

### *Pathways to strengthened agri-food research and innovation systems in Asia and the Pacific*



*ASTI Project in Fiji - page 7*



*APAARI General Assembly  
2018, Taipei - page 11*



*ACIAR-WorldVeg Partnership  
- page 15*

### CONTENTS

- Editorial 1
- Meetings, workshops and symposia organized by APAARI 2
- News Update from NARS 11
- Profile Higher Education 14
- News Update from International Centres 15
- New Appointments 19
- New APAARI Staff 21
- APAARI Outgoing Staff 21
- Forthcoming Events 21
- New APAARI Members 22
- New Executive Committee 2019-2021 22
- New APAARI Publications 25

### EDITORIAL TEAM

- Dr Ravi Khetarpal
- Ms. Mellissa Wood
- Ms. Martina Spisiakova
- Ms. Celilu Bitong

### Editorial

#### State of Food Security and Nutrition in the World 2018

The latest State of Food Security and Nutrition in the World 2018 is indeed alarming. New evidence shows a rise in world hunger and a reversal of trends after a prolonged decline. In 2017, the number of undernourished people is estimated to have increased to 821 million, and over 22 per cent of children under five were affected by stunting. The changing climate is increasingly threatening food production, while our population is growing and demanding more food. As a result, we need more productive and efficient agri-food systems with highly skilled farmers and agricultural entrepreneurs able to balance risks and reward for their work and invested capital.

But, are we doing enough to develop youth with the skills they need to effectively address current and future agri-food challenges? Are we really preparing them to be agricultural 'job creators' rather than 'job seekers'? It was with these questions in mind that APAARI engaged more actively in the development of its agricultural education programme from 2017.

Though different countries face different issues in their education systems, APAARI recognizes that one of the key common issues is that the agricultural university curriculum and pedagogy has not adapted to the dynamic and complex environment that the agri-food sector is facing. The industry feedback indicates that low employability of graduates are partly due to their poor inter-personal and communication skills, lack of leadership and entrepreneurial skills, work ethics, time management and decision-making. This is largely affecting their future career growth and work success, and ultimately agri-food systems.

Policy changes are urgently needed to shift the current focus on teaching and testing knowledge to skill-based education, creativity and innovation to develop a new generation of leaders to lead sustainable agricultural development.

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Institutional capacity is also needed to develop leaders in teaching positions to attract more students to agricultural profession, and teach them to think, learn and take risks.

As an active partner of the Tropical Agriculture Platform (TAP), hosted by the Food and Agriculture Organization of the United Nations (FAO), APAARI has fully integrated the principles, approaches and concepts of the TAP Common Framework on Capacity Development for Agricultural Innovation Systems (CD for AIS) in its work, with a particular emphasis on developing functional capacities in higher agricultural education. FAO and the Global Confederation of Higher Education Associations for Agricultural and Life Sciences (GCHERA) – APAARI's latest member – have been key partners in these initiatives.

Since 2017, APAARI has successfully conducted two webinars on promoting functional capacities in the higher education sector in Asia-Pacific, and contributed to regional and sub-regional conferences on motivating and attracting youth to agriculture. The most recent activity, however, is a training workshop on Knowledge Management and Capacity Development for More Effective AIS at the Tamil Nadu Agricultural University (TNAU) conducted from 23-25 January 2019 in Coimbatore, India.

TNAU has been identified as a pilot university to initialize their university transformation. To initiate this transformation, this training helped over 40 university staff, including professors, administrators and students, to develop: knowledge of key concepts and processes in KM and CD for AIS; understanding of the academic model of the EARTH's University in Costa Rica that has influenced university transformations all over the world; understanding the key elements of successful transformation of agricultural education systems, such as bringing business, ethical and value-based leadership and experiential development to agricultural universities, as recently introduced in the Kellogg-funded project on Transforming Higher Education implemented by GCHERA in Mexico and Haiti; and inspire transformation of teachers into leaders that promote career development in agricultural professions.

It is critical that higher education develops the skills enabling youth to become active agents of change and creators of agricultural jobs, while addressing the complexity and dynamics of agricultural development. The desired outcome is that graduates have the ethical foundation, knowledge, and functional capacities – especially ethical leadership, entrepreneurship, proper values and creativity- to succeed in their future careers as agents of positive change in addressing the challenges of global food and nutritional security, and environmental sustainability.

This year, APAARI will build on these recent partnership initiatives to continue its work on bringing positive changes to agricultural education in Asia-Pacific. Some immediate

outputs that APAARI will share with all of you include the synthesis of the above-mentioned training in India, an analytical study on tertiary sector perspectives on AIS for sustainable development in Asia-Pacific tropics, and a compilation of success stories on CD for AIS.

In case your organization has similar initiatives or success stories, please contact us to explore synergies and more engagement in this critical development area.



**Dr Ravi Khetarpal**  
*Executive Secretary - APAARI*



### Analytical Research Agenda Workshop by APAARI and IFPRI



*Participants at the ASTI workshop*

APAARI and the International Food Policy Research Institute (IFPRI) held a workshop on 9-10 July 2018 in Bogor, Indonesia, with the aim to implement an analytical research agenda and transform results into stakeholder-friendly application. The workshop was organized in collaboration with the Indonesian Agency for Agricultural Research and Development (IAARD) and attended by 15 participants from national agriculture research systems (NARS) and policy organizations from Indonesia, Philippines, Sri Lanka and Vietnam. The region is the latest geographical area of the Agricultural Science and Technology Indicators Project (ASTI), and is being supported by the Australian Centre for International Agricultural Research (ACIAR).



### Regional Workshop on Conservation Agriculture for Sustainable Intensification (CASI)

Dr Ravi Khetarpal attended a Regional Workshop on Conservation Agriculture for Sustainable Intensification (CASI) organized by the University of Adelaide and ACIAR in Nepal, Kathmandu, from 22-23 July 2018. The workshop focused on the modalities of developing a regional

collaborative platform. The meeting culminated in the signing of the Kathmandu Resolution by Heads of NARS from four South Asian countries, namely: Bangladesh, India, Nepal and Pakistan. APAARI proposed active collaboration on knowledge management and scaling up of innovations related to conservation agriculture in the Asia-Pacific region.



*Participants of the workshop from South Asian countries*



### Brainstorming on ‘Harnessing the Intellectual Property Rights (IPR) for Agricultural Growth

Dr. Rishi Tyagi, Coordinator, Asia-Pacific Consortium on Agricultural Biotechnology and Bioresources (APCoAB), participated in a brainstorming meeting on ‘Harnessing the Intellectual Property Rights for Agricultural Growth’ organized by the Trust for Advancement of Agricultural Sciences (TAAS) and Indian Council of Agricultural Research (ICAR), on 27 July 2018 in New Delhi, India.

The meeting aimed to:

- Discuss and understand the scope of intellectual property (IP) protection of biological innovations under the Patents (Amendments) Act 2005, as well as under the Protection of Plant Varieties and Farmers Rights Act (PPV&FRA) 2001;
- Improve understanding of the possible grey/overlapping areas of IP protection, especially those of biological inventions; and
- Recommend measures to ensure proper incentives and rewards to researchers, and effective compliance relating to IPRs for accelerating agricultural research and innovation for development.

A total of 51 senior officials from ICAR, Department of Biotechnology (DBT), Protection of Plant Varieties and Farmers’ Rights Authority, National Research Development Council (NRDC), Technology Information Forecasting and Assessment Council (TIFAC), Consultative Group of International Agricultural Research (CGIAR) Centers, APAARI, South Asia Biotechnology Centre (SABC), intellectual property (IP) legal experts, biotechnologists, plant breeders, and representatives of seed associations, actively participated in the brainstorming meeting and

presented their viewpoints on the subject.



