

ASIAN SEED

THE OFFICIAL PUBLICATION OF THE ASIA & PACIFIC SEED ASSOCIATION



Asian Seed Congress

Reviews, summaries and photographs



NSA Meeting

Seed legislation updates from around the region



Thailand Country Report

PBR, Seed Hub investment incentives



Seed for Thought

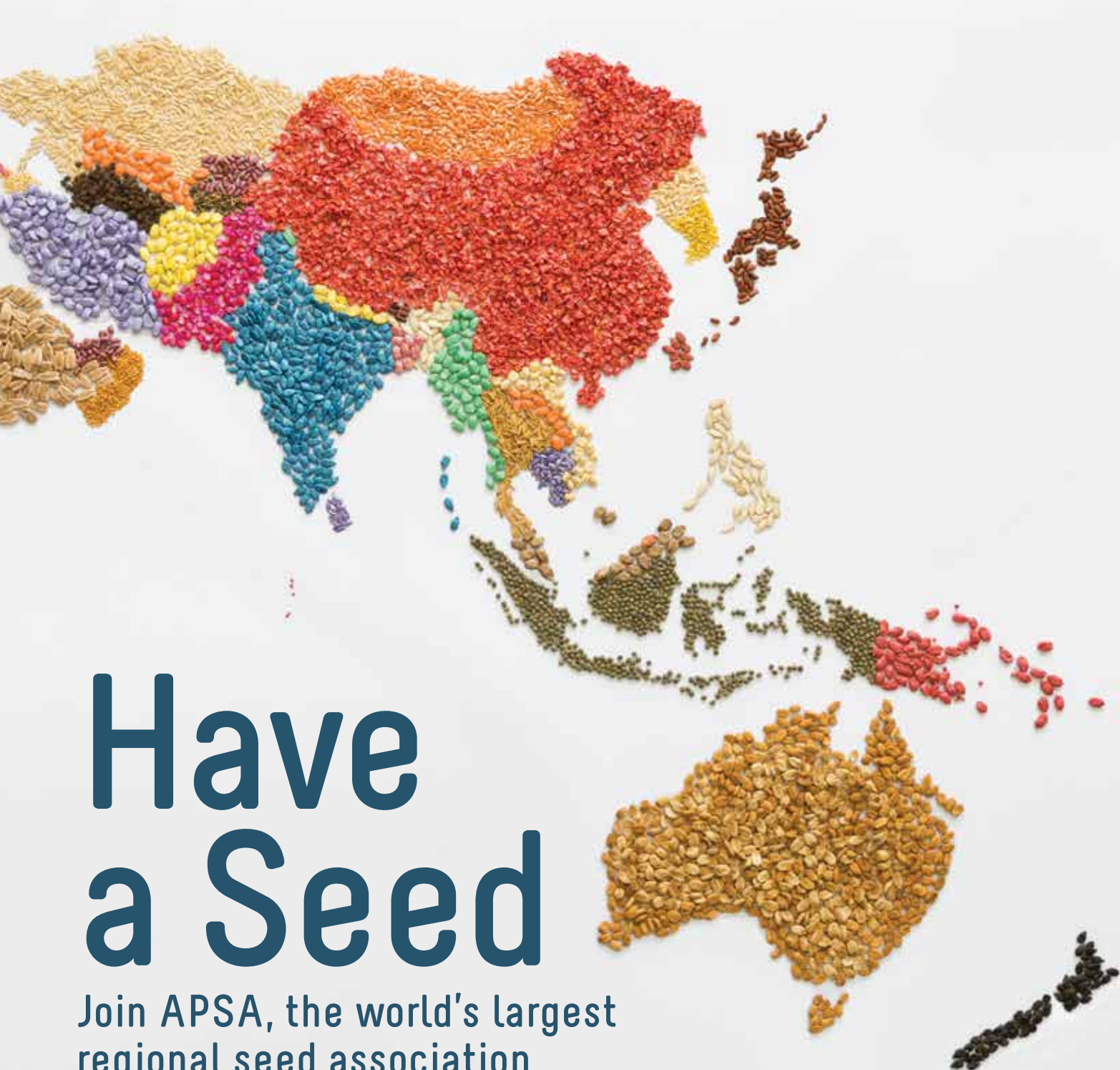
Asia's vegetable breeding visionary
Simon N. Groot

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ASC 2017 BANGKOK REVIEW





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ASIAN SEED

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Resilience in the seed sector, APSA



Brenda Dossey, APSA President

Hello and Best Wishes to all APSA Members.

Greetings for the New Year 2018.

While considering possible topics to share in this latest issue of *Asian Seed*, I was reminded of something I thought might be of interest to you personally, and perhaps useful in your work and research: it is the word, resilience.

Resilience is a noun and, according to the Merriam Webster Dictionary, has two meanings. They are:

- 1) The capability of a strained body to recover its size and shape after deformation caused, especially by compressive stress.
- 2) An ability to recover from or adjust easily to misfortune or change.

In the past, the word resilience was often used by social workers to describe people who seemed able to endure stressful conditions, and take misfortune in their stride. Resilience was also the topic of one of the longest sociological studies ever carried out: the *Kauai Longitudinal Study*. Here, a group of researchers in Hawaii, ran a study of every child born on the island of Kauai in 1955 to find out how they developed over the course of their lives.

There were 698 children born that year and their progress was checked at ages 1, 2, 10, 18, 32 and 40 – all key stage years in human development.

The results of the study challenged long-held opinions that children born in poverty, or who were subjected to great adversity, were doomed to fail in life. Instead, it was found that many individuals build forms of self-protection that help them to cope with life's misfortunes. Some of the scientists even considered the possibility that there was a genetic element of resilience, which can be shared by family groups.

And nowadays, resilience has become a buzzword in the corporate world. Questions are asked such as "What can we do to make our organisation more resilient?". Bosses and managers want to know how they can improve their company culture so that businesses can endure the challenges and problems that are thrown at them.

This brought to mind one organisation that knows much about the importance of having comprehensive resilience planning procedure in place. And this is an organisation you're all familiar with – the Food and Agriculture Organization of the United Nations. So what they have to say about

resilience on the FAO website (www.fao.org) makes for interesting reading.

- Over the past decade, natural disasters caused over \$US1.3 trillion in damages and affected 2.7 billion people.
- Between 2003 and 2013, agriculture absorbed some 22% of damages caused by natural hazards and disasters in developing countries.
- Agriculture is the sector most affected by drought, absorbing about 84% of the worldwide economic impact

I invite everyone to see what FAO has been doing with regards to resilience and how the organisation works hard to ensure long-term sustainability for farmers around the world.

I feel strongly that the seed industry is resilient and by extension, so is APSA. It is our ability to show resilience, adapt to change and respond to challenges that has served us so well all these years.

From everyone at APSA, thank you for your membership, support and for your contributions to the association.

I hope that 2018 will be a great year for you, your families, your staff and your companies. 🌱



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Creating Tomorrow Today

Looking Back, Moving Forward



Heidi Gallant, APSA Executive Director

First, on behalf of the APSA Secretariat, I would like to take this opportunity to thank all of the members who attended the Asian Seed Congress 2017. We truly enjoyed seeing you and continue to welcome your feedback on the event so that we can better serve you in 2018.

Organising this Congress was a great challenge due to the last-minute venue change, which gave us only five months to replan the event. We were left scrambling to ensure we could stage a superior event at such short notice. However, from your feedback thus far, it appears that we were highly successful. So we are eagerly looking forward to doing it all again in 2018.

In the meantime, the Executive Committee is busy discussing the best course of action moving forward. We have listened to our members' feedback and ideas, and are making every effort to ensure APSA can become an internationally registered association as soon as possible. Despite all the hurdles we have encountered, we are pleased to see APSA continuing to grow stronger. Indeed, 2017 was a busy year for us. We started the year in fine form with our second Asian Solanaceous Round Table, which was organised in February in

cooperation with Kasetsart University. Following this successful research-focused event, we worked with The World Vegetable Center in May for a workshop in Tainan as part of our Vegetable Breeding Consortium. Back in June, in Bangkok, we hosted National Plant Protection Officers from all over Asia for the Third Expert Consultation on Phytosanitary Measures in the Asia-Pacific region. Also in June, we took an eager group to France for a seed production study tour. In August, we concluded the tospovirus project with the National Center for Genetic Engineering and Biotechnology, with a well-attended workshop of keen and knowledgeable members who took part in this project.

APSA joined many international events this year, including UPOV meetings, the World Seed conference, OECD meetings, the Seed Association of the Americas conference and the Guangdong Seed Expo in China. APSA has started a business development programme in line with its 2017–2018 strategy, and while this meant our conference was oversubscribed in 2017, it should also mean that you will soon see many new faces in our expanded venue in the Philippines in 2018. One of our most amazing developments in 2017 was the

launching of the Membership Directory on the APSA website. This system allows you to buy and sell seeds all year round. You simply search by country and by the type of seed you are looking for. So, to ensure members can find you, please be sure your profile is fully completed.

We are also sad to announce that Dr. Narendra Dadlani, who has been APSA's Director of Technical Affairs for three years, officially retired in December. His contributions have been invaluable and we'll miss him, while wishing him the very best in future.

As we head into 2018, we have a lot of great things lined up for our members. APSA members are vitally important to us at the Secretariat. We want to work with you more closely on initiatives that will improve the seed industry in Asia and the Pacific.

In order to achieve this, we need your participation in our Special Interest Groups, Standing Committees and their respective working groups. For more information, please log into your membership profile with APSA and take a look at the meeting minutes and news for the activity of these committees. We look forward to hearing from you! 🐦



The APSA Secretariat formally bids farewell to Dr. Narendra Dadlani, who served as APSA Director of Technical Affairs for three years, and will now officially retire. Look out for an interview with him in the near future.

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Investing in Food Security



HRH Princess Maha Chakri Sirindhorn pictured (centre) with FAO Regional Representative for Asia and the Pacific, Kundhavi Kadiresan (far left) FAO's five Model Farmers (2nd left-to-right: Afghanistan, Indonesia, Japan, Nepal and Thailand), along with Keynote Speaker Prof. Bina Agarwal (2nd right) and Mr. Kim Jong-Jin, FAO Deputy Regional Representative (far right). Photo: FAO. Full names and stories of farmers can be found on FAO's website.

A delegation from the APSA Secretariat joined more than 100 esteemed guests in a ceremony on 16 October to mark the 37th World Food Day.

The ceremony was held at the Food and Agriculture Organization's Regional Office for Asia and the Pacific on Bangkok's Phra Athit Road. Delegates represented key agricultural, trade, research and diplomatic bodies from across the region.

Presided over by Her Royal Highness Princess Maha Chakri Sirindhorn – who last year graciously agreed to represent the FAO as Special Ambassador for the Zero Hunger campaign – the event was also attended by Privy Councillor, Jaranthada Karnasuta; Ministry of Agriculture and Cooperatives Permanent Secretary, Mr. Lertviroj Kowattana; Secretary-General of the Chaipattana Foundation, Dr. Sumet Tantivejakul; as well

as Ambassadors from Bangladesh, Bhutan, Brazil, Canada, Finland, Germany, Philippines, Qatar, Sri Lanka and Switzerland.

