

ASIAN SEED

THE OFFICIAL PUBLICATION OF THE ASIA & PACIFIC SEED ASSOCIATION



KOSA Celebrates 50th Anniversary

Korean Seed
Association prepares
for ASC 2016



Access to Genetic Resources

What you need to
know about access,
sharing and benefits



African Seed Congress

Report on AFSTA's
annual congress
in Zimbabwe



Seed For Thought

Dr. Chee Hark Harn
charts the rise of
biotechnology

VOL.21 NO.2
MAR/APR 15
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Access to Genetic Resources





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THE OFFICIAL PUBLICATION OF THE ASIA & PACIFIC SEED ASSOCIATION

Asian Seed
Volume 21, No. 2, Mar/Apr 2015

Official Publication
ISSN 0859-1776

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Cover photo of corn varieties

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Asian Seed is published bi-monthly as the official publication of the Asia & Pacific Seed Association (APSA). APSA is a provident organisation dedicated to the promotion and improvement of the seed industry in Asia Pacific.

Asian Seed has a pass-on readership of 3,500 worldwide. Eighty per cent of our subscribers reside in the Asia-Pacific region and include senior executives in seed enterprises, government agencies, universities and seed associations.

Subscriptions are available on the APSA website or from the Secretariat.

Editorial contributions and advertising enquiries should be sent to the Secretariat or by email to apsa@apsaseed.org. APSA holds the right to accept or reject contributions.

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The Benefits of Access to Genetic Resources



Photo by John Clewley



Intellectual Property Rights (IPR) and access to Genetic Resources are the important subjects in this issue of Asian Seed magazine. Executive Committee member Anke van den Hurk, the Deputy Executive Director of Dutch seed association Plantum and APSA's expert on biodiversity issues wrote the cover story, Access to Genetic Resources to help facilitate understanding among APSA members of what is at stake in this complicated issue and what the policies and treaties related to biodiversity access, such as the Convention on Biological Diversity and the Nagoya Protocol, mean for APSA's members. Turn to pages 14-21 to read her in-depth coverage.

APSA has been working on a "Position Paper on Protection of New Plant Varieties in Asia and the Pacific" as part of the association's response to address IPR issues that are unique and critical for APSA's member countries. APSA's objectives on IPR development include advocating the establishment and protection of intellectual property rights for seeds, plant varieties and associated technologies.

To address IPR issues, in 2012 APSA's Executive Committee set up an Intellectual Property Rights Working Group (IPRWG) tasked with developing the position paper on IPR. The IPRWG has completed a draft of the paper and a two-day workshop will have been convened

on 18-19 May in Bangkok. The first day of the workshop will feature presentations by APSA members, representatives of UPOV, PVP offices, seed associations and organisations with direct experience of creating and implementing IPR policies, and will end with a roundtable discussion on IPR and the seed industry.

Day two of the workshop will feature APSA representatives from seed associations in the region and breakout groups, which will formulate a set of recommendations; they will be sent to the next EC meeting in June for consideration. The EC will then propose a draft policy for adoption by the General Assembly at ASC 2015 in November. A report on the



IPR workshop will be published in the next issue of the magazine.

There has been a lot of interest in Africa from seed companies in recent years. To gauge the situation there and to meet and talk to those involved in the seed industry in Africa, Director Tom Burns attended the recent African Seed Congress, which was held at Victoria Falls in Zimbabwe on 3-5 March 2015. You can read his in-depth report on pages 26-28.

Finally, I'd like to congratulate the Korean Seed Association (KOSA), which this year is celebrating its 50th anniversary. KOSA was one of the first seed associations from the region to join APSA and has been a good friend and supporter of APSA over the years. In 2004, KOSA hosted the Asian Seed Congress in Seoul and next year will host the Congress again, but this time in Incheon. I'm sure I will be seeing all of you there in 2016 when we can celebrate the anniversary with KOSA's members. 🐣


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Welcome to an Information-Packed Issue



Photo by John Clewley

The third issue of Asian Seed this year highlights access and benefit sharing, or to perhaps phrase it in a context more relevant to APSA members, “access and use of genetic resources in the varieties that you develop, sell and/or trade”.

As has been mentioned before, this issue of access to genetic resources is the “600 pound gorilla” sleeping quietly in the corner which, when aroused, could potentially reek havoc, and have major implications for APSA members. In short, each APSA member will need to be able to prove to government regulators from where the genetics were derived in the varieties that they sell or trade.

But there is a catch. Because many countries in the region (and indeed the world) have not yet signed onto or ratified the agreements and treaties covering access and benefit sharing, or if they have how it will be implemented, it is not clear how it will affect APSA members. However, as most members trade seed not just across the Asia-Pacific region, but internationally, members need to be aware of what is or will be required in different countries.

I would refer all members to the article in this issue by APSA EC member Anke van den Hurk. Ms. van den Hurk is also the Deputy Director of Plantum, the Dutch seed association; she is a regular speaker at international congresses and meetings on biodiversity and international biodiversity treaties; and a major resource person

for many organisations at the international level on these issues.

I hope that members are enjoying the revamped style of Asian Seed as well as the content. If you are an APSA member and haven't been receiving copies of Asian Seed on a regular basis, please contact the APSA Secretariat (apsa@apsaseed.org) or log on to the APSA membership database (see link on the APSA website www.apsaseed.org).

While on the subject of the APSA membership database, I would request all members to update their membership details on the database ahead of online registration for the 2015 Asian Seed Congress on 1 June. As you know, the Congress will be held at the Grand Hyatt Hotel in Goa, India (not to be confused with the Park Hyatt Hotel) on 16-20 November. All delegates should register early especially if booking trading tables and booths. This year we have approximately 170 trading tables, (including semi-private trading tables and display trading tables), more than in Macau, but due to limited space the number of booths is limited.

Please also note that all delegates attending the Congress require a Congress Visa, which must be applied for online. Officially, delegates cannot use a tourist nor business visa to attend the Congress, however accompanying persons must apply for a tourist visa.

A special reminder for delegates from China, Pakistan, Afghanistan,

Iran, Iraq and Sudan that there is an additional time delay of 45 days in the application process for your visas as security clearance must be obtained in advance. All delegates require a letter of invitation in addition to four letters of approval from various government agencies for their visa applications, all of which will be available for download on the Congress website.

The earliest delegates can apply for visas is 21 August, or 90 days before the date that they will leave India to return home. For delegates from the six countries mentioned above, you MUST apply for the letter of invitation no later than 26 September and lodge your visa application with the Indian embassy no later than 5 October. For all other delegates, you have until 20 October to lodge your visa application but this may vary from country to country so please confirm with consular offices in your country beforehand. More details on important dates for the Congress can be found on page 32 and will also be available on the Congress website. Special arrangements are being made with delegates from China and Pakistan to facilitate their visa process. Please check the APSA website on a regular basis for more details. If you have any urgent queries please contact the APSA Secretariat directly.

In March AFSTA held its 2015 Congress in Zimbabwe. The Congress was a great success and highlights the growing seed market in Africa. It was interesting to see the increasing presence

of APSA members in the African region, especially those interested in vegetables. Related to this is a story on East-West Seed's recent experience in Africa, on pages 29 to 30.

This year the activities of the Activity and Crop Groups (AGs and CGs, previously known as SCs and SIGs) are progressing with planned activities during the year as well as at the Congress in November. The Hybrid Rice Crop Group is hosting two study tours, the first to China in August and the second to India in October. Details of both tours are nearing completion and will be available on the APSA website. Those interested should contact Dr. Dadlani (dadlani@apsaseed.org) to confirm attendance; book early as the number of places on the tours is limited.

The target group for both tours are those companies interested in trading rice seed as well as those interested in setting up collaborations or companies distributing and conducting R&D. Many members from Pakistan, India, Vietnam, Bangladesh, Indonesia and Thailand have expressed interest in joining the China tour. Many of the same members have indicated that they will attend the tour in India, particularly those from China. APSA is planning to host similar tours for vegetable crops.

Some of you will be reading this while attending the 2015 ISF Congress. This year the ISF Congress is being held in Krakow, Poland and has been shaping up as being a truly memorable Congress. As usual, APSA members will be

attending in force with approximately 40 per cent of all registered delegates to-date being APSA members and 20 per cent coming from the region.