### APEC High Level Policy Dialogue on Agricultural Biotechnology



*Chair (center) with APEC representatives*

Dr Rishi Tyagi, Coordinator, APCoAB, participated in APEC High Level Policy Dialogue on Agricultural Biotechnology, where he presented a paper on “Current Status of Agricultural Biotechnology in the APEC Economies”. The meeting was organized on 5 August 2018 in Port Moresby, Papua New Guinea (PNG) by the Asia-Pacific Economic Cooperation (APEC).

While discussing the status of agricultural biotechnology, Dr. Tyagi also emphasized that efforts should be made for regulatory alignment/cooperation amongst the APEC economies. This can ease out the process of adoption of biotechnology and biotech-derived products with minimum time period and cost of biosafety studies, to enhance the food and nutritional security, and livelihoods of small holder farmers. He proposed that APAARI, being a regional organization working in Asia-Pacific, can play an effective role to coordinate the above activities at the APEC economies level.



### The 22nd Agricultural Technical Cooperation Working Group Meeting



*Participants of the 22nd Agricultural Technical Cooperation Working Group Meeting*

The 22nd Agricultural Technical Cooperation Working Group Meeting was part of a series of meetings organized by APEC and attended by representatives of all APEC countries to discuss the technical programme of agriculture in APEC member countries. The meeting aimed to enhance agricultural contribution to the region's economic growth and social well-being by promoting agricultural technical cooperation between APEC members. The Working Group's objectives are to improve the capacity of agriculture and its related industries, and share information and experiences in the areas of agriculture, biotechnology, and animal and biogenetic resource management. Priority is given to projects and activities that build members' capacities to increase trade in agricultural products.



### High-level presentation on Phytosanitary Strategy for Bangladesh

Dr. Ravi Khetarpal participated in high-level presentation on Phytosanitary Strategy for Bangladesh along with experts from the United State Departure of Agriculture (USDA) and United States Agency for International Development (USAID) in Dhaka, Bangladesh on 6 August 2018. He shared an analytical account of the status of phytosanitary capacity of Bangladesh after due evaluation as per the norms of the International Plant Protection Convention (IPPC) of the Food and Agriculture Organization of the United Nations (FAO).



### ABAC Food Security Symposium



*Participants in the ABAC Food Security Symposium*

On 9 August 2018, the APEC Business Advisory Council (ABAC) organized a Food Security Symposium in Port Moresby, PNG. The meeting aimed to provide updates on domestic policies of APEC countries to achieve food security and initiatives involving private sector participation relative to "Promoting Food Security in APEC Region". The meeting focused on three thematic areas:

- Promoting food security and sustainable agriculture using information communications technology (ICT) to

respond to climate change

- Promoting the participation of women in agriculture and fisheries
- Sustainable fisheries management and development

There was a general consensus that activities should leverage cross-fora partnerships through multi-stakeholder platforms and public-private engagement. Dr. Rishi Tyagi, Coordinator, APCoAB, represented APAARI in this meeting.



### The Sustainability Science and Development Goals Meeting



*Participants of the Sustainability Science and Development Goals Meeting*

Co-hosted by Chulalongkorn University Office of the Higher Education Commission and the United Nations Educational, Scientific and Cultural Organization (UNESCO), the 2nd phase of the "ASEAN Way Forward for SDGs and COP21" project kicked off on 20-21 August 2018 in Bangkok, Thailand. Participants included representatives from seven ASEAN countries, Centre for Sufficiency Economy Philosophy and Centre for Tropical Biology of the Southeast Asian Ministers of Education Organization (SEAMEO), International Rural Sociology Association, United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS), Thai higher education institutions (HEIs), and APAARI.

One of the goals of the project is to establish an ASEAN network of scholars on social and sustainability sciences, and identify and conduct research that will serve as a foundation for policy recommendations. Dr Ravi Khetarpal participated in the Session on 'Research Topics on Agri-Food System Studies, Agricultural Research and Higher Education Reform'. The meeting concluded that ASEAN has to work collaboratively with other regional and international organizations on promoting sustainable development and sustainability sciences.



### EU Organic Market: Export Opportunities and Challenges

Dr. Ravi Khetarpal participated in a seminar on "EU Organic

Market: Export Opportunities and Challenges” on 27 August 2018 in Bangkok, Thailand. This seminar was organized by the Royal Thai Embassy Brussels, together with the National Bureau of Agricultural Commodity and Food Standards, and the European Union (EU Delegation to Thailand and DG-AGRI).



#### 4th World Symposium on Sustainable Development at Universities

Dr. Wayne Nelles, Consultant, Higher Education, represented APAARI at the “4th World Symposium on Sustainable Development at Universities, held at Universiti Sains Malaysia (USM), Penang, Malaysia from 28-30 August 2018. He distributed general APAARI information materials and membership brochures with a Background Note on Higher Education for Sustainable Agri-food Systems (HESAIFS) for a display table. He also introduced APAARI and its attention to higher education in a presentation during a session on partnerships. Networking and discussions among some prospective new higher education members for APAARI also took place.



#### APAARI-ICARDA Mung Bean Field Study



Participants from ICARDA, DOA Thailand, APAARI and the mung bean farmer

APAARI coordinated a mung bean field visit from 25-31 August 2018 in Chai Nat, Saraburi, Lopburi, and Phitsanulok provinces of Thailand. The objective was to learn and share experiences on the trial of diverse varieties of mung bean grown at the Chai Nat Research Centre. The scientists and participants, who came from many research institutions in India, and led by the International Center for Agricultural Research in the Dry Areas (ICARDA), noted various promising mung bean and black gram varieties that produce an annual yield of 1.6- 1.8 tons per hectare.

Among other things, they also learned about breeding programmes, DNA finger printing, varieties, varietal introduction, pulses value addition and technology transfer. The Chai Nat Research Centre is a ‘One-Stop State-of-Art

Crop Research and Service Centre’ doing varietal trials, breeder seed production, operating a seed testing lab, coordinating supply to farmers and field inspections, and facilitating certification, buy back and processing.

The researchers also visited Saraburi where they inquired about relevant scientific method introduced in growing a mung bean. The group also went to the seed multiplication center in Lopburi to check on the storage and packaging method of mung bean. A visit to the Phitsanulok Seed Research and Development Centre (PSRDC) also took place at Phitsanulok province. A presentation was made on seed production and breeding, and an incentive provided by the Government of Thailand to farmers. Ultimately, an inclusive visit to the scientist’s laboratory was also arranged.



#### Motivating and Attracting Youth in Agriculture (MAYA)



Opening session, inaugural address Dr.R.S Paroda chairman TAAS

A Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA) was organized from 30-31 August 2018 by the Trust for Advancement of Agricultural Sciences (TAAS), Indian Council of Agricultural Research (ICAR), MS Swaminathan Research Foundation (MSSRF), APAARI, Skill India, Agriculture Skill Council of India (ASCI), Young Professionals for Agricultural Development (YPARD), and National Bank for Agriculture and Rural Development (NABARD).