Reinforcing this year's World Food Day theme, "Change the Future of Migration – Invest in Food Security and Rural Development", inspirational addresses were given by HRH, as well as the FAO's Assistant Director-General and Regional Representative for Asia and the Pacific, Khundavi Kadiresan. This was followed by a speech from keynote speaker, Ms. Bina Agarwal, an award winning Professor of Development Economics and Environment at the global Development Institute, University of Manchester in the UK.

The event concluded with an awards ceremony in which five "Model Farmers" from across the region – four women and one man – from Afghanistan, Indonesia, Japan, Nepal and Thailand, were awarded

certificates by Her Royal Highness, on behalf of the FAO Regional Office for Asia and the Pacific. 🌱



APSA's delegation was represented by Suchada Yansarasin (left) and Mike Kingpayom (right), posing here with the FAO's Linda Barrios Muangsombut, who was one of the founding pioneers of APSA more than two decades ago.

First Global Sustainable Rice Conference

APSA was among dozens of regional and global grain stakeholders who participated in the First Global Sustainable Rice Conference and Exhibition, which was held in October at the UN Conference Centre in Bangkok.

Facilitating optimistic dialogue on the regional and global scale implementation of environmentally-responsible and



Dr. Matthew Morell, IRRI Director-General (left) and Mark Radka, Chief of the UN Environment Programme's Energy, Climate and Technology Branch, sign the MoU.

economically-viable rice production, the four-day event was attended by more than 300 delegates, including rice officials, value chain actors and researchers, from both the public and private sectors, including representatives from 83 member organisations of the Sustainable Rice Platform (SRP).

Delegates came from throughout Southeast Asia, South Asia, East Asia, Europe, North America, South America and Africa.

Topics of discussion spanned every aspect of sustainable rice production, including SRP indicators and implementation, market forecasts, climate-smart agriculture, innovative solutions, water conservation, irrigation, greenhouse gasses, solar cycles, crop-protection chemicals, supply

and value chains, farmer-and-female empowerment, to name a few.

A benchmark set at the event was the signing of an MoU between UN Environment and IRRI, which served as the basis for a subsequently-published declaration that stated the indicators, objectives, commitments and desired outcomes of the meeting, (the full declaration can be downloaded from APSA's website).

Overall, the conference served as a useful and productive forum to facilitate dialogue and interaction among key global agriculture stakeholders – not only for pursuing novel objectives of the SRP, but also for exchanging practical insights, data, indicators and forecasts for the present and future of rice production in Asia, the Pacific and across the world. 🌱

From Nyanza to Bangkok and Back

By Paul Hategekimana

I arrived in Thailand back in August 2016 to pursue a Master's Degree in Tropical Agriculture at Kasetsart University. Through cooperation between the governments of Rwanda and Thailand, the objective of the scholarship was for me to gain experience and learn techniques that could be implemented in Rwanda after my graduation. Agriculture is the backbone of Rwanda's economy, with more than 95% of the country's population involved in it, whether directly or indirectly.

In January 2017 I began my internship with APSA, which involved visiting the APSA Secretariat office once a week. This arrangement was initially planned for three months, but fortunately I was able to extend the internship up to a year. My responsibilities included administrative tasks in the secretariat office and joining field visits to numerous locations, as well as helping out at APSA's Asian Seed Congress.

Food for Thought

During my time at APSA, I got the chance to go out into the field and learn about other types of agriculture, in addition to seed. One of the first trips I took was to learn about aquaculture, which you probably read about in a previous issue (Volume 23, Issue 4). On other field visits, I studied spirulina and vegetable seed production.

My crash course in spirulina, a type of cyanobacteria, was with a social enterprise called Energeia, which was later reinforced at the Biotechnology Department at Kasetsart University. Since we haven't discussed spirulina in *Asian Seed* yet, I'll take this opportunity to share what I learned. Like seed, spirulina is a high source of vitamin and proteins, not to mention being a potentially lucrative source of income for farmers too. I was surprised to learn that such a rich food source is being researched and produced in the heart of an urban centre like Bangkok.

The director of Energeia, Saumil Shah, started work on his business idea back in 2008. Previously an aerospace engineer, Saumil went on to study microbiology in California and was determined to start his own organisation to address malnutrition. I was very inspired when touring Energeia's production base in Bangkok and I encourage anybody in the neighbourhood to look them up! Saumil and his mother-in-law, Bonny, were very knowledgeable and showed us their entire process.

I was also surprised to learn that research is also taking place right here at Kasetsart University in the same building as the APSA Secretariat. To find out more, I spoke with Wanida Pan-utai, a researcher in the Biotechnology Department, where I learned that there are two main species of spirulina, namely *arthrospira platensis* and *arthrospira maxima*.



Paul (far right) poses with Saumil Shah (2nd right) of Energeia, along with several international interns who had been learning about spirulina production with the social enterprise in Bangkok. Photo: APSA.

The production process was similar in both places I visited and, in a nutshell, goes like this: First, the media or culture is prepared, which takes about five days in the laboratory. The solution requires high alkalinity (up to 11PH) and salinity to protect against contamination, and a nutrient solution called Zarouk ensures the medium can thrive. Next, after a certain point, the medium is transplanted into larger tanks. In commercial and research applications, it can be harvested within ten days to a month. Finally, after harvesting, the product is cleaned and dried before being packaged.

Spirulina has many applications, including as feed for agriculture and aquaculture, and can be consumed as a human dietary supplement. At Energeia, we were even fortunate enough to try some spirulina-fortified chocolate and pasta. In Rwanda, we have natural spirulina which has not yet been exploited, but I will definitely look into this when I return home.

Seeds & Seminars

APSA is a seed organisation, and indeed, I did get some valuable field experience specific to seed. I visited a farm and seed processing plant of Chia Tai during the Post-Congress Tour, and I got to learn about the production of various types of vegetable seed crop, namely corn, peppers, pumpkin and watermelon. It was amazing to see high-yielding hybrid seeds in action. I was pleased to learn that in the near future this firm will be expanding to East Africa, where low seed quality and yields are still limiting factors. This field visit got me thinking about how I could introduce new grain seeds – other than maize – like sunflower and white sesame, in my area in order to reduce our dependence on high cost imports.

Speaking of the Congress, I was very lucky to assist in the technical sessions of the Asian Seed Congress 2017. As well as helping the team to manage the various seminars, I also was given the opportunity to present and share my research in the Field Crops seminar. A big part of my coursework is weighted towards this research project. I chose to do trials to evaluate the performance of different corn cultivars in greenhouse-simulated

drought conditions. Drought stress is a key factor for productivity and corn is a staple crop in Rwanda, where productivity is relatively low due to limited technology and little support for farmers to better cope with climate change. According to a 2017 report from the US Department of Agriculture, Rwanda's average yields range from half a tonne to a tonne per hectare. In contrast, Thailand's average production is between 4.2 to 4.9 tonnes per hectare. Be sure to check out page 20 for more information, and APSA members can even view the video of my presentation and all others online.

In conclusion, I would like to thank APSA for giving me this great opportunity. I will now prepare to return to my home country and pay the knowledge forward for the next generation of agriculture in Rwanda, East Africa and beyond. 🌱



ASIAN SEED CONGRESS 2017

13-15 NOVEMBER, BANGKOK, THAILAND



The 24th Asian Seed Congress



More than 1,500 agriculture industry stakeholders from more than 50 countries around the world took part in the most significant seed trade event in the Asia and Pacific calendar



This year's Asian Seed Congress was held at the Marriott Marquis Queen's Park Hotel in Bangkok, Thailand, from 13 to 16 November, followed by Post Congress Tours on 17 November (see pp. 24-25). A Pre-Congress Workshop Climate Change was held on 13 November (see p. 16). The Congress officially got underway with an Inaugural Ceremony on 14 November, which was presided over by APSA Vice President Tahir Saleemi (left), along with Chairman of the National Organising Committee, and President of the Thai Seed Trade Association, Dr. Chairerg Sagwansupyakorn (right); and Thailand Department of Agriculture Acting Senior Expert of Plant Production, Dr. Naruatai Wotasatit (centre), who was delegated as Chair of the ceremony by Thailand's Ministry of Agriculture and Cooperatives.

Thailand Country Report

In line with tradition at the Inaugural Ceremony of the Asian Seed Congress, a “Country Report” is presented by a seed industry expert, who provides an overview of the latest developments, policies and trends in the local seed sector. This year’s presenter was Dr. Boonyanath Nathwong, who is currently the Director of Regulatory Affairs at Monsanto, Thailand. An esteemed authority on biosafety and biotechnology in relation to the seed industry, Dr. Boonyanath is the Vice President of the Thai Seed Trade Association (THASTA) and an Executive Committee member of the Seed Association of Thailand. She is also a Secretary on the Seed Hub Executive Committee of the Ministry of Agriculture and Cooperatives, as well as the Plant Variety Protection Committee.

The report began with an overview of production and export trends for three main seed crop groups: namely, hybrid corn, rice and vegetables. Dr. Boonyanath noted that half of the hybrid corn seed produced is for domestic consumption and the other half for export. This balance is also true for vegetable seed. As for the third group, Dr. Boonyanath explained that “Since the Government has a policy to neither import nor export rice seed, all production of this type of seed is entirely for domestic consumption.”

Quality Indicators

Of these three groups, vegetable seed – including cucurbits, peppers, tomatoes and water spinach – has become the biggest income earner for the industry. Owing to a strong breeding programme, advanced production technology and reinforcement by government policy, Dr. Boonyanath said that both production and exports of vegetable seeds are experiencing a sharp uptrend.

According to the data presented, the value of vegetable seed exports is increasing at an even faster rate than the quantity of exports. In 2016, Thailand exported around 4,000 tonnes of (the aforementioned types of) vegetable seed, valued at about US\$118 million, which equates to an average price of about \$29,500 per tonne, or \$295 per kg. This is in contrast to a decade ago, where in 2006 the

Thailand Corn and Veg. Seed Export Volume and Value (2005 – 2016)



kingdom exported about 2,000 tonnes of vegetable seed worth about \$30 million, about \$16,000 per tonne, or \$160 per kg.

“The trend is a significant indicator that Thailand is producing more high-quality vegetable seeds,” said Dr. Boonyanath, who credited the trend to wide implementation of advanced breeding and production technologies.

“The trend for hybrid corn production and exports is more stable however,” continued Dr. Boonyanath, who explained that the growth of this sector directly corresponds to domestic demand in the animal feed industry. “Demand in the feed industry is estimated to be growing at 7% annually, which means that seed production should also be growing at the same rate.”

In respect to “stabilising” exports and production of hybrid maize seed, Dr. Boonyanath pointed to a decline in the past few years for exports of this type of seed. Data showed that exports peaked in 2014 at about 28,500 tonnes valued at about \$75 million, compared to 2016 when the country exported about 17,000 tonnes worth about \$52 million.

One of the main factors for this trend was due to hybrid maize seed production companies – including both local and multinational companies – beginning to diversify production.