This is a very information packed issue of Asian Seed with details on the IPPC meeting held in Rome earlier this year as well as an update on the Myanmar vegetable sector acceleration taskforce, a meeting of which was held in March. I would also recommend that you take a few quiet minutes of your time to read this issue's “Seed for Thought” in which Dr. Chee Harn has reflected on the role of biotechnology in the seed industry and his personal experience spanning its infancy in the seed industry, today and the future. “Don't put down this issue without reading it!” 🐛



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Horti-ASIA and AGRI-Asia Hold Joint Trade Show in Bangkok



Photos by John Clewley

The fourth annual joint trade show, Horti-ASIA 2015 and AGRI-Asia 2015 was recently held on 17-19 March 2015 at BITEC, Bangkok. The event showcased innovations and technology related to horticulture and floriculture, and agricultural machinery and processes. Some 200 organisations from more than 20 countries attended the show, which was opened by Dr. Apichart Phongsrihadulchai, the Vice Minister for Agriculture and Cooperatives.

In his opening speech, Dr. Phongsrihadulchai noted that the trade show was the only

event of its kind in Asia to promote Asian technology and innovation in agriculture, horticulture, crop cultivation, maintenance, testing, processing, packaging and shipping. He also said that the event had “caught the interest” of many countries as could be seen from the Exhibition Pavilions set up by the Netherlands (the sponsoring country), Spain, South Korea, China, Taiwan and Germany.

In addition to participation by the private sector from 20 countries, the Thai government joined the show, led by staff from the Department of Agricultural Extension, the Department of

Agriculture and The Marketing Organization for Farmers. The Thai contingent created several highlights of the trade show, including an exhibition on flowers, ‘Flowers for Modern Life’, a pavilion to showcase coconut-based products and a display on agricultural technology.

The event included more than 20 seminars and presentations, as well as two conferences, one of which, the Conference on Coconut Oil, attracted many delegates. The organisers, VNU Exhibitions said that more than 5,000 people participated in the three-day event. 🐾

Mahyco Buys 60% of Zimbabwean Seed Company Quton

India’s leading agri-biotech company Maharashtra Hybrid Seeds Company (Mahyco) bought a 60 per cent stake in the Harare-based Quton Seed Company in November 2014. Mahyco bought its holding from the listed group, SeedCo, for a figure reported to be around \$10 million. Group CEO of SeedCo, Morgan Nzwere said that Mahyco would assist the company with introducing hybrid cotton seeds into Africa.

SeedCo has also sold stakes to other multinational seed companies, including a deal in 2014 with the French seed company Groupe Limagrain, which paid \$60 million for a 28 per cent stake. For more information on the African seed industry, turn to pages 26 – 27 for a report on the recent African Seed Congress. 🐾

Sources: *The Economic Times (India), New Zimbabwe and agencies.*

GM Crop Trials Begin in Maharashtra

Five major seed companies have started field trails for genetically-modified (GM) crops in Maharashtra. The companies are to focus on crops such as rice, corn, chickpeas and cotton. The trails were given government approval earlier in the year; Maharashtra became the first state to run GM trails. 🐾

Sources: *Agencies*

IPPC Holds the 10th Commission on Phytosanitary Measures

The Commission on Phytosanitary Measures (CPM) established under the International Plant Protection Convention (IPPC) held its 10th annual meeting at FAO HQ in Rome on 16-20 March. The Commission meeting was attended by contracting parties and observers from Regional Plant Protection Organizations, the WTO Sanitary and Phytosanitary Committee, the Standards and Trade Development Facility, and the Convention on Biological Diversity. APISA’s Director of Technical Affairs Dr. N. K. Dadlani attended as an observer.

The CPM meets to: review the state of plant protection globally; identify actions to control the spread of pests; develop and adopt international standards; establish rules and procedures for resolving disputes; adopt guidelines for the recognition of regional plant protection organisations; and cooperate with international organisations on relevant issues.



Chairperson Ms. Kyu-Ock Yim opened the meeting, after a brief welcome by FAO Deputy Director General Ms. Helena Semedo. They stressed the need to protect food security and the environment to ensure that the international trade of agricultural products worth over \$1 trillion remains safe from plant pests.

CPM meeting discussed 22 agenda items, covering CPM’s

governance; international standard setting; capacity development; and communications. The meeting also hosted side sessions on e-Phyto; NPPO management; IPPC Technical resources; and the CPM’s Market Place (New Diagnostic Technologies; Banana Pests; Palm Tree Pests). A ‘Photo Contest’ on ‘Pests without borders’ was also held which generated considerable interest among the participants. NKD 🐾

Myanmar Vegetable Sector Acceleration Taskforce (VSAT)

The Ministry of Agriculture and Irrigation and the Netherlands Embassy in Yangon hosted a roundtable meeting on ‘Developing Myanmar’s Vegetable Sector’ in November 2014. Subsequently, a multi-stakeholder platform was established to drive the development of the vegetable sector. The ‘Vegetable Sector Acceleration Task Force’ (VSAT) is tasked with bringing together expertise and leadership from the Myanmar government, the private sector, civil society, and international development/resource partners.

VSAT’s main aim is to guide the development of the vegetable

sector into becoming a key pillar of Myanmar’s agricultural economy. It is hoped that VSAT’s work will contribute to improved food and nutrition security, and generate rural employment and income for vegetable growers on the basis of socially responsible and sustainable practices.

The VSAT comprises representatives from: Ministry of Agriculture & Irrigation; Ministry of Commerce; Food Security Working Group; Myanmar Fruit, Flower and Vegetable Producer & Exporter Association; Thiriminglar Wholesale Trader Group; Vegetable Exporting Companies; Myanmar Fertilizer, Seed and Pesticide Entrepreneurs Association; APISA; and Croplife Asia. Mercy

Corps, an international development organisation, is coordinating the functioning of VSAT under its initiative ‘Making Vegetable Markets Work for Smallholders Program’ (MVMW). The Dutch Government is providing resource support for VSAT.

VSAT held its first meeting on 31 March 2015 in Yangon, which discussed the proposed terms of reference for the group and an initial plan of work. Dr. N. K. Dadlani, Director of Technical Affairs, represented APISA at the meeting and said that APISA would support the project and would provide suggestions on the proposed the Myanmar Seed Law (2011), to assist in making the Myanmar seed industry more vibrant. NKD 🐾

Korean Seed Association Celebrates 50th Anniversary

The Korean Seed Association (KOSA) has been with APSA since the early days, joining on 1 May, 1995 as the Korea Seed and Seedling Association, and in the process becoming the fourth national seed association to join after the seed associations of India, China and Australia. This year KOSA celebrates its 50th anniversary.

KOSA President Mr. Chang Hyun Kim said that the formation of KOSA 50 years ago was inspired by two important developments: The FAO's designation that 1961 was to be 'World Seed Year'; and the Korea FAO Association's promotion

of a 'Seed quality improvement movement'. The Korean FAO was established in 1945 to raise nutrition levels nationally, improve agricultural productivity and the lives of rural people. As a result, KOSA was established on 13 July 1965 to support plant breeding, seed production and the distribution of good varieties.

KOSA President Mr. Kim added that, "To commemorate our association's 50th anniversary this year, we plan to publish a memorial book, entitled the 'Korean Seed Association's 50 Years' and we will also hold a celebration in May. We feel that this is a good time for KOSA and

the Korean seed industry to raise their profiles and jump into the next 50 years."