Dr. R.S. Paroda, Chairman, TAAS, urged to mainstream youth in agriculture emphasizing that youth should be trained as employment creators rather than employment seekers. Dr. Trilochan Mohapatra, Secretary (DARE) and Director General (ICAR), urged to create a “Mission for Youth in Agriculture” and “Regional Platform for Youth in Agriculture” with neighboring countries as partners. Dr. MS Swaminathan, “the father of` agriculture in India” made a keynote statement through a video message. Dr. Ravi Khetarpal, Executive Secretary, APAARI, pointed out that youth want to get involved in glamorous jobs. If such jobs are created in agriculture, they will bring revolution. He also highlighted various global programmes on involvement of youth in

agriculture and how one can draw benefits from them to enhance the role of youth towards agriculture.



*The APAARI team with some regional participants*

The conference provided an opportunity for all stakeholders to interact and discuss various options and avenues for not only attracting youth to agriculture but even motivating them towards entrepreneurship in agriculture and allied fields. More than 200 participants gathered to learn and share the good practices and innovative methods, tools and policies for motivating youth to agriculture. This included farmers from various states, senior research, development and policy-related officials and managers from national and regional organizations, non-governmental organizations (NGOs), the private sector, education and training institutions, and other members of civil society. International participants included representatives from Afghanistan, Bhutan, India, Nepal and Sri Lanka.

APAARI facilitated a session on 'Initiatives on Youth Empowerment in South Asia' with contribution of representatives from the above-mentioned countries. It also brought global perspectives on developing soft skills and ethical leadership to prepare graduates to become catalyst of change with participation of Dr. John Kennelly, President of the Global Confederation of Higher Education Associations for Agricultural and Life Sciences (GCHERA).

A regional perspective on facilitating capacity development for agricultural innovation systems (CD for AIS) in Asia-Pacific was also shared. In this context, APAARI shared the key concepts and principles of the Common Framework on CD for AIS developed by the Tropical Agriculture Platform (TAP) and hosted by FAO, Rome, particularly its applicability in agricultural education. The meeting led to the development of a MAYA road map to guide policymakers, NARS, higher education and the private sector in creating an enabling environment to motivate and attract youth to agriculture as creators of agricultural jobs.

## 6th Annual Biosafety Conference



*Chair and speakers of the Plenary Session 1*

The 6th Annual Biosafety Conference was organized by the Biosafety Program of the International Life Sciences Institute (ILSI) Research Foundation, and Biotech Consortium India Limited (BCIL) on 15-17 September 2018 in Dhaka, Bangladesh. Amongst others, APAARI and APCoAB were also co-organizers of the conference. Dr Rishi Tyagi, Coordinator, APCoAB, chaired the plenary session on 'Biosafety Regulation and Capacity Building Initiatives in South Asia'. A total of about 160 participants representing academia, government and public sector from eight South Asian countries participated in the conference. Of the total participants, 36 per cent were women researchers or students of biotechnology.



## APAARI welcomed by ACIAR in Australia



*CEO Andrew Campbell, Dr Ravi Khetarpal and Ms. Mellissa Wood*

Dr Ravi Khetarpal, Executive Secretary, APAARI, was welcomed at ACIAR, Canberra by Andrew Campbell, CEO, and Mellissa Wood, General Manager, Global Programs, on 3 October 2018. Dr Khetarpal made a presentation for ACIAR staff on APAARI and its recent activities and challenges. Discussions focused on strengthening research and innovation for agriculture in Asia and the Pacific.



## The 5th International Rice Congress



*Discussion on the role of youth in achieving Zero Hunger*

The International Rice Research Institute (IRRI), Agri-Food and Veterinary Authority of Singapore (AVA), and FAO organized the 5th International Rice Congress (IRC 2018) from 15-17 October 2018 in Singapore. Around 1,500 participants participated in the three-day conference. Scientists, thought-leaders, decision-makers, investors, and private sector actors from 40 countries gathered to learn about the latest agriculture technologies, discuss potential areas for collaboration and strategies to boost the rice sector, as well as to further agricultural innovations through sustainable solutions. During the event, partnership agreements for long-term funding, knowledge exchange, and technology transfer were officially signed by IRRI and partners. On 16 October 2018, the conference celebrated the World Food Day with an interactive global discussion on the role of youth in achieving Zero Hunger.



## Knowledge Management for More Effective Agricultural Innovation Systems



*KM Workshop participants*

APAARI, in collaboration with the National Agriculture and Forestry Research Institution (NAFRI), organized and facilitated the Regional workshop on Knowledge Management for More Effective Agricultural Innovation Systems (AIS) from 18-19 October 2018 in Vientiane, Lao People's Democratic Republic (PDR). The objectives were to: (i) increase understanding of knowledge management (KM) in the context of AIS; (ii) develop skills in the use of

various knowledge-sharing methods and tools; (iii) identify and outline approaches for the integration of KM in ongoing work; (iv) validate the draft KM Strategy of APAARI; (v) share experience in KM – particularly in identification, collection, packaging, dissemination and use of agricultural knowledge; and (vi) strengthen the KM Community of Practice (CoP) of APAARI for future networking, collaboration and programme development.



*APAARI staff during the workshop*

About 30 participants took part in the workshop, being the APAARI KM focal points and members of APAARI CoP on KM and communication, representing APAARI member institutions from across Asia-Pacific. In addition to new knowledge and facilitation skills acquired, participants discussed and significantly contributed to the validation of APAARI's KM Strategy, which is currently being finalized by the Secretariat based on the received feedback.



## Seminar on the ASTI project in Fiji



*Participants from agricultural research agencies, universities, SPC, FAO and MOA*

APAARI and IFPRI organized a seminar with the Ministry of Agriculture, Fiji, in October 2018, to introduce the ASTI project to agricultural research agencies in Fiji and to discuss ASTI's surveys, influence pathway, and research systems of the country. Forty-five participants from agricultural research agencies, universities, South Pacific Community (SPC), FAO and MOA attended.



## UN agencies' meeting to fight hunger and malnutrition in Asia and the Pacific



*Dr. Ravi Khetarpal intervening during the global conference*

Dr. Ravi Khetarpal, Executive Secretary, participated in the launch of the 2018 Asia and the Pacific Regional Overview of Food Security and Nutrition Conference organized by FAO, the United Nations Children's Fund (UNICEF), World Food Programme (WFP) and the World Health Organization (WHO). Four specialized UN agencies presented and revealed a joint-report of the status of hunger and malnutrition in Asia-Pacific, which raised a number of concerns related to the increased number of the world's undernourished people to 821 million – over half of which lives in the region. The Asia-Pacific countries have committed to achieve the Sustainable Development Goals (SDGs) by 2030 and are presently combating hunger and malnutrition. The conference invited international organizations, including APAARI, to share their views and their possible roles in achieving SDG 2 or Zero Hunger. The

event was held on 2 November 2018 in Bangkok, Thailand.



## E-Agriculture Solutions Forum 2018, Nanjing, China



*Participants of the E-agriculture Solutions Forum 2018*

The E-agriculture Solutions Forum 2018, held from 15-17 November 2018 in Nanjing, China, empowered its participants with new knowledge and experiences to advance agricultural development through the use of information and communication technologies (ICTs). For four days, participants shared good practices and experiences in implementing ICT solutions to improve food production and related policies, as well as the livelihoods of small farmers in a more sustainable way. Organized by FAO and partners, participants were drawn from Asia-Pacific and beyond. This knowledge-sharing event was built around interactive activities and presentations from government ministries and private organizations. The forum provided excellent opportunities for networking and building partnerships.