Seed Hub Policy

Dr. Boonyanath went on to introduce the Thailand Seed Hub Policy, which she defined as a public-private collaboration – among the Ministry of Agriculture and Cooperatives, the National Science and Technology Development Agency, and the Thai Seed Trade Association – to promote and facilitate the continued development of the seed industry, encompassing areas of R&D, production, domestic commercialisation, import, export and re-export.

The policy, which is being built upon a number of MoUs with key stakeholder organisations, has been arranged into five strategic pillars or drivers. These are R&D, policy and regulation, seed production, imports and exports, human resource development, and infrastructure, which includes irrigation and logistics.

“We welcome investment, both domestic and foreign... We would like to see Thailand as a trading nation – a reliable and credible place for all of you to come here and conduct business in the seed industry together with us,” she said, addressing a captivated audience.

Investment Incentives

The Thai Government continues to offer considerable incentives to attract investment in the seed industry. Dr. Boonyanath introduced two such incentives

that have been offered since 2015 under the Investment Promotion Policy of the Thailand Board of Investment (BOI).

The first is for Conventional Plant Breeding, in which qualified investors are offered a five-year corporate income tax exemption, as well as import duty exemptions for machinery and raw materials.

The second scheme is specific to R&D and certain activities related to seed industry manufacturing and the improvement of plants, animals or microorganisms using biotechnology. Under these incentives, qualified ventures can take advantage of an eight-year corporate income tax exemption, as well as import duty exemptions on machinery and raw materials.

Regulatory Progress

Dr. Boonyanath emphasised that the Government of Thailand has been progressive in updating regulations and procedures to be more seamless for conducting seed business. Among these, are regulations that reduce timelines and complicated processes for renewing licenses related to seed gathering and commercialisation, as well as importing and exporting. Thanks to a new regulation recently approved by the cabinet, for example, the procedure for renewing a license can be as simple as going to the bank and

Thai Seed Stakeholders Lobby for Stronger PBR

On 24 November 2017, at the Centara Grand, Central Ladprao in Bangkok, four Thai organisations signed an agreement of support for proposed amendments to the Plant Varieties Protection Act, B.E. 2542 (1999).

The organisations were the Plant Breeding and Multiplication Association of Thailand (Mr. Pichet Grudloyma, President), the Seed Association of Thailand (Dr. Boonyanath Nathwong, Executive Board), the Thai Seed Trade Association (Mr. Pachok Pongpanich, Advisor to the President) and the Federation of Safe Agriculture (Mr. Sukan Sangwanna, Secretariat). Also attending the signing event were many representatives from the public and private sectors.

A total of 58 amendments to the act have been proposed by the Department of Agriculture and the process to revise legislation requires provisions for feedback from relevant stakeholders.

Outlined in the signed document, which was submitted to the Department of Agriculture, were a dozen points, mostly addressing the need for stronger plant breeders rights through more precise definitions of key terms and clarification of the rights of both breeders and farmers.



This in turn addressed concerns that proposed revisions (Section 35) seek to take away farmers' rights to save and use seeds of general and protected crops.

For example, the document clarifies that with the revised Act, farmers would still in fact have the right to save and use such seeds on their own land, but would not be permitted to commercialise protected seeds without permission from the breeder.

Other key revisions covered closing certain loopholes while extending protection for Essentially Derived Varieties (EDV) and products derived from protected varieties. Now that the period for public and private feedback has ended, the next step will be for the Department of Agriculture to forward its final recommendations to the cabinet, who will decide whether or not to enact the new legislation.



paying a renewal fee. She said that such new business-friendly measures are key as to why Thailand surged from its ranking last year of 36 to 26 this year in the World Bank's "Ease of Doing Business" survey.

PVP Act Revision

Finally, Dr. Boonyanath outlined current developments in respect to proposed revisions to the Plant Variety Protection Act of 1999. "PVP is very relevant to the Thai seed industry right now. Since R&D is a strategic pillar of the Seed Hub policy, there needs to be adequate protection of Plant Breeders rights. Lots of things have

changed since the original PVP Act was passed, and we see a necessity to revise the Act," she explained.

According to her presentation, the revisions include extending the scope of "breeders" to cover the breeder, employer, heir or assignee of the breeders. This provides protection for plant varieties that result from a breeding programme; extending protection to essentially derived varieties (EDV), in addition to products that derive from a protected variety; and increasing the protection period for annual and perennial plants to 20 years, from 12 and 17 years, respectively. 🌱





BEST BOOTHS: Every year, a panel of judges from the APSA Executive Committee selects three top booths, judging on aesthetics, creativity, innovation, and the hospitality and knowledge of staff. This year's top prizes went to Chia Tai (top), CNUS (middle) and Known-You Seed (bottom).



Blooming Seed Trade

Millions, if not billions of dollars in business was generated at the 24th Asian Seed Congress. Many APSA members plan their business for the entire year at the annual annual event, which ultimately translates to the trade of many hundred thousand tonnes of seed to, from and within the region. ASC 2017 was fully booked out with 152 trading tables, 50 booths, 24 semi-private meeting rooms, and four private meeting rooms. APSA is the world's largest regional seed trade association in terms of members and territory covered and its member countries account for more than one third of the global seed trade.



Pre-Congress Workshop

"Climate Smart Seed Industry" was the theme of this year's Pre-Congress Workshop. At the meeting on 13 November, leading experts discussed the latest trends and adaptation strategies for the seed industry.

Chairing the meeting was Dr. Marco Wopereis (Director General of the World Vegetable Center) with Mr. Charnyut Panutat (Acting Expert in Farmers and Farmer Organization Development, Department of Agriculture Extension, Government of Thailand) serving as Co-Chair.

Dr. Wopereis opened the meeting with a presentation highlighting climate change challenges and opportunities for the expansion of vegetable cultivation. His talk centred on effects, both biotic and abiotic, and possible mitigation measures. He advised wider use of traditional vegetables to enhance resilience and also of genetic resources, particularly wild relatives, for crop improvement. Adaptation measures should include preservation of agro biodiversity, both in situ and gene banks, as well as the use of appropriate agronomic practices like IPM and protected cultivation, including precision farming.

The next speaker, Dr. Leo Sebastian (Regional Program Leader, CGIAR Research Program on Climate Change, Agriculture & Food Security Southeast Asia), discussed what is needed to establish a responsive climate smart seed system to effectively operationalise climate smart agriculture. Dr. Sebastian mentioned that the agriculture sector has contributed mainly through greenhouse gas emissions and that there was a very real need to find measures to correct its impact. He highlighted the climate vulnerability over the Asian region and climate hazard hotspots, and also introduced the concept of climate smart agriculture, which includes a greater focus on food security, adaptation, mitigation and production. He suggested the use of climate-change ready crops (for drought, salinity, submergence, heat, pest and disease resistance) and multiple trait varieties. In his opinion,

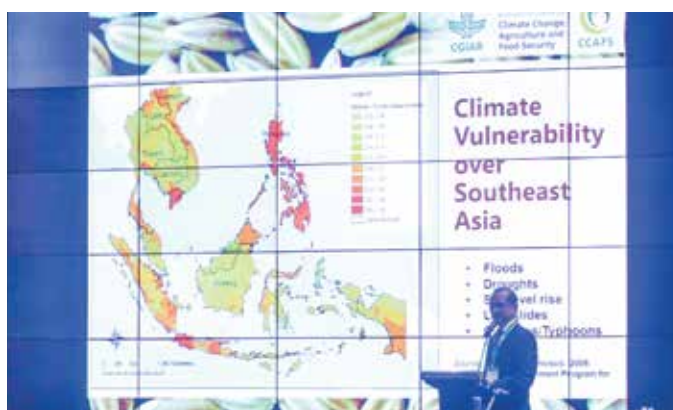
early warning, preparedness, participatory climate risk mapping and adaptation planning is crucial. In addition, he advocated greater involvement of the private sector and support for smallholder agriculture.

Next, Dr. Arnab Gupta (Bioversity International) suggested the adoption of the right seed systems to combat the effects of climate change. In view of shrinking biodiversity, Dr. Gupta advocated greater use of both modern and traditional varieties. He promoted the concept of Community Seed Banks (CSBs) and explained in detail the types, functions, establishment steps and management processes for these CSBs. He also highlighted their usefulness based on case studies of success in Africa (Rwanda, Uganda) and Asia (India, Nepal, Sri Lanka).

Finally, Dr. Naruatai Wotasitit (Senior Expert, Thailand Department of Agriculture) discussed the "Thailand Department of Agriculture Strategic Plan of Action 2017–2021 for Climate Change", focusing on technical means for the reduction of GHG emissions; Research & Development measures for plant production, including breeding for drought tolerance, specific cultural



From Left: Dr. Wopereis, Dr. Sebastian, Dr. Gupta and Dr. Naruatai.



Dr. Sebastian provided some home-hitting data in his presentation.

practices like water-use efficiency, aerated composting systems, agricultural engineering research, crop protection, seed production for food security (forage, legumes and rice) and seed for export (corn and vegetables); as well as technology transfers and supporting activities for government policy.

In the afternoon session, a round-table discussion on "Climate Change & Seed Industry" was held, moderated by APSA Director

of Technical Affairs Dr. Narendra Dadlani and representatives of four leading National Seed Associations acted as panelists: the Japan Seed Trade Association (Mr. Madoka Koshibe), the National Seed Association of India (Dr. P. Sateesh Kumar), the Philippine Seed Industry Association (Dr. Frisco Malabanan) and the Thai Seed Trade Association (Dr. Witsanu Attavanich). The panel discussed how climate change challenges affect the seed industry in terms of areas of plant breeding, seed production, seed quality and other areas such as GMO use.

The session was closed with a presentation from Co-Chair Mr. Charnyut Panutat, who summarised the day's session and added several points about his own department's efforts in mitigating climate change, including the Young Smart Farmers programme and the Thai Government's policy to transfer seed production capacity from the public sector to the private sector.

Videos of the entire session are available online in APSA's Members section.

Vegetable production in Asia: big business



Climate Change poses a lot of risk for Asian agriculture, economics.

Quantifying Climate Change

Asian Seed has been actively monitoring and tracking crop loss and other impacts of Climate Change on agriculture region wide. We've been collecting data from news reports and logging losses in both volume and value. We will present our findings in a "Climate Change Report Card" in an upcoming issue. So far, we've received data from Bangladesh, Chinese Taipei, India, Indonesia, the Philippines, Thailand, Vietnam and elsewhere, but we could always use more. If you have any of your own data, leads or other reports about weather/climate related crop damage – whether from frost, floods, cyclones, storms, drought, heat, pests or pathogens – or have been impacted by Climate Change in any way, we'd love to hear from you.

Technical Sessions

APSA has four Special Interest Groups (SIGs) and three Standing Committees (SCs) who convene on a regular basis throughout the year. Their main meeting is held at the Asian Seed Congress, where experts are invited to speak on pre-identified priority topics. Highlights from the 2017 sessions are as follows:

SC – Trade and Marketing



Left: Mr. David Callachor of Limagrain Group; Right: Panel (from left), Dennis Johnson, ASN Reddy; Toyoharu Fukuda; Liyang Zhang and Dr. Gabriel Romero.

Recognising the growing importance of Thailand as a seed industry hub, the first of seven technical sessions at the Asian Seed Congress 2017 explored seed business opportunities and challenges in the kingdom.

