop Biotech Update 11 February 2015

CONTRIBUTIONS FROM SEED PROGRAMS

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

Ethiopia Releases Orobanche-resistant Faba Bean and Rust Resistant Wheat Varieties

Broomrape-*resistant faba bean variety*

Faba bean is an important food and cash crop for the 4.4 million smallholder farmers in the wheat/barley-based cropping systems of the Ethiopian highlands. It is the largest legume crop planted on 574,000 ha producing 0.9 million t at an average productivity of 1.6 t/ha in the 2012/13 crop season. However, broomrape infestation has become one of the major threats to faba bean production, particularly in northern Ethiopia.

The Alamata Agricultural Research Center (ARC) of Tigray Agricultural Research Institute announced the release of a new variety *Hashenge* from germplasm (ILB4358) received from ICARDA. The variety is moderately resistant to broomrape (*Orobanche crenata*), chocolate spot, and ascochyta blight and moderately susceptible to faba bean gall – a newly emerged faba bean disease in the country. The variety consistently gave higher yield and lower broomrape count than local, susceptible, and standard checks across locations. The grain yield was 141% over the susceptible check (ILB 1814), 211% over local variety, and 247% over *Wolki* (standard check). The variety also had lower broomrape count numbers of 152,967 (76%), 133,366 (66%), and 266,200 (132%) compared to susceptible, local, and standard checks, respectively.

Mean yield and Orobanche count of faba bean varieties

Variety	Yield (t/ha)	Yield advantage (%)	Number of broomrape/ha	Broomrape reduction (%)
Hashenge	3.54	-	201,800	-
ILB 1814[1]	1.47	141	354,767	76
Local check[2]	1.14	211	335,167	66
Walki[3]	1.02	247	500,000	132

Note: [1]susceptible, [2]local, and [3]standard checks

Broomrape infestation on local cultivar (left) and broomrape-free field of Hashange (right)

The variety is adapted to highland faba bean growing areas of South Tigray and Amhara regions and similar agro-ecologies across Ethiopia, especially in areas infested with broomrape. It fits well at the altitude of 2200–2800 masl and rainfall of 700–1200 mm. The planting date is from mid-June to early July, and the recommended seed rate is 200–225 kg/ha and fertilizer rate is 100 kg/ha of DAP (18:46% N:P_2O_5). It flowers within 46–51 days and matures in 106–129 days. The average plant height is 108 cm and it has an indeterminate growth habit. It has white seed color, cream cotyledons, and a black flower with a black spot. The average yield is in the range of 2.1–5.1 t/ha depending on Orobanche infestation. The variety has already entered accelerated seed multiplication

through a new faba bean scaling-out project implemented by ICARDA and supported by USAID.

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Rust resistant wheat varieties

Ethiopia is the second largest producer of wheat in sub-Saharan Africa. In 2012/13, about 4.84 million smallholder farmers planted 1.64 million ha of wheat, producing 3.34 million t at an average productivity of 2.11 t/ha. However, annually about a million tons are imported due to increased demand for human consumption and agro-industry. Wheat rusts have become a major threat to wheat production across the country.

The Kulumsa ARC (KARC) of the Ethiopian Institute of Agricultural Research (EIAR) announced the release of two new rust resistant varieties, *Biqa* and *Honqolo*, from germplasm received from CIMMYT and ICARDA, respectively. *Biqa* and *Honqolo* are both moderately resistant to wheat rusts (stem, yellow, and leaf) and Septoria. Both varieties have white grain color, which is most preferred by farmers and consumers.

In another development, the Sinana ARC (SARC) of Oromia Agricultural Research Institute also released two bread wheat varieties, *Sanate* and *Mandoyu*, adapted to the Bale highlands and similar agro-ecologies in the country.

The ICARDA-EIAR project on deployment of rust resistant varieties funded by USAID supported the varietal evaluation and release, as well as accelerated seed multiplication during the main and off-seasons. In 2013/14, *Biqa* and *Honqolo* were multiplied in the off-season and about 4.5 t of breeder seed was produced in the accelerated seed production program. In 2014/15, the seed was multiplied further, producing 16.5 t of pre-basic and sufficient quantity for large-scale multiplication by the public or private sector. Moreover, about 140 demonstrations were planted during the same year for both varieties for popularization.

Similarly, *Mandoyu* and *Sanate* were multiplied and 4.55 t were produced during the 2014/15 main crop season. About 70 demonstrations were also planted during the same year to popularize these new varieties.

Agronomic and morphological descriptors of released bread wheat varieties

Description	**Biqa** (ETBW 6095)	**Honqolo** (ETBW 5879)	**Sanate** (14F/HAR 1685)	**Mandoyu** (Worrakatta/Pastor)
Adaptation	Moderately moisture stress areas	Highlands and mid-highlands	Highlands and mid-altitude areas of Bale	Highlands and mid-altitude areas of Bale
Altitude (masl)	1600–2200	2200–2600	2300–2600	2200–2500
Rainfall (mm)	450–1100	750–1500	750–1500	750–1500
Planting date	Early June to early July	Early June to 2nd week of July	Mid-June to late August	Mid-June to late August
Fertilizer rate (kg/ha)	P_2O_5 = 46 & N = 41	P_2O_5 = 46 & N = 23	P_2O_5 = 46 & N = 41	P_2O_5 = 46 & N = 41
Days to heading	60	65	71	68
Days to maturity	95	110	141	139
Plant height (cm)	90	100	102	85.3
Growth habit	Erect	Erect	Erect	Erect
1000 seed weight (g)	37	39.2	39.5	36.2
Test weight (kg/hl)	71	75.2	80	81.5
Grain color	White	White		
Yield in research fields (t/ha)	3.5–5	5–6	3.4–6.7	5–6
Yield in farmer fields (t/ha)			3.3–4.3	2.8–4.3
Moderately resistant	Sr, Yr, Lr & Septoria	Sr, Yr, Lr & Septoria	Sr, Yr, Lr & Septoria	Sr, Yr, Lr & Septoria
NARS	KARC	KARC	SARC	SARC

Note: Sr, Yr, and Lr indicate stem, yellow, and leaf rusts, respectively

Wheat varieties released in Ethiopia in 2014: Biqa (top) and Honqolo (bottom)

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Ethiopia Introduces GPS-GIS Assisted Field Inspection for Seed Certification

Seed certification requires field inspection of growing crops and seed quality testing in the laboratory. Seed growers make declarations and submit their applications to the seed certification agency indicating the location, variety, area, seed source used, seed class to be produced, and the contracting seed company. These days the location of the field can be entered on a GPS for easy access. Official field inspection requires that the inspector verifies information on the application including the cropping history, isolation distance, varietal identity, plant density, and yield estimates. Then the inspector determines the walking patterns, location of sample field counts, and takes the field counts measuring the level of contamination, filling the field inspection report based on the national procedures and guidelines. These estimates are mechanical for a trained expert.

According to the Ethiopian Seed Law, all certified seed sold legally requires official certification with mandatory field inspection and laboratory seed testing. Traditional field inspection can be a tiresome, costly, and time-consuming manual process (see table below). In an effort to modernize and speed up these processes, the Agricultural Transformation Agency (ATA), in collaboration with federal and regional seed regulatory authorities, is currently introducing GPS-GIS assisted field inspection. GPS has been found very helpful in preparing maps and measuring the area and isolation distance of seed fields, which otherwise must be estimated or measured using tapes or ropes.

The area of the seed field is important to determine the amount of seed received for planting and to estimate seed production. In most cases, inspectors were simply estimating the field area without taking exact measurements, which could be inaccurate. This may also affect the inspectors' estimates of the amount of seed produced. The seed certification tags issued based on overestimated production may allow adulteration of seed due to fraudulent practices. According to inspectors' reports, however, the new GPS tools improve the accuracy of production estimates by 10–50%.

The GPS also helps in providing information on locating seed production fields and field counts, and allowing the taking of geo-tagged pictures of relevant information. The success of these new high-tech tools is building trust among inspectors and producers. ATA is encouraging regional regulatory agencies to use GPS for the identification of field count areas, to ensure correct implementation of sample randomization across fields.

Historically, seed inspector reports have been used for making critical decisions, often worth millions in value. With the new GPS intervention, the accuracy and reliability of this information is improving significantly, enabling tracking of field inspection throughout the country. With the new technology, every field count will be geo-tagged by GPS applications, increasing inspector accountability with reports supported by GPS data. Officials can re-check initial reports, taking random samples from inspectors' data and evaluating them accordingly. The GPS system also provides a quick solution to address any claims that producers may raise against the results of field inspections.

The first training course was organized in March 2014 for 29 participants from 10 seed laboratories using 10 ATA granted GPS (Garmin 450 t). In 2014, the first GPS-assisted inspection took place in Amhara, Oromia, SNNP, and Tigray Regions. In 2015, the second training course was conducted on both GPS and GIS applications for 61 officials, technical experts, and seed laboratory inspectors from federal and regional regulatory agencies.

Filed inspection methodologies: current and GPS-assisted practices

Field inspection activities	Current practice	GPS-assisted practice
Geo-positioning or locating the field on GPS	Not in practice	Inspectors take NE GPS readings from satellite window
Measuring area and map the field	Inspectors estimate or measure to confirm declared area	Inspectors walk along the perimeter to read area and draw a map of seed field, which can be edited with built in Quantum GIS on personal computers
Measuring isolation distance	Visual observation or measuring using steps or tapes	Inspectors walk between two neighboring fields and take GPS readings to measure isolation distance
Identifying and tracking contaminants	Information entered on inspection report only	GPS camera is used to capture the contaminants and their locations in the field
Designing walking patterns	The inspector decides walking patterns but difficult to re-check	Quantum GIS software is used to locate walking patterns in seed fields; easy to locate and re-check to correct and enhance reliability
Randomizing sample areas for counting plant density or taking field counts	The inspector decides sample count areas mechanically	Quantum GIS software is used to locate sample areas on a field map and this is used to navigate later in the field
Determining distances among field counts	The inspector may count steps or use estimates	GPS application can be pre-adjusted to measure distance between field counts

Note: GPS enables the taking of field data and GIS software is used to prepare maps using personal computers

In 2014, seed laboratories took data on 5000 ha. In 2015, GPS-assisted inspection is planned for 8000 ha; and field maps will be developed using GIS. The maps will be used to check cropping history of seed fields and identify random sample areas and walking patterns for inspection. The federal Regulatory Directorate of MoA will monitor the progress and, based on the results, the seed certification guidelines could be revised to incorporate GPS-GIS for field inspection.

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PARC Recommends Eight Maize Varieties

The Pakistan Agriculture Research Council (PARC) recommended several high-yielding maize varieties for cultivation in various agro-ecologies. The recommendations will be forwarded to Provincial Seed Council (PSC) for final approval followed by multiplication and distribution among farmers. In total, 11 proposals were presented in the Variety Evaluation Committee (VEC) meeting held under the Chairmanship of PARC. These varieties included 10 hybrid varieties and one open-pollinated variety, out of which the committee recommended eight varieties be forwarded to PSC while rejecting two others. The maize hybrid varieties include P3164W, P3939, CS-2Y10, CS-200, CS220, GR-0702W, SC539, and EV-3001.

This was the first-ever meeting of the VEC on maize since the commencement of the PARC coordination system and the Federal Seed Certification and Registration Department was directed to formulate the sub-committee in consultation with the National Coordinator of Cereal System of PARC to devise the Standard Operating Procedures for maize to use in maize VEC meetings in future.

During the meeting it was stated that only those varieties that were high-yielding, disease-resistant, and had the ability to perform better in diverse environments should be released. It is hoped that the efforts of the scientists and other stakeholders will bear fruit with the new varieties helping farmers to boost crop production and raise their incomes.

Source: Pakistan Agricultural Research Council

Pakistan Investigates CLCV-Resistant Varieties of GM Cotton

Cotton Leaf Curl Virus (CLCV) is the major impediment to increasing cotton production and remains a hurdle to achieving high yields of cotton. The government has taken various measures to upgrade cotton production. CLCV-resistant varieties of GM cotton developed by the Pakistan Central Cotton Committee and other public and private research systems are under investigation for release. The CLCV issue is being addressed through a Pakistan–US Cotton Productivity Enhancement Program with the intent to strengthen the national cotton research and development system especially for development of virus-resistant varieties of GM cotton.

A new research station in Lasbela with collaboration of the Lasbela University of Agriculture Water and Marine Sciences is facilitating cotton cultivation in Balochistan. Field staff of Agriculture Department of Khyber Pakhtunkhwa and Balochistan were trained at Multan and Faisalabad in cotton production technology. Bt cotton varieties were developed and released through the official system. To increase cotton fiber quality, a cotton ginning institute is being established in Multan with the objective to produce world-class quality fiber from cotton. All endeavors have been undertaken by the government to ensure a high level of cotton production.

Source: Pakistan Biotechnology Information Center

Senegal Becomes a Member of OECD Seed Schemes

During the annual meeting of OECD, on 4 June 2015, the member countries of OECD seed schemes approved the participation of Senegal in maize, sorghum, and cereal schemes. The effective accession will be on 1 January 2016, and will make Senegal the 59th member of OECD seed schemes.

At a national level, Senegal becomes the first member country of the Economic Community of West African States to implement comprehensive harmonized regulation in seed quality control. At an international level, Senegal is thus the first country of West Africa whose seed certification scheme is recognized on international markets and is able to bring the guarantees required by customers. Thus, Senegal joins Kenya, South Africa, Uganda, and Zimbabwe from sub-Saharan Africa as a member.

A process supported by GNIS

The Senegalese Ministry of Agriculture submitted its application to cereal, maize, and sorghum seed schemes in May 2010 in order to integrate Senegal into the international seed market. In this process, the authorities had two objectives: to improve the quality of national seed production by aligning it to internationally recognized standards and norms of production and controls; and to promote the quality of national seed production to be certified according to OECD schemes and obtain recognition of the equivalence of certification schemes for export to the EU market. The ministry is potentially interested in off-season seed production for European seed companies, currently occurring in Latin America.

Since 2011, the Senegalese Ministry of Agriculture started cooperation with its French counterparts, in particular GNIS, the organization of the French seed sector and FNPSMS, the French federation of producers of maize and sorghum seeds. The cooperation led to revision of the national certification scheme to meet the requirements of the OECD and European Commission through audit missions, training, and skills transfer to meet the above objectives.

Recognition of Senegalese certification by the EU

To meet the objectives set by the Senegalese Ministry of Agriculture, a request for recognition of EU equivalence will be lodged for the certification scheme of Senegal to be recognized as conforming to the requirements of EU member countries. It will allow Senegalese seed producers to satisfy the needs of European seed producers for off-season seed production. The cooperation with GNIS and its partners will address the training and the technical support to the administration and all stakeholders to meet these requirements.

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MEETINGS AND COURSES

Announcements of national, regional, or international meetings, seminars, workshops, and training courses appear in

this section. Please send in announcements of relevant events organized in your country for inclusion in the next issue.

Conferences

Fifteenth International Cereal and Bread Congress

The 15th International Cereal and Bread Congress (ICBC) will take place during 17–21 April 2016 in İstanbul, Turkey. ICC (International Association for Cereal Science and Technology) and its national representation in Turkey, the Hacettepe University, will organize the congress. The focus of the conference will be storage, marketing, and development of innovative cereal products to meet the need of consumers (add value in convenience, taste, nutrition and health, and safety and security). Moreover, exploiting new raw materials/ ingredients and new technologies, producing functional foods in the legal framework, and alternative uses of cereals will also be topics.

The 15th ICBC is expected to attract about 1000 delegates from about 60 countries from all continents, including researchers, manufacturers, policy makers and regulatory bodies, industries and small and medium seed enterprises in the areas of food production, grain/crop breeding and production, storage, milling, baking, and food processing, as well as students and professionals. The event is an excellent opportunity for networking and extending business/cooperation opportunities. Exhibitors and sponsors are welcome to complement the oral and poster presentations.

The International Cereal Science and Technology Conference and Exhibition will be organized by Hacettepe University together with the 15th ICBC. This major international cereal science and technology event is planned to be organized regularly after commencing with the 15th ICBC.

The abstract submission is now open. The abstracts should be submitted online through the website of the 15th ICBC. For further information and submission, please visit the website at www.icbc2016.org

AFSTA Congress 2016

AFSTA Congress 2016 will take place 1–3 March 2016 in Nairobi, Kenya. For more information, you may kindly contact the AFSTA Secretariat at afsta@afsta.org

2016 ISF World Seed Congress

The ISF World Seed Congress 2016 will take place in Punta del Este, Uruguay on 15–18 May 2016. Registration will open on 5 Jan 2016 at 11.00 h (GMT). It will be organized under the theme 'World Seed Congress 2016 – The Way Forward in Business and Life'. For more information, see the ISF World Seed Congress 2016.

Thirty First ISTA Congress 2016

The 31st International Seed Testing Association (ISTA) Congress 2016 will be held during 14–21 June 2015 in Tallinn, Estonia. The ISTA Congress provides an excellent opportunity to meet other seed experts and to exchange experiences. It also provides a chance for in-depth discussions about topics of interest to the ISTA community. For more information, please visit: www.seedtest.org

ISTA Seed Symposium

ISTA is organizing the Seed Symposium during its 31st Congress. The ISTA Seed Symposium 2016 under the theme 'Progress in seed testing and seed quality improvement through science and technology' will be held during 15–17 June, as part of the 31st ISTA Congress in Tallinn, Estonia on 14–21 June. Participants intending to take part are encouraged to present oral and display posters detailing a range of topics under the above theme.

Papers should be submitted online only in the form of an abstract in English with 1600 characters (maximum). Papers will be presented orally and as posters, both having equal status.

The deadline for submission of all papers is 23 October 2015. The selected authors will be contacted for further information on experimental results, additional to the abstract.

For more details on the ISTA Seed Symposium or to submit a paper visit the ISTA Website: http://www.seedtest.org/en/seed-symposium-_content---1--1463.html or use the following link: http://www.seedtest.org/en/abstractpaper-submission.html

For more information please contact: ISTA, Zurichstrasse 50, 8303 Bassersdorf, Switzerland; Tel: +41-448386000; Fax: +41 44 838 6001; E-mail: ista.office@ista.ch; www.seedtest.org

Courses

ICARDA courses

ICARDA organizes both short- and long-term courses in thematic areas related to its research portfolio on biodiversity and integrated gene management, integrated water and land management, diversification and intensification production systems, and socioeconomics and policy research. For more information on the ICARDA annual training program, contact Mr. Charles Kleinermann, Head of Capacity Development Unit, ICARDA, Amman, Jordan; e-mail: c.kleinemann@cgiar.org

UPOV Distance Learning Courses

UPOV Distance Learning Course on 'Introduction to the UPOV System of Plant Variety Protection under the UPOV Convention' (DL 205) will be held from 19 October to 23 November 2015 (on-line registration period: 17 August to 27 September 2015). The courses will be in English, French, and Spanish. The categories of participants for the DL 205 and DL 305 courses are as follows:

Category 1: Government officials of members of the Union endorsed by the relevant representative to the UPOV Council (*no fee*)

Category 2: Officials of observer states/inter-governmental organizations endorsed by the relevant representative to the UPOV Council (*one non-fee paying student per state/inter-governmental organization; additional students, CHF1000 per student*)

Category 3: Others (f*ee, CHF1000*)

The registrations of participants in Categories 1 and 2 must be endorsed by the representative to the UPOV Council of the UPOV member or observer, as appropriate, formally nominating the participant. More detailed information on the course and online registration is available at the UPOV website: http://www.upov.int/resource/en/dl205_training.html

ISTA training workshops

ISTA Workshop on Seed Sampling and Quality Assurance in Seed Sampling will be organized in Edinburgh, Scotland, UK, and Johannesburg, South Africa. For more information, please contact ISTA, Zurichstrasse 50, 8303 Bassersdorf, Switzerland; tel: +41448386000; fax: +41448386001; e-mail: ista.office@ista.ch; website: www.seedtest.org

International course on Integrated Seed Sector Development 23 May to 10 June 2016, Wageningen, the Netherlands

The course participants can broaden their international experience and strengthen their competencies to support seed sector development, taking an integrated perspective. The training includes lectures, visits to different Dutch seed companies and organizations, case studies, group discussions, assignments and field work.

Interested candidates can apply to Wageningen UR Centre for Development Innovation (CDI) for admission to the training. A limited number of fellowships are available from Nuffic – the Netherlands Fellowship Program (NFP) for nationals of certain countries. To apply for a NFP fellowship, you first have to register with CDI. Applications for NFP fellowships should be submitted before 20 October 2015.

For more information, please contact: Karèn Verhoosel, CDI, Wageningen UR, P.O. Box 88, 6700 AB Wageningen, The Netherlands; tel: +31-317 486860; e-mail: karen.verhoosel@wur.nl

LITERATURE

Books, journal articles, and other literature of interest to readers are presented here. Please send information on agriculture-related publications – seed policy, regulation, and technology – to the Editor for inclusion in *Seed Info*.

Books

Ojiewo, C.O., S. Kugbei, Z. Bishaw and J.C. Rubyogo (eds.). 2014. Community Seed Production. Proceedings of Workshop 9–11 December 2013, Addis Abeba, Ethiopia

Published by ICRISAT, P.O. Box 5689, Addis Abeba, Ethiopia; ISBN 978-92-9066-565-6, CPE 173. 176 pp.

During the 1970s and 1980s, seed system support in developing countries focused on strengthening public sector institutions including agricultural

research centers, extension services, and state-owned seed corporations. This approach achieved limited success in Africa and some regions of Asia and South America. The structural adjustment programs in the 1980s and 1990s resulted in general withdrawal of state seed sector support, and created space for the private sector but also for civil society seed organizations. The 1990s also saw the emergence of large-scale direct seed purchase and distribution, particularly in Africa, in response to natural disasters and crisis.

Many food security crops of Africa, and of other continents, however, have not attracted private sector interest. The same holds true for seed supply of minor or neglected crops (often called orphan crops, including various staple crops). In essence, both the public and private sectors cannot fulfil the entire seed needs of farmers, especially of smallholders located in remote areas who have limited purchasing power. Civil society plays a unique role in promoting and advocating Community Seed Production (CSP) for smallholder farmers. Farmer groups, farmer associations, and other community-based institutions often provide support to seed-related activities complementarily to the public and private sectors. The CSP approach is widely used to deliver seeds to smallholder farmers, although no clear definition or criteria exist for assessing success.

FAO-assisted seed programs in Africa have demonstrated that CSP fulfils an important role and need that is neither purely commercial nor farmer managed, thus creating a link between traditional farmer seed management and commercial seed production. It includes activities relating to smallholder seed enterprises, informal seed supply systems, and other local seed-sector development programs. In this respect, a well-functioning CSP should be complementary to formal sector seed activities in the public or private sectors. Further exploration of the CSP concept is necessary by corroborating African experiences with similar approaches used in other parts of the world. There is a need for greater understanding of underlying issues in CSP, and to explore ways to mainstream it within the overall agricultural development strategies.

Cognizant of this fact, FAO, in collaboration with ICRISAT, ICARDA, and CIAT, organized an expert consultation workshop on CSP in December 2013 in Addis Abeba, Ethiopia. The workshop's objective was to create a roadmap and develop strategies for enhancing effective uptake and implementation of CSP in developing countries to contribute to improved and sustainable crop production, food security, and rural livelihoods. It also explored the scope, opportunities, and challenges in CSP, as well as the critical points necessary for effective implementation.

About 30 international experts with a wide range of knowledge on CSP came from different parts of the world. They attended the workshop and made technical presentations, engaged in small working groups, and deliberated pertinent technical issues. In their presentations, they provided the context, unique features of CSP initiatives, elements of sustainability, lessons learned, and opportunities and strategy for moving forward based on their experiences. The workshop concluded with a discussion on how to strengthen and promote market-oriented CSP schemes that optimize benefits to farmers in each region and the global farming community.

The diversity, wide range of presentations, and discussions at the workshop established a baseline of the status of CSP in different regions and developed the following key discussion points:

- CSP approaches vary and are location-specific. There is no recommended general framework.
- CSP sustainability is not based on commercial considerations only. Governance factors (leadership, business planning, sharing of risk, and linkage with public sector institutions) are particularly important.
- Greater crop diversification, better quality seeds, and the introduction of new varieties increase genetic diversity and contribute to the viability of CSP and reliable seed production. Other value added dimensions should be taken into consideration, such as processing of final products.
- Although usually ignored in CSP programs, quality assurance is crucial at all levels and underscores the linkage with the formal seed sector.
- There is a general lack of published information on the establishment and performance of CSP programs. This has resulted in the use of different approaches with no consistent technical guidance.
- Key challenges in CSP include the shifting from subsistence farming to business-oriented enterprises and the implementing policies that create an enabling environment.

These proceedings provide details of the main issues presented and discussed at the workshop as part of the effort to further the debate surrounding CSP practices. They include an acceptable general definition of CSP and how to enhance the uptake and implementation of CSP, and deliver pertinent messages on issues related to CSP, which could be used for guidance in implementing relevant projects.

Khanal, N.P. and K.L. Maharjan. 2015. Community Seed Production Sustainability in Rice–Wheat Farming

Published by Springer, Tokyo, Japan; ISBN 978-4-431-55474-5; Hard cover; 172 pp; Price: 119.99€; website: *http://www.springer.com/gp/book/9784431554738*

This book analyzes the sustainability of community seed production (CSP) under a rice–wheat farming system from microeconomic perspectives, considering how seed producers benefit from CSP and how those benefits continue into the future. Seed producers' performance in resource management, governance, and marketing strategies indicates current benefits, whereas soil conservation and risk-management practices provide the basis for future benefits. CSP is a local-level seed management system owned by farmers. This system provides the institutional mechanism to supply diversified seed demands of open-pollinated varieties of food crops in a cost-effective way in rural regions. Being able to address the concerns of food insecurity, poverty, climate stress, and biodiversity loss in programs and policies of development agencies, CSP is gaining popularity among farmers and policy makers in developing countries.

This book discusses the issues of organizational governance of the CSP groups and links them with household-level benefits to understand the organizational dynamism and the probable development paths of such organizations in the future. It also highlights the necessity to institutionalize lessons learned in CSP in the stakeholders' programs and policies. These understandings provide a basis for formulating policies for strengthening the system in developing countries. Students, researchers, policy makers, and donor agencies working with CSP in the developing world will find this book useful in broadening their understanding of CSP in general and its sustainability in particular.

Ravinder Reddy, C.H., P. Sujathamma, D. Vishnuvardhan Reddy, G.V. Ranga Rao and A. Srinivas. 2015. Seed Systems for Rainfed Agriculture: Village Based Seed Enterprise for Seed Production and Dissemination of Improved Varieties of Chickpea and Pigeonpea in India; Information Bulletin No. 96. Monograph

Published by ICRISAT, Patancheru, Telangana, India; ISBN: No. 978-92-9066-566-3 (PDF), Order Code: IBE096; 36 pp.; Website: http://oar.icrisat.org/id/eprint/8706

The crops grown under rainfed agriculture are described as farming practices that rely on rainfall for crop production, and their seed systems describe how farmers in these regions are sourcing seeds for cultivating these crops. The objective of this publication is to share information and experiences of some success stories of seed value chain models developed for production and supply of improved varieties of seed of rainfed crops to resource-poor farmers in the semi-arid tropical regions to enhance productivity.

Websites

ISAAA

ISAAA (International Service for the Acquisition of Agri-biotech Applications) is a not-for-profit international organization that shares the benefits of crop biotechnology with various stakeholders, particularly resource-poor farmers in developing countries, through knowledge sharing initiatives and the transfer and delivery of proprietary biotechnology applications. ISAAA's global knowledge sharing network and partnerships in the research and development continuum provide a powerful combination of science-based information and appropriate technology to those who need to make informed decisions about their acceptance and use. In addition, an array of support services completes the holistic approach to agricultural development and ensures effective implementation and timely delivery of crop biotechnologies. These services include capacity building for policy makers and scientists; regulatory oversight on such issues as biosafety

and food safety; impact assessment; and science communication.

FELAS

FELAS (Federação Latino-Americana de Associações de Sementes), founded in 1986, represents its members at the Latin American and global level, promoting the interests of the seed industry and the progress of agriculture on the continent. It is based in Bogotá, Colombia. Every two years, FELAS organizes the Pan American Seed Seminars, meetings that are increasingly important, not only from the technical and business point of view, but also as forums where Latin American countries discuss and analyze policies related to the seed industry. These meetings are no longer regional, since participants come from around the world.

Newsletters

ASARECA Policy Newsletter

ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa) newsletter is an attempt to use e-communications to provide to a broad audience within and outside Eastern and Central Africa with a mechanism for distribution and exchange of information relevant to agricultural policy issues. For more information, visit the website at http://www.asareca.org/~asareca/publication-categories/policy-newsletter-documents

Note to Subscribers

Subscribers are encouraged to play a proactive role in making this newsletter a useful platform for information exchange. Contributions are most welcome on the broad areas of seed system development; meetings, courses, and electronic conferences; books and reviews; websites of special relevance to the seed sector; funding opportunities; requests to other readers for information and collaboration; and feature articles or discussion issues proposed by subscribers. The Editor always welcomes suggestions on format and content. Please send inputs by e-mail to z.bishaw@cgiar.org