To follow-up on the 50th celebrations, KOSA and the Korean Seed & Variety Service (KSVS) will be partners with APSA in co-hosting the Asian Seed Congress (ASC) in Incheon in 2016. KOSA was part of the successful 2004 ASC in Seoul as well, which attracted 504 APSA delegates from 37 countries. "We are committed to making ASC 2016 the best seed festival for everyone from the world seed industry. We are really looking forward to seeing you all in Incheon next year," said Mr. Kim. 🌱

KOSA Timeline: 1965 to 2014



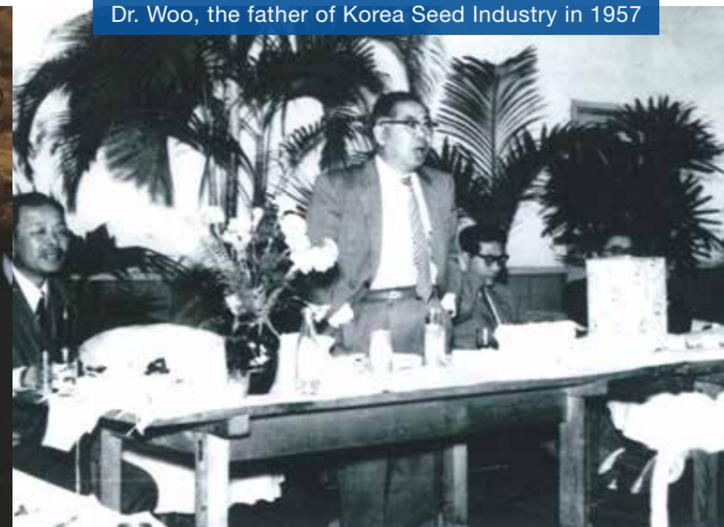
Mission Goals

- Pursuit of common benefits for the breeding, production and marketing of seeds
- Support for the domestic seed market, including import and export
- Assistance for R&D and promotion of seed business
- Publication of magazine on seeds and training of seed technicians
- Assistance for variety registration and seed testing
- International information exchange and cooperation
- Execution of seed-related tasks entrusted by the government

Seed Sales in the 1960s



Dr. Woo, the father of Korea Seed Industry in 1957



Varieties Evaluation in 1970



Seed inspection in the 1980s



2004 Seoul APSA Congress



Photos courtesy of KOSA



Photos courtesy of www.icekrakow.pl
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Sharing a Passion for Nature at WSC



ISF World Seed Congress 2015
Kraków | Poland | 25-27 May

The International Seed Federation's World Seed Congress 2015 will be held in Krakow, Poland on 25-27 May 2015. The three-day event is co-organised by the ISF and the Polish Seed Trade Association (PSTA) and hosted by the latter organisation.

Last year the WSC was held in Beijing, China. This year the focus is on the central European nation of Poland and the organisers said that over 1,500 delegates had already registered. The theme for WSC 2015 is 'Sharing Passion For Nature'.

Krakow - UNESCO World Heritage Site

Krakow was the royal capital of Poland for 500 years. It has traditionally been one of the leading centres of Polish intellectual, cultural and artistic life and remains a key economic hub. Because of its wealth of beautiful Gothic, Renaissance and Baroque buildings, it is often cited as one of the most beautiful cities in Europe; they include Wawel Castle and St Mary's Basilica. The city also features Europe's largest medieval market square, Rynek Glowny. Krakow received its World Heritage status in 1978. The city is also renowned for its lively entertainment and nightlife.

In addition to offering facilities for trading and exhibition, the event will also feature technical meetings of the Standing Committees, Crop Sections and Special Groups.

The WSC venue is the new ICE Congress Centre, which is located in a beautiful setting on the banks of the Vistula river, facing Wawel Castle. The venue is about 20 minutes walking distance from most of the hotels designated for the congress. Delegates will find that travelling around Krakow is easy and convenient; all delegates will receive a three-day public transportation pass.

Poland is an important producer of agricultural (arable and livestock) and horticultural goods. In 2012, the total acreage under cultivation was 10.4 million ha (74 per cent cereals, 9.3 per cent industrial crops, 8.7 per cent fodder crops, 3.4 per cent potatoes and 2 per cent pulses). More than 12 per cent of the population works in agriculture (a high percentage for Europe), which highlights the importance of agriculture in Polish culture.

More information from:
www.worldseedcongress2015.com

Saturday, 23 May 2015		Venue	Location
09:00 – 12:30	ISHI - Veg Policy Coordination Group (Invitation only)	Park-Inn	Gamma 2
10:00 – 12:30	Forage & Turf Crops Section Board (Invitation only)	Park-Inn	Beta 1+2
13:00 – 18:00	Registration	ICE	Level 0
13:30 – 18:00	Meeting of Secretariats of National and Regional Associations (Invitation only)	Park-Inn	Alfa 1
19:00 – 22:00	Dinner of Secretariats of National and Regional Associations (Invitation only)	Upon Invitation	

Sunday, 24 May 2015		Venue	Location
08:00 – 18:00	Registration	ICE	Level 0
08:00 – 17:30	Golf Tournament	Krakow Valley Golf	
08:00 – 12:30	Executive Committee (EC Members only)	ICE	
08:30 – 12:30	Phytosanitary Committee (Invitation only)	Park-Inn	Gamma 1+2
08:30 – 12:30	Seed Applied Technologies Committee (Invitation only)	Park-Inn	Alfa 1
13:30 – 18:30	ISF Board of Directors (Invitation only)	Park-Inn	Alfa 1
14:00 – 18:00	Exhibit booths set-up and decoration	ICE	
18:00 – 20:00	Private Meeting Rooms key hand over and set-up	ICE	
19:30 – 22:00	President's Dinner (Invitation only)	Upon Invitation	

Monday, 25 May 2015		Venue	Location
07:00 – 18:00	Registration	ICE	Level 0
07:00 – 18:00	Internet Corner	ICE	Level 3
09:00 – 11:00	Opening Ceremony	ICE	Hall 1 Level 0 + 1 + 2 + 3
11:00 – 11:30	Welcome drink	ICE	Level 0 + 1 + 2
11:00 – 17:00	Coffee & Water stations	ICE	Level 0 + 1 + 2 + 3
11:00 – 18:00	Trading Floors - Reserved tables	ICE	Hall 2 Level 0 / Hall 3 & 4 Level 3
11:00 – 18:00	Trading Floors - Unreserved tables	Q Hotel Best Western	1st Floor - Mocca & Latte
11:00 – 18:00	Exhibition	ICE	Level 1 + 2
11:00 – 18:00	Private Meeting Rooms	ICE	Level 1
12:00 – 14:00	Lunch	ICE	Level 0 + 1 + 2
12:00 – 16:00	Half-day Krakow sightseeing tour		
13:00 – 18:00	Trading Floors - Unreserved tables	ICE	Hall 2 Level 0
13:00 – 18:00	Open Meeting of the Breeders Committee	Park-Inn	Alfa 1 + 2
19:00 – 23:00	Welcome Party	Old Tram Depot	

Tuesday, 26 May 2015		Venue	Location
08:00 – 18:00	Registration	ICE	Level 0
08:00 – 18:00	Internet Corner	ICE	Level 3
08:00 – 18:00	Gala Dinner table reservation	ICE	ISF Desk / Level 0
08:00 – 18:00	Trading Floors - Reserved tables	ICE	Hall 2 Level 0 / Hall 3 & 4 Level 3
08:00 – 18:00	Trading Floors - Unreserved tables	ICE / Q Hotel	ICE Hall 2 Level 0 / Q Hotel 1st floor
08:00 – 18:00	Exhibition	ICE	Level 1 + 2
08:00 – 18:00	Private Meeting Rooms	ICE	Level 1
08:30 – 10:30	Open Meeting of the Phytosanitary Committee	Park-Inn	Gamma 1+2
08:45 – 16:45	Full-day tour - Dunajec River Gorge	Park-Inn	Alfa 1 + 2
09:00 – 17:00	Coffee & Water stations	ICE	Level 0 + 1 + 2 + 3
09:30 – 15:30	Full-day tour - Auschwitz - Birkenau		
11:00 – 13:00	Open Meeting of the Trade and Arbitration Rules Committee	Park-Inn	Alfa 1 + 2
12:00 – 14:00	Lunch	ICE	Level 0 + 1 + 2
14:00 – 18:00	Vegetable and Ornamental Crops Section Meeting	Park-Inn	Alfa 1 + 2

Wednesday, 27 May 2015		Venue	Location
08:00 – 15:00	Registration	ICE	Level 0
08:00 – 18:00	Internet Corner	ICE	Level 3
08:00 – 12:00	Gala Dinner table reservation	ICE	ISF Desk / Level 0
08:00 – 18:00	Trading Floors - Reserved tables	ICE	Hall 2 Level 0 / Hall 3 & 4 Level 3
08:00 – 18:00	Trading Floors - Unreserved tables	ICE / Q Hotel	ICE Hall 2 Level 0 / Q Hotel 1st floor
08:00 – 18:00	Exhibition	ICE	Level 1 + 2
08:00 – 18:00	Private Meeting Rooms	ICE	Level 1
08:30 – 10:30	Field Crops Section Meeting	Park-Inn	Alfa 1 + 2
09:00 – 17:00	Coffee & Water stations	ICE	Level 0 + 1 + 2 + 3
09:30 – 13:30	Half-day tour - Wieliczka Salt Mine		
11:00 – 13:00	Forage and Turf Crops Section Meeting	Park-Inn	Alfa 1 + 2
12:00 – 14:00	Lunch	ICE	Level 0 + 1 + 2
14:00 – 15:30	Open Meeting of the Seed Applied Technologies Committee	Park-Inn	Alfa 1 + 2
16:00 – 18:00	ISF General Assembly	Park-Inn	Alfa 1 + 2
18:00 – 18:30	Booths, Private meeting rooms dismantling	ICE	Level 1 + 2
19:00 – 01:00	Gala Dinner	Expo Krakow	

Thursday, 28 May 2015		Venue	Location
8:00 – 14:00	Post-congress Workshop on Seed Applied Technologies		



Access and Benefit Sharing of Genetic Resources in the Asia and Pacific Region

Anke van den Hurk,
APSA EC Member and Deputy Director, Plantum

Since 1992, various international agreements on biodiversity and access and benefit sharing have been negotiated. The discussion on the implementation of those agreements is ongoing, as is access to and benefit sharing of genetic resources by the breeding sector. Discussions are taking place at all levels, at the national, regional and international levels, and in all regions, including the Asia and Pacific region. But are the negotiators aware of plant breeders' needs? Are the two groups working together?