The lead presentation, "Opportunities for the Seed Industry in Thailand", was delivered by Mr. David Callachor, the Group Sales & Marketing Manager for South East Asia for Seed Asia Limagrain Group. Mr. Callachor said that Thailand was the second largest economy in ASEAN, importing and exporting a lot of vegetable and field crop seeds to many countries across the region and beyond. Thailand has developed various strategies for sustaining new seed business investments. The country's vast seed production, breeding and processing infrastructure as well as

the fact that most of its seed companies are conservative of GMO use, along with Thailand's UPOV-aligned PVP policies, have greatly enhanced the nation's competitiveness in the seed industry.

The next session was a Round Table on "International Standards for Phytosanitary Measures 38 (ISPM 38): International Movement of Seeds". The Round Table was convened and coordinated by Mr. Dennis Johnson, Seed Health Manager at the International Seed Federation (ISF). Four panelists represented National Seed Associations (NSAs): from China – Mr. Liyang Zhang (China National Seed Association); India – Mr. ASN Reddy (National Seed Association of India); Japan – Mr. Toyoharu Fukuda (Japan Seed Trade Association) and Philippines –

Dr. Gabriel Ortega Romero (Philippines Seed Industry Association). They discussed how NSAs could assist with national governments' efforts in the implementation of vital international guidelines. They felt that, as the industry strives to produce and export high quality seeds, it could help governments' efforts at pest risk assessment through better engagement. It was stressed that many of the government agencies in the region do not have adequate resources to carry out such assessments or to take steps to create awareness about important new guidelines, either in the industry or among government agencies. Capacity building exercises, using instruments like the ISF Training Guidelines on ISPM, will go a long way to ensuring safe movement of seeds across borders and could help boost the trade in the region.

SIG – Vegetables and Ornamentals



Dr. Ray-Yu Yang, Nutritionist at World Vegetable Center

The meeting of Vegetables & Ornamentals Special Interest Group (SIG) was opened by SIG Chair, Mr. Michel Devarreware who started by updating members on the recent activities of the group; namely, those of R&D Group (ASRT 2, collaborative research projects & APSA – WVC Consortium), a study tour to France (see Asian Seed, Vol. 23, Issue four) and APSA's interventions in developing the Myanmar seed sector (see NSA Meeting on p. 26). Mr. Jack Metzelaar, SIG Co Chair introduced the four speakers at the session.

The first speaker Dr. Ray-Yu Yang, Nutritionist at World Vegetable Center (WVC), presented on the topic of "Nutraceuticals in Vegetables" discussing the diversity and distribution of phytonutrients in vegetables; the health benefits of vegetables and the phytonutrients and improving nutrition and health through plant breeding (bio-fortification) and use of plant genetic resources and biodiversity.

Dr. Yang described the classification of phytonutrients – macro and micro – nutrients, and secondary metabolites, as well as classification of dietary phytochemicals. Discussing health benefits using phytonutrients from vegetables, Dr. Yang opined that in vegetable improvement programmes, by focusing on yield increases, we often compromise nutritional quality. She advocated better use of biodiversity as sources for phytonutrients.

The second speaker Mr. Praveen Noojibail, Managing Director of I and B Seeds, India, in his presentation on "Marigold in Asia – a Golden



Dr. Shital Dixit of Key Gene compared Genome Editing technologies.

opportunity", discussed the types of marigolds (African, French, Mexican and signet), their use (garden, cut flowers and oleoresin extraction), their sales value (global and Asia) and the Asian cultivation and market trends. Mr. Praveen mentioned that while numbers of suppliers (including breeders) were increasing in the region in recent years, the market price had declined.

India, Europe and China ranked top in the global market, worth \$34 million (see table to right). He mentioned that while African marigolds had a larger share of the markets in Americas and Europe, the market in Asia (India, China, Thailand, Japan, Korea and Vietnam being the main players) was dominated by garden types, followed by cut flower varieties for garlands and those for oleoresin extraction.

The next speaker Mr. Szabolcs Ruthner from the International Seed Federation (ISF), discussed the composition of the ISF Working Group on Disease Resistance Terminology and the importance of the international work of this working group. He invited members from the Asian region to join in with the important ISF work.

In the last presentation, Dr. Shital Dixit from Key Gene, the Netherlands, spoke on "Genome Editing in Crops: Application in Light of Scientific, Regulatory and Economic Perspectives". She discussed the various technologies for gene editing, the editing spectrum, delivery of gene editing tools and the effects of combining various gene editing tools.

She discussed the examples of Key Gene edited traits under plant architecture, reproduction, fruit ripening and disease resistance and gave examples of herbicide tolerant crop species including tomato, cabbage, lettuce and petunia, which were developed using gene editing. Dr. Shital also discussed the regulatory systems in the Americas and Europe, with reference to whether or not the products of the technology were being considered GMOs. She ended her presentation by discussing the benefits of gene editing technologies for consumers, growers and breeders.

SIG Chair Mr. Devarreware then informed members of future planned activities, including a study tour and a Working Group of Integrated Seed Companies. Co Chair Mr. Metzelaar wrapped up by summing up the session's presentations.



Mr. Noojibail revealed marigold seed market trends (table below).

AREA	VALUE - ~ \$ Millions
EUROPE	7.5
AMERICAS	5
CHINA (Domestic consumption)	6
INDIA	8.5
THAILAND	3.5
REST OF ASIA	3

Marigold market size estimates, according to data presented.



Mr. Ruthner of the ISF is all about Disease Resistance.

SIG – Cover Crops

The technical session of APSA Special Interest Group on Cover Crops (Forage and Amenities) was chaired by Mr. Bhupen Dubey, who opened the session highlighting the importance of cover crops by asking, "Why do seed breeders promote fruit and vegetable seeds yet overlook the potential of the livestock industry and cover crop seed production?" He then suggested that the improvement of livestock genetics and farm management is crucial for the development of this important sector.

SIG Co-Chair, Mr. Muhammad Asim Butt then introduced the two speakers of the session, Dr. P. K. Ghosh, (former Director, Indian Grasslands & Fodder Research Institute, India) and Mr. Prabhakar Babu (Deputy General Manager Forages for Advanta Seeds, A UPL Group Company).

Dr. Ghosh gave a presentation on "Forage Seed Sector in Asia: Opportunities and Threats", in which he highlighted the importance of the livestock sector in world agriculture. Discussing the average consumption of animal products, he stressed that returns from livestock provide stability to farm income and livelihoods. Dr. Ghosh discussed the feeding systems (crop residue based vs pasture / green forage based) in the Asia Pacific region. He stated that feed and fodder deficiency was an important factor responsible for low



Mr. Muhammad Asim Butt (Co-Chair) and Mr. Bhupen Dubey (Chair).

cattle productivity in the region. Discussing the opportunities in the global forage market, Dr. Ghosh opined that the Asia Pacific market, though small, is expected to witness robust growth in coming years.

Presently there is big dependence on imports. He said that small herd size, stagnant area under fodder crop and having only a few established forage seed companies, are the main obstacles for growth of the forage seed sector in developing countries. Dr. Ghosh also discussed the scope and lacunae of seed supply systems in South Asia, as further constraints in fodder seed, at production, research, farmer and policy levels.

The second speaker Mr. Prabhakar Babu presented on “New Generation Forage Crops – the Great Opportunity in Asia”, opening with a discussion of the types of cover crops, and their respective advantages. He informed the members that the sector is likely to grow at CGR of 8% over next three years and reach a market of \$ 17.5 billion. Discussing the region-wise contributions, he opined that Asia Pacific region is likely to replace Europe behind the global leader the Americas by 2020. He also discussed the crop wise market estimates and forecast. He then highlighted the opportunities in the Asia Pacific region, based on the crop wise acreage and value estimates. For business potential in different countries, he mentioned

the requirements of the right customers and also talked about the key players for different crop segments, as well as discussing the probable threats and opportunities. Mr. Prabhakar Babu's suggestions for improving the sector included: more participation from the private sector by increasing forage seed research and production, the setting up of international standards for forage seeds to enhance ease of trading, and setting out policies to use forage crops in rejuvenating degraded lands.

SIG Chair, Mr. Dubey, summed up the discussions and informed the members about proposed future activities, including a proposal to organise a study tour.



Mr. Prabhakar Babu: Cover crops sector will grow by 8% CGR.



Dr. Ghosh highlighted obstacles, opportunities in forage seed production.

SC – Intellectual Property Rights & Biodiversity

At APSA's IPR & Biodiversity Standing Committee meeting, three expert speakers led discussions on the vital topics of Intellectual Property Rights and Biodiversity.

Dr. Arvind Kapur, Managing Director of Acsen HyVeg Pvt Ltd. and Chair of the APSA Standing Committee on IPR & Biodiversity is outspoken on the subject of farmers' rights and privileges and has examined comparisons between farm-saved seeds and certified seeds from seed companies.

Dr. Kapur said that while in the past, farmers traditionally saved crop seeds to plant each season, now they are more likely to buy seeds annually. Hybrid seeds can be more costly but have genetic benefits that can ensure better yield productivity, he said.

Citing Indian and Canadian studies, Dr. Kapur presented on the use of farm-saved seeds in terms of UPOV and national IPR regimes and their disadvantages in terms of farmers' lack of knowledge about genetics,

and storage issues. The presentation fuelled some lively discussions among delegates.

Next, Ms. Anke van den Hurk, Deputy Director of Plantum, presented an overview of the current status of several international IPR treaties and legislation and the consequences these could have for seed companies. Ms. Anke also touched on the subject of farmers' rights, saying that these should be implemented at the national level... *(continued on next page)*



Casper van Kempen (Co-Chair) and Dr. Arvind Kapur (Chair).



Ms. Anke van den Hurk clarified advantages of genetic resource treaties.



Tomochika Motomura of UPOV

... and that each country should have its own structure. In terms of legislation, there was some disagreement on gene biodiversity such as using GMO crops in developed countries, while most developing countries were against it. Overall, there was no agreement regarding the establishment of standardised legislation. Ms. Anke van den Hurk encouraged the private sector and the public sector to be more interdependent.

Next, Tomochika Motomura, Technical / Regional Officer of UPOV, gave an update on his organisation, which covered registration and regulatory trends and challenges in Asia.

The session concluded with a presentation on the IPR perspectives of the “APSA Vegetable Seed Crop Production Best Practices Guidelines” from Mr. Michel Devarreware, who is Vice President of East-West Seed International Ltd. The guidelines highlighted important factors in the relationships among seed companies, producers and farmers. Mr. Michel also mentioned other ongoing priorities of the group, such as child labour, phytosanitary measures and other regulatory issues.



Michel Devarreware of East-West Seed.

SIG – Field Crops

The meeting of APSA Special Interest Group on Field Crops (SIG-FC) was chaired by Dr. P. Sateesh Kumar, who opened the session by explaining that in the past APSA field crops sessions mostly focused on corn. However, three years ago it was decided that there should be more diversification and so presentations were included on cotton, pearl millet and wheat. Mr. Tahir Saleemi, SIG FC’s Co-Chair then introduced the speakers for the session.