## Regional Conference of Diverse Experts on Soil and Plant Health in Asia-Pacific



*Soil and plant health experts*

APAARI and the Department of Agriculture (DOA), Thailand, organized the Regional Conference on Role of Soil and Plant Health Towards Achieving the Sustainable Development Goals (SDG) in Asia-Pacific held on 21-23 November 2018 in Bangkok, Thailand. It was co-organized by IRRI, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), ACIAR, and the Council of Agriculture, Taiwan (COA). Over 100 participants attended the event, including diverse experts from research and development, extension, policy makers, private sector, professional societies, civil society and donor organizations. It was a regional platform for sharing knowledge and experiences on the status of soil and plant health, crop pest issues, challenges, and biodiversity in the context of climate change.

The objectives of the meeting were to: (i) explore the possibility to develop a knowledge platform within and outside the region for new technologies; (ii) establish and outline research priorities; (iii) facilitate capacity development on the topic;



(iv) strengthen policy interventions and new networks; and (v) sustain and protect soil and plant health. It also addressed the common global issues of achieving the SDGs particularly in the context of the region's significant dependence on agriculture. The role of land degradation and carbon sequestration in soil health, and lingering harm of pests and diseases to plant health were some of the foremost discussion during the event.



## Innovation Symposium on Agricultural Innovation for Family Farmers



*José Graziano da Silva, FAO's Director General opening the Symposium*

The Innovation Symposium on Agricultural Innovation for Family Farmers was organized by FAO, in collaboration with the European Commission (EC), on 21-23 November 2018 in Rome, Italy. The event emphasized the important role that FAO plays as an innovation catalyst to empower family farmers through agricultural innovation. It provided inspiration for innovation actors and decision-makers, especially in the developing countries, to unlock the potential of innovation to drive socio-economic growth and to ensure food and nutrition security, reduce poverty, improve resilience to changing environments and thereby achieve the SDGs. The symposium was organized around different sessions exploring the potential of agricultural innovation for family farmers in achieving the SDGs; putting family farmers at the centre; strengthening research, education, and bridging institutions to accelerate innovation; building effective agriculture innovation systems and empowering its actors; reaching millions of family farmers through scaling up of successful innovation; driving successful innovation through effective decision-making and innovative partnerships; and increasing access to markets and engaging the private sector to accelerate innovation.

The meeting also presented success stories of innovation and aimed to boost partnerships and public-private investments to foster and scale up agricultural innovation. From Asia, Iranian Plant Protection Organization presented eLocust3: a revolutionary trans-boundary plant pest early warning system in Africa and Asia. From Nepal, Organic World and Fair Future Pvt Ltd presented the use of the Mountain Partnership Products (MPFF) participatory certification and labelling scheme to promoting mountain biodiversity and improve local economies and livelihoods in Nepal. From India, Government of Telangana presented the Rythu Bandhu Insurance scheme in India. The symposium took a multi-sectoral approach, encompassing innovation in the different production systems and value chains of the

crop, livestock, forestry and fishery sectors. Participants in the meeting were representatives of governments, intergovernmental organizations and of non-state actors.



## Sustainable Food Digital Agriculture Innovation Management Seminar



*From left to right: Kuo-Chang Fu, Cheng-I Wei (IAAS), Ravi Khetarpal (APAARI) and Tzong-Ru Lee (IAAS)*

The "Sustainable Food Digital Agriculture Innovation Management Seminar" co-sponsored by the IAAS, Singapore Management University (SMU) and APAARI was held in Singapore on 27 November 2018, inviting participants from Taiwan, the United States and other countries, including experts scholars and venture capitalists from across the agricultural value chain. The conference focused on the concept of smart plant factories as a reliable source of food security in response to severe challenges faced by the global agriculture. Various speakers expressed their suggestions ranging from the wide use of applications in research and development, technical operation, product marketing, digitalization of image-containing sensing systems, and block chain development. Currently, the United States have adapted the system to support their agriculture. Taiwan has been developing plant factories for eight years already – one of the examples that it shared in the meeting.



## Global Event to Accelerate the End of Hunger and Malnutrition

APAARI attended a Global Event to Accelerate the End of Hunger and Malnutrition organized by FAO and IFPRI on 28-30 November 2018 in Bangkok, Thailand. The world with a targeted year to achieve the SDGs by 2030 is experiencing a slow progress in eliminating hunger and malnutrition

as widely seen across countries. The increased number of undernourished people worldwide, stunted children, overweight, obesity and associated communicable diseases are some of the major factors considered on a global scale. Our global food system is also threatened by continued conflicts, rapid urbanization and climate change. Efforts to speed up the progress to end hunger and malnutrition must take place.



*Invited speakers of the Global Conference*

This points to a call for “accelerators”, which can be identified as policy, intervention, countrywide strategies, and innovations. The event held high-level panel discussions, acceleration fair (side events), parallel and plenary sessions, and facilitated networking. The Global Nutrition Report 2018 was launched and highlighted an unacceptable burden of malnutrition figures with slow and inconsistent progress to end global hunger. A publication on Future Smart Food (FSF) by FAO was also inaugurated during the event to address Zero Hunger in Asia-Pacific. Neglected and underutilized species (NUS) were emphasized, which are a potential solution to increase dietary and production diversity if integrated throughout the entire food system.



### Webinar on Capacity Development for Agricultural Innovation

In the context of the Tropical Agricultural Platform (TAP) hosted by FAO, APAARI organized a webinar on Capacity Development for Agricultural Innovation on 30 November 2018. The webinar targeted university managers, leaders and post-graduate students in Asia-Pacific. Resource persons from APAARI, FAO and GCHERA, as well as the academic community were brought to a dialogue on capacity development to strengthen agricultural innovation systems. It aimed to raise awareness on the importance of developing functional capacities to unlock the potential for agricultural innovation and the role of higher education in developing the respective capacities. It also raised awareness among professionals in higher education on the Common Framework on Capacity Development for Agricultural Innovation Systems (CD for AIS) developed by TAP partners, its principles and tools, including functional capacities for AIS – individual, organizational and enabling environment. GCHERA brought a global perspective on educational transformation efforts to develop future leaders of agricultural and rural development.



### Workshop on Agriculture and the Imperatives of Food and Nutrition Security

The Centre for Technology Alternatives for Rural Areas (CTARA) of the Indian Institute of Technology Bombay, organised and facilitated a two-day workshop on “Agriculture and the Imperatives of Food and Nutrition Security” in association with APAARI and NABARD. The main focus was on availability, accessibility, utilisation and stability of food; integration of food-processing and logistics in controlling food-prices; district (local government) level decentralised planning for nutrition security; regional and local food and nutrition security; and linkages between agriculture, income, livelihoods, and malnutrition. The event was held from 6-7 December 2018 in Mumbai, India.



### International Seminar on Conservation and Prospecting of Bioresources in Asia-Pacific Region



*Participants of the International Seminar in Taipei, Taiwan*

An international seminar was organized in collaboration with COA, Taiwan; Ministry of Foreign Affairs, Taiwan; National Taiwan University; and Academia Sinica, Taiwan, on 18-21 December 2018 in Taipei. A total of 134 participants from eleven Asia-Pacific countries (Bangladesh, Fiji, India, Iran, Malaysia, New Caledonia, Samoa, Singapore, Sri Lanka, Taiwan and Thailand) participated. APAARI sponsored ten speakers/panelists for the seminar.

Opening remarks were presented by Dr. James C. Liao, President, Academia Sinica, Taiwan; Dr. Junne-Jih Chen, Director General, Taiwan; Agricultural Research Institute, COA, Taiwan; Mr. Cheng-Maw Shih, Minister of Department International Organizations, Ministry of Foreign Affairs (MOFA), Taiwan; Dr. Ta-De Lin, Vice President, National

Taiwan University, Taiwan; and Dr. Ravi Khetarpal, Executive Secretary, APAARI, Thailand.