The plant breeding sector in Asia continues to develop at a rapid pace. Genetic resources are being used continuously to develop new and better varieties for growers and farmers, but questions remain: Are breeders in the region aware that the use of genetic resources is not automatically permitted? Are they aware of the access and benefit sharing rules and regulations? Do plant breeders and negotiators on access to and benefit sharing of genetic resources talk to each other? Should they even talk to each other? And if so, how do we establish a framework for discussion?

But first it is important to understand something about the treaties and protocols already in place, and there are three important ones.



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International Biodiversity Treaties

Convention on Biological Diversity (CBD)

Previously, there were no specific biodiversity rules for the collection of plant materials, genetic resources, out of nature or from farmers' fields. So this meant implicitly that crop wild relatives and landraces were freely available to plant breeders. When the Convention on Biological Diversity (CBD) came into force in 1994, genetic resources were no longer freely available.

The CBD has three goals: Conservation of biological diversity; sustainable use; and the sharing of the benefits of access to genetic resources. The CBD defines access to and use of genetic resources as only possible when prior permission from the competent authorities and/or local communities has been obtained and agreements made on the sharing of benefits. (See <http://www.cbd.int>).

Nagoya Protocol on Access to Genetic Resources

This protocol deals with the fair and equitable sharing of benefits arising from their utilisation (The Nagoya Protocol). As the text on access and benefit sharing in the CBD was not very specific, a need was felt, in particular by developing countries, to further elaborate the conditions for access and benefit sharing. This resulted in the Nagoya Protocol in 2010, a protocol under the CBD that needed to be ratified by 50 countries to be enacted; by 12 October 2014, more than 50 countries had ratified the Protocol, which meant that it came into force.

a national focal point, which would assist applicants on the national rules of access and benefit sharing. The information on access rules and responsible persons has to be made public on the clearing house mechanism of the Nagoya Protocol.

Secondly, countries should be ready to negotiate an agreement with the users that would settle benefit sharing arrangements between the provider country and the user.

Thirdly, countries have to set rules to control whether users of genetic resources in their country have fulfilled their obligations with regard to obtaining prior informed consent, whether permission to utilise the genetic resource has been obtained, and to enact an agreement on benefit sharing. To be able to carry out these requirements one or more checkpoints need to be established. (See <http://www.cbd.int/abs>).

The Nagoya Protocol is based on three pillars: Access; benefit sharing; and compliance. First of all countries have to set clear access rules in their countries, and the protocol needs to be further elaborated into national legislation. In addition, countries wanting to utilise the protocol need to identify a competent authority with the responsibility issuing permits for access and

International Treaty on Plant Genetic Resources for Food and Agriculture

When the CBD was developed and ratified, it was felt that earlier agreements within the FAO on the free exchange of plant genetic resources for food and agriculture needed to be adapted in order to be in line with the CBD. This resulted in the International Treaty on Plant Genetic Resources for Food and Agriculture (IT PGRFA), which came into force in 2004.

conditions material can be obtained and how benefit sharing is organised, and therefore enables the exchange of material in a practical manner. Moreover, the SMTA understands the breeding process and therefore settles benefit sharing obligations that value the breeding exemption as a form of benefit-sharing and take the multiple use of genetic resources for one end-product into account.

The IT PGRFA objectives are: Conservation; sustainable use; and access to and benefit sharing of plant genetic resources for food and agriculture. Within the IT PGRFA, a multilateral system has been developed to simplify the exchange of genetic resources for a certain group of species that are specified in Annex I of the IT PGRFA. The exchange of the listed varieties is done through a standard contract, The Standard Material Transfer Agreement (SMTA), which stipulates under which

Several countries appreciate the functioning of the SMTA as a practical mechanism for the exchange of genetic resources; they also make use of the conditions of the SMTA for non-Annex I crops to make the exchange of genetic resources from their gene banks possible. Countries that do this include Canada, the Nordic countries, the Netherlands, and Germany. (See <http://www.planttreaty.org>).

Are International Treaties on Biodiversity and Plant Breeding Interlinked? Is Advocacy Needed?

Have the treaties on biodiversity and access and benefit sharing really changed the daily life of plant breeders? In the early days there was very limited awareness among plant breeders of this topic, so no linkage with their daily work was seen and hence the work continued as normal. At a later stage, especially when the IT PGRFA and the Nagoya Protocol came into force, more and in particular larger breeding companies, started to become aware of the treaties. Even so, a lot of people in the sector continued to feel no real linkage at all.

Moreover, the national implementation of rules did not necessarily affect the daily work of plant breeders. However, in some recent cases, plant breeders have started to realise the linkage and the need for greater clarity of national rules on the plant breeding sector. An example of this in the Asian region is India, which was one of first countries to develop biodiversity legislation, and in recent years it has become clear that they have had an impact on the plant breeding sector.



Genetic Resources and Plant Breeding Cannot Live Without Each Other

Biodiversity, in particular genetic resources, are the basic materials for plant breeding. It is important to realise that much of the genetic material that is used comes from improved varieties, and not from the wild nor from local farmers and/or indigenous peoples.

The use of modern varieties is very common, very acceptable, and made possible through the so-called 'breeders' exemption'. This exemption implies that varieties can be used for further breeding without informing the developer of the modern variety and/or any further obligations. Once a newly developed product is commercialised the developer has no obligation towards the developers of modern varieties that were used in the breeding activities. I believe that it is important that the breeders' exemption remains unaffected by international treaties on access and benefit sharing of genetic resources.

To broaden the biodiversity base and/or find newly important characteristics in genetic resources from the wild, from local farmers and/or research institutes may be used. Very often limited or no specific information is available on the quality of these genetic resources. They may have potency, but most of the time they do not contribute anything. Moreover, working with crop wild relatives and landraces is complex (crop wild relatives do not always easily cross with cultivated species), and full of risks as the material may be useless in the end, and can take lots of time to process. Thus, the decision to use those types of genetic resources is not an easy one as it is a riskier endeavour than using modern varieties. If an additional level of complexity is added via access and benefit sharing legislation, the use of those genetic resources may become more limited. It is a question of whether crop wild relatives serve biodiversity, the breeders, farmers and society as a whole.



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Implementation of compliance elements in national/regional legislation

As indicated above, the Nagoya Protocol does not only regulate access and benefit sharing, it also checks on compliance. In the European Union (EU), legislation has been developed on the latter. Australia and Japan are looking to this legislation to see if similar rules can also be used in their own countries.

The EU legislation determines whether users of genetic resources have due diligence obligations on genetic resources within the scope that they utilise. This means that for those species falling within the scope of the legislation users have to be able to demonstrate that they have the right to use the genetic resources and have an agreement to arrange benefit sharing, if required by the provider. In other words, the user of genetic resources has to prove that he or she is allowed to use them, which should be demonstrated with relevant documents.

Even though the EU legislation was adopted, much of it needs further clarification. Some of the articles demonstrate that the EU does not understand the needs and functioning of industry sectors dealing with genetic resources, especially for those related to the plant breeding sector. To really make the legislation work and to avoid undermining UPOV and the breeders' exemption, clarity should be provided on the scope of the legislation, the precise obligations with regard to due diligence and the place of one or more checkpoints in the development chain. Even if the rules become clearer, the EU should be open to other ideas that really makes the system of access and benefit sharing work. More administrative work will surely follow for users, but whether greater benefit sharing will be the result is open to question.