The first speaker, Dr. P.K. Ghosh (former Director of the Indian Grasslands & Fodder Research Institute, India) gave a presentation titled “Abiotic Stress Management in Field Crops” on behalf of Professor Himanshu Pathak, Director of National Rice Research Institute, India, who was unable to join this year’s congress due to last-minute obligations. Dr. Ghosh talked about the negative impact of climate change on field crop production and distribution. He said that the biggest abiotic threats to field crop production are heat, droughts, floods, and salinity. Dr. Ghosh suggested the adaptation of new technologies to combat these issues as they relate to rice, wheat and maize production. He also talked about the action points for climate-resilient seed production.

The second speaker was Mr. Paul Hategekimana who gave a presentation on “Sustainable Corn Production with Drought Resistant Cultivars” based on his Master’s research programme at Kasetsart University, Thailand. He told delegates how corn was popularly grown in Africa, both as food and for the extraction of ethanol. However, the crop is affected by drought stress through its life cycle and the crop’s morpho-physiology drives this. Drought resistance can be divided into four basic types: drought avoidance, drought tolerance, drought escape and drought recovery. Paul concluded that breeding for drought resistance should focus on varieties with deep root systems, greater root weight and higher levels of antioxidants pigment concentration.



From Left: Dr. Narendra Dadlani; Kunaporn Phuntunil; Dr. P. Sateesh Kumar; Dr. P.K. Ghosh; Tahir Saleemi and Paul Hategekimana.



SIG – Hybrid Rice

APSA's Special Interest Group meeting on Hybrid Rice (SIG-HR) was opened by SIG-HR Chair, Dr. Frisco Malabanan, who discussed the latest developments in research and market challenges. Dr. Jauhar Ali, a Hybrid Rice Breeder from International Rice Research Institute, Philippines, addressed issues relating to enhanced adoption of hybrid rice in the region in his presentation "Sustaining the Rice Bowls of Asia through Hybrid Rice Technology under Changing Climatic Conditions". Dr. Ali discussed the need for hybrid rice technology for Asian markets and the reasons for low adoption of this technology, considered vital for food security in the countries in the region where rice is a staple crop. Dr. Ali highlighted the

key considerations for designing rice hybrids for Asian markets in light of the market needs of key nations. He discussed changes in the breeding systems initiated at IRRI, Philippines, such as moving towards two-line hybrid breeding systems and slowly phasing out three-line systems.

He said that the focus is now on developing multiple stress tolerant parental lines and genomic-assisted parental line breeding for obtaining climate smart rice hybrids. He also detailed the changes initiated in IRRI's Hybrid Rice Development Consortium (HRDC) and how this partnership programme with the private sector is helping seed companies in their rice breeding enterprises.



Dr. Jauhar Ali



From Left: Dr. Narendra Dadlani; Vaibhav Kashikar; Dr. Jauhar Ali; Dr. Frisco Malabanan; Jiang Sanqiao; Arthur Santosh Attavar and Kunaporn Phuntunil.

The presentation was followed by a Round Table discussion on "Hybrid Rice Seed Production". The panelists for this session, moderated by Dr. Jauhar Ali were Dr. Frisco Malabanan (SL Agritech Corporation, Philippines); Mr. Vaibhav Kashikar (Ankur Seeds, India); Mr. Arthur Santosh Attavar (Indo American Hybrid Seeds, India) and Mr. Jiang Sanqiao (Winall Hitech Seed Co., China).

Discussions covered the challenges faced in hybrid rice seed production, which are key to improving the adoption of hybrid rice technology in the region.

SC – Seed Technology



SC Chair and Co-Chair, Johan Van Asbrouck and Dr. Tso-Chi Yang.



Prof. Bradford's Dry Chain model is simple yet smart.

For the final of the seven technical sessions, APSA's Standing Committee on Seed Technology welcomed renowned seed and biotechnology academic, Professor Kent Bradford (Director, Seed Biotechnology Center, University of California Davis), whose work and expertise spans diverse areas of seed science, from seed germination and conservation to mathematical modeling and molecular biology

Prof. Bradford presented his popular and proven viability-optimising "dry chain" model for maintaining seed quality.

The model provides a basis for developing effective alternatives to the commonly used methods of handling and storing seeds that have been harvested with high moisture content, in warm temperatures – conditions that prevail throughout tropical

and subtropical climates across Asia and the Pacific. Such conditions are linked to the rapid loss in viability of seeds.

Herrington's law states, "seed longevity doubles for every 1% decrease in moisture content or every 6°C decrease in temperature". So moisture is the main factor determining the duration of the storage. Professor Bradford sees the longevity of seed as a metronome. Bradford's Metronome Rule, states "the 'clock' starts running as soon as the seeds are mature and they have a total number of ticks before death. The rate at which the metronome ticks, depends upon the temperature and moisture content". What seed industry players are trying hard to do is to slow down the rate of the metronome tick in order to give seeds a long storage life. Previously demonstrated successfully in several South Asian countries, the dry chain

model is put into practice immediately after harvest and continues throughout the value chain. A scaling up project of using desiccant-based drying beads for storage has now been demonstrated in Bangladesh with three seed companies. After taking into account investment in infrastructure and training in these companies, the scheme has been a great success commercially. So other companies and government agencies are now starting to adopt this new technology. The process not only increases seed viability, but it has also been demonstrated to reduce overall storage costs. 🌱

All of the presentations were recorded and are available to APSA members online in the Members only section of apsaseed.org



APSA formally thanked Sponsors, Partners and Associates of the 2017 Asian Seed Congress with a dinner on November 13.



Welcome to Bangkok! The sun has set. Let business cease and strap on that "Pa Kao Ma" traditional Thai farmer's loin cloth, fill your glass up and raise it to the sky (Not to worry, whatever you say or do tonight is our Asian Seed-cret). Here are some images from the Welcome Cocktail meeting on 14 November.



Heidi Gallant (APSA Executive Director), Dr. Arvind Kapur (MD of Acsen HyVeg) and Dr. Marco Wopereis (Director General of WorldVeg)



Rowena Petrie, Alysha Lockley and Michael Leader of the Australian Seed Federation know how to have a good time.



APSA Pioneers. From left, Dr. Anthony Tse, Manas Chiaravanond, Olivia Wong, Avtar Singh Dhindsa, Dr. Arvind Kapur and Vinich Chuanchai.



The night is young, show us your best moves.



Mary Ann and Maaiké of East-West getting their groove on.

A Ball of a Time

The Asian Seed Congress is not just strictly business, meetings and seminars! The itinerary is thoughtfully planned to include social events, live entertainment complete with good food and great company to ensure the event will leave delegates and guests with lifelong memories. These include the Inaugural Ceremony, Welcome Cocktail meeting, Thank You Sponsors & Partners Dinner, a golf tournament and the Grand Banquet.



Team Anseme Italy are always on time, and always on point.



The APSA Secretariat works hard, but parties even harder.



It's always a pleasure to meet the lovely ladies of Cathay Green.

Post Congress Tours: Rice & Veggies



While the annual Asian Seed Congress officially concludes on Thursday night with the Grand Banquet, the unofficial wrap-up of the region's most important seed industry event, comes the following Friday with the "Post Congress Tour". This year, on 17 November, APSA arranged three separate agendas for delegates. The first two tours were devoted to vegetable seed production, and so naturally, were hosted by the two main players in Thailand's vegetable seed production sector: East-West Seed and Chia Tai Seeds. The third itinerary, aimed at grain and cereal producers and researchers, was arranged in cooperation with Thailand's Rice Department. Read on to learn more about the tours.

Thailand Rice Department

APSA, in collaboration with the Rice Department of the Ministry of Agriculture and Cooperatives, organised a Post Congress Tour, which brought participants to Suphanburi Province, a few hours northwest of Bangkok. The group got to learn about the history and traditions of Thai rice and its importance to Thai culture. The first stop was the Rice Seed Compiler and Supplier Association, where delegates enjoyed a Q&A session and toured the "Lifestyle and Spirit of Thai Farmers Learning Center". After lunch, delegates stopped by Pra Non Temple and made merit by feeding the fish, before continuing on to the Thailand Rice Science Institute. Here, they learned about the various stages of public sector paddy production and seed multiplication, testing standards, quality control processes, research and development for a number of Thai paddy varieties. The group also got the chance to look out over Suphanburi from the famous Banharn-Jamsai Tower before returning to bustling Bangkok.





Chia Tai Seeds

Delegates joining the Chia Tai tour visited two key facilities of one of Thailand's oldest and most prominent seed companies. In the morning the group went to Choncharoen Farm in Kanchanaburi province in western Thailand, where they toured demonstration plots, showcasing hundreds of varieties of maize, cucumbers, peppers, melons, gourds, pumpkins, tomatoes and watermelon. It is at this facility, where much of the firm's tropical breeding and multiplication activities take place before the seed is moved along the production line. After a tasty lunch, complemented with homemade Chia Tai pumpkin ice-cream and melon smoothies, the group journeyed to the firm's main seed processing plant in the Om Noi sub-district, outside Bangkok. Guests were given a presentation highlighting Chia Tai's production standards and processes before being led on a tour of the 5,000 square-metre facility, where demonstrations were given on seed cleaning, drying, processing, packing and storage.



East-West Seed

Delegates on the East-West Seed Post Congress Tour joined this leading international firm in celebration of its 35th Anniversary; 2017 marks the 35th year since East West was established in the Philippines (see story p. 32). The plant that Asian Seed Congress delegates visited in Bang Bua Thong, Nonthaburi, opened in 1988 and today serves as the firm's new international headquarters. Welcoming the group were scrumptious samples of fresh produce and refreshments, which were enjoyed against breathtaking landscape of golden marigolds, planted especially for the occasion. Eager delegates got to inspect 150 different crop varieties on four different plots of land surrounding the company headquarters. Also showcased on the tour were some of the latest seed processing technologies and vegetable growing techniques, exciting new commercial varieties and indigenous vegetable varieties in home gardening plots. 🌱



National Seed Association Meeting

On 16 November 2017, representatives from 15 key seed industry organisations joined APSA's annual National Seed Association meeting in Bangkok. As well as representatives from APSA's main territory countries, observers representing seed associations in Africa, South America and Europe also attended. The meeting focused on updates to national legislation, structure and policies. Following are the country-by-country highlights:

Myanmar

The Seed Association of Myanmar was established early in 2017 with the support of the Dutch government and in consultation with APSA. At the national seed meeting, chairperson Ms. Khin Myo Khaing, gave a presentation about the seed situation in Myanmar. Citing 2015 data for the estimated sowing area of key vegetable crop seeds (including chili, tomato, cabbage, cauliflower, watermelon, garlic and onion), she

said some 370,000 hectares (910,000 acres) of land is under cultivation for these crops, valued at about US\$33 million. Seed-specific regulations have been passed in Myanmar including laws for seed policy, regulations and plant variety protection, which regulate variety registration, seed production and trade. New varieties of crops must be registered with the Department of Agriculture and undergo trials of at least

one season in three different agro-ecological zones before they can be approved by the National Seed Committee. The Plant Protection Department is concerned with import and export procedures, especially Pest Risk Analysis (PRA) lists and phytosanitary certificates. To boost seed production, the Myanmar government welcomes foreign investment through a 100% FDI scheme.