The key topics of the seminar included policies and regulations of bioresources in Asia-Pacific, prospecting and application of bioresources in the region, application of CRISPER/Cas9 in bioresources, and commercialization of bioresources in Taiwan. A technical tour to Tea Research Station, Taoyuan, Taiwan, and Agricultural Technology Research Institute, Hsin Chu, Taiwan, were also organized.



## APAARI 2nd Executive Committee Meeting 2018 and 15th General Assembly



Group photo of 15th APAARI General Assembly participants

On 21 December 2018, APAARI organized its 2nd Executive Committee Meeting (ECM) of 2018, back-to-back with the 15th General Assembly in Academia Sinica, Taipei, Taiwan. Attended by APAARI member representatives, the meeting focused on discussing vital issues concerning administrative matters, constitutional amendments and financial/audit reports submitted by the APAARI Secretariat for endorsement.

Dr. Ravi Khetarpal presented some concerns and developments on administrative matters, seeking recommendations and opinions from the Executive Committee (EC) members.

The Committee provided supportive suggestions to guide the Secretariat in obtaining its legal status in the host country, Thailand, and also appreciated the efforts made in the financial and audit reports that were presented.

The General Assembly focused primarily on the formation of new EC members for Biennium 2019-2020. In addition, extensive discussion centered around the constitutional amendments' agenda. An updated report regarding APAARI's key strategies were also highlighted in the meeting.



## NEWS UPDATE FROM NARS

Philippine Council for Agriculture, Aquatic and Natural Resources, Research and Development (PCAARRD)

Filipino universities lead the development of low-salt fish sauce from mussel for consumers, and natural food supplements for goats



*Mussel farming is considered an important food-producing sector in many coastal areas of the Philippines (Source: PCAARRD)*

### Low-salt fish sauce from mussels

Functional food is currently one of the fast-growing segments of the food industry. It contains both essential nutrients and health promoting non-nutrients. However, fish sauce and other fermented food products may not be considered functional food due to its high salt content. Fortunately, a project of the University of the Philippines (UP) Visayas made fish sauce derived from mussel, which is low-salt. Because of this, it can be a potential functional food and ingredient. The project is led by Ernestina M. Peralta of the UP Visayas Institute of Fish Processing Technology and funded by PCAARRD's Department of Science and Technology PCAARRD.

Green mussel (*Perna viridis*) is abundantly found in the country and is considered as an important farming commodity in many coastal areas. Mussel farming requires less input and capital compared with other aquaculture activities, such as fish cages and pens, making it a preferred backyard activity of fisher folks.

Mussel can be an alternative raw material in producing self-fermented sauce. It is high in protein content, amino acids, zinc, calcium, and iron. Moreover, it is low in fat, cholesterol and calories. The low-salt fermented mussel sauce is a natural food ingredient and condiment and can improve protein digestibility as well as the flavor of the food.

### Natural feed supplements and dewormer for goats

The death of kids before weaning is perhaps the biggest cause of economic loss to goat farmers. Studies have shown that much of these mortalities were due to doe-related causes. To address these concerns, researchers from the Visayas State University (VSU) and the Central Luzon State

University (CLSU) developed natural plant-based dewormers and feed supplements to prime the does (female goats) for kidding and lactation and to ensure survival of their kids.

Specifically, a dewormer made from extracts of 'Makahiya' (*Mimosa pudica*), 'Caimito' or star apple (*Chrysophyllum cainito*), and 'Makabuhay' (*Tinospora rumphii*) was formulated and packaged into 500 mg capsules by Dr. Tomas J. Fernandez, Jr of VSU. Also referred to as a 'MCM dewormer', it has the ability to fight *Haemonchus contortus*, the most pathogenic parasite in goats that attaches itself to the goat's stomach and feed on its blood, thereby causing anemia and ultimate death of the goat if left untreated.

The MCM dewormer was proven effective as it contains anthraquinones and flavonoids, which kill adult stages of the parasite; alkaloid, which purges the dead worms through the feces; and tannin, which heals traumatic lesions inside the goat's stomach.

As the dewormer has been proven to have no side effects, it can thus be given to pregnant does and get rid of parasites before they give birth. Since it is all natural, it does not contribute to anthelmintic resistance, a problem plaguing the industry caused by the overuse of chemical drenches in the past, particularly albendazole.

To ensure the newborn survives, a coco-water drench was formulated by Dr. Lolito C. Bestil, also of VSU. This nutritional supplement is a high glucose drink that contains coconut water, dextrose powder, liquid seaweed, and vitamin-mineral premix. It has the ability to alleviate hypoglycemia (low blood glucose) in newborn kids and enable faster weight gain in the first 30 days of the kids. This supplement is intended for orphaned kids, those born to underfed does during late pregnancy, and those whose dams have mastitis and other metabolic disorders during early lactation.

To keep the kids strong and healthy during the preweaning stage (1-3months), creep feeds were formulated by Dr. Edgar A. Orden of CLSU to bridge milk to solid feeding. It contains 18-20 per cent crude protein (CP) and 75 per cent total digestible nutrient (TDN), hence, providing pre-weaners a rich source of vitamins and minerals.

Dr. Orden also developed a *Leucaena*-based pelletized blended grower ration to ensure that these pre-weaners survive to post-weaning age (older than 3 months). He customized the ration with highly digestible plant and animal protein ingredients to facilitate faster weight gain among growers.

For lactating does, Dr. Orden formulated a special feed known as SFEED-Lactating. It is an *Indigofera*-based diet complete with rice bran, copra meal, molasses and minerals, dry-ground and pelleted to prevent selection. It contains 15 per cent CP and 75 per cent TDN, hence ideal for lactating does. It has the ability to increase milk production by more than 45 per cent due to the high feed intake that can reach

more than 4 per cent of the doe's bodyweight.

*Authors: Hannah Lei N. Gabutan and Anna Marie P. Alo, DOST-PCAARRD S&T Media Services*



## Ministry of Agriculture and Forests, Bhutan (MOAF-Bhutan)

### Enhancing capacities in agriculture research



*Participants of a five-day course on research methodologies and scientific paper writing (Source: MoAF)*

Agriculture in Bhutan provides employment to around 57.2 per cent of its population. Like elsewhere, research for development in agriculture and extension services serves as a strong driving force in developing and sustaining programmes that contribute to national food self-sufficiency and security, employment generation and leveraging the country's trade balance. Although formal agricultural research in Bhutan started in 1982 with the establishment of Centre for Agriculture Research and Development (CARD) in west Bhutan, several factors adversely impacted the consistency, growth and therefore the quality of agriculture research over the years.

Recognizing the positive, long-term and diverse impact of agriculture research on development, and as part of its effort to instill fresh drive and reiterate research focus, the Department of Agriculture, MoAF, Bhutan, organized a series of capacity development programmes in 2018.

In three separate week-long courses, the department trained 94 young agriculture researchers and officers from various research centres and central programmes on scientific paper writing. The course, which was arranged in Paro and Wangduephodrang in west Bhutan between April and September 2018 was run by senior research personnel from within the Department of Agriculture. The programme also involved building skills in developing research proposals.

The department wound up these initiatives for the year with a five-day training programme on experimental design and data analysis for senior agriculture officials in Thimphu, Bhutan. The programme, which ran from 10 to 14 December

2018 was financially supported by FAO-Bhutan. A total of 26 agriculture officials from research centres, central programmes and division headquarters attended the course.



*Participants of a five-day course on research design and data analysis (Source: MoAF)*

Ms. Alaine Gulles and Ms. Rose Imee Zhella Morantte, specialists from the Quantitative Genetics and Biometrics Cluster of IRRI Philippines, delivered the course that covered statistical concepts, experimental design, and data analysis including introduction to and hands-on practice on Statistical Tool for Agricultural Research (STAR) package. Developed specifically for crop scientists using Eclipse Rich Client Platform (RCP) and R language, STAR is commonly used in crop research design, data management, and statistical analyses. STAR provides a user-friendly graphical interface as compared to R's rather challenging in-line command language and structure. STAR will be used as the standard statistical software across all Agriculture Research and Development Centres (ARDCs) and central programmes under the Department of Agriculture. The Department of Agriculture will keep up the pace in exploring available options and opportunities for developing a pool of agriculture professionals that are skilled and competent in fundamentals of applied agriculture research and scientific communication.

*Author: Agriculture Research and Extension Division (ARED), MOAF, Thimphu, Bhutan*



## Vietnam Academy of Agricultural Sciences (VAAS), Ministry of Agriculture and Rural Development (MARD)

### Plantwise and the sustainability of plant clinics in Vietnam

On 18 December 2018, the Vietnam Academy of Agricultural Sciences (VAAS) and Centre for International Agricultural Biology (CABI) co-organized a 'Seminar on Plantwise and the Sustainability of Plant Clinics in Vietnam'. Participants included experts from CABI; leaders of VAAS, Plant Protection Department (MARD); representatives of the Ministry of Science and Technology, Vietnam National Institute of Agriculture (VNUA), Plant Protection Institute (PPRI), Southern Horticultural Research Institute (SOFRI); Plant Production and Protection Sub-department of Vinh Phuc, Hung Yen and Tien Giang, and others.

Plantwise Project (Plant Clinics) in Vietnam has been funded by CABI since 2012. Until now, 45 plant clinics have been established in different provinces of Vietnam, namely Hung Yen, Vinh Phuc, Son La, Dak Lak, Tien Giang, Ben Tre and Vinh Long. Hundreds staff of research institutes, centres, plant protection departments and plant protection sub-departments have been trained to be plant doctors with good knowledge and skills. Recommendations of plant doctors help farmers to control pest and diseases more effectively, use fewer pesticides, reduce losses caused by pests and diseases, thus contribute to improved economic efficiency of agricultural production. The usefulness of plant clinics, as well as the quality of advice of plant doctors has been highly appreciated by farmers and local government authorities.

Prof. Dr. Nguyen Hong Son, President of VAAS, confirmed that plant protection systems in Vietnam have markedly changed in recent years. Plant clinics are really needed as they are helping farmers in getting accurate information and knowledge for applying safer method in pest and disease control.

All participants in the seminar were actively involved in the discussions on how to achieve the sustainability of plant clinics in Vietnam in the future. For stable development, this system could not only rely on CABI's aid, but also on government policies and budget in Vietnam and localities.

*Source: Pham Thi Xuan, Department of Information, VAAS-MARD*



## Department of Agriculture, Thailand – DOA Collaboration between Thailand and Sweden (NordGen)



*Agreement signing between DOA, Thailand and NordGen*

Thailand and Sweden continue their collaboration through the Svalbard Global Seed Vault (SGSV), which is a secure seed bank on the Norwegian island of Spitsbergen near the remote Arctic Svalbard archipelago. Recently, Dr. Suwit Chaikiattiyos, former Director-General, DOA; Ms. Kunyaporn Pipithsangchan, Director, Genebank Research and Development Group, DOA Genebank; and Mrs. Jintawee

Thai-Ngarm, Director, International Agricultural Affairs Group, visited and joined the Svalbard Global Seed Vault's 10-year anniversary. In August 2018, the DOA, Thailand, signed an agreement for seeds to be deposited at SGSV in Norway. These are good quality seeds certified by the DOA, which have been promoted in Thai farming.

Author: DOA Thailand



## Nepal Agricultural Research Council (NARC)

### Inauguration of a residential training programme for farmers



*Hon. Minister and NARC Chairman inaugurating the Residential Training Programme for Young Entrepreneur Farmers*

On 18 December 2018, the Outreach Research Division of the Nepal Agricultural Research Council (NARC) organized a ten-day Residential Training Programme for Young Entrepreneur Farmers in its complex in Khumaltar Lalitpur. Honorable Minister Chakra Pani Khanal of the Ministry of Agriculture and Livestock Development, Government of Nepal and NARC Chairman, inaugurated the training.



*Hon. Minister and NARC Chairman Mr. Chakra Pani Khanal welcomed by NARC scientists*

A total of 150 participants attended the programme, including the Deputy Director General (DDG) of DoA, and Programme Director of the Department of Livestock Services. Following the training, on 31 December 2018, Honorable Minister Mr. Chakra Pani Khanal visited again the NARC complex in Khumaltar, particularly its research laboratories and field research activities. The purpose

of the visit was to observe recent research activities and facilities under NARC. After the visit, a short meeting was held at the National Agriculture Research Institute (NARI). Honorable Minister delivered guidelines to develop a master plan for efficient use of the space for research laboratories to generate demand-based agricultural technologies for farmers. He also insisted on the construction of a farmers' guest house in Khumaltar Complex, as well as in all seven provinces for starting long-term residential training for small farmers to transform them into entrepreneurs.

Author: Secretariat of Executive Director, NARC



## PROFILE: HIGHER EDUCATION

### University of Agricultural Sciences (UAS), Dharwad

#### ICAR's Vasantrya Naik Award 2017



*The research team receiving Vasantrya Naik Award 2017*

The prestigious Vasantrya Naik Award 2017 of the Indian Council of Agricultural Research (ICAR) for research application in dryland farming systems has been awarded to the 'All India Co-ordinated Research Project for Dryland Agriculture' (AICRPDA), implemented by the Regional Agricultural Research Station, Vijayapur, under the aegis of UAS, Dharwad, India.

The award was given for AICRPDA's innovative, applied and action research through application of new tools and concepts, including: water balance analysis, geospatial technologies, and real-time contingency crop planning. AICRPDA's understanding of the dryland production systems in northern dry zone of Karnataka led to the development of agro-ecology specific technologies in rainwater management, efficient cropping systems, nutrient management and real-time contingency planning. Wider scaling up of these technologies, particularly in convergence with central and state government programmes, increased the yield of dryland crops by 21 to 46 per cent, and ensured net returns of up to Rs. 68,000 per hectare. This resulted in remarkable impacts on income and adaptive capacity of resource-poor dryland farmers in the northern dry zone of Karnataka.

The award was presented during the 90th foundation day

of ICAR on 16 July 2018 at the National Academy of Social Sciences (NASC), New Delhi, India.

*Author: Dr. V. R. Kiresur, Head, Project Planning and Monitoring, UAS-Dharwad*



## NEWS UPDATE FROM INTERNATIONAL CENTRES

### Australian Centre for International Agricultural Research (ACIAR)

#### ACIAR signs four-year partnership with the Centre for Agriculture and Bioscience International (CABI) and WorldVeg



*Ms. Mellissa Wood, General Manager Global Programs, ACIAR, and Dr Marco Wopereis, Director General, WorldVeg, planting a commemorative tree at the WorldVeg, Taiwan, on the occasion of the partnership signing*

In December 2018, ACIAR signed a four-year AUD 2,120,000 partnership with the Centre for Agriculture and Bioscience International (CABI). The partnership recognizes mutual priorities of high impact, strategic research partnerships providing sustainable solutions to challenges facing biosecurity. The partnership will support CABI's Plantwise programme and high priority initiatives under the CABI development fund. Plantwise is a global programme led by CABI, which helps farmers lose less of what they grow to plant health problems. ACIAR's funding will assist CABI to work closely with national agricultural advisory services establishing and supporting networks of plant clinics run by trained plant doctors where farmers can receive practical plant health advice.

In the same month, ACIAR also signed a four-year AUD 1,708,000 partnership with the World Vegetable Centre (WorldVeg) recognizing the partner's commitment to providing sustainable solutions to challenges in global food and nutrition security. WorldVeg is committed to research and development to realize the potential of vegetables for healthier lives and more resilient livelihoods. WorldVeg's improved varieties, production and post-harvest methods help farmers increase vegetable harvests, raise incomes

in poor rural and urban households, create jobs, and provide healthier, more nutritious diets for families and communities. The partnership will support vegetable breeding activities and capacity-building in Asia and sub-Saharan Africa through development of improved lines of vegetables with higher yields, tolerance/resistance against pest and diseases and/or higher nutrient content. It will also support introduction of improved agricultural practices, pre- and post-harvest for safe, sustainable and competitive value chains; and collaboration with, and building capacity of partners from the public and private seed sectors.

*Source: Bosibori Bett, Project Officer, Global Program, ACIAR*



### International Association for Agricultural Sustainability (IAAS)

#### The 3rd International Agriculture Innovation Conference (IAIC 2018)



*The 3rd International Agriculture Innovation Conference*

The 3rd IAIC 2018 was organized in Beijing, China, from 12-13 October 2018 by IAAS, APAARI and Zhongnong Futong. On the first day of the conference, specialists from China, Finland, India, Indonesia, Netherlands, Norway, Poland, Singapore, Taiwan, Thailand, United Kingdom and others, presented and shared their point of view on agricultural innovation, technology and globalization. On the second day, business owners, professors, and students from all over the world enriched the conference with their inspiring presentations and discussions on agricultural technologies, agricultural globalization and cross-border e-commerce, agricultural business operations, and international agricultural festivals. After the conference, the guests and participants went to the Beijing International Urban Agricultural Science and Technology Park, to experience the newest farming technology. The attendance and support from all the participants and the honor guests is greatly valued by the organizers.

*Source: Tracy Su, IAAS*



### International Livestock Research Institute (ILRI)

#### Bioaerosol sampling to detect avian influenza virus in Hanoi's largest live poultry market

During the first three weeks of October 2017, ILRI research team used aerosol samplers to conduct surveillance for avian influenza at Ha Vi market, the largest live wholesale poultry market in Hanoi. They positioned the samplers 0.5 m from the ground and next to live bird cages, and sampled for a duration of four hours for each sampling. During that time, researchers also collected 15 to 20 oropharyngeal (OP) swab samples from chickens and ducks situated 0.2 to 1.5 m from the air samplers.

Our study found that 90 per cent of 30 aerosol samples and 47 per cent of the 116 pools of poultry OP swabs were positive for influenza A. Egg culture yielded one influenza A virus from the aerosol samples that was not an H5 or H7 virus, and 25 influenza A viruses in the OP sample pools, including five H5 viruses. Strong associations between positive sample types in the aerosol samplers and the OP swab samples were observed, including 91.7 per cent of positive OP pool samples confirmed by positive aerosol samples and 81 per cent of influenza A aerosol samples confirmed by the positive OP swab samples. This pilot study supports the use of aerosol sampling in concert with other surveillance methods as a tool for screening large poultry markets for avian influenza virus. This study was an internationally collaborative effort between researchers from institutions in Vietnam (National Institute of Veterinary Research and ILRI), USA (Duke University and North Carolina State University), China (Duke Kunshan University) and Singapore (Duke-NUS Medical School). The results were recently published in the journal *Clinical Infectious Diseases*.

*Source: Nguyen Thi Quynh Chi, Regional Communications Officer for East and Southeast Asia, ILRI*



## International Rice Research Institute (IRRI)

### IRRI and partners enhance farmer livelihoods through new rice straw composting technique



*The compost turner with promising results (Source: IRRI)*

Rice straw is a natural byproduct of rice production. Each kilogram of milled rice produces around 0.7-1.4 kilos of rice straw, a potential additional income for small holder farmers that usually end up being burnt due to convenience and

lack of awareness on other rice straw management options. With support from the Federal Ministry of Economic Cooperation and Development (BMZ), IRRI and its partners are developing and piloting technologies to facilitate the use of rice straw as an additional opportunity to enhance farmer income and improve sustainability of rice production.

Through the project “Scalable straw management options for improved farmer livelihoods, sustainability, and low environmental footprint in rice-based production systems”, IRRI conducted a demonstration of a locally adapted compost turner in Vietnam in September 2018. “The compost turner is a technology developed by the project to provide farmers with alternative uses for rice straw that are left on the field after harvest, rather than burning it. It can also make land preparation easier for the next cropping season”, said IRRI post-harvest scientist and project leader, Dr. Nguyen Van Hung. “The composting process makes use of rice straw waste from mushroom production and low-quality rice straw from the field, hence, it does not compete with the rice straw being used for the production of ruminant feed,” Dr. Hung pointed out. In addition, there is also an increasing demand for compost from rice straw. This is being sold at US\$1.5-3.0 per 100 kg or USD150-300 per ton of industrial compost. Farmers would normally make soil compost manually through different farming implements or by mixing farm and animal wastes using a bulldozer. “This process is energy intensive and costly as the rental fee for bulldozer is about US\$100 for an 8-hour operation,” said Dr. Hung. By having a good mixture of rice straw and animal manure, compost material is made available in forty-five days. A few farmers in Vietnam have tried mixing the compost in a pomelo farm and found the results promising.

The original design and prototype of the compost turner machine was developed by scientists from Hohenheim University, Germany. This was later adapted to fit smaller fields in Vietnam in collaboration with Nong Lam University, Tien Giang University and IRRI. The locally adapted compost turner has a capacity of 30 tons per hour and is operated by connecting it to a 32HP 4WD tractor. The field demonstration was attended by researchers and experts from IRRI, CGIAR Challenge Programme on Water and Food (CPWF), Philippine Rice Research Institute (PhilRice), Philippine Carabao Center (PCC), University of the Philippines-Los Baños (UPLB), Nong Lam University (NLU), Loc Troi, Cuu Long Delta Rice Research Institute (CLRRI), Vietnam National University of Agriculture, Vietnam Academy of Agricultural Sciences (VAAS), and Tien Giang University. It took place at Hung Thanh Commune, Tan Phuoc District, Tien Giang Province, and was followed by a writeshop to outline the book on Rice Straw Management, which was facilitated by Dr. Boru Douthwaite, former Impact Director of CPWF.

The compost turner machine will also be piloted and disseminated in other countries involved in the implementation of the rice straw management project, particularly the Rice Straw PH project in the Philippines



funded by the Department of Agriculture, Bureau of Agriculture Research.

Source: Kris Jovet Garcia, Stakeholders Relations, Communication Unit, IRRI



## The World Agroforestry Centre (ICRAF)

### Trees on farms: a biodiversity assessment tool



*Diverse plants in a coffee agroforestry system*

The United Nations Biodiversity Conference held from 17–29 November 2018 in Egypt, which included the Fourteenth Meeting of the Conference of the Parties (COP14), called on decision makers from more than 190 countries to increase efforts to halt loss of biodiversity and protect ecosystems that support food and water security and health for billions of people. One of the important policy discussions in view of developing the successor of the Global Strategic Plan for Biodiversity 2011–2020 is innovative ways of mainstreaming biodiversity into core sectors of national economies, including agriculture. As forests are declining and so are the ecosystem services they provide, we need to restore at least some of these vital services on managed land.

Trees on farms play a critical role because they provide high levels of landscape biodiversity through in-situ conservation, connecting fragmented wild habitat, and conserving soil biodiversity and agrobiodiversity. Trees on farms have attractive co-benefits for climate-change mitigation and adaptation through carbon sequestration, income diversification and adaptive strategies in communities facing increased climate variability and climate-related crop failures. While trees on farms are an important instrument to restore and maintain biodiversity and other ecosystem services and directly support Aichi Target 7 ('By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity'), they are not well featured in any national biodiversity strategic action plans. Trees on farms need to be included as one of the indicators for monitoring the status of sustainably managed agricultural landscapes. Seeking to fill that gap, a team of experts from many countries have gathered to develop a purpose-built tool.

## Creating the tool

Working with a team of 30 national biodiversity experts from Honduras, Indonesia, Peru, Rwanda, and Uganda, the Harnessing the Potential of Trees on Farms for Meeting National and Global Biodiversity Targets project has developed a Trees on Farms Biodiversity Assessment Tool that is about to be field-tested through farm inventories. The project is funded by the International Climate Initiative of the Federal Government of Germany. At a workshop held on 12–16 November 2018 in Tegucigalpa, Honduras, the team presented the parameters of the tool and scheduled its path to release. Following the field testing, there will be a consultation with the national focal points of the Convention on Biological Diversity of the five pilot countries — Honduras, Indonesia, Peru, Rwanda, and Uganda — to ensure complementarity with their approaches. Next will be a wider consultation with experts outside of the five countries.

The workshop addressed key questions: 1) what do we need to understand about biodiversity on farms to improve agricultural sustainability and conserve biodiversity? 2) which components provide the most information and how can these be most efficiently measured? and 3) how can protocols be integrated with existing government data collection and reporting, especially to the Convention on Biological Diversity?

The participants also reviewed the main components of the tool: (i) an inventory of trees on farms; (ii) monitoring birds; and (iii) options for assessing and monitoring other taxa (pollinators, pest and diseases and their natural enemies, and soil biota). This included considering the draft protocol for monitoring biodiversity in agricultural land; the approaches used to assess tree biodiversity in agricultural landscapes; the value of using birds for monitoring ecosystem health (the data would also be combined with that on trees on farms to calibrate models of connectivity and matrix permeability, which could be used to assess the conservation value of an agricultural landscape. Optional modules on pollinators, pests and their natural enemies, and soil biota should also be available); the robustness and efficiency of the World Bird Index for monitoring the birds themselves; the different types of biological corridors that can be used to connect farm land with forest patches; the Amazonian experience of monitoring and sustainable use of wild fauna by indigenous communities, including their experience in reporting on Aichi Target 7 and REDD+; and the institutional and legal arrangements in place in the Peruvian Amazon that regulate the use of forest resources.

Mauricio Guevara, Honduras' Minister of Agriculture and Livestock, highlighted the importance of capacity development to support the government achieve its national and international biodiversity targets and mitigate the impact of climate change on farmers. He cited recent droughts and floods that have devastated farms, saying that it was of critical importance to make farmers aware of

the benefits of trees. More trees on farms could not only contribute to providing habitat for threatened species but also act as corridors for movement of long-ranging ones. He also highlighted the need to educate young people, with curricula that included climate change and biodiversity conservation.

Anabel Gallardo, Vice-President of the Federación Nacional de Agricultores y Ganaderos de Honduras (FENAGH/ National Federation of Farmers and Ranchers of Honduras), explained how the agriculture and livestock sub-sectors were working with the government on sustainable livestock production. The 2018 National Biodiversity Strategy is also being updated. Gallardo highlighted the process of creating the National Sustainable Livestock Platform, to ensure better organization and sustainable management of livestock.

‘We recognize that trees on farms are important both for ecological health and for improving the sustainable production of agriculture in Honduras,’ said Gallardo.

Francisco Aceituno, representative of the Dirección de Biodiversidad (DiBio/Directorate of Biodiversity) of Ambiente y Minas (MiAmbiente/Environment and Mines), said that they were convinced of the role of trees on farms to help conserve biodiversity and, consequently, was ready to adopt the methods and recommendations of the project and to incorporate them in reporting to the Convention on Biological Diversity. The project presented an excellent opportunity to engage the government and private sector in improving farm management.

Eduardo Somarriba, leader of the Programa de Agricultura, Ganadería y Agroforestería (PRAGA/Agriculture, Livestock and Agroforestry Program) of Centro Agronómico Tropical de Investigación y Enseñanza (CATIE/Tropical Agricultural Research and Higher Education Center) emphasized that the project bridged both the government’s agricultural and environmental areas as well as those between the government and the private sector.

During a field visit, the participants reviewed the protocols and considered how they might apply to two very different types of landscape: open pasture land with forest patches and boundary trees; and ‘bird friendly’ coffee plantations growing in the understory of a secondary forest. Broadly, there was strong agreement on the content and its complementarity with national monitoring systems although more information was required to guide implementation.

*Source: Rob Finlayson, Regional Communications Specialist Southeast Asia Coordinator, Mekong Expert Group on Agroforestry for Food and Nutrition Security, Sustainable Agriculture and Land Restoration, ICRAF-Myanmar Liaison*



## NEWS UPDATE FROM PARTNERS

### Indonesian Agency for Agricultural Research and Development, IAARD

#### Indonesia-Fiji Agricultural Mechanization Training Program

Technical cooperation in agriculture between the Government of Indonesia and the Government of Fiji is one concrete proof of Indonesia's commitment to help develop fellow developing countries. The initial step of the collaboration was taken when the Ministry of Agriculture provided 100 hand tractors to the Fiji Ministry of State. The assistance was handed over by Syukur Iwantoro, Secretary General, Ministry of Agriculture (MOA), Indonesia, to the Permanent Secretary of MOA, Fiji, at a bilateral meeting at the Ministry of Agriculture, Maritime and Rural Development and National Disaster Management in Fiji.



*Participants of the training*

Indonesia’s MOA is ready to support the modernization programme of the agricultural sector in Fiji. The cooperation is based on:

- (i) agricultural machinery development support accompanied by training of young farmers in Fiji in the operation, maintenance and repair, as well as developing workshops for agricultural machinery repair and treatment;
- (ii) support for the development of superior seeds/seedlings to increase production and productivity of food crops and livestock in Fiji;
- (iii) support for capacity building for farmers and agricultural officers in Fiji through training activities in Indonesia or sending Indonesian trainers to carry out training in Fiji; and
- (iv) support the development of research institutions in Fiji on post-harvest, mechanization, seeds/seedlings, pest control, tissue culture, and soil chemistry.

The Indonesia-Fiji 2018 Agricultural Mechanization Training Program was held from 10-17 December 2018 to benefit the modernization and improve agricultural capacity in Fiji.

Agricultural mechanization officers and operators from Fiji participated in the technical training conducted at the CV Karya Hidup Sentