January 2018 | Issue No. 54

Seed Info

Official Newsletter of WANA Seed Network

IN THIS ISSUE

ICARDA
Science for Better Livelihoods in Dry Areas

Published by Seed Section, ICARDA, P.O. Box 114/5055, Beirut, Lebanon
E-mail icarda@cgiar.org www.icarda.org

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 News** provides information on activities relating to global and/or regional cooperation and collaboration in order to facilitate the development of a vibrant regional seed industry. In this issue of Seed Info, we report on the regional seed workshops organized by Common Market for Eastern and Southern Africa (COMESA) and Food and Agricultural Organization (FAO) in Africa.

In the **News and Views** section**,** Wynand J. van der Walt from FoodNCropBio, Pretoria, writes about the agricultural sector in South Africa. It gives highlights on the transformation of the agricultural sector from subsistence to a commercialized sector over the years. Government's focus on domestic food production and quality seed provisions was the stimulus for seed industry growth and the beginning of commercial agriculture. Although agriculture is a major contributor to food security, it was taken over by mining and industry to the extent that the country became the most industrialized country in Africa, contributing 35% of Africa's GDP and becoming Africa's second biggest economy. The transformation of South African agriculture is a lesson for many countries, which can be adapted within national context. Other news in this section come from regional and/or international organizations, such as the International Seed Federation (ISF), the International Seed Testing Association (ISTA), and the International Union for the Protection of New Varieties of Plants (UPOV).

The section on **Seed Programs** presents news from Ethiopia and Iran. In *SeedInfo No 53*, we have reported that Ethiopia is embracing the cooperative based seed production (CBSP) as an alternative strategy to fill the seed demand and supply gap in the country. Cognizant of this fact, the CBSP project, initiated by the Ethiopian Agricultural Transformation Agency (ATA) and partner organizations, has been bearing fruits. The initiative is structured within the current framework of the Cooperative Promotion Agency, where farmers become members of primary cooperatives at district level; and the primary cooperatives become members of the farmers' cooperative union at the zonal/regional level. In 2016, the CBSP project worked with 147 primary seed producer cooperatives to establish 11 seed production and marketing unions, an umbrella organization at zonal level. These seed unions are operating in different geographies, commodities, and scales across four major crop-producing regions of the country. The ATA report highlights the on-going activities in strengthening the capacity and infrastructure as well as seed production and marketing experiences of the seed unions and their primary seed producer cooperatives.

ICARDA is implementing a project *Increasing the Productivity of Cereal-based System to Enhance Food Security in Iran*. The project focuses on four provinces of East Azerbaijan, Kermanshah, Kurdistan, and Lorestan, targeting cold, moderate and hot agro-ecologies. Enhancing the availability and access of quality seed of wheat, barley and chickpea to increase productivity and production in rainfed areas is one of the major components of the project. Within this context, a *National Workshop on Public-Private Partnership on Seed Delivery in Iran* was held from 5-6 August 2017 in Tehran, Iran. The report from Iran provides a detailed report of the National Workshop on Public Private Partnership in Seed delivery in Iran.

The **Research** section of *Seed Info* captures information on research activities or issues relevant to the development of seed programs in the CWANA region and beyond. This issue features an article by Aynewa et al. from ICARDA, Ethiopia, titled *Farmers Preference of Food Barley Varieties in Southeastern Ethiopia*. The paper discusses the participatory variety selection carried out at Africa Rising project sites in the Sinana district of Bale Zone in southeastern Ethiopia. Farmers identified high-yielding food barley varieties, which were well adapted, preferred by farmers, and were introduced into the local seed production.

Seed Info encourages the exchange of information between 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. Take time to share and contribute to your newsletter.

Happy New Year

Zewdie Bishaw, Editor

WANA Seed Network News

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

COMESA Held National Workshop on Domestication and Implementation of COMSHIP in Ethiopia

For many years, the African regional economic communities have been trying to harmonize regulatory frameworks and technical procedures to improve the seed trade on the continent. Among these efforts are the harmonization of regulatory frameworks on variety release, seed certification and phytosanitary measures by the Common Market for Eastern and Southern Africa (COMESA), a trade block of 17 African countries. In 2014, the COMESA Seed Regulations formally approved (February) the implementation plan developed (May) in Addis Ababa, Ethiopia. COMESA member countries have signed and are aligning the harmonized regulations and allowing cross border seed trade that support the farmers to receive quality seed. Ethiopia is one of the COMESA countries that have agreed to domesticate and implement the regulations in order to facilitate the free movement of seed across the region. The 12 priority crops in COMESA are maize, wheat (bread), rice, sorghum, pearl millet, beans, groundnut, soybean, sunflower, Irish potato, cassava, and cotton.

From 18-20 September 2017, the Ministry of Agriculture and Natural Resources (MoANR) organized a workshop on *National Seed Regulations and Implementation of the COMESA Seed Harmonization Implementation Plan (COMSHIP)* to sensitize the stakeholders in the country. This meeting provided a platform for dialogue and to develop actions for the short to medium term to domesticate the COMESA regulations in Ethiopia, while enhancing private sector participation in the industry and increasing trade in seed across the region. The overall goal of the stakeholder workshop was to officially launch and sensitize the national aligned seed regulations/laws and to assist Ethiopia in implementing the COMESA Seed Harmonization Implementation Plan (COMSHIP).

The meeting had the following specific objectives:

- provide participants with an overview of the progress made in implementing the COMESA Seed Harmonization Implementation Plan (COMSHIP) in the COMESA member states;
- conduct an assessment of the institutional, human resource and seed infrastructure required to implement the COMESA Seed System;
- present to stakeholders, the processes, alignment and gazette of the National Seed Regulations in line with COMSHIP;
- develop the road map for implementing COMSHIP in Ethiopia;
- highlight the challenges and opportunities facing seed companies in Ethiopia.

The meeting started with an overview of the progress made in implementing the COMSHIP in member countries, where significant progress has been made, although major challenges remain. So far, five member states, including Burundi, Kenya, Rwanda, Uganda, and Zimbabwe, have fully aligned their seed policy frameworks, whereas five countries, including Comoros, Egypt, Eritrea, Seychelles, and the Sudan, have not yet started. The remaining seven countries (Democratic Republic of Congo, Djibouti, Ethiopia. Malawi, South Sudan, Swaziland and Zambia) are at different stages of preparation in aligning their regulatory frameworks with COMESA. The most outstanding achievement is the COMESA variety catalogue, operational since 2016, where over 40 varieties, of mostly maize and Irish potato, are listed for commercial release across the region. Prior to being listed in the catalogue, the varieties have been tested in Kenya, Malawi, Swaziland, Zambia and Zimbabwe and the private firms that have listed their varieties are Monsanto, Pioneer, HZPC, Holland BV, and MRI-Syngenta.

In Ethiopia, the team leaders and national task forces completed the review of alignment of variety release system, seed certification and quality assurance, and quarantine and phytosanitary measures for seed import and export. Gaps were identified and drafts for alignment were prepared and are pending approval by the MoANR. Three thematic working groups were formed and discussed these findings. Each working group gave an overview of the challenges and opportunities related to thematic areas and presented the road map for the sub-sector, highlighting the steps to finalize the alignment.

The meeting also discussed the status, challenges and opportunities of the seed sector in general and the private sector based on the presentation from the Ethiopian Seed Association (ESA) in particular. The Ethiopian seed sector reached a significant milestone, where the private sector expected to take

the leadership and play a key role in both domestic and regional seed trade. The ESA should play a key role in developing a new business plan and a road map for the growth of the private sector within the enabling national policy and regulatory frameworks in Ethiopia.

Daniel Mekonnen and Medemdemmiyaw Nekenike, PVRPSQC, MoANR, Addis Abeba, Ethiopia; e-mail: danielmk64@gmail.com

FAO and AATF Organizes Regional Seed Workshop for Selected African Countries

An FAO Regional Initiative in sub-Saharan Africa, *Sustainable Production Intensification and Value Chain Development in Africa*, seeks to improve the productivities of the cassava, maize and rice production systems. The initiative focuses on nine countries: Cameroon, Chad, Cote d'Ivoire, Democratic Republic of Congo, Kenya, Mali, Mozambique, Rwanda, and Zambia. However, a CGIAR study published in 2015 has estimated the average adoption rates of improved crop varieties and the use of their quality seeds and planting materials in the region to be 30% and 80%, respectively. In order to identify and characterize the causes of these sub-optimal situations, the FAO commissioned desk studies on the status of the development and adoption of improved crop varieties and seed delivery systems in Western and Central Africa and in Eastern and Southern Africa. The FAO in collaboration with the African Agricultural Technology Foundation and the Africa Union Commission organized a multi-stakeholders workshop on *Enhanced Adoption of Well-Adapted Crop Varieties and Use of Quality Seeds and Planting Materials in Africa* from 14-15 September 2017 in Addis Ababa, Ethiopia. The main objective was to review the findings of these studies and to articulate solutions that may be addressed by the FAO and other partners.

Participants of the regional workshop in Addis Ababa, Ethiopia

Workshop participants included: (i) delegates from Ethiopia, Cameroon, Chad, Côte d'Ivoire, Democratic Republic of Congo, Kenya, Mali, Mozambique, Rwanda and Zambia; (ii) representatives of donor and development agencies; (iii) representatives of CGIAR centres, sub-regional organizations, regional seed association, and NGOs; and (iv) representatives from FAO headquarters and sub-regional offices for Central, Eastern and Southern Africa and FAO consultants.

In order to maximize the impact of the workshop, the participants were asked to: (i) suggest specific actions with high feasibility and high impact potential that the stakeholders need to take in the next 3–5 years to address the challenges; (ii) think about bottlenecks that might hinder success; and (iii) propose solutions that would mitigate these. The main action areas agreed on in the workshop were:

- facilitate and operationalize regional crop improvement networks that allow cross-learning and capacity sharing among countries;
- train current and future breeders on demand-led breeding;
- use all available opportunities and avenues to share information on varieties and seeds;
- establish and build capacity for the use of product profile-guided breeding;
- formalize and scale up the use of demonstration plots as critical means for enabling farmers and other stakeholders to access varieties and seeds;
- build private sector networks to improve seed delivery in remote rural areas – incentivize agro-dealers to operate in such areas;
- formalize the participation of farmer associations in determining breeding priorities;
- establish enabling policy and infrastructure support to develop seed value chains, monitor quality, and facilitate cross-border trade and the sharing of varieties;
- build capacity for production of early generation seed;
- adopt pragmatic seed quality assurance/seed certification to suit the situations of seed delivery system, including community-based seed production and supplies;
- create a regular effective seed demand pull through horizontal integration of the seed supply chain with the crop transformation chain;
- create effective cross linkages amongst various stakeholders in the crop improvement and seed delivery systems;
- demonstrate economic returns to quality seeds;
- transform farmer field schools to farmer business schools in order to promote commercial production and to increase the uptake of improved varieties and quality seeds.

In addition to the main event, a satellite event *Enrichment Expert Visit for Enhanced Adoption of Well-Adapted Crop Varieties and Use of Quality Seeds and Planting Materials in Africa* was organised on 12, 13 and 16 September 2017 for the focus countries. The main objective of this visit was to facilitate the observation of good practices in crop breeding and seed delivery, learning from the CGIAR centers (CIMMYT, ICARDA and ICRISAT) and the Ethiopian national organizations (EIAR, ATA and EABC). The participants took part in day visits to various community-based seed production of chickpea through the collaboration of EIAR, ICARDA and ICRISAT; and of maize and wheat of EIAR and CIMMYT. Interactive sessions were organized on the second day at the premises of ILRI. The participants and the experts from the visited CG centers engaged in structured discussions of the best practices that had been observed the previous day. Finally, the third day was dedicated to visits to two Ethiopian governmental organizations: ATA and EABC.

Participants visting community seed production of chcikpea around Debre Zeit

Ndeye Ndack Diop, AGPM, FAO, Rome, Italy, e-mail: ndeyendack.diop@fao.org

News and Views

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

South African Agriculture: Droughts, Resilience and Innovations

In South Africa, subsistence farming has endured for hundreds of years but has changed after arrival of the first Dutch merchant ships in 1652. Initially, the ships brought new seeds but only for food production for their ships en route to traders in Asia. Later, plant propagating material became distributed over Southern Africa. Farming was always challenging and, even today, only 13% of the land is arable. There are no navigable rivers and some 70% of the country is classified as very dry to semi-desert. Periodic droughts are not unique. The development of the dynamic agriculture and seed industry has however changed the face of agricultural landscape in the country.

Stimulating the agricultural sector

Agriculture served as a major source of food security but was taken over by mining and industry to the extent that the country became the most industrialized country in Africa, contributing 35% of Africa's GDP and becoming Africa's second biggest economy. The government's focus on domestic food production and quality seed provisions in the 1940s was the stimulus for the growth of the seed industry. Commercial agriculture took off in the 1930s with the establishment of some 22 Marketing Boards. When these Boards were phased out by the new government, existing agri-cooperatives soon changed into registered professional private companies.

New challenges and innovations

In 1986, the Department of Agriculture advised the seed industry to organize and merge their various seed associations into one, as well as taking over official seed certification from Agriculture. Thus, the South African National Seed Organization (SANSOR), as an independent agency, was born in 1989 with the same seed inspection authority as Agriculture. In 2016, SANSOR had 123 members comprising of 74 seed companies, 25 associate, 7 affiliate, 7 international, 2 third party and 8 honorary members. It also had 180 trained inspectors and samplers with inspectors allocated to specific species related to their expertise.

Leading vegetable producing farmers complained that new vegetable varieties bred by the Agricultural Research Council, a new public institution, took too long to reach farmers and requested that SANSOR must draft an agreement with the ARC. SANSOR soon negotiated a contract with the ARC to license their new seed varieties to appropriate seed companies and to collect royalties from licensees, who marketed certified seed. In this way, the ARC has benefited from millions of Rand and farmers got quicker access to new public varieties. In 2016, SANSOR reviewed 1.787 units of 31 species registered for certification and in total

31,893 ha and 50,000 tons of certified seed were approved.

(a) Hybrid maize seed production under irrigation (top: left), natural drying of maize crop (top: middle), maize cob (top: right); and (b) production fields of wheat (bottom: left), sunflower (bottom: middle), and canola (bottom: right)

Biotech crops and adoption

Many years ago, geneticists started studying microbes, such as the *E. coli* bacterium to be able to understand how its genetic system works, whilst others studied pigment patterns on colored maize and discovered 'jumping genes'. In South Africa, a small group of geneticists at the University of Cape Town and Rhodes University established a Committee on Genetic Experimentation (SAgene) in 1973 in order to advise the government and the scientific industry of appropriate frameworks. The first GM plants field-tested in 1990 were cotton, carrying a Bt gene for resistance to bollworms. Bt cotton was approved for commercial release in 1997 with seed sales in 1999 and was followed by the approval of Bt maize resistant to stalk borer also in 1997, but commercial seed sales only commenced in 2000 as the transgene had to be inserted into local varieties. The approval of herbicide tolerant soya bean followed in 2000 and the seed became available later.

The GMO Act covers all defined ways of genetic modification in all living organisms. The enforcement of biosafety involves scientific assessment of applications and approval of any research, testing and modification of living organisms. The biosafety framework works on a permit approval system (12 types) including research and development, import, export, field testing, contained use in laboratories and greenhouses, milling and processing of grain commodities, etc. Any activity with GM and GMOs require a valid permit. A scientific Advisory Committee for safety first assesses applications before their recommendations are considered by the government's Executive Council, the final decision-making authority, representing six departments, Agriculture, Health, Trade and Industry, Environment, Science and Technology.

Adoption of biotech varieties by farmers for commercial planting has increased the area coverage of maize to 85-90%, soya beans to 95% and cotton to 100%. There has been no substantiated negative impact on humans, animals, or the environment for over 16 years. In 2016, more than 700 permits had been approved, including GM vaccines.

Farm-saved seed agreement

After many years of interaction and meetings, a breakthrough between farmers, breeders and variety owners was achieved in 2017. An independent non-profit company was established, the South African Cultivar and Technology Agency. This agency is charged with monitoring declared farm-saved seed practices and with collecting levies at first point of sale, i.e. End-Point-Royalties, which will then be transferred *pro rata* to variety owners with their respective market shares. Implementation started in 2017 with wheat, where 70% of the area was planted to farm-saved grain used as seed, followed by soya bean. Other self- and open-pollinated crops may follow.

Grain price, stock exchange and crop estimates

It is in the interest of farmers, traders, consumers, and all other actors in the food chain to be aware of fluctuating commodity prices and the causes of

these fluctuations. Information on available and projected grain quantities can help in stabilizing prices. In order to achieve this, an independent South African Futures Exchange (SAFEX) had been established in 1990 and, recently, it became a subsidiary of the Johannesburg Stock Exchange Securities. SAFEX does not determine grain prices but it monitors what is happening on the trade floor. Globally, grain traders also follow prices at the Chicago Board of Trade.

Estimates on areas planted to major grain crops and estimates on crop size are managed by the Crop Estimates Committee, a team in the Department of Agriculture, Forestry and Fisheries. These estimates follow specific steps:

- national surveys in October on the farmers' intention to plant specific grain crops in specific regions;
- draft estimates in early January;
- first official estimates released in the third week of January, and then continuing monthly and into the next marketing year.

Who provides the data?

- national data collected from low-flying small helicopters and fixed wing airplanes, transmitted directly onto on-board laptop computers using locally developed software, with sensors that measure a defined range of crop status of coded farms.;
- a wide array of appointed collaborators in the field;
- some data served from USA satellites.

The CEC analyses incoming data and compiles public releases on a monthly basis.

Key drivers of agricultural successes

A small 'seed' was planted in 1652 when a Dutch trading company initiated commercial food production in the Southern Cape area to provide sustenance to passing merchant ships. Collaborations among key stakeholders later followed.

First, initiatives from the then government supported food production using quality certified seed for food security. In more recent times, collaborations between the Department of Agriculture and the seed industry grew with the first formal seed association – the Seedsman's Association— founded in 1944. In 1989, at the request of the Department of Agriculture, seed associations were merged into a national secretariat, as a non-profit company, SANSOR, and the Department of Agriculture appointing SANSOR as the seed certifying authority. Support for and interaction between seed companies strengthened the bond between agriculture, seed industry, and resulted in the foundation of SANSOR.

The advent of modern genetics and biotechnology further strengthened the links between industry, agriculture, food chain links, and scientific bodies, resulting in increased international visibility. Crop performance was boosted by higher yields from improved genetics, reduced dependence on pesticides and herbicides, and reduced adverse biotic and abiotic impacts. The seed industry also conducted more outreach into Africa. The transformation of South African agriculture is a lesson for many countries which can be adapted to the national context of other countries.

Dr Wynand J. van der Walt, MBL, FoodNCropBio, Pretoria, South Africa; tel: +27-83-468-3471; e-mail: wynandjvdw@telkomsa.net

Hybrid seeds Worth USD 57.19 Billion by 2022

The global hybrid seed market is estimated to be valued at USD 33.91 billion in 2016 and is projected to reach USD 57.19 billion by 2022, at a CAGR of 9.10% from 2016. The growth of the market is attributed to factors, such as high quality and high yielding varieties used with innovative technology, new product offerings, and the modernization of agriculture.

The global market has been segmented based upon crop type, seed treatment, duration and farm type. It has been further segmented into regions: North America, Europe, Asia-Pacific, Latin America, and the rest of the world. The main objectives of the report are to define, segment, and project the market size of the global hybrid seed market with respect to the above-mentioned segmentations. It also provide a detailed study of the key factors influencing the growth of the market, along with profiling the key players in the market and their core competencies.

This report includes estimations of market sizes for value (USD million) with 2015 being the base year and a forecast period from 2016 to 2022. Top-down and bottom-up approaches have been used to estimate and validate the size of the hybrid seed market and to estimate the size of various other dependent submarkets. The key players in the market have been identified through secondary sources, such as the U.S. Environmental Protection Agency and the Food and Agriculture Organization, and their market share in respective regions has been determined through primary and

secondary research. All percentage shares, splits, and breakdowns have been determined using secondary sources and were verified through primary sources.

Some of the major key players in the market are E. I. du Pont de Nemours and Company, Syngenta AG, Monsanto, Dow AgroSciences LLC and KWS. Research and development activities from seed companies have provided new pollination techniques in order to increase the efficiency of crop production through improved seeds or planting methods in order to meet the fast-growing demand for food and feed. Increasing investments in R&D capabilities of the key players for innovating new hybrid seed products, along with the increased expenditure on innovating new and cost-effective production processes of hybrid seed are expected to change the business landscape in the next six years.

With regard to crop type, the fruits and vegetables segment is projected to have the highest growth rate from 2016 to 2022. The demand for various types of fruit and vegetable seeds is driven by favorable climatic conditions, technology, and storage methods. In order to meet the increasing demand for fruits and vegetables, the commercial seed companies are constantly investing in production facilities that focus on hybrid seed quality and sustainability.

Based on duration, short-term hybrid seeds are the most widely used. Short-duration hybrids require less input and can thrive under limited water availability. Crops, such as wheat, chickpea, rice, and mustard, can be grown in a relatively short period of time.

Based on seed treatment, the untreated segment is projected to grow at a higher growth rate in the global hybrid seed market from 2016 to 2022. Untreated hybrid seeds are not treated with any chemical, biological, or physical method of seed treatment. For this reason, the untreated hybrid seeds can be used in organic farming, provided that a comparable seed variety is not available in certified organic seed.

Outdoor farming is a widely accepted type of farming that eases the application of pesticides and fertilizers, resulting in increased crop yields. Outdoor farming comprises fields, gardens, and nurseries, generally preferred for seasonal crops.

The fastest-growing market for hybrid seeds between 2016 and 2022 is projected to be Asia-Pacific. The North American market experiences the highest consumption of hybrid seeds due to an increasing population and a demand for new and enhanced agricultural products. Key players have concentrated their major research & development efforts to develop products conforming to European regulations for hybrid seeds, since these regulations are considered to be the benchmarks for certain seeds.

The report brochure and an enquiry can be accessed in the respective links.

Insecticide Seed Treatment Market Worth USD 5.7 Billion by 2022

According to the 'Insecticide Seed Treatment' report, the insecticide seed treatment market was valued at USD 2.73 billion in 2016 and is projected to grow at a compound annual growth rate (CAGR) of 11.3% from 2017, reaching a projected value of USD 5.04 billion by 2022.

The market is driven by factors, such as easy application of seed treatment and advanced farming technologies, which ensure the safe and reliable application of seed treatment formulas. Additionally, seed treatment reduces costs and any potential environmental impacts. Continuous innovations in the field of insecticides for seed treatment have resulted in enhanced seed performance and germination. Thus, for farmers, insecticide seed treatment is both a safe investment as well as insurance against crop loss due to pests. Biological seed treatment is a small, but this emerging segment is expected to grow tremendously due to government's endorsement for reducing the use of agrochemicals. The increased demand for biological pest control and the consequent increase in research and development activities directed toward multifunctional and environment-friendly products present seed treatment providers with lucrative opportunities.

Some of the major key players in the market are BASF SE, Monsanto Company, Sumitomo Chemical Co., Ltd Bayer CropScience AG, Syngenta AG and Nufarm Ltd.

Increasing investments in R&D capabilities by the key players for innovating new products of insecticide seed treatment, along with the increased expenditure on innovating new and cost-effective production processes of insecticide seed treatment are expected to change the business landscape in the next five years.

Based on type, chemical insecticide seed treatment accounted for a larger market in the year 2016, compared with biological insecticide seed treatment.

Chemical insecticide seed treatment plays an increasingly important role in the pest control of various crops and are easier to handle compared with biological insecticide seed treatment.

Based on crop type, the cereals and oilseeds segment is projected to have the highest growth rate in the global insecticide seed treatment market from 2017 to 2022. The demand for seed treatment in crops, such as corn, soybean, wheat, and rice, is driving the market of insecticide seed treatment.

The increased usage of specific insecticide seed treatment based on crop type, due to increased awareness over the past few years, along with growth and development in the crop protection industry, have opened new opportunities for the insecticide seed treatment industry. The market of insecticide seed treatment in 2016 is dominated by cereals and oilseeds and is projected to witness the highest growth from 2017 to 2022.

South America is projected to be the fastest-growing market for insecticide seed treatment between 2017 and 2022. The driving factors for the market in this region are the increased usage of all types of insecticide seed treatment, due to high levels of commercialization in the agricultural sector. Moreover, this region is an overall leading exporter of many cereals, grains, oilseeds, and exotic fruit & vegetable crops to western countries of North America and Europe. The U.S. market for insecticide seed treatment accounted for the largest share of the North American market in 2016. The report brochure and an enquiry can be accessed in the respective links.

Momentum for Seed Assessments Grows as Experts Emerge from Leadership Course in Zimbabwe

For the first time in the seed security field, 16 experts engaged in an intensive Leadership Course designed to build a foundation in Seed System Security Assessment (SSSA) methods. For two weeks in September 2017, experts representing 11 African countries and eight organizations (NGOs, UN agencies, research partnerships, and others) gathered in Zimbabwe to gain field experience using refined assessment tools and to develop evidence-based action plans. The course was funded by the USAID/Office of U.S. Foreign Disaster Assistance, which has supported similar work for over a decade.

With increasing scrutiny focused on ill-tailored or dependency-generating seed responses, SSSAs are rapidly becoming the tool of choice to prevent misdiagnosis of seed insecurity. Seed security is now widely seen as distinct from food security and there is growing worldwide interest in the nascent field of SSSAs. The Zimbabwe course comes as assessments have recently been integrated into USAID guidelines and standards for best practice. Indeed, organizations, such as the Catholic Relief Services and the UN-Food and Agriculture Organization are routinely commissioning such field assessments.

Led by Dr. Louise Sperling of CRS and the CRS-Zimbabwe country office, the Leadership Course is viewed as a first step towards building sustainable field-level capacity in seed security concepts and methods. Trainees engage in classroom sessions in Harare, which are complemented by field visits to the Murehwa and Mudzi districts. Using quantitative and qualitative tools, the team surveyed individual farmers, agro-dealers, bulk seed/grain traders, small market traders, experts from government and research institutions, value chain players, and other stakeholders. Rapid mock action plans were developed after the assessment was completed.

As many trainees arrived from nations that have promoted annual seed distributions for 20-40 consecutive seasons, they are expected to serve as fresh voices in the debate on evidence-based seed responses. An assessment in Burkina Faso was carried out in October 2017 (just after the training) and others will follow. A second Leadership Course is planned for mid-2018 (with applications

being currently screened).
The tools and templates used in SSSAs are hosted at 'SeedSystem.org'. SeedSystem is a collaboration among diverse national and international organizations aiming to improve seed security in high stress and vulnerable areas across the world. It exists for practitioners, researchers, managers, policy-makers and donors working in humanitarian relief and agricultural development. As a Community of Practice, SeedSystem promotes seed

system security and puts the needs of farmers' front and center. To learn more, visit the *link.*

SeedInfo community: what other methods and channels could be used to build field capacity in seed assessments? Please contact Louise Sperling to share ideas at louise.sperling@crs.org**.**

Louise Sperling, Catholic Relief Services, 228 West Lexington Street, Baltimore, MD, 21201, USA: e-mail: louise.sperling@crs.org

Seed Sector Renews Commitment to Genetic Resources

Representatives of the International Seed Federation (ISF) joined a global forum to present the views of its members on the future direction of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

Hosted by the Republic of Rwanda in Kigali, from 30 October - 3 November 2017, the Seventh Session of the Governing Body of the ITPGRFA brought together 144 member countries, observer nations, farmers' groups, NGOs, experts, and other international organizations.

In his opening ceremony speech, the President of the ISF expressed the seed sector's wholehearted support for the Treaty and its multilateral system as the preferred tool to access and share the benefits of genetic resources and called for 'a system that serves the many, and not the few.'

'A declaration signed by 41 companies and a voluntary contribution to the benefit sharing fund provide further substantial evidence of the seed sector's continued commitment to the Treaty' he said. 'What we need now is to move towards a multi-access benefit-sharing system that makes sound business sense, and meets some critical legal and economic conditions.'

At a satellite event 'Putting farmers at the heart of seed policies' the International Agriculture Manager of the ISF facilitated an open discussion between a Rwandan farmer and a breeder representative, which highlighted the need for farmers to access quality seed to enhance their livelihood and prosperity. 'ISF would like to see more freedom of choice for all farmers regarding the main agricultural inputs – namely seed,' said Ms Guillot. 'In developing countries, this will only be achieved by putting in place the right regulations so that quality seed reaches farmers.'

In a closing statement, the ISF reiterated its commitment to playing an active role in the ITPGRFA-related topics in line with the Federation's vision for a world, where the best quality seed is accessible to all, supporting sustainable agriculture and food security.

Looking ahead to the next meeting of the Governing Body in 2019, the ISF is preparing to build on the outcomes from the Kigali negotiations on the funding strategy, the global information system, farmers' rights, sustainable use of germplasm, and especially the enhancement of the multilateral system.

ISF's key future actions include supporting the work of the ad hoc Committee on the Funding Strategy and Resource Mobilization; joining the proposed ad hoc Expert Group on Farmers' Rights to promote greater awareness of how ISF breeders contribute to sustainable use of PGRFA; and contributing to the enhancement of the multilateral system via the dedicated working group. For the full press release, visit the website.

ISTA Documents

ISTA is pleased to announce that the 2018 ISTA Rules are now available on our website. The free Rules chapters that can be downloaded as PDF files are:

- ISTA Rules 2018: Introduction
- ISTA Rules 2018 Chapter 1: Certificates
- ISTA Rules 2018 Chapter 2: Sampling
- ISTA Rules 2018 Chapter 7: Seed Health Testing and Seed Health Methods 2018. The Validated Seed Health Methods includes two new chapters:
  - 7-031: Filtration method for detection of *Ditylenchus dipsaci* on *Medicago sativa* (alfalfa); *D. dipsaci* and *D. gigas* on *Vicia faba* (faba bean) seed
  - 7-032: Detection of *Verticillium dahliae* on *Spinacia oleracea* (spinach) seed

Please check the new ISTA Rules *here:*

All the information to access the online 2018 ISTA Rules are available at this *link.*

Other guidelines on *How to use the ISTA 2018 Rules* are available, please check them out in any of the previous links.

The following documents have been published on the ISTA Website:

- How to complete ISTA Certificates: The new document provides the following information:
  - How to deal with lost ISTA certificates;

- Where 'Additional information' from the applicant can be reported;
- Clarifies that verification of the species under test is an ISTA test method
- Introduces the category of Sampling Entity

- Responsibilities of ISTA Technical Committees: The new document provides additional information on the TCOM Budget framework.
- Seed Health Committee: The committee added information on the terminology related to seed-associated microorganisms on their webpage.

For more information, please contact: ISTA, Zurichstrasse 50, 8303 Bassersdorf, Switzerland; tel: +41 44 838 6000, fax: +41 44 838 6001; e-mail: ista.office@ista.ch,

News from UPOV

Bosnia and Herzegovina became the 75th UPOV member

Bosnia and Herzegovina deposited its instrument of accession to the 1991 Act of the UPOV Convention on 10 October 2017. It became bound by the 1991 Act on 10 November 2017 as the 75th member of UPOV. The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organization based in Geneva, consisting of 75 members and covering 94 States from Americas, Africa, Asia and Australasia (see *link)* as of November 2017.

Examination of national PVP Laws for conformity to UPOV Convention

Decision on Law of Brunei Darussalam

The UPOV Council at its 51st ordinary session on 26 October 2017 took a positive decision on the conformity of the 'Plant Varieties Protection Order' (Law) of Brunei Darussalam with the provisions of the 1991 Act of the UPOV Convention, which allows Brunei Darussalam to deposit its instrument of accession to the 1991 Act.

Decision on Draft Law of Guatemala

The UPOV Council took a positive decision on the conformity of the 'Draft Law for the Protection of New Varieties of Plants' ('Draft Law') of Guatemala with the provisions of the 1991 Act of the UPOV Convention. This allows Guatemala, 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.

Decision on Draft Law of Myanmar

The UPOV Council took a positive decision on the conformity of the 'Draft Law on New Plant Variety Protection' ('Draft Law') of Myanmar with the provisions of the 1991 Act of the UPOV Convention. This allows Myanmar 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.

FAQ on the UN-SDGs

The UPOV Council adopted an FAQ on how the UPOV system of plant variety protection contributes to the UN Sustainable Development Goals (SDGs) which is available at the link.

Interrelations with the ITPGRFA

The UPOV Council agreed the following actions concerning interrelations with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) to:

(i) review the FAQ on the interrelations between the UPOV Convention and the ITPGRFA (see http://www.upov.int/about/en/faq.html#QR10);

(ii) exchange of experience and information on the implementation of the UPOV Convention and the ITPGRFA, with the involvement of stakeholders.

Adoption of documents

The UPOV Council adopted revised versions of the following documents:

- UPOV/INF/16 Exchangeable software
- UPOV/INF/22 Software and equipment used by members of the Union
- UPOV/INF-EXN/11 List of UPOV/INF-EXN Documents and latest issue dates

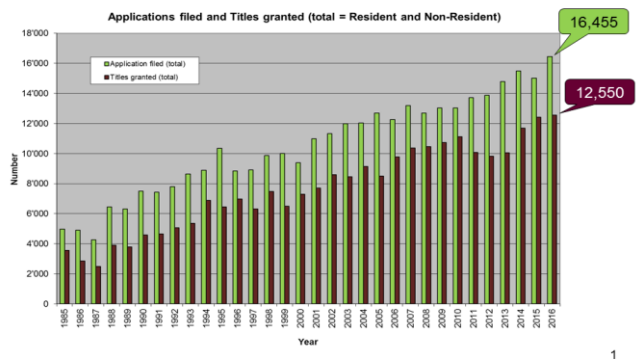
All adopted documents will be published in the UPOV Collection (see *link)*.

Plant Variety Protection Statistics

The number of applications for plant variety protection increased from 15,017 in 2015 to 16,455 in 2016 (an increase of 9.6%). The number of titles granted increased from 12,409 in 2015 to 12,550 in 2016 (an increase of 1.1%). About 117,427 titles are in force in 2016, representing a 4.6% increase on figures for 2015 (112,215).

The following graph presents the trends in applications filed and titles granted since 1985. Information on the 10 members of the Union receiving the largest number of applications in 2007, 2015 and 2016 is also provided, together with an analysis of applications by country of residence of breeders for the same years.

Plant variety protection statistics (C/51/7)



1

Top 10: UPOV members by number of applications

Rank	2007 Member	2007 Number of applications	2015 Member	2015 Number of applications	2016 Member	2016 Number of applications
1	European Union	2'968	European Union	3'111	European Union	3'299
2	United States of America	1'485	China ↑3	2'342	China	2'923
3	Japan	1'406	United States of America ↓1	1'634	United States of America	1'604
4	Russian Federation	885	Ukraine ↑3	1'075	Ukraine	1'274
5	China	877	Japan ↓2	914	Japan	977
6	Netherlands	846	Netherlands	799	Republic of Korea ↑1	966
7	Ukraine	560	Republic of Korea ↑1	757	Netherlands ↓1	804
8	Republic of Korea	527	Russian Federation ↓4	743	Russian Federation	772
9	Canada	430	Australia ↑1	359	Australia	387
10	Australia	336	Brazil ↑3	355	Brazil	326

2

For more information, please contact the UPOV Secretariat: tel: +41-22-3389155; fax: +41-22-7330336; e-mail: upov.mail@upov.int; website: www.upov.int

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's Cooperative Based Seed Production Initiative is Getting Momentum

Background

In *SeedInfo No 53*, we have reported that Ethiopia is embracing the cooperative-based seed production (CBSP) as an alternative strategy to fill the seed demand and supply gap in the country. Cognizant of this fact, the CBSP project, initiated by the Ethiopian Agricultural Transformation Agency (ATA) and partner organizations, has been bearing fruits. The initiative is structured on the current cooperative promotion framework of the national Cooperative Promotion Agency, where farmers become members of primary cooperatives at district or *kebele* (lowest administrative unit) level and the primary cooperatives become members of the farmers' cooperative union at the zonal/regional level. In 2016, the CBSP project worked with 147 primary seed producer cooperatives to establish 11 seed production and marketing unions, an umbrella organization at zonal level. These seed unions are operating in different geographies, commodities and scales across four major crop production regions of Ethiopia.

The objective of this initiative is to build institutionally and financially sustainable seed unions that can play a significant role in the national seed sector. The project aims to address the weak institutional capacity of cooperatives, poor governance and leadership, knowledge and skills, physical capacities, access to early generation seed (EGS) and output financing.

Strengthening human capacity and facilities

The first step in this initiative is to build the human resources capacity and infrastructure of the seed unions as a hub for CBSP. More than 13,000 farmers are trained in technical aspects of seed production and management. Moreover, 21 staff were hired and trained to provide the leadership in managing the seed business of the unions.

For aggregating production, processing and marketing of seed, each union was assisted in constructing offices and storage facilities and in procuring cleaning machines, where ATA provided the funds and the unions covered 30% as matching funds. A significant milestone is the construction and completion of 7 office buildings, 12 seed storage facilities, and 5 seed laboratories as well as the procurement and installation of six seed cleaning machines under a cost sharing arrangement with the unions.

As part of this initiative, the CBSP project inaugurated offices and seed facilities of Tegulet Seed Union in Debre-Birhan, Amhrara region on 3 November 2017 and Handnet Raya Seed Union, in Maychew, Tigray region on 11 November 2017. The remaining nine unions are on schedule to inaugurate their facilities.

ATA provided the Tegulet Seed Union with ETB 10 millions to build a seed storage facility with a capacity of 2,500 tons and an office building and to purchase seed cleaning machine, with the union contributing 30% as matching funds. The construction of a seed laboratory, a seed cleaning shade and a tractor is planned for 2018 with a similar cost sharing arrangement. Similarly, ATA provided ETB six millions to Handnet Raya Seed

Union to build a seed storage facility with a capacity of 1000 tons, an office building, and a seed laboratory. The union contributed 30% as matching funds.

MoANR representatives, Deputy Heads of Regional BoANRs, Deputy Heads of Zonal Administrations, Regional Directors of Cooperative Promotion Agencies and other key federal and regional stakeholders attended both inaugural events.

Access to credit facilities

Seven unions in Amhara, SNNP and Tigray regions received ETB 60 million seed loan through a credit guarantee arrangement in 2017. Seed unions in Amhara and Tigray regions have repaid 100% of the loan, while in the SNNP region the loan repayment is about 55%. Moreover, the seed union's loan demand for aggregation is submitted to the regional states and it is highly likely that all the unions will secure a loan for the 2017/18 crop season.

During the inaugural sessions, the Amhara regional government announced that it has already approved ETB 8 millions for output financing and ETB 2 millions for procurement of a tractor for the Tegulet Seed Union. Tigray regional offices also promised to support output financing and seed marketing of the Handinet Raya Seed Union.

(a) Office facilities (Raya Union: top left and Tegulet Union: top right); (b)seed storage (Raya Union: middle left and Tegulet Union: (middle right); and (c) inauguration of facilities (Raya Union: bottom left and Tegulaet: bottom right)

Following the inauguration of the facilities, Tegulet Union hosted a successful field day, where the invited guests from federal, regional, zonal, and district offices and farmers visited seed production fields of wheat and faba bean. Similarly, Handinet Raya also organized a field day, where seed

production fields of wheat and malt barley were visited.

Field day organized by Tegulet Union, Siya Debir district, North Shewa Zone

Field day organized by Handinet Raya Union, Ambalaje district, Southern Tigray Zone

Seed production and marketing

From 2016/17, the seed unions have joined the Ethiopian seed sector in full force. In 2016/17, all unions have been engaged in basic seed production, which will enable them to cover a significant proportion of their basic seed need for the next planting season. Furthermore, nine unions have entered contractual EGS production with NARS for the first time in order to secure part of their EGS need for planting in 2018. However, enforcing the contracts remains a challenge.

The Tegulet Seed Union has produced and marketed more than 400 tons of certified seed of different crops in 2016/17. This one-year experience has demonstrated that the union has the potential to become a major player in seed production and marketing in the North Shewa Zone and beyond. The union has also distributed ETB 500,000 from the annual profit to members of primary cooperatives and this is indeed a promising achievement. In 2018, the union is working to aggregate and market over 1,300 tons of certified seed to 6,000 smallholder farmers engaged in wheat, barley, and faba bean production. Handinet Raya Seed Union has also produced and marketed 270 tons of certified seed in 2016/17 and is planning to market 1,500 tons in 2018. Handinet Raya is also planning to expand its marketing from Southern Tigray to two neighboring zones.

The Tegulet and Handinet Raya Seed Unions aim to diversify their business into all crops including forage seed, mechanization service and agricultural input supply to seed producers and other farmers in their operational areas. This applies to all unions supported by this initiative.

In 2017, all 11 unions have produced and marketed over 4,000 tons of certified seed and this figure is expected to reach 12,000 tons in 2018. Adopting decentralized seed production, marketing and distribution enables the unions to cater for a wide range of crops and varieties adapted to specific localities and to reach niche geographies not addressed by other producers. It helped the unions to cut transaction costs and to supply quality seed at reasonable prices, leading to a more competitive seed business and providing options for smallholder farmers.

National worship for experience sharing

The performance and experience over the year demonstrated that the unions are becoming key actors in the Ethiopian seed sector. However, many stakeholders are not yet aware and their roles in seed delivery not yet recognized. They are still experiencing common challenges in accessing EGS, output financing and seed marketing.

The first National Seed Unions' Forum held from 17-18 August 2017 aimed to enhance the visibility of CBSPs at national/regional levels, and thereby improve the intra- and inter-zonal or regional collaboration among seed unions and with other actors. During the forum, stakeholders had the opportunity to appreciate their current roles and potentials of seed unions, to learn about the challenges and to take responsibility for enhancing the role of seed unions in their respective areas. Representatives from 11 seed unions, MoANR, Regional Bureaus of Agriculture and Natural Resources (RBoANR), Regional Agricultural Research Institutes, Regional Cooperative Promotion Agencies (RCPAs), public seed enterprises, ICARDA and ATA attended the forum.

The best practices from six seed unions were presented to the forum. Sustainability of seed unions, improving the governance, leadership in the capacity of seed business management of the seed unions, access to EGS and enforcing EGS contract, access to output financing, tackling challenges of

marketing, emergency seed distribution, diversification of the seed business, and income generation schemes were the pressing issues thoroughly discussed at the forum.

Representatives from different institutions appreciated the progress of the seed unions thus far and agreed to address the key issues listed below:

- compile and submit seed loan demand of seed unions (ATA);
- identify possible entrepreneurship areas and diversify the seed business (unions and ATA);
- complete a plan for soft and physical capacity building activities (ATA and unions);
- support seed unions in planned seed collection, processing and marketing (ATA and BoANR);
- submit formal loan requests to regional BoANR and RCPAs (seed unions);
- facilitate loan releases to the seed unions (RCPAs and RBoANR);
- allocate adequate EGS to seed unions (RBoANR);
- support seed unions in enforcing EGS contract agreements (ATA and RBoANR).

Finally, the participants agreed to organize a similar forum once every year in different regions of the country.

Mersha Tesfa, ATA, Addis Abeba, Ethiopia; e-mail: mersha.tesfa@ata.gov.et

Iran Organizes National Workshop on Public-Private Partnership in Seed Delivery

Introduction

ICARDA is implementing a project *Increasing the Productivity of Cereal-based System to Enhance Food Security in Iran*. The project focuses on the four provinces of East Azerbaijan, Kermanshah, Kurdistan and Lorestan, targeting cold, moderate and hot agro-ecologies. Enhancing the availability and access of quality seed of wheat, barley, and chickpea productivity and production in rainfed areas is a major component of the project.

Within this context, a *National Workshop on Public-Private Partnership on Seed Delivery in Iran* was held from 5-6 August 2017 in Tehran, Iran. About 50 staff from the project, its partner organizations, and private seed companies, working in the four target provinces, attended the workshop. On the first day, presentations were made by invited speakers from India, Pakistan, Turkey, and the United Kingdom to provide relevant information and experience from those countries. ICARDA gave a presentation on the *Trends in Seed Sector Development in the CWANA Region*. Two presentations also explained the current situation of the seed sector in Iran. Each presentation was followed by intensive discussions.

On the second day, three working groups discussed key issues relating to the implementation of the project. In order to guide these discussions, the groups were given separate focus areas, as shown below, and a list of suggested topics to consider within each area.

- Working Group 1: Policy and institutions to support public-private partnerships
- Working Group 2: Regulatory framework and technical procedures
- Working Group 3: Support to the business environment and seed trade

In the afternoon of the second day, the groups presented their findings and recommendations, followed by further discussions. In order to avoid overlap , the three group reports were merged into a composite document under a series of headings reflecting the main issues. Despite the rather specific title of the workshop, discussions covered a wide range of issues that will affect the implementation of the project. Some relevant points raised in the earlier presentations and discussions have also been reflected in this synthesis.

Participants of the national workshop on public-private partnership in seed delivery in Tehran, Iran

Summary of issues discussed

1. ***Subsidies:*** There is complete agreement that subsidies are required to support and to promote the production of quality seed in order to achieve the project objectives. The current general subsidy on the seed price is 20% and it was recommended that this is increased by 10–35% on early generation (pre-basic and basic) seed. This is intended to encourage seed companies to undertake this work and to compensate seed growers, who produce seed

of rainfed varieties and obtain lower yields, in the irrigated project target areas.

It was also recommended that the price support policy of the government should be uniform for all the staple grain crops, especially in order to encourage the production of legumes.

Based on experiences in Turkey, it is essential that production subsidies are based on a sound knowledge of the production costs. Furthermore, there must be an efficient mechanism for making the payments.

It was noted that there is often a long delay in making subsidy payments to companies, forcing them to take short-term loans, and threatening their financial viability. This is contrary to the declared intention to increase private sector participation in the seed chain.

2. Seed replacement rate: It was recommended to increase the current replacement rate of 33% for wheat to between 45 and 65%. This is within the range of seed renewal rate targets of the project for wheat and barley, but it is slightly higher for chickpea, which will influence the proposed work plan and needs to be resolved.

3. Promotion of private sector role in seed production: Privatization is part of the government policy and it is recommended to transfer an increasing proportion of the seed production program to private companies. However, this raises a number of issues, for example:

- which generations of seed are given to the private companies;
- whether they have the technical capacity to produce early-generation seeds;
- on what conditions should the seed be supplied by DARI to the companies.

Considering that many companies are small and only have minimal facilities at present, it is recommended that companies are carefully selected according to agreed criteria.

4. Variety maintenance: This is a critical activity in the seed chain and it must be done to the highest standard. It is the breeder's responsibility but it should not occupy too much of their time or resources. It is recommended that a Seed Unit be established in DARI with the necessary trained staff and facilities to carry out this task. Given the distinct climatic zones within the four provinces, it is recommended to locate the unit in the highest yield potential areas, where the widest range of varieties can be grown.

5. Registration and multiplication of imported varieties: This is a 'live issue' because varieties of chickpea imported from Turkey performed well last season and these will be multiplied using seed from the 'IP' demonstration plots. These varieties cannot be registered and certified without DUS test data from the source or from locally-generated data. It is recommended to confirm the status/origin of these varieties as soon as possible and to obtain DUS reports so that they can be formally registered (it is possible that they are ICARDA lines). A source of 'basic seed' should also be investigated so that multiplication and certification of these varieties can be started as soon as they are registered.

6. Accelerated seed production and variety release: If the project objectives are to be achieved, it is recommended that promising varieties are registered and multiplied as quickly as possible. Specifically, it is recommended to reduce the number of seed generations and to increase the multiplication factor by growing early-generation crops under optimal conditions, using irrigation if necessary. Both of these options should be considered in the context of the work plan for the coming season. There should be a mechanism to start certification of seed crops prior to variety release in order to avoid any delays in making new varieties available to farmers. Varieties already released and under production in countries with similar agro-climatic zones should have a fast-track for registration in Iran, but this may require adjustments to the existing regulations. In order to support the project objectives, it is recommended that SPCRI is to be consulted and engaged to facilitate the process of registration of introduced varieties and elite lines tested at IP sites.

7. Crop diversification with the project area: In addition to the main 'ICARDA crops', it is recommended that the project assist AREEO in identifying suitable varieties of new crops and import material for field trials. Several crops were mentioned in this connection, including Lupin, Triticale, and Rye.

8. Uniform inspection costs: At present, there are different inspection costs for the certification of seed crops of irrigated or rainfed varieties. This gave rise to very intense discussions because it discriminates against seed production of the rainfed varieties, which the project is trying to promote. It is recommended that the project resolves this issue in consultation with DARI and SPCRI. Wherever possible, seed crops of rainfed varieties should be grown on irrigated land to maximize the multiplication factor.

At a more general level, there were intense discussions about the costs of certification and to what extent they are covered by the subsidies for seed production. This may need further clarification in order for subsidies to have the intended effect in promoting seed production

9. Preparing the 'Road Map' for seed production: This is regarded as a priority and it was included as a discussion topic for all three groups. However, it did not yield any new recommendations that had not been mentioned before. An indicative production plan has been prepared and should be refined during the upcoming technical meeting.

10. Promoting the private sector. The private sector is at an early stage of development in Iran and companies may need support if they are to take on a greater share of the seed production program. It is recommended that the project considers a range of support options, such as investment incentives, staff training, demonstrating new technologies, and study tours to countries with an active private sector participating in the seed system. Direct financial support to companies is not recommended, because it may attract unsuitable entrants.

Private companies also complain about the difficulty of enforcing seed production contracts with growers when the market price for grain is volatile, especially for legumes. This is a common problem in the seed trade, but it may improve as the community of companies and growers develop a closer relationship and understanding. It is recommended that the project takes steps to promote contract growing, which is the normal procedure for commercial seed production.

11. Credit provision: Due to the seasonal nature of seed production and the uncertain demand, seed companies, especially new ones, have a special requirement for credit. It is recommended to discuss this with the relevant financial institutions as part of the wider seed sector privatization process.

12. Improving coordination within the seed chain: It is recommended that the private companies be represented more strongly in project meetings at the provincial level. This will enable the official production plans to be more closely reflected in the plans of the seed companies. At the national level, there should also be a forum to enable closer coordination between the 'Seed Association' and the Ministry or other official bodies.

13. Plant Variety Protection: This topic was mentioned many times during the workshop and in different contexts. It is absolutely clear that having a PVP law is a stimulus to growing the private sector; this has been shown in many countries. However, this only works if there is an effective system of royalty collection and that requires a good database of information about seed production and sales. It will be difficult to develop such a system in the rainfed areas, where much of the farming is at a semi-subsistence level. It may be more relevant to irrigated crops/areas and should be treated as a national issue.

In a different context, the PVP status of imported varieties should be confirmed and this is reported to be a bilateral agreement with Turkey to mutually respect Plant Breeders Rights.

14. The following general issues were raised in discussion during the workshop and are noted here for reference:

- the project must clearly respect existing regulations and procedures, but it should also be able to test innovations that will help to improve the national seed system;
- the activities carried out by the project should be closely aligned with the existing national seed program and integrated with it where possible; the project should not be regarded, or operate, as a separate entity;
- many of the issues raised in the context of the project (such as pricing and subsidies) are ultimately matters of national policy and should be addressed and clarified at that level. It is recommended that the project promotes a policy dialogue of this kind and/or contributes to ongoing discussions.

Michael Turner, Morningside; Edinburgh, UK; e-mail: seedturner@gmail.com, Zewdie Bishaw, ICARDA, Addis Abeba, Ethiopia; e-mail: z.bishaw@cgiar.org; Abdoul Aziz Niane, ICARDA, Beirut, Lebanon; e-mail: a.niane@cgiar.org; Seyed Yacoub Sadeghian and Seyed Ata Rezaei, ICARDA, Tehran; Iran; e-mail: icarda-iran@cgiar.org

FAO Supports Reform of Seed and Phytosanitary Legislation in Uzbekistan

The Government of Uzbekistan (GoU) recognises the importance of rationalized seed legislation, plant variety protection and phytosanitary legislation in order to enhance seed trade. In January 2017, the FAO and GoU started implementing the project *Support to the improvement of the national seed sector, plant variety protection and phytosanitary legislation in Uzbekistan.* The project outcomes, outputs, and

activities were presented and the detailed work plan was discussed with the national partners and stakeholders at the inception workshop held on 15 February 2017 in Tashkent, Uzbekistan. In total, 25 members of Parliament and participants from the Ministry of Agriculture and Water Resources (MoWAR) and National Agricultural Research System (NARS), including participants from FAO, ICARDA and IPPC, attended the workshop. During the workshop, a general overview was provided regarding the existing national legislations and international frameworks on seed, plant variety protection and phytosanitary measures, including the International Plant Protection Convention and its capacity development tools.

Participants of FAO project launching workshop in Tashkent, Uzbekistan

The project provided technical support to review the status of the seed sector and plant health in the country by conducting a SWOT analysis. Based on a review of the national legislation, new drafts of three laws - on seed, plant variety protection and plant quarantine - were prepared and, after discussion with a broad range of stakeholders, submitted to the Government of Uzbekistan. In parallel, the technical regulations on plant variety testing, registration, and protection and on seed quality control and certification were prepared for alignment with the new laws.

With the objective of developing the international trade and market integration, a group of plant protection experts will travel to Latvia for a study tour in order to learn about plant health and phytosanitary control. The project is also helping the phytosanitary control service in conducting the phytosanitary capacity evaluation and developing a strategic plan in cooperation with the Secretariat of IPPC. Moreover, the project is raising awareness on IPPC and SPS-WTO. As part of the project, a survey will be carried out on the farmers' demand for plant varieties. The survey will serve as a basis for future improvements of the plant variety testing and registration system.

Aziz Nurbekov, Tashkent, Uzbekistan; e-mail: nurbekov2002@yahoo.com and Hafiz Muminjanov, FAO-SEC, Ankara, Turkey; e-mail: hafiz.mumijanov@fao.org

Research Notes

This section contains short communications on practical research or relevant information on agriculture or seed science and technology.

Farmers' Preference of Food barley (*Hordeum vulgare* L.) Varieties in Southeastern Ethiopia

Yetsedaw Aynewa[1], Seid Ahmed[2], Negussie Tadesse[1] and Zewdie Bishaw[11]

Abstract

Participatory variety selection (PVS) of food barley was conducted in order to identify and to recommend varieties that are better adapted to southeastern Ethiopia. Five released food barley varieties were evaluated at Selka and IluSanbitu *kebeles* in the Sinana district of Bale Zone in the 2014/15 cropping season. The barley varieties were scored using a matrix ranking method and farmers selected the HB1307 and Abdene varieties through participatory evaluation at African Rising sites. Farmers' evaluation provides information to design and to develop appropriate variety selection approaches, enabling a more efficient identification of better adapted varieties to specific environments.

Key words: Food barley, farmer's preference, variety evaluation, southeast Ethiopia

Introduction

Barley (*Hordeum vulgare* L.) is one of the most important cereal crops ranking fifth, after teff, maize, sorghum and wheat in area coverage and production in Ethiopia (CSA, 2016). Barely covered about 944,401 ha with close to 2 million tons of grain production with a productivity of 1.97 tons ha^{-1} in the 2015/16 cropping season (CSA, 2016). The crop is produced during the main and

[1] [1]ICARDA, P.O. Box 5689, Addis Abeba, Ethiopia;
[2]ICARDA, B.P. 6299, Rabat, Morocco
*Corresponding author: e-mail: ayenyetse@gmail.com

small rainy seasons in the highlands of the country. Barley productivity can be over 3 tons ha^{-1} on farmers field with improved cultivars and production packages. The barley grain is mainly used for food and malt, whereas the straw is used for livestock feed in Ethiopia. Barley is a versatile crop and grows in a wide range of environments, compared to other cereals (Grando et al 2005). However, genetic uniformity continues to pose a threat to agriculture, as shown recently by the Fusarium head blight epidemic on barley that has swept some areas of the US (Windels 2000). This has been associated with the decline in the agro-system diversity (Mercer and Wainwright 2000). Farmer participation in variety selection is not only advocated for equity, but there are sound scientific and practical reasons to increase the efficiency and the effectiveness of a breeding program (Ceccarelli and Grando, 2002). PVS has been very successful both in facilitating adoption by poor farmers in marginal environments, not previously reached by formal plant breeding, and in understanding the preferences of farmers (Maurya *et al*., 1988; Sperling *et al*., 1993; Joshi and Witcombe, 1996).

About 36 food barley varieties with wide and specific adaptations are released by NARS centers in Ethiopia, but adoption was not very high since they are tested and demonstrated in a few specific areas to meet the requirement for variety release in the country. Besides its importance to smallholder farmers in barley-based copping systems, it plays a role in diversifying the wheat mono-cropping in southeastern highlands. Therefore, the objective of the PVS work was to identify high yielding and disease resistant food barley varieties that can be promoted to diversify bread wheat production, a crop highly prone to rust epidemics.

Materials and methods

Five food barley varieties (HB-1307, Harbu, Abdene and Dafu at Ilu Sanbitu and Abdene, Dafu, EH1493, and Harbu at Selka sites) were evaluated for their yield and other agronomic traits based on farmer rankings. Each variety was planted on 10 m x 10 m plots at two sites (two farmer's fields) as mother trials (with no replication) each at both IlluSanbitu and Selaka *kebeles* at Africa Rising Innovation Platform sites. All agronomic practices recommended for food barley were applied.

Two groups, each with female and male members only from villages surrounding the experimental sites, were randomly selected and participated in the evaluation and ranking of the varieties. Parameters for evaluation were plant height, crop stand, maturity, lodging resistant, tillering, disease reaction, spike length, and kernel number. The criteria were identified through brainstorming with farmers and ranking was made in groups with score values from 1 (very poor) to 5 (excellent). Evaluations were made during mid and end season of the crop cycle. Ranking was based on the sum of the evaluation indices. Besides, other farmers in the community participated in the evaluation during field days and guided visits to the trial sites.

Result and Discussion

Ilu Sanbitu Kebele

Mid-season evaluation of food barley varieties at IluSanbitu with youth and female farmers in one group and male farmers in the other group found some congruence in varietal preferences. According to youth and female group, Abdene, Dafu, and Harbu ranked first, second and third, respectively. The male group ranked Abdene, HB1307, and Harbu as first, second and third in that order.

During PVS, some variation was observed between food barley varieties at IluSanbitu (Table 1). The overall score value ranged from 766 to 1006; and Abdene ranked first (score 1006), followed by HB1307 (score 904) and Dafu (score 799). In agronomic and related traits, the mean values revealed that there is a difference among the evaluated genotypes.

Table 1. Farmer's evaluation of food barley varieties at IluSanbitu in 2014/15 cropping season

	Variety			
Parameters	**Abdene**	**Dafu**	**Harbu**	**HB1307**
Plant height	144	73	96	143
Crop stand	156	97	121	116
Disease resistance	138	112	114	92
Insect pest resistance	90	60	38	36
Maturity	45	57	74	16
Lodging tolerant	59	101	45	155
Spike length	132	89	61	121
seed color	79	60	57	116
Tillering capacity	83	102	96	45
Number of kernels	80	48	64	64
Total sum	1006	799	766	904
Rank	1	3	4	2

Note: Score 1= very poor, 2= poor, 3= good, 4= very good 5= Excellent

The mean value of grain yield ranged from 2.9 to 3.8 t ha^{-1} (Table 2). The highest mean grain yield value was recorded for HB1307 (3.8 t ha^{-1}) and the lowest was recorded for Dafu (2.9 t ha^{-1}). The farmers' evaluation indicated that Abdene and HB1307 ranked first and second, respectively, while the mean values for grain yield revealed that HB1307 and Abdene were the first and second highest yielding varieties, respectively.

Table 2. Agronomic performance of food barley varieties at IluSanbitu in 2014/15 cropping season

Variety	SPL	NK	NT	GY (t/ha)
Abdene	6.8	40.6	6.9	3.3
Dafu	7.2	37	7.8	2.9
Harbu	7	38.8	7.1	3
HB-1307	6.8	44.4	12	3.8

Note: SPL=Spike length, NK= Number of kernel, NT= Number of tillers, GY= Grain yield

Selka Kebele

The female farmers selected Abdene and Dafu, whereas male farmers selected Abdene and Harbu. The farmers' evaluation showed that there is a difference between varieties (Table 3). The evaluation score value ranged from 508 to 984; the highest score was for Abdene and the lowest was for EH1493. The mean yield revealed that there is a significant difference between the barley varieties (Table 4). The mean yield ranged from 2.95 to 5.85 t ha^{-1} with the highest mean yield for EH1493 and the lowest for Harbu.

Table 3. Farmer's evaluation of food barley varieties at Selka in 2014/15 cropping Season

Parameters	Variety			
	Abdene	Dafu	Harbu	EH1493
Plant height	112	127	127	86
Crop stand	140	99	97	56
Disease resistance	140	99	97	56
Tillering capacity	140	99	97	69
Spike length	75	60	45	30
No. of kernels	140	86	97	69
Maturity	97	125	127	43
Lodging tolerance	140	71	82	99
Total sum	984	766	769	508
Rank	1	3	2	4

Note: Score 1= very poor, 2= poor, 3= good, 4= very good 5= Excellent

Table 4. Agronomic performance of food barley varieties at Selka in 2014/15 cropping season

Variety	PH (cm)	SPL (cm)	NK	GY (t/ha)
Abdene	108.6	7.4	47.2	3.35
Dafu	110.6	8.2	58.8	3.1
Harbu	108.2	6.6	47.8	2.95
EH 1493	105.8	7.1	36.2	5.85

Note: PH= Plant height, SPL= Spike length, NK= Number of Kernels, GY= Grain yield

Food barley field day to popularize selected variety (HB1307) through PVS

Food barley variety HB1307 seed multiplication field to address seed availability and access to farmers

Conclusion

Participatory variety evaluation provides the understanding of relevant systems to strengthen technology generation for diversifying varieties and for ensuring accessibility in specific environments. The involvement of farmers in variety selection is crucial for sustainable intensification and diversification of varieties within a short period of time for wheat, based on the cropping system in the highlands of Ethiopia.

References

Aynewa, Y., T. Dessalegn and W. Bayu, 2013. Participatory evaluation of malt barley and other agronomic traits at Northern Ethiopia.

Wudpecker Journal of Agricultural Research 2(8): 218–222.
Ceccarelli S, Grando S, 2002 Plant breeding with farmers requires testing the assumptions of conventional plant breeding: Lessons from the ICARDA barley program. pp, 297-332 In: Farmers, scientists and plant breeding: integrating knowledge and practice. Cleveland DA, Soleri D (Eds). CABI Publishing International, Wallingford, Oxon, UK
CSA (Central Statistics Authority). 2016. Central Statistics Agency Report on Area and Production of crops. Statistical Bulletin of Agricultural Sample Survey, Volume I. No. 584, Addis Ababa, Ethiopia.
Grando, S. and H.G. Macpherson (eds.). 2005. Food barley: Importance, uses and local knowledge. Proceedings of the International Workshop on Food Barley Improvement, 14-17 January 2002, Hammamet, Tunisia. ICARDA, Aleppo, Syria, x+156 pp. En.
Maurya, D.M., A. Bottral, and J. Farrington. 1988. *Experimental Agriculture* 24: 311-320.
Mercer K., Wainwright J. 2000. Use of agricultural diversity. pp 76-80, In: Encouraging diversity, Almekinders C.J.M. and W. De Boef (eds.). Intermediate Technology Publications Ltd. 103 105 Southampton Row, London, UK, and Minnesota, USA.
Sperling, L., M.E. Loevinsohn and B. Ntabomvura. 1993. *Experimental Agriculture* 29: 509-519.
Stoskopf, N.C. 1985. Cereal Grain Crops. A Prentice-Hall CO. Reston, Virginia USA.
Windels, C,E, 2000. Economic and social impacts of Fusarium head blight: changing farms and rural communities in the northern Great Plains. *Phytpath*. 90:17-21
Witcombe, J. and A. Joshi. 1996. Participatory Plant Breeding, pp. 57-65. *In* Proceeding of a workshop on participatory plant breeding, 26-29 July 1995, P. Eyzaguirre and M. Iwanaga (eds.), Wageningen, The Netherlands. IPGRI, Rome, Italy
Yetsedaw, A., T. Dessalegn, W. Bayu and Z. Bishaw. 2013. Participatory varietal selection of malt barley (*Hordeum vulgare* L.) for yield and related traits at Gusha Shinkurta, West Gojam, Ethiopia. *Seed Info* No.44. ICARDA, Syria, Aleppo
Yetsedaw, A., S. Ahmed, N. Tadesse and Z. Bishaw. 2016. Identification of farmer's preferred durum wheat (*Triticum durum* L) varieties in Southeastern Ethiopia. *Seed Info* No.51. ICARDA, Beirut, Lebanon
Yetsedaw, A., S. Ahmed, N. Tadesse and Z. Bishaw. 2017. Identification of Lentil (*Lens culinaris* L.) Genotypes with Farmers in Southeastern Ethiopia. *Seed Info* No.52. ICARDA, Beirut, Lebanon
Yetsedaw, A., S. Ahmed, N. Tadesse and Z. Bishaw. 2017. Evaluation of field pea (*Pisum sativum* L.) varieties with farmers' participation in Southeastern Ethiopia**.** *Seed Info* No.53. ICARDA, Beirut, Lebanon

Meetings and Courses

Announcements of national, regional, or international conferences, meetings, workshops, meetings and training courses appear in this section.

Conferences

BGRI Technical Workshop, 14-17 April 2018 in Marrakech, Morocco

The work of wheat researchers is more important than ever in managing the biotic and abiotic stresses, that threaten wheat production, and in improving the livelihoods and food security for smallholder wheat farmers. In an ever-populous world, wheat farmers around the world are threatened by drought, the effects of climate change, outbreaks of new races of yellow and stem rust, septoria and, most recently, wheat blast.

The 2018 BGRI Technical Workshop — held in Marrakech, Morocco, 14-17 April 2018 — will focus on the efforts of wheat scientists to secure the world's wheat crop and to manage disease vulnerability. It is an opportunity for the wheat community to exchange research results, to network and explore opportunities for collaboration, and to learn more about the challenges facing wheat scientists and farmers.

In addition to two days of cutting-edge presentations and plenary sessions, workshop participants will spend half a day touring the ICARDA Tassaout Research Station, where critical work by the ICARDA wheat team is being conducted, regarding breeding and selecting for drought-tolerant wheat.

Other highlights of the BGRI workshop include announcements regarding the 2017 and 2018 Jeanie Borlaug Laube Women in Triticum Early Career and Mentor Awards, and the 2018 Gene Stewardship Award.

For the first time, the BGRI is pleased to offer a day and a half of focused training sessions before the start of BGRI 2018. Beginning on April 13, registrants can choose one training workshop only. Please see the list of available training sessions.

Please note that you can only choose one training session and choosing a specific session is merely an expression of your interest. You will not be officially registered for the training session until you receive official confirmation from the instructor.
For more information, please visit the website at the workshop website.

International Food Legumes Research Conference (IFLRC-VII), Marrakesh, Morocco.

The seventh International Food Legume Research Conference (IFLRC-VII), which will be hosted by ICARDA and INRA Morocco and held during 6-8 May 2018 at Palais des Congrès, Marrakech, Morocco. The IFLRC was started in 1986 to disseminate current knowledge and achievements of research and development (R&D) in food legumes and identify research needs, new scientific approaches and partnerships.

Remarkable progress has been made in R&D of food legumes since the last IFLRC held in 2014, particularly in the UN International Year of Pulses – 2016. The IFLRC-VII will provide a platform for knowledge sharing on these developments and preparing strategies and partnerships to tackle future challenges in R&D of food legumes.

For more information and registration, please visit the workshop website.

Annual Congress on Plant Science and Biosecurity, 12-14 July 2018, Valencia, Spain

The Annual Congress on Plant Science and Biosecurity will take place in Valencia, Spain during 12-14 July 2018. The theme of the conference is '*A Legislative Framework of Science Protecting Plant Health'*. **The** ACPB-2018 conference covers a good range of topics with a variety of informative talks about current research, where delegates and invited speakers have a chance to interact on both scientific and social ideas. We encourage teams working on plant health research to use this opportunity to exchange ideas and to meet, plan, and engage at our esteemed meeting.

The theme of the meeting centered on '*A Legislative Framework of Science Protecting Plant Health'*, be it in the food we eat, the plants we grow on our farms, to the trees we walk through in the woods. The **ACPB-2018** gathering will attract plant science experts and invasive specialists from all over Europe and beyond, to examine novel methodologies for enhancing plant biosecurity and set up an endurable knowledge transfer.

This top scientific annual conference addresses the state of the art and future directions in plant biology research and education, basic and applied plant biology and covers plant biology in its broadest sense, encompassing agriculture, forestry, horticulture, ecology, environmental biology, etc. It also includes science policy and plant science-based societal issues and includes contributions from students, post-docs, senior scientists and policy makers from across Europe and beyond.

If you require any further information please do not hesitate to contact the Conference Manager at plantscience@acpb2018.com. For more information, please visit the conference website.

AFSTA Congress 2018

The Africa Seed Trade Association (AFSTA) Congress will be held in Cairo, Egypt, from 28 February to 2 March 2018. For more information, please contact the AFSTA Secretariat at afsta@afsta.org

ISF World Seed Congress 2018

The International Seed Federation (ISF) World Seed Congress 2018 will be held in Brisbane, Australia on 3-6 June 2018, with the theme of 'Where Innovation Shines'. Conference registration will open on 9 January 2018 at 11:00 GMT. See the ISF World Seed Congress 2018 website for more info.

ISTA Annual Meeting 2018

The International Seed Testing Association Annual Meeting 2018 will take place in Sapporo, Japan, on 11–14 June 2018. For more information, please contact: ISTA, Zurichstrasse 50, 8303 Bassersdorf, Switzerland; Tel: +41-448386000; Fax: +41-448386001; 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 programs on biodiversity and crop improvement, integrated water and land management, and resilience. For more information on the ICARDA annual training program, please contact: Charles Kleinermann, ICARDA, Cairo, Egypt; e-mail: c.kleinermann@cgiar.org

UPOV Distance Learning Courses

Two sessions of each of the following UPOV Distance Learning Courses will be run in 2018:

i. DL-205 Introduction to the UPOV System of Plant Variety Protection under the UPOV Convention;

ii. DL-305 Examination of Applications for Plant Breeders' Rights;
iii. DL-305A Administration of Plant Breeders' Rights (Part A of DL-305); and
iv. DL-305B DUS Examination (Part B of DL-305).

The timetable of all courses in 2018 is as follows:
Session I

- Registration: January 16 to February 16
- Study period: March 5 to April 8
- Final examination: April 3 to 8

Session II

- Registration: August 06 to September 14
- Study period: October 01 to November 04
- Final exam: October 29 to November 4

The categories of participants 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 (*fee, CHF1000).*

More detailed information about the course and online registration is available on the UPOV **website.**

International Seed Testing Association (ISTA) Training Workshops

ISTA Workshop on Seed Sampling and Quality Assurance in Sampling, 19-22 February 2018, Volcani Center, Rishon LeZion, Israel

The ISTA Bulking and Sampling Committee and Volcani Center are looking forward to hosting you at the ISTA Workshop on 'Seed Sampling and Quality Assurance in Seed Sampling', to be held from 19-22 February 2018 at the Volcani Center, Israel. The workshop will include lectures and practical group work.

The aim of the workshop is to provide an overview of seed sampling and aspects of quality assurance in relation to seed sampling for a range of species. The workshop will provide a forum to discuss seed sampling in general as well as the opportunity to discuss specific questions relating to seed sampling methodologies. The workshop will focus on practical exercises, providing an opportunity to use different sampling equipment, and will include practicals for the evaluation and examination of seed samplers. For further details and registration, please visit the website.

ISTA SHC Workshop: Seed Health Methods using PCR, ELISA, dilution plating and indexing methods, 13-16 March 2018, Bangalore, India

This workshop will provide an overview of Seed Health Testing Methods and detection of seed-borne bacterial, viral, and nematode pests, which are very relevant for seed trade in the field and vegetable crops seed industry in India and other countries.

The main focus will be on *Xanthomonas campestris* pv. *campestris* on Brassica spp., *Clavibacter michiganensis* and Tobamoviruses on tomato, Cucumber Green Mottle Mosaic Virus CGMMV cucumber and *Aphelenchoides* on rice. The methods covered will be dilution plating, ELISA, SE-PCR and PCR on isolates and morphological identification. For further details and registration, please visit the website.

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

Literature

Books, journal articles, and other literature of interest to readers are presented here. It may include relevant information on agriculture-related publications including seed policy, regulation, and technology.

Books

Biddle, A.J. 2017. Peas and Beans

Published by CABI (www.cabi.org); ISBN: 9781780640914*; Price: $67.50 (Paperback); 188 pp*

A part of the Crop Production Science in Agriculture, this practical book provides an accessible overview of all aspects of pea and bean production, including botany and physiology, breeding, agronomy, weed management, pests and diseases, harvesting, nutritional value and uses. It also reflects on the constraints and opportunities for the future of peas and beans, exploring their role in food sustainability and crop rotation, and various factors affecting supply and demand, such as climate change and breeding technologies.

Peas and beans are crops of economic, social, and agronomic importance and this volume provides the specialist knowledge needed to ensure good quality standards are met. It includes:

- coverage of the main types of peas and beans grown on a significant scale or commercially produced in large area farming;
- key information relating to the role of peas and beans in biological nitrogen fixation;
- extensive coverage of the technology from cultivation to postharvest industry; and
- high quality photos, presented in full color throughout.

Authored by a recognized authority with extensive experience in applied research, this book is an ideal resource for practicing agronomists, advisors and producers, extension workers, horticulture students and all those involved in the production of peas and beans.

ISTA Publications

We are pleased to inform you that the Spanish translation of the ISTA Accreditation Standard for Seed Testing and Seed Sampling (version 6.0) is now available and published on the ISTA *website.*

OECD. 2017. Policy Advisory Systems: Supporting Good Governance and Sound Public Decision Making

Published by OECD (www.oecd.org); ISBN: 9789264283664 (PDF); Price: $20; 101 pp

Governments face increasingly complex, dynamic and 'wicked' challenges that require new policy solutions. To help them understand and respond to these challenges, policy makers often rely on evidence from advisory bodies operating at arms' length from the government. This report provides a comparative overview and analysis of the important role played by these bodies in public consultation and decision making. It is based on a survey of policy advisory systems in 17 countries and a series of qualitative interviews. The report examines the institutional set up of such systems, and the role they play in the policy cycle. It discusses how to ensure that they contribute to open, inclusive, and sound policy making.

The information about the book can be accessed on website of OECD

OECD. 2017. Youth Aspirations and the Reality of Jobs in Developing Countries: Mind the Gap

Published by OECD (www.oecd.org); ISBN: ISBN: 9789264285668 (PDF); Price: $20; 88 pp

Many governments in developing countries are realizing that good quality jobs matter for development. However, little attention has been paid so far to explore what actually matters for young people in terms of job characteristics and employment conditions. Today, in many developing and emerging countries, a key development challenge is that existing jobs do not live up to the aspirations of the youth.

This study revisits the performance of the youth labor market and the quality of jobs in developing countries. It places youth employment preferences at the forefront and answers the following questions. What is the nature of career aspirations and job-related drivers of job satisfaction? What shapes such employment preferences? How likely will young people be able to meet their job aspirations? What can policy makers do to reduce the gap between youth preferences and the reality of jobs?

The study draws on the comprehensive data from school-to-work transition surveys in 32 developing and transition countries in Africa, Asia, Europe and Latin America. It suggests a number of priority areas for policy makers to enhance the well-being of youth, raise labor productivity, and contain the chilling effects that unmet youth aspirations can have on society.

The information about the book can be accessed on website of *OECD.*

OECD. 2017. Women's Economic Empowerment in Selected MENA Countries: The Impact of Legal Frameworks in Algeria, Egypt, Jordan, Libya, Morocco and Tunisia

Published by OECD (www.oecd.org); ISBN: 9789264279322 (PDF); Price: $25; 152 pp

This report examines how current legal provisions in Algeria, Egypt, Jordan, Libya, Morocco and Tunisia are impacting on the ability of women to fully participate in economic life, both as employees and entrepreneurs. It is based on a comparative analysis of the various rights set out in constitutions, personal status laws, labor laws, in addition to tax and business laws. The report recognizes the considerable progress made to date – in particular in the aftermath of the 2011 uprisings – following the adoption of constitutional and institutional reforms to strengthen women's status.

Yet, ensuring sufficient opportunities for women remains a challenge in these six countries. The report suggests that this may be due to different factors, such as the existence of certain laws that discriminate between genders, contradictions between various legal frameworks, lack of enforcement mechanisms, and barriers for women in accessing justice. Through targeted policies, countries can tackle these challenges and help to unleash the potential of women and to boost growth, competitiveness and inclusive social development. The information about the book can be accessed on website of OECD.

Websites

OECD Publishing

OECD Publishing is one of the world's largest publishers of books in the fields of economics and public affairs. It publishes more than 250 new books, 40 updated statistical databases, and thousands of new statistical tables, working papers, and journal articles each year. A number of dedicated websites and their links are as listed below:

The *OECD iLibrary* brings the full range of OECD books, papers, and statistics in PDF, WEB and XML formats to online users at universities, governments and think tanks all around the world. Consult it to find, use, and cite OECD information. OECD iLibrary is a subscription service.

The *OECD Online Bookshop* is the place for individuals to go to browse and purchase OECD books and subscriptions to journals and online services. Customers can immediately download PDF versions of books they purchase.

Newsletters

What's New @ OECD

What's New @ OECD is OECD's monthly e-newsletter highlighting key new books, reports, and statistics from various OECD sources. To sign up and to receive it each month, go to the *link.*

About ICARDA

The International Center for Agricultural Research in the Dry Areas (ICARDA) is the global agricultural research organization working with countries in the world's dry and marginal areas to deliver sustainable systems solutions that increase productivity, improve rural nutrition, and strengthen national food security. ICARDA's integrated approach includes new crop varieties; agronomy; on-farm water productivity; natural resources management; rangeland and small ruminant production; and socio-economic and policy research to better target poverty issues and accelerate technology adoption. As a member of the CGIAR Consortium, ICARDA works closely with national agricultural research programs and other partners in more than 40 countries across North and Sub-Saharan Africa, and Central, South, and West Asia.

Contact: Zewdie Bishaw, Acting Regional Coordinator for Sub-Saharan Africa Regional Program and Head of Seed Section, Addis Ababa, ICARDA, z.bishaw@cgiar.org

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 in 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 email to z.bishaw@cgiar.org