China

China has two national level seed associations: the CNSTA (China National Seed Trade Association) and CNSA (China National Seed Association). Presenting on behalf of CNSTA, Secretary General, Weihong Tian, explained that her association plays an important role as a communication bridge between its members and the government, which has been active in strengthening IPR and PVP. According to MOA China, in 2016, 2,523 PVP applications were filed in the country, 1,937 of which were approved, meaning that China ranks first among UPOV members for both submitted and approved applications. Since 1 January 2016, new seed legislation came into force, with several changes worth noting: First, the number of crops subject to strict variety registration procedures, was reduced from 28 to five main crops. For these main crops – corn, cotton, rice, soybean and wheat – stringent regional and national level registration procedures remain in place. Under a “Green Channel” scheme, qualified seed companies integrated with breeding, production and promotion may conduct their own trials for these main crop varieties, and no longer need ministerial approval to introduce a registered variety to a similar ecological region in other Chinese provinces. Registration for other non-main crop varieties has also been simplified. This year, the MOA initiated a new registration system for crops, having published a variety catalogue including registration guidelines

for an initial batch of 29 crops, including vegetable and cash crops. Secondly, enterprises are incentivised to cultivate varieties independently, while researchers at public institutes are also encouraged to commercialise their achievements. Moreover, new legislation strengthens legal protection for new varieties, through the Protection of New Plant Varieties section, which imposes stricter penalties and fines for PVP infringement and counterfeiting. Furthermore, the new seed law clarifies responsibilities and standards for all concerned stakeholders through decentralisation measures, improved file management standards and strengthened supervision. Finally, the “Management methods for labelling and using instructions of crop seeds” regulation, came into force 2017. This regulation, which includes a requirement for unique QR codes on all seed packages, was covered in an article published in *Asian Seed Issue 1* of Volume 23.

Presenting on behalf of CNSA, Deputy Secretary General, International Exchanges and Cooperation, Jiang Sanqiao revealed that the association was established in 1980 as a self-disciplined, social non-governmental organisation, whose members include seed industry related units and individuals engaged in crop seeds, scientific research, production, operations and management, ensuring adherence to relevant laws and regulations in China. Its main

mission is to develop and strengthen the seed industry through various services for its members. This extends to codes of practice, information exchange, technical training, marketing, credit rating, consultation and evaluation, international cooperation and self-discipline management principles, while also safeguarding the rights of members. To achieve its mission, it engages a wide array of seed industry stakeholders, from farmers to government officials. A member of ISF and APSA, CNSA holds a Congress for its members every five years, in which a Council is elected by members. Currently with its 6th Council, its body composes one President, 21 vice Presidents, one Secretary-general, 80 executive directors and 243 directors. The council meets annually, while the standing council convenes biannually. The Secretariat is responsible for the routine work of the Association, and implementing the resolutions of the council and the standing council. CNSA currently has 1,000 members. A majority, or 79% are corporate members; 8% are institution members; seed association members account for 4%, and individual members 9%. Corporate members share more than 80% of the seed market in China. At present, CNSA has a number of branches dedicated to specific sectors, including for rice, corn, vegetables, cotton, seed coating, mechanisation, international exchanges and cooperation, off-season seed production and multiplication.

Indonesia

Established in 1991, ASBENINDO – the Indonesian Seed Association (Asosiasi Perbenihan Indonesia) – started up with 25 members, but has since grown to 66 members, including national companies, as well as a few state-owned enterprises, and several multinational companies. According to Chairman, Ricky Ganawan, ASBENINDO members produce about 90% of the country's corn seeds, 75% of the rice seeds and 80% of horticulture crop seeds. He said that 15% of this latter type of seed is produced by

seed companies from other Indonesian professional organisations, while the remaining 5% is imported. ASBENINDO recently received many questions from regional and international counterparts about the complications in exporting seed to Indonesia. Ricky explained that from the government's point of view, seeds require special regulation as the country has more than 13,000 islands, making it vulnerable to a multitude of phytosanitary threats. This is why the government has implemented strict import controls.

According to a new Regulation of the Minister of Agriculture (No 15 / Permentan / HR.060 / 5 / 2017 Article 14 point d) ASBENINDO has a formal role to advise and recommend its members on the latest import permit requirements of the government, specifically on quarantine paperwork, namely the phytosanitary certificates, certificates of origin and detailed field inspection and disease control certificates authenticated by the NPPO in the country of the seeds' origin.

Thailand

The Thai Seed Trade Association (THASTA) is one of two national seed associations, the other one being the Seed Association of Thailand. While the latter is more concerned with research and technical issues, the former is dedicated to trade issues. THASTA now boasts the membership of more than 400 companies, including all of the registered seed companies in Thailand, according to President Dr. Chairerg Sagwansupyakorn. THASTA serves a

key role in facilitating the exchange of information and education through capacity building activities, enabling its members to not only be in compliance with seed trade regulations, but also to implement Best Practices along the entire production, storage and distribution line. Thailand has three specific laws concerning the seed trade; namely its PVP Act, Quarantine Act and Seed Act. While the first two are concerned with specific standards relevant to the

movement and utilisation of seed and germplasms internationally, the latter emphasises farmers' rights and ensures optimal production quality. As covered in this year's Country Report (See page 12) Thailand is in the process of revising its PVP Act, which includes provisions for encouraging innovation and investment in the seed sector through extended protection of PVP registrations and stricter penalties on infringement.



Japan

Starting from April, 2018 the private sector will have increased opportunities in the production and distribution of seed for five mainstay crops in Japan: barley, naked barley, rice, soybeans and wheat. In April 2017, a bill was passed by the Japanese Diet to repeal the country's 1952 Main Crop Seed Law.

As stipulated by this law, seed research, production and distribution for these mainstay crops was tightly regulated by the prefecture government, which had subsidised the production and distribution of seeds. However, this arrangement had limited the involvement of the private sector, and thus innovation and

development of new varieties. According to Toyoharu Fukuda, Senior Managing Director of the Japan Seed Trade Association (JASTA), the abolition of the law will not affect the production and distribution of other types of crop seeds, and has no implications on PVP registration and procedures.

South Korea

South Korea also has two key national-level seed organisations, including the Korea Seed & Variety Service (KSVS) – whose function, as its name indicates, is concerned with variety testing and registration – and the Korean Seed Association (KOSA). Presenting on behalf KOSA, Manager Mi Hye Kim revealed that her NSA was established in 1965 and currently has 61 member seed companies who are involved in the breeding, marketing, importing and exporting of seeds, mostly vegetable varieties. She said that the association recently underwent a change in structure with revisions to its constitution and electoral process. In the past, the association had elected its president from outside the association, such as from the Ministry of Agriculture. With the new structure,

KOSA's president is now elected from within the association, and the Vice President is elected from outside the association. This ensures that the president is a person who speaks on behalf of the private sector and the vice president is a person who represents a specialty sector related to seed and agriculture. The association does not receive funding from the government, but sustains itself from membership dues. From 28 December, this year, companies who deal in seedlings will have to comply with the same registration pre-requisites required for seed companies that deal in fruit, flowering and mushrooms. This means that before they can register their business, they need to be equipped with authorised facilities. Additionally, a representative of the seedling business must

undergo 16 hours of nursery training with a government-sanctioned organisation (such as KSVS or Seoul National University) before the business can be registered. In August this year, the South Korea Cabinet approved an enforcement ordinance of The Act on Access and Utilisation of Genetic Resources and Sharing of Benefits, effectively becoming the 98th nation to ratify the Nagoya Protocol, which will regulate access to domestic genetic resources, and ensure compliance with procedures on overseas genetic resources. KOSA's annual meeting is held at the end of January and following the successful organisation in October 2017 of the First International Korea Seed Expo in Kimje, the association is looking forward to similar events in the future.

Australia

The Australian Seed Federation has approximately 120 Members, who deal in all types of seed crops, including horticulture, cover and field crops. In addition to traditional seed companies, ASF's membership also includes seed treatment, processing and testing organisations. The Federation engages in a number of activities on behalf of its members, including advocacy in areas as diverse as import conditions, intellectual property and biotechnology regulations, as well as training and education, and the development of industry Codes of Practice and Best Management Guidelines. ASF Vice President Michael Leader revealed that the Australian government is currently reviewing import conditions for seeds for a number of crop families: Apiaceae, Solanaceae, Brassica and Cucurbit. The

first draft Pest Risk Analysis (for Apiaceae) has recently been released for public comment. There are likely to be major implications for the import of seed for a number of important crops, including canola, cucumbers, broccoli, eggplants, melons and peppers. The ASF is working closely with the ISF to contribute technical input during the process to ensure flexibility and harmonised testing protocols. Mr Leader also informed NSAs that the ASF has been working hard to convince Australian legislators to revise outdated biotechnology laws to exclude certain plant breeding innovations from regulation. The Australian Gene Technology Regulator has recently announced that it will look to exclude SDN (Site Directed Nucleases)-1 techniques – resulting in non-specific genetic repair mutations – from

the scope of regulation and will be issuing draft legislative amendments for comment soon. This will be the first time that such techniques have been specifically excluded globally. At the same time, there is currently a broader review of the entire gene technology regulatory scheme, in which the ASF is advocating for broader Plant Breeding Innovation exclusions, as well as adoption of a fast-track risk assessment model, the addressing of low level presence, and the removal of moratoria affecting the transport of approved GM seed across state borders. Finally, Mr Leader told the meeting that the ASF is also advocating to implement new provisions in Intellectual Property legislation that would further strengthen breeders, as part of a current reform initiative of the Australian government.

Philippines

The Philippines Seed Industry Association (PSIA) is a national seed association established in 1976. It includes 23 members, including mostly local seed companies as well as seven multinational companies and three government agencies (Bureau of Plant Industries, Philippines Rice Research Institute and the University of the Philippines Los Banos). The PSIA's prime objective is to provide quality seeds and relevant technologies to farmers to improve their lives and develop the country's agriculture industry. It does this through a number of programmes and projects nationwide, including seed caravans, field demos, food contests, a harvest festival, and the organising of seminars on technology and advances in rice, corn, vegetable and other crop production. According to President, Dr. Mary Ann P. Sayoc, the Philippine Seed Industry Development Act of 1992 is currently undergoing Senate review. Following a recent meeting with PSIA reps, a Senator who chairs the Agriculture Committee expressed the desire for more involvement from the private sector in hybrid seed production, especially hybrid rice and coconut. They also stressed the need to increase engagement of smallholder farmers. Dr Sayoc said that PSIA, along with CropLife International, are advocating for a revised seed law to implement stiffer criminal penalties for infringement and other illegal seed practices. She said that fines imposed currently are negligent, and not enough to serve as an effective deterrent. Nonetheless, she lauded her country's seed regulation status, noting that it was ranked 11th out of 62 countries in a recent Enabling the Business of Agriculture World Bank survey.