Advocating for the plant breeding sector in the region

As the negotiations around access and benefit sharing continue at the international level, as the implementation of such legislation at national level moves forward and as they start to have a direct effect on the daily work of plant breeders, I believe that it is time for the breeding community in the Asia-Pacific region to decide whether advocacy is needed and if so, how to do it. The issues are too serious for us to hope that they will go away or that someone else will deal with them.

To decide whether advocacy is needed on access to genetic resources and benefit sharing, I would urge APSA members and everyone involved in plant breeding in the region to consider the following issues as a starting point:

- Consider the needs of the plant breeding sector in the region;
- Keep the breeders' exemption fully applicable in practice;
- Consider the different needs of the Asia and Pacific seed sector compared to the rest of the world;
- Decide if the advocacy of the International Seed Federation (ISF) and other regional and national associations is in line with needs of the Asia-Pacific region and in particular APSA's members; in other words, should advocacy be left to the ISF and related organisations?
- Identify specialists in the region to follow and report on the subject;
- Identify the major points that need advocating in the region; and
- Decide on how to raise awareness of the issue of genetic resources, access and benefit sharing. 🐦

Access to Genetic Resources

- ▶ Countries have an obligation to conserve ALL biological diversity, not just their own native species.
- ▶ Countries MUST manage the use of ALL plant species in a sustainable manner.
- ▶ Countries MUST ensure that the benefits derived from the COMMERCIAL use of all plant genetic material are shared.
- ▶ Use of publicly available material on a commercial basis is NOT FREE.
- ▶ YOU MAY be required to prove, when seeking registration of your varieties, importing/exporting or selling your varieties, what genetic material is used that is listed by the country in relevant regulations and where and how it was derived.

What You Need to Do As a Developer of Varieties

- ▶ Start cataloguing the genetic traits (being resistances, characteristics) introgressed into your varieties.
- ▶ Have proof of their origin (import permits, material transfer agreements etc.).
- ▶ Ensure that you are aware of the scope of the access and benefit sharing regulations in the countries that you develop and/or trade varieties in. Only a limited number of countries have signed or ratified treaties on access and benefit sharing, but this will change over time.
- ▶ Play an active advocacy role in your country's development of laws, regulations and policies on access and benefit sharing.



APSA delegates on an ASC 2012 field demonstration

Indonesia Upholds Horticulture Bill

On October 26, 2010, the House of Representatives and President Susilo Bambang Yudhoyono passed a comprehensive law on the horticultural industry in Indonesia. The general objective of the law, according to the Indonesian government, was to develop the horticulture sub-sector in Indonesia; more specifically, the aim was to organise the sector comprehensively to achieve these development aims.

In principle, the enactment of a comprehensive horticulture law was and is viewed as a positive step; however, one article of the law, Article 100, has caused dismay in the industry, particularly for foreign seed companies, as it limits foreign ownership in the horticulture sector to just 30 per cent. The ownership limitation could also seriously affect the strategic development of Indonesia as a key player in horticulture and agriculture as it could reduce foreign investment in the sector and restrict innovation.

Article 100 could also negatively affect domestic seed producers as they would be deprived of full access to the best quality seeds as well as best practices in terms of plant propagation and cultivation, crop protection, plant breeding and biochemistry. This in turn would lead to a loss of yield (and profitability) and therefore threaten food security; the loss of quality and variety in crops would result in costly imports of horticultural products.

In November 2010, then APSA President Dr. Ruiqing Huang led a delegation of APSA members to Indonesia to deliver a letter to the then Indonesian President Dr. Yudhoyono, which outlined the major limitations and possible implications not only for those in the seed industry but also for those in the horticultural sector and for farmers in general.

In 2014 a judicial review was launched by vegetable farmers from West Java and Banten province along with HORTINDO (the Seed Producers Association of Horticultural Indonesia), to challenge Article 100 of the Horticulture Law. The plaintiffs argued that due to the investment restrictions their close cooperation with seed companies was under threat. HORTINDO representative Afrizal Gindow told the World Service Voice of Indonesia that several multinational seed companies in Indonesia had closed down their operations and moved to other countries in the region. Other seed companies have made arrangements to change the structure of their companies in advance of the verdict on the judicial review.

The result of the review was that the court decided to uphold the law, thereby ruling out any chance of a compromise being sought. The rationale behind the ruling was that the aim of the Horticultural law, in particular Article 100, was to strengthen the role of national entrepreneurs and make the country independent in terms of seeds. Whether this can be done without the close collaboration of the past and the expertise and technology of foreign seed companies remains to be seen.

In an editorial *the Jakarta Post* noted that, "The horticulture seed market has been controlled by foreign companies ... But this dominant role should be credited with their centuries of experience in research and development in biotechnology and plant breeding.

"We [Indonesians] cannot transfer this body of knowledge and experience by simply forcing foreign seed breeders to sell their controlling shares to the national interest. These seed breeding companies will simply bring their research and knowledge to other ASEAN countries such as Thailand and Vietnam." 🐦



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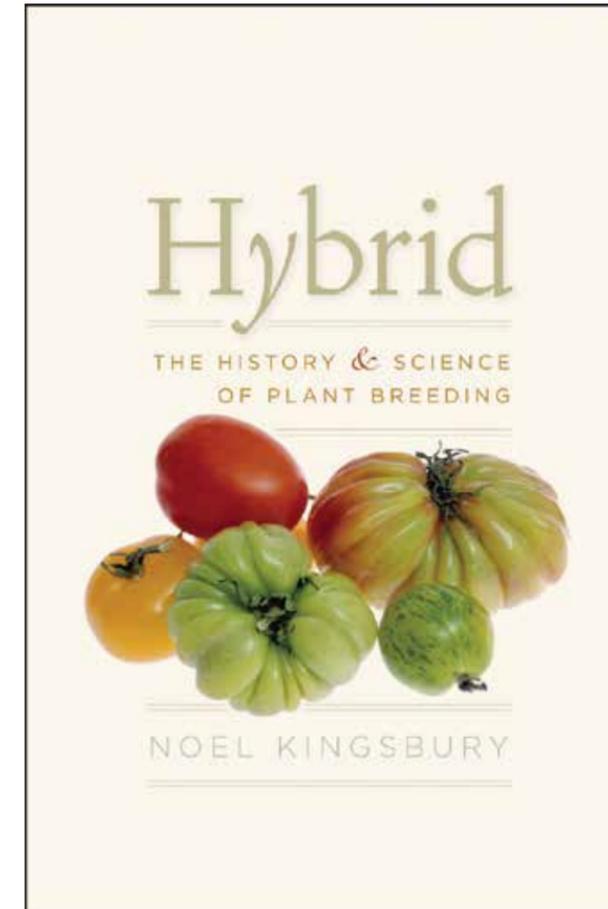


This illustration is Shin Yun-bok's 'Dan-opungjeong' which is Korean genre painting in the second half of the 18th Century.

Beyond Seeds Share the World

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Hybrid: The History and Science of Plant Breeding



crops, which is done in broad historical strokes, and then goes into great detail about how modern plant breeders have shaped the food on our mealtime menus.

The writer divides his subject matter into two distinct periods, the first of which begins with the dawn of 'civilisation' and the birth of agriculture, up until the Spring of 1900, when Gregor Mendel's 1856 paper on pea hybridization was rediscovered. From that date on he considers the question of how genetics has delivered on its promise of agricultural development in the 20th century. He argues that as a result of this rediscovery, interest in plant genetics enabled the development of F1 double-cross F1 hybrid maize, which became widespread in the USA during the 1930s; it was one of the first F1 hybrids to become popular with farmers.

The major food crops like wheat, corn, potatoes and rice are considered in detail, and he assigns a whole chapter on plant breeding for ornamentals, no doubt to the delight of lovers of roses and tulips. But there are also asides in which he talks about many other kinds of fruits and vegetables, which will interest breeders. Along with the star plant varieties, breeding legends like Gregor Mendel, Norman Borlaug, Luther Burbank, Nikolai Vavilov, Henry A. Wallace as well as Henri and Philippe de Vilmorin emerge as the innovators behind some of the amazing developments of the 20th century (just consider two examples: Borlaug and his work on the 'green revolution' and Vavilov on his notion of centres of origin for crops and biodiversity).

British horticulturalist Dr. Noel Kingsbury's 2009 book on plant breeding, 'Hybrid: The History and Science of Plant Breeding' was recommended to this reviewer by former APSA President Anthony Tse of Clover Seed, a keen analyst and historian of the breeding business, who urged me to read it as a general introduction to plant breeding.

The book is written in an engaging, readable style (avoid the hardback edition as it is full of typos and errors, which were eradicated for the paperback edition) that will appeal not only to students preparing to be geneticists, breeders and molecular biologists but also to lay readers who might be interested to learn how plant breeders took wild plants and turned them into the brightly coloured, perfectly formed vegetables that we buy in supermarkets today. They might also consider that there is very little that we eat today that hasn't been developed or 'bred' over the past 10 millennia.

The book covers the 10,000 years of human agricultural history and the domestication of our common food

Kingsley also describes the major centres for plant breeding, noting how Vavilov's original work on this topic has been validated by other researchers since his death from malnutrition at the hands of Stalin's henchmen in a prison that was located not far from the world's largest collection of germplasm and seeds that he helped to create.

A complaint might be made that the book glosses over the more recent developments in plant breeding, including the issue of GMO plants. He doesn't say enough on these issues and he tends to regard anyone who doesn't share his opinion as a bit of a 'luddite'; if you want to go into these areas in more depth then there are more detailed plant breeding histories available and a new generation of researchers such as Paolo Palladino who give more prominence to the social context of the research and work of plant breeders.

That said, this is an engaging and well-written book that is a pleasure to read. Recommended. JC 🐣



AFSTA Hosts African Seed Congress

The African Seed Trade Association (AFSTA)'s annual Congress was held at the picturesque Victoria Falls in Zimbabwe on 2-5 March 2015. Attended by over 300 delegates, the Congress had all the essentials for networking, including trading tables, booths, good surroundings and comfortable weather. Close proximity to Victoria Falls itself also allowed delegates to take time out with their colleagues. The four-day Congress programme offered the usual golf tournament, pre-congress workshop, information and plenary sessions, general assembly meeting as well as the essential social events of a cocktail party and a gala dinner.

While the seed market in Africa is dominated by field crops, from an APSA perspective, and remember our members are predominantly vegetable seed companies, the Congress was a good opportunity to develop networks for the growing and high potential vegetable seed market. Some countries, particularly in north Africa and in the Republic of South Africa have well developed vegetable seed markets, but in rest of Africa the vegetable seed market is in its infancy and only very limited numbers of vegetable varieties are available to farmers and most are OPs.

It was surprising to hear that "Moneymaker" was a leading tomato variety in some African countries, but it showed that while these commonly available varieties may fill a market need, it is because farmers lack access to high-value varieties and seed companies only have restricted access to these markets.

Clearly, this situation represents an opportunity for APSA member companies, particularly since Africa's climate, soil

conditions and to a large extent vegetable dietary habits have parallels in South and Southeast Asia.

Several APSA member companies have been active in Africa for some time, but developing vegetable seed markets in this region is challenging. In filling the market void there are issues that APSA companies are only too aware of, including farmer knowhow, government support both for the markets at the farmer level and for importing seed, distribution networks, as well as technology access for both farmers and seed companies. Some of these issues are being addressed in a number of countries through government and NGO programmes, such as the African Agricultural Technology Foundation.

Government support for the trading of seeds between countries is important and a number of speakers at the AFSTA Congress addressed some of these issues. Ichungwa Gichuki, a partner with the firm Allen Consulting in Kenya, outlined a potential on-line system for facilitating the application and approval process for seeds. The inordinate amount of time required for the application/approval process is a real bottleneck and for some countries it is a barrier to trade. The system proposed by Ichungwa has already been successfully applied for the importation of pharmaceuticals into Kenya, reducing the time required for approvals, increasing the number of approvals processed, raising the level of transparency and reducing opportunities for corruption as well as increasing the revenue raised for the government from the process. The proposal, should it be adapted for seed importation, would necessitate adapting the current system developed in Kenya, which could

be undertaken by a consultant and then passed on to any government department for use. The implementation process would necessitate the training of government staff, as off-site officers tasked with field inspections. The system would also require monitoring for a period of nine months following implementation to ensure that it addressed all issues. The government department would have total control over the system and process. For seed importers, it would offer real-time tracking of the application and approval process and all application forms, approvals and feedback would be on-line.

A standardised system would have many benefits including cost and the implementation process could build on the experiences of other countries. Having one or a small number of countries initially adopt the system would serve as a clear example for others in the region, highlighting the benefits. It would also require funding support from donor organisations with a long-term outlook to promoting the trading of seeds in the region for the benefit of farmers and consumers.

On the seed association benefits for the seed industry theme, there were other presentations both at the National Seed Associations Meeting and during other Congress sessions on the seed industry in Africa.

Dr. Walter de Boef, Senior Program Officer for Agriculture Development with the Bill and Melinda Gates Foundation offered an overview into a proposal to strengthen NSAs in Africa. The proposal, slated to start before the end of 2015, is to invest in developing seed associations in seven African countries. Performance of the participating seed associations will be gauged against a set of criteria including competency, leadership, communication to members and use of technologies in this

process, establishment of effective committees, development of analytics and their use in identifying issues and the development of policies and advocacy with the aim of improving access of poor farmers to quality seeds. AFSTA and the African Green Revolution (AGRA) will have joint leadership on the programme, which would invest \$5 million over five years, or about \$100,000 per country per year.

Dr. Joseph DeVries, Director for the Program for Africa's Seed System (PASS) with AGRA, outlined a role for the seed industry in making the African green revolution profitable for farmers. Joseph gave practical examples from a number of African countries showing how access to quality seed/germplasm significantly improved the life of farmers as well as that of seed companies.

Other presentations from industry speakers included those at the pre-congress workshop from ISTA, OECD and UPOV on working together to develop a framework for sustainable development of the seed sector. Aspects of the International Treaty on Plant Genetic Rights for Food and Agriculture (ITPGRFA) were also highlighted by APSA EC member Anke van den Hurk and guest speaker from the 2014 Asian Seed Congress, Dr. Bert Visser. While these developments will affect how seed companies operate and trade seed in the future, the implications for seed companies, both big and small, and governments are yet to be fully understood.

Overall the AFSTA Congress was a great success; high-profile APSA members participating included Mahyco, Little's Oriental Balm, Indo-American Hybrid Seeds, Namdhari, Clover Seed, Sakata, Takii Seed, Safal Seed, Advanta, Nirit, Hazera, Nongwoo Bio and Asia Seed. T.B



Seeds2B Open Day

Immediately after the AFSTA Congress, many APSA delegates joined the AATF Seeds2B Open Day in Marondera, near Harare, Zimbabwe. AATF is working with partners on the implementation of tomato trials. Field day participants travelled to the Horticulture Research Center in Marondera to get an overview of the project involving the trialling of market leading varieties of tomato as well as those of some participating vegetable seed company partners, including APSA members. A major component of the project was not just the trialling of tomato varieties and other crops (broccoli, cabbage, carrots, cauliflower, green peppers) suitable for the market but also the establishment of improved farming practices that impact on disease management. Participants agreed that attendance at the trial was well worthwhile.

Of particular note was the stark contrast between Asia and Zimbabwe. In Asia, crops are cultivated intensively, using every possible square metre of land, compared to Zimbabwe where thousands of square kilometres of what was cultivated farmland are now open grasslands. Farmers struggle to understand how to grow crops, particularly emerging cash crops such as tomatoes and

do so by trial and error, and only have access to locally produced OP seeds; they use expensive low quality chemicals and fertilisers and have limited access to agricultural machinery and basics such as plastic tunnels which would allow the farmer to extend tomato cultivation into the winter season.

The expertise of government extension officers was low, which impacts directly on the farmer. It was a reality check to visit the trial of five hectares, which was next to a tomato fruit processing plant that had closed in 2008, thousands of hectares of open unutilised farming land once fully under tomato cultivation and supported by a small dam constructed specifically to supply irrigated water the surrounding farm land. All participants identified with the plight of the farmer but they did see the potential of the market and arranged to submit seed varieties for future trials.

Any company interested in adding their varieties to the trials throughout the participating countries in Africa should contact Mr. Edgar Wavomba (e.wavomba@aaf-africa.org). More details on AATF can be found at: www.aaf-africa.org. T.B



Africa: East-West Seed's New Frontier

Francine Sayoc-Shiraishi,
Group Communication Manager,
East-West Seed

Tanzania's famous Mount Kilimanjaro, the tallest mountain in Africa, stands 5,895 meters above sea level. The drive going to the East-West Seed office in Moshi has a view of the mighty Kilimanjaro. It is breathtaking. Right now, however, the company has higher mountains to climb.

East-West Seed is the first market-oriented vegetable breeding company in Asia. For more than 30 years, the company has benefitted from a strong market-driven R&D providing a continuous flow of new products in a wide range of market segments. This, combined with an outstanding seed production capability, provides its farmer-customers in tropical Asia with a reliable and consistent supply of quality seeds.

The company spurred a revolutionary change in the Southeast Asian vegetable seed market, helped to improve the lives of 18 million smallholder farmers and stimulated an enormous increase in the availability of high quality and nutritious vegetables for millions of people in Southeast Asia.

The next big adventure for the company is Africa and other tropical regions in the world where the need for improving farmers' income and providing a source of nutrition for people are equally important.

In 2005, East-West Seed started research and field trials in Tanzania with Rijk Zwaan, which eventually resulted in the formation of the well known Afrisem breeding programme. The cooperation sought to develop hybrid vegetable varieties for the African market such as African eggplant, pepper (Chinenses), and kale (Sukuma wiki) and to provide African vegetable growers with suitable hybrid varieties and top quality seeds, while educating farmers on modern farming practices.

East-West Seed established its own company in Moshi in 2008. It has since started a seed production and sales and marketing company, and today employs more than 400 people. The seed production capacity was set up with PSOM support (a dutch emerging market programme). It produces seeds for local farmers, as well as for export. In 2012, East-West Seed acquired local distribution company Multiflower.

Tanzania is a vast country with over 45 million people and the potential for vegetable consumption and marketing, including export to East Africa. For instance, the preferred minimum daily intake of vegetables is 200 grams per person. Taking into account after-sales losses, 300 grams of fresh produce per capita is needed daily, which means 3,500 tons of fresh vegetables per day, or 5,000,000 tons per year.

To meet this yearly demand, Tanzania should have a vegetable production area of at least 500,000 ha (single crop cycle). The current area for fresh vegetables is about 120,000 ha, while irrigated land is approaching 300,000 ha. The potential in the irrigated area is much larger, so Tanzania can increase productivity per hectare, and the production area can also be expanded. Major vegetables grown include tomato, onion, carrot, watermelon, cabbage, sweet pepper and several indigenous varieties like the African eggplant, night shade and amaranth.

Two years ago East-West Seed was awarded a grant under the Seeds of Expertise for the Vegetable Industry of Africa (SEVIA) project of the Dutch government. SEVIA's objective is to contribute to the food security strategy and vegetable industry development for Africa. The partners, which also include Rijk Zwaan and Wageningen UR, want to develop the

African vegetable sector by providing adapted varieties to the farmers and by setting up an African Institute for Vegetable Technology (IVT) for the development, implementation and dissemination of farm innovations and the screening of genetic vegetable resources in Africa.

SEVIA seeks to address rural poverty in Africa by promoting market-oriented vegetable chain development. By stimulating vegetable production and marketing innovations, the vegetable sector will provide opportunities for income improvement, employment generation and better nutrition in rural Africa. Current vegetable farming does not generate sufficient income for the farmers, nor does it provide sufficient employment. The hope is that urban migration will become a less obvious choice for the rural population, particularly if there are opportunities for economic growth through the vegetable industry. 🍅



Beyond Tanzania

Using farmer knowledge enhancement as the foundation for opening new markets, East-West Seed is active in training and extension not only in Tanzania but also in several countries in West Africa. The company has initiated market and product development initiatives in West African countries, including Senegal, Ghana, Benin, the Ivory Coast, Nigeria, Burkina Faso, Togo and Mali. East-West Seed works with various stakeholders like the Dutch-funded GhanaVeg and the private sector-funded 2SCALE (Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship), which is also partly funded by the Dutch government. These projects aim to offer African vegetable farmers access to quality seeds and technical training and advice, which will allow them to better respond to local market requirements and improve food nutrition and security.

East-West Seed participates in the 2SCALE project in Benin, Ghana, Mali and Nigeria by conducting practical training workshops for different leaders of farmers' groups, agricultural extension workers, regional coordinators, business support service providers, and some agronomists. Training is held for four days during both the rainy and dry seasons, and based on lectures on theoretical aspects supplemented by a lot of practical field work.

Aside from NGOs, East-West Seed collaborates with educational institutes such as the University of Ghana

in providing practical training on vegetable grafting to students. It runs trial testing with the Benin agricultural agency Institute National de Recherche Agricole and the Centre National de Recherche Agronomique in the Ivory Coast. Vegetable demos were established on various sites under the care and maintenance of the different farmers' groups to teach farmers about good nursery preparation and management, raised beds, installing trellis or plant support, the use of seedling trays, plastic mulch as well as drip irrigation, and drainage systems which are very important during the rainy season. Follow-ups are conducted to assist the activities done by the farmers. Field days are organised at each of the demo sites in the participating countries. Guided by a peer-learning approach, East-West Seed focuses on the training of trainers i.e. farmers are taught to share with other farmers the knowledge they acquire during training.

There is still a long way to go, but progress is certainly being made. The challenge for East-West Seed in Africa is not unlike the challenge in Asia some years ago: to increase vegetable consumption by making good quality fresh vegetables available in urban areas. This will require the availability of good seeds and intensive farmer education on modern vegetable cultivation in lowland areas near the cities. East-West Seed has successfully responded to that challenge in Asia – and that is what it plans to do in Africa, too. 🍅

APSA Collaborative Research Programmes



Tomato Spotted Wilt Virus

For some years now there have been extensive discussions on the possibility of a tomato spotted wilt project that would develop a simple mechanical inoculation protocol for Peanut Bud Necrosis Virus (PBNV) and Capsicum Chlorosis Virus (CaCV), in addition to the sourcing of resistant material. Tospoviruses are notoriously difficult to work with and getting this project off the ground has reflected this difficulty. Specifically, there are no reports of efficient, repeatable mechanical inoculation methods for tomatoes and peppers for many of the tospoviruses widespread in the region.

Tospoviruses such as PBNV and CaCV are, perhaps second to TYLCV, the major viral tomato diseases in the region. With this in mind, the APSA R&D Advisory Committee has been actively seeking collaborations with universities and other research institutions. Just recently, the Committee evaluated a number of proposals and recommended a project proposed by BIOTEC (part of the National Center for Science Technology and Development Agency in Thailand)

under the title, "Development of a robust mechanical inoculation protocol in tomato for CaCV (Thai isolate) and TNRV (Thai isolate)."

To date, 11 APSA members have joined the project, which is scheduled to start in the coming months. The project will run for two years and will include two workshops. Only consortium members will be eligible to attend the workshop. Access to results (mechanical inoculation protocol) will ONLY be available to participating companies. In the near future there will be a second follow-up proposal (Phase 2) submitted to APSA members. Using the mechanical inoculation protocol developed in Phase 1, Phase 2 will select virus resistant lines, which would be made available to participating seed companies for incorporation in their tomato breeding programmes. Phase 2 will be open to all APSA members but conditions will apply as the project will rely heavily on the mechanical inoculation protocol developed in Phase 1. More details can be found on the APSA website.

Tomato Yellow Leaf Curl Virus (TYLCV)

The collaborative TYLCV programme with AVRDC trialing tomato lines carrying different combinations of Ty genes on different seed company-managed sites at different locations in the region has entered Year 2. Results from Year 1 trials were extremely promising, offering participating members insight into resistance to TYLCV in the region. The report from Year 1 has already been circulated to participating members. Seed for trials in the first half of 2015 have been

delayed until 2016, but trials in the second half of 2015 will go ahead as planned. Participating companies should have received or will be receiving their seed shortly. More details on the project itself are available on the APSA website. Those participating companies who have not received copies of the report for Year 1 should contact APSA (tom.burns@apsaseed.org). Results and workshop attendance are only available to participating members. TB 🍅

ASC 2015: Important Dates

Congress Registration

Event	Date
Congress registration opens online	1 June 2015
First day for lodging visa applications	21 August 2015
Early bird registration CLOSES Registration fee increases after today	31 August 2015
Late registration starts Delegates registering after this date will NOT have their names in the Congress programme; registration fee increases after today	16 October 2015

Visa Applications

Event	Date
Visa invitation letters Last day for requesting visa invitation letters for delegates from China, Pakistan, Afghanistan, Iran, Iraq and Sudan	26 September 2015
Visa applications Last day for lodging visa applications for delegates from China, Pakistan, Afghanistan, Iran, Iraq and Sudan	5 October 2015
Visa applications Last day for lodging Congress visa applications (except China, Pakistan, Afghanistan, Iran, Iraq and Sudan)	20 October 2015

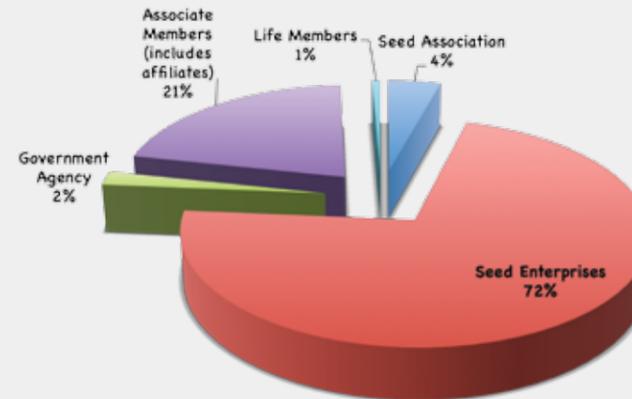
Other Important Dates

Event	Date
Executive Committee Meeting #63 in Bangkok	10-11 June
Crop & Activity Group Meetings for committees and advisors (online or TBC)	July 2015

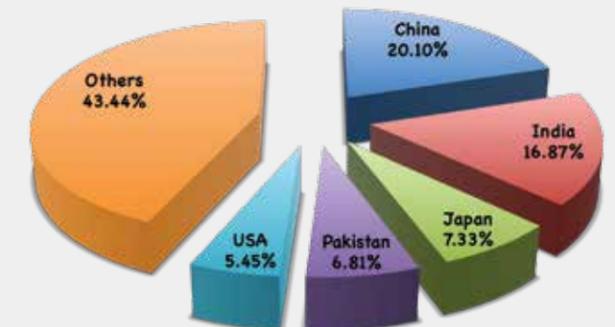
Don't miss out on Congress facilities. If you need a booth, trading table, display trading table or a private room, book early and avoid disappointment.

APSA Membership

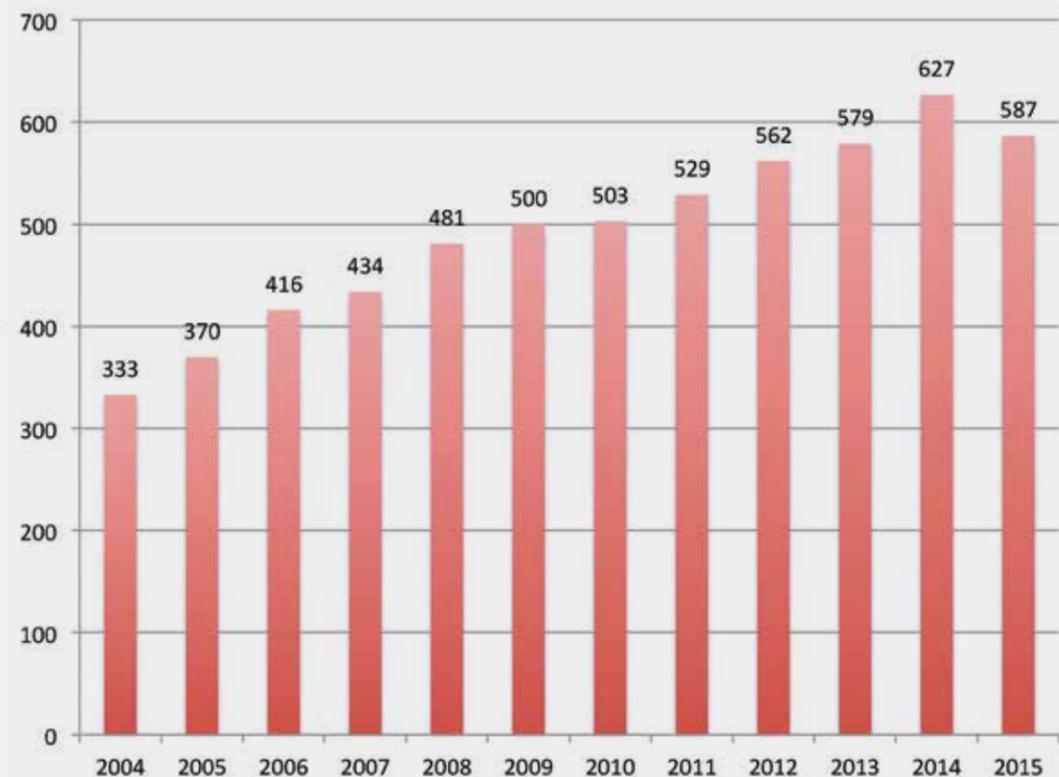
Members by Category



Members by Country



APSA Membership Growth Since 2004



The Role of Biotechnology in the Seed Industry

I still remember the headlines screaming “Biotechnology Is Coming” on the front page of *The Times* newspaper and the cover of *Newsweek* magazine, and even in many science journals, more than two decades ago. Since then, I have observed the huge impact that biotechnology has had on biological and agricultural science. As a biotechnologist and a research director in the private sector at Nongwoo Bio (or NWB, a vegetable seed company in South Korea), I enjoy every day working and thinking about how I can graft together two technologies: biotechnology and plant breeding.



Several key turning points in my life led me to where I am today. The first was when I was a kid, when I used to play with an old microscope at home to see the exciting world of microorganisms in sewage. The second was in 1983 when I saw a beautiful DNA band on an agarose gel under UV light. At the time, I was a graduate student at Oregon State University in the United States, and it was the first time I had ever purified DNA from *E. coli*. Since then, I have learned how to clone genes of plants and study gene functions.

My career in biotechnology really started when I was a postdoctoral fellow at Rutgers University working in collaboration with Zeneca Seed. For a short period of time, I attempted to transform corn with *Agrobacterium*, although the transformation did not work then. I remember asking some of the researchers in the major seed companies how biotechnology would influence the seed industry in the future but they could not give me a clear answer, because they were only keen on the development of GMO, which was a very difficult task.

When I joined NWB in 1999, I recruited scientists to build a platform of technologies that could be utilized in breeding practice. NWB was the first private company in Korea to jump into biotechnology for the purpose of crop breeding. And we have made some significant advances, including the development of DNA markers associated with disease resistance, tolerance to the environment,

and functionality. Hundreds of specific markers developed in our Institute over the past 16 years now complement breeding practices. The genotyping application we developed have made many services possible, such as the purity control of F1 and inbred lines, variety verification, MAS (marker assisted selection), and MAB (marker assisted backcrossing). In addition, cell fusion and DH technologies have helped breeders to solve breeding limitations.

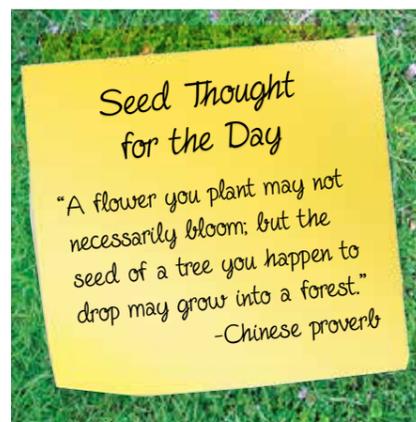
These technologies play a major role, not only in the reduction of breeding time, development of various genetic sources, enhancement of purity of the lines and cost-saving but also for the selection of value-added varieties. I am very happy with the breeding pipeline we have developed from the technologies that we have created, and I am pleased to note that several South Korean seed companies have recently started their own biotech labs to help breeders.

For GMO in South Korea, many crops that were considered too difficult to transform, such as hot peppers, have been changed. However, no GM varieties have been successfully commercialized in Korea, and no GM crops have been approved for risk assessment. But I'm sure it will happen. And it should, because we import lots of GM products, equivalent to \$3 billion every year.

In order to feed a growing human population, seed production rates and crop quality are important.

Consequently, the use of biotechnology in the seed industry is inevitable if better seeds are to be produced. In addition, seeds are being used as material for future industries and technologies in medicine, pharmaceuticals, functional foods, energy, and many other applications, so we can expect a set of new seed-related technologies to appear soon. Actually, new technologies like genomic breeding, genome editing, in silico breeding and NBT (new plant breeding technology) are emerging rapidly.

If someone today asked me how biotechnology has influenced the seed business, I would say it has already become a major tool in plant breeding. Over the past 20 years or so, it has changed the face of R&D and the world seed market dramatically. Now, the use of biotechnology in the seed industry is more like the expression, "Don't leave home without it".



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