Taiwan Seed Society & Taiwan Seed Trade Association

Dr. Tso Chi Yang attended the meeting on behalf of the Taiwan Seed Society (TSS) and Taiwan Seed Trade Association (TSTA), which work in conjunction to develop the seed industry, domestically and internationally through the organisation of capacity-building events and activities, and by liaising with regulatory authorities on seed specific legislation. Dr. Tso-Chi, who is President of TSS, revealed that the organisation was established in 1990 and currently has 300 members including seed companies, tissue culture companies, academic and farmer organisations. The TSTA was established in 1971, and now has 183 members, including 138 individual members and 45 corporate members. Every year, around November, it organises the "National Seed and Seedling Festival" in Tainan. Dr Tso-Chi revealed that his government is currently considering revisions to the Seed Variety Law of 1988, and is collecting input from stakeholders about the proposed revisions, which will be compiled by TSS and TSTA before being announced publicly. He said that the revisions are concerned mostly with PVP regulations, with an emphasis on plant breeders rights, and procedures for handling infringement cases, including judicial processes related to the collection and depositing of evidence. New DUS testing guidelines have already been announced to the public. 🍌

APSA and Asian Seed will be following up with revisions, developments and guidelines continuously



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Where Quality Food Begins.

Honouring Thailand's legendary seedsmen

Thailand is one of only a handful of countries in Asia – and globally – which is a consistent net exporter of both vegetable and field crop seed (see our seed trends story on Page 12). While the kingdom has always been a renowned food-producing nation, it was only after the Second World War, that agricultural production began to excel, cementing the kingdom's reputation as a seed hub. This boost was driven by the adoption of emerging technologies – mechanised farming and later, biotechnology.

But skill and dedication are required to get the best results from technology, however sophisticated. Recognising this, every year APSA consults with the National Organising Committee of the Asian Seed Congress host country to nominate individuals who they feel have made a significant impact on the region's seed industry. This year, APSA and the Thai Seed Trade Association nominated two recipients of this prestigious award - Dr. Sujin Jinahyon, 82, and Manas Chiaravanond, 61. The distinguished seedsmen have had a huge impact on the industry in their home country, Thailand, and across the world. Dr. Sujin and Manas were honoured during the ASC 2017 Inaugural Ceremony on 14 November 2017.



Father of Thai Plant Breeding

Introducing the first recipient was APSA Lifetime Honorary Member, and Founder of East-West Seed, Simon N. Groot, who spoke fondly of Dr. Sujin, his long-time friend and associate.

"Though Dr. Sujin is not well-known outside the academic community and is naturally modest, he deserves recognition for his major contributions to Thailand, both as the father of plant breeding and as passionate educator ... Working with Dr. Sujin to develop the Thailand Seed Industry over the last 20 years has been hugely rewarding," Simon said.

Dr. Sujin began his seed work breeding maize in the 1960s and 1970s, when he led the team of breeders who developed the Suwan-1 variety, which is considered Thailand's first, commercially successful hybrid plant. Dr. Sujin worked extensively with Kasetsart University at the institution's Kamphaeng Saen Campus, training a new generation of plant breeders. He was central to building and developing the relationship between KU and the World Vegetable Center (formerly AVRDC) and facilitating the exchange of seeds and genetic material from around the world.

Having completed his Ph.D. (in Plant Breeding) at Iowa State University in 1963, Dr. Sujin served the seed industry through a number of key roles and positions. He was director at National Center for Genetic Engineering and Biotechnology (BIOTEC) under the Ministry of Science and Technology and was also a member of the Board of Advisors of East-West Seed.

In addition to working at Kasetsart University, Dr. Sujin has undertaken important academic roles for Prince of Songkla University, Yonok College (Lampang), Mae-Fah Luang University (Chiang Rai) and most recently, Naresuan University, where he was President from 2009 – 2017. Moreover, the Thai Monarchy has bestowed a number of Royal honours upon Dr. Sujin for his contributions to science and academia.

Now 82 and enjoying a well-earned retirement, Dr. Sujin lives in Chiang Mai and continues to emphasise the need for enhancing Thai agriculture through plant breeding and research.

"I'd like to express my sincere thanks to APSA for this recognition ... I had a dream a long time ago that our country would provide the best quality seeds for farmers, but didn't believe we had the capacity. We persevered, starting with maize and ultimately extended to vegetable seed ... I hope that young plant breeders will continue to think about producing high quality seed for the betterment of the Asian region," Dr. Sujin said in his acceptance speech.



An Everlasting Legacy

The second recipient of the APSA Award 2017, Manas Chiaravanond, is not only a founding member of APSA, but also a founder and current Executive Committee member of the Thai Seed Trade Association. Manas comes from a renowned Thai agri-business family and is regarded as one of the most influential seed executives in the region.

Manas served as APSA's fourth President from 1997 to 1998 and is the Chief Operating Officer for leading Thai seed firm, Chia Tai. Following sad passing of his elder brother, Dr. Manu Chiaravanond (see Obituary on next page), Manas became acting Chief Executive Officer of his firm. Under Manas' leadership, Chia Tai's reputation and influence have extended globally – across Central, South and Southeast Asia, the Middle East and beyond. Having served as APSA's fourth President from 1997 – 1998, Manas' management and financial talents, as well as love for the industry, ensured a strong financial foundation in APSA's early days.

Held in high esteem by associates and competitors alike, Manas has served the Thai and Asian seed sectors loyally for more than three decades. Without his hard work and dedication, the industry would look very different today.

Addressing delegates, Manas said, "I am sincerely humbled and pleased to accept this prestigious award. I am grateful to APSA, with whom I have journeyed since the association's inception in 1994. This award is very special to me, as one of a handful of professionals who've been privileged to witness the development of the seed industry over the last 30 years ... It is well-known that before the formation of APSA, the seed industry was highly fragmented with local companies and institutions functioning independently around the region.

"But today, the seed industry has entered a new phase, thanks in great part to APSA, which played a key role in uniting private enterprises, government institutions and research institutes across borders. APSA encourages collaboration, the sharing of best practices and helps promote a bigger vision of the seed industry. And it is with the support from APSA that Chia Tai has continued to grow and better serve the needs of farmers and communities. So this award is not only significant to me and Chia Tai, but to everyone working in the Thai seed industry for the betterment of communities and especially farmers – the backbone of our economy."

Asian Seed recently sat down with Manas to learn more about his history, contributions and unique perspectives. This interview will feature in *Asian Seed*, Volume 24, Issue 1, due for publication February, 2018. 🍀

APSA extends its utmost gratitude to both Dr. Sujin and Mr. Manas, for their lasting legacy, which is certain to inspire and foster future seedlings to grow towards the light of APSA's vision of Growing Stronger Together.



Dr. Manu Chiaravanond: Obituary

Born in 1954, Manu was the tenth of 12 siblings fathered by legendary agribusiness entrepreneur, Choncharoen Chiaravanond, who co-founded Chia Tai with his older brother, Chia Ek Chor in 1921.

After finishing his primary education in Bangkok, Manu attended Salesian College, near Melbourne in Australia, for his secondary schooling. He then moved to the USA where he graduated from Davis Senior High School in Davis, California. Manu went on to obtain his Bachelor of Arts in Business Administration from UC Davis, before pursuing a Masters of Arts in Business Administration from the US International University in San Diego.

Upon returning to Thailand in 1979, he joined the family business, initially as Manager of the firm's Agri Equipment division, before being promoted to Manager of the Fertilizer Division in 1983. He held this position until 1991, when he was made president at the CP group, overseeing operations for Seed, Fertilizer and Plant Protection. He was appointed Chia Tai's Chief Executive Officer in 2008 and remained in that office for nine years until October 2017.

Manu's dedication and service were not exclusive to his family, colleagues and friends. He volunteered what little spare time he had to philanthropic activities and initiatives that benefitted Asia's seed industry and the community at large.

Manu spent two consecutive terms as President of Thai Fertilizer and Agricultural



Supplies Association from 2000 to 2003. He was also appointed Honorary Advisor of Thai Crop Protection Association from 2006 to 2017, during which time he served on the Advisory Board of Thai Fertilizer and Agricultural Supplies Association. From 2008, he gave his time to the Fertilizer Pricing Sub-committee in the Thai Chamber of Commerce. From 2013 to 2017, He was also dedicated to the Committee of the Foundation for the Volunteer's Defense, Under the Royal Patronage of Her Majesty the Queen.

Always eager to help the next generation, Manu was the Director for Rural Development Foundation and Wat Samphanthawong School in Bangkok. He also made countless contributions to agricultural research and community development through charitable initiatives and student scholarships.

In 2011, formally recognising his contributions to the agriculture sector, the Faculty of



Agricultural Research and Development at Kasetsart University in Kamphaeng Saen bestowed upon him an Honorary PhD.

Dr. Manu led a full life and will be remembered as a kind, positive and down-to-earth leader who was dedicated to his work, his family, colleagues and friends. He possessed great perseverance and always acted for the benefit of society. His smiles were rare, but when he did break out in a huge grin, the world smiled with him.

Manu's simple life philosophy, many virtues and care for others made an unforgettable impression on those who knew him. When he wasn't working, undertaking acts of charity or spending time with his family, he was an avid golfer and gardener.

APSA mourns the passing of Dr. Manu. He left the world a better place and he'll be sorely missed by all who had the privilege of knowing and working with him. 🌱

International Meetings 2018

DATE	MEETING	VENUE
27 – 30 Jan	ASTA 57th Vegetable & Flower Seed Conference	San Diego, California, USA
5 – 6 Feb	NSAI Indian Seed Congress	Colombo, Sri Lanka
27 Feb – 1 Mar	AFSTA Congress	Cairo, Egypt
4 – 9 Mar	ISF Committee Meetings	Zurich, Switzerland
26 – 28 Mar	UPOV Meetings	Geneva, Switzerland
3 – 6 Jun	ISF World Seed Congress	Brisbane, Australia
9 – 13 Jun	ASTA Policy & Leadership Development Conference	Washington D.C., USA
11 – 14 Jun	ISTA Annual Meeting	Sapporo, Japan
Late Sep – early Oct (TBC)	Beijing Seed Congress	Beijing, China
7 – 9 Oct	ESA Annual Meeting	Madrid, Spain
21 – 26 Oct	ISF: Mid-term Meetings	Berlin, Germany
28 – 31 Oct	UPOV Meetings	Geneva, Switzerland
4 – 5 Nov	ASTA Farm and Lawn Seed Conference	Kansas City, MO, USA
12 – 15 Nov	Asian Seed Congress	Manila, Philippines
3 – 6 Dec	ASTA Corn & Sorghum Seed Conference & Soybean Seed Conference	Chicago, Illinois, USA
10 – 13 Dec	Guangdong Seed Expo	Guangdong, China

Crossing East with West



Simon N. Groot Reflects upon the Past 35 Years in Asia and Beyond

Simon N. Groot (2nd left) leads a ceremony to mark East-West Seed's 35th anniversary. Also pictured, EWS GM Wichai Laocharoenpornkul (1st left), President Bert van der Feltz Simon (1st right); honorary guest Dr. Sujin Jinahyon (front, 2nd right); and EWS VPs Simon Jan de Hoop and Michel Devarewaere (2nd row: 2nd and 3rd right)

Though APSA was officially established at the Foundation Meeting in Chiang Mai in 1994, our beloved association's story unofficially began more than a decade earlier, in 1982 when a Danish seedsman named Mogens Lemonious moved to Bangkok to begin work on a regional seed project with the FAO Seed Service. This 11-year project would lay the groundwork for what would eventually become APSA. That same year, another seasoned seedsman from Northern Europe was also sowing lucrative and everlasting seeds in Southeast Asia: Dutchman Simon N. Groot had just concluded a quarter-century-long career with his family namesake company, Sluis & Groot, when, at the ripe age of 47, he entered into a historic partnership with a Filipino seed trader, which would kickstart a new era of vegetable breeding in Asia.

Seed Roots

Hailing from the "seed cradle" of the West-Friesland region in the Netherlands, Simon is a sixth generation seedsman from the Groot line. His Great-great-great grandfather, Nanne, from whom Simon takes his middle name, is considered the founding father of Holland's seed industry, having supplied select vegetable seeds to farmers and traders in the historic town of Andijk during the first decades of the 19th century. The seed legacy continued through the generations, spanning over two centuries. Born in 1934 in Enkhuizen, Simon wasn't always fixed on fulfilling his family destiny. After finishing his studies in Business Economics at Erasmus University Rotterdam, he was drafted for military service, when, at the height of the Cold War, the future was uncertain in Europe. Agriculture was

gradually beginning to revive after the Second World War, but there were other threats looming.

"We were all worried about a Russian invasion. I was a field artillery lieutenant in command of a battery. We were on constant alert, guns at the ready," he recalled.

Luckily for Simon, and luckily for APSA, the Russians didn't invade, but the calling of seed would keep the young Dutchman in the fields anyway. His father, Rutger, ultimately steered Simon back on the course to seed.

"I worked for the family company a bit after my stint in the military, but I didn't necessarily have long term plans at first. When my father's health started to suffer, and he was nearing his last days, he pulled me aside and urged me to take on a more active role in the company."

Simon went on to serve the company for 25 years in several positions. At the height of his career, he was head of the flower division and was one of the founding members of Fleuroselect, the international organisation for the ornamental plants industry.

Not long after the family company was acquired by Sandoz in 1980, Simon resigned and toured the world, following in the footsteps of his ancestors to seek out and capitalise on untapped market potential.

Vegetable Visionary

Simon was equipped with all the right tools for success in the tropics. He possessed a plant breeder's mindset: knowledge, know-how, experience, business acumen and a deep

understanding of economics. Most importantly, he had a novel vision, which he says was first realised during a trip to Indonesia in 1965, when he had observed how temperate OP cabbage varieties from Europe failed to perform as well in the tropical highlands.

The solution was clear in Simon's mind. This vision, to bring plant breeding to the tropics, stayed in the back of his mind for 16 years, until he finally had the chance to act on it. A free-spirited entrepreneur at the age of 47 in 1981, Simon embarked on a tour of the tropics, covering many potential starting points in Southeast Asia.

"The Philippines ticked all the boxes. The longstanding farming tradition. The hospitality. There wasn't a language barrier for me," said Simon, who is fluent in Dutch, English, Spanish and French.

In the Philippines, Simon found the right partner in successful Filipino seed trader, Benito M. Domingo.

In 1982, near the small town of Lipa in Batangas province, Simon and Ben opened an experimental farm called "Horta Nova", the name of which is quasi Spanish-Latin for "New Garden". They initially called their new venture "Hortigenetics Philippines" but would soon change the name to East-West, symbolising the successful crossing of proven seedsmanship from the West and the desirable tropical vegetables of the East.

"I was really lucky to meet Ben," said Simon. "He was active and liaised with other seed industry stakeholders, who in 1976 had formed the Philippine Seed Industry Association, the first



From Top, Going Clockwise: Simon (far right) meets with Benito Domingo (far left) in 1982; Simon presented the 2014 APSA Award by then-APSA President, Avtar Singh Dhindsa; Simon poses with some fruits of East-West's 'Sae Yid' variety of bittergourd, Thailand's first commercially successful hybrid vegetable variety, released in 1987.

national level seed organisation of its kind in Southeast Asia."

In those days, commercial vegetable breeding was non-existent in Southeast Asia, recalled Simon. Seed was treated as a commodity in which quantity (yields) was emphasised over quality (yield, performance and vigour), while farmers heavily depended on imports and age-old, counterproductive seed saving practices, resulting in primitive retail markets and a lack of uniformity and quality of produce.

Simon sympathised with the plight of poverty-stricken farmers. And he knew the key to alleviating their suffering was through fundamental economic principles: develop the value chain through diversification from prevailing low-value, monocropping practices.

Though hybrid maize was already widely accepted and adopted in the region at the time, and the Japanese had successes with various hybrid vegetables since the 1940s, there was no established market for commercial vegetable hybrids in Southeast Asia. The market was wide open and Simon and his partners grasped the opportunity.

"Ben knew everything about farmers, markets and consumers in the Philippines, and understood the high potential of value addition in the seed production chain," said Simon.

The Philippines was to be just the first seed. According to Simon's vision, the minimum market size for any viable Research & Development commercial operation had to be at least 500 million consumers.

Owing to its strategic location and strong infrastructure, Thailand was a logical choice for expansion. Partnering with the Chung family in Bangkok, who had a network of 40,000 contract tobacco farmers looking to diversify into vegetables, East-West opened the Lert Phan farm in Chiang Mai, Thailand, in 1985, where the country's first commercial vegetable breeding work commenced on a number of cucurbit, brassica and solanaceous crops. However, it would be four more challenging years before any seeds were ready to market.

By 1986, the first hybrids of bitter gourds, eggplant, pumpkin and tomato finally made their way to the farmers. East-West also focused on improving open-pollinated selections, with

kangkong as one of its favorite stories of OP transformation through value addition. In the 80s, farmers used to buy kangkong seeds in bulk for less than a dollar per kilo, giving them a meager germination rate of no more than 50%. Through improved selections and better seed quality, East-West was able to turn a commodity into a high performing crop that fetched a good price in the market and made good money for growers.

The rest is history. By the end of the 1980s, East-West expanded into Indonesia, then Vietnam. Today the company supplies seed to some 60 countries and has 14 R&D centres in six countries, including in India and Guatemala. Simon is proud of the number of first and most successful milestones for hybrid vegetables in the region.

Regional Links

Simon was all ears when he heard about Mogens Lemonius' regional seed project. Their goals, to bring together and organise the right players in the industry, were very much in line.

"I was staying on the outskirts of Bangkok in the early 1990s when Mogens started organising regular meetings at the FAO Regional Office to form an association. To ensure I could attend all the meetings, I moved in to the Royal Princess Hotel, a short walk to the FAO Bangkok office. Most of the pioneering Indians who had been involved early on, such as Dr. Chopra (APSA's second president), also stayed in that hotel."

"Aside from Chia Tai, we didn't have much participation early on from many other Thai players. Many of the Thai companies, who had been successful with corn breeding since the 1970s, didn't immediately see the value in vegetable seeds."

"The Japanese were also difficult to convince at first. They had long been successful in the seed business, and, as members of ISF, didn't at first see the need for another regional seed association." But in time, things would change.

"The industry of seed, like the business of breeding, is a long term process. Success doesn't happen overnight, but requires time, patience, planning and a little bit of luck."

Having now realised his vision in full, Simon is ready to formally take a back seat and enjoy the rest of his 80s. He'll pass the chairmanship over to his son, Ard Groot, in January 2018.

As for APSA matters, Simon insists that a key role of the association is constant, to engage the public sector – and particularly the governments of ASEAN – to ensure the movement of seed and germplasm is encouraged, not hampered.

"We need more integration, coordination and support from ASEAN countries in order for the seed industry to thrive."

"Many of the crops we depend on here in the tropics didn't originate from here, but have come from distant lands. This is the nature of seed, and it is up to the next generation of seedsmen to remember this."

"I hope and trust that APSA will continue to play its crucial role of 'Serving the world with good seeds'." 🌱

APSA Members Dominate Access to Seeds 2018 Index of Leading Global Firms

Dozens of APSA members are among the 60 leading regional and global seed firms that will be surveyed in the World Bank's Access to Seeds (ATS) 2018 Index.

Expected to be published between November 2018 and February 2019, the survey is an extension of the ATS 2016 Index, which surveyed 25 companies operating in four target regions.

These regions were Latin America; Western Africa; Eastern Africa; and South and Southeast Asia. The 2018 Index has added and grouped Southern Africa with Eastern Africa, and Central Africa with Western Africa.

In the latest survey, the number of leading seed companies identified in South and Southeast Asia was increased to 24, from eight previously.

Of these companies, a majority are APSA members, either directly or through regional subsidiaries, with headquarters in Bangladesh, Chinese Taipei, Germany, India, Japan, Pakistan, Thailand, UAE, US and Vietnam. The index will include Acsen-HyVeg, Advanta, Bayer, Bioseed, BRAC, CP Group (Chia Tai), East-West Seed, Limagrain Group (HM Clause, Vilmorin SA & Mikado Kyowa), Kalesh Seed/Bejo Sheetal, Known-You Seed, Lal Teer



Access to Seeds Index

Seed, Mahyco, Monsanto, Namdhari, National Seeds Corporation, Nongwoo Bio, Nuziveedu, Rallis/Metahelix, Sakata, Syngenta, Takii, DowDuPont (Dupont Pioneer), Vinaseed and Punjab Seed Corporation.

Several APSA member companies have also been shortlisted for the Global Index as well as two regional surveys for the African market.

APSA Members dominate the Global Index of 13 companies. In the ranking are Advanta, Bayer, Bejo, East-West, Enza Zaden, Limagrain Group, Monsanto, Rijk Zwaan, Sakata, Syngenta, Takii, DowDuPont and KWS (Germany).

A number of APSA Members will be surveyed in the Eastern and Southern Africa Index, including East-African Seed (Kenya), East-West, Klein Karoo (South Africa), Monsanto, Pop Vriend Seeds (Netherlands), Starke Ayres (South Africa), Syngenta and DowDupont.

Several APSA members were also shortlisted among 22 companies in the Western & Central Africa Index, including East-West, Monsanto, Syngenta and DowDupont.

The Indices that make up the Index score and rank companies on six main dynamics related to seed access for smallholder farmers.

These are availability, affordability, suitability, capability, profitability and autonomy.

According to Executive Director of the Access to Seeds Foundation, Ido Verhagen, indicators express what stakeholders expect from seed companies on each of the dynamics, which are grouped into seven measurement areas. Each measurement area is composed of indicators that assess commitment, performance, transparency and innovation. 🌱

Welcome New APSA Members

AGRIMEDICA | Seed Enterprise (Lebanon)

LIM-LOGES & MASTERS PTE LTD | Affiliate Member (Singapore)

PHOENIX SEEDS COMPANY LIMITED | Seed Enterprise (Hong Kong)

RZI | Associate Member (Netherlands)

ASTRA INDUSTRIAL GROUP | Seed Enterprise (Saudi Arabia)

RMB INTERNATIONAL SEEDS | Seed Enterprise (Pakistan)

PHENOME NETWORKS | Seed Enterprise (Israel)

DUNHUANG VEGETABLE SEEDS COMPANY | Seed Enterprise (China)

APSA Members can access full member details, including contact information, and other business details via our Member Directory at Apsaseed.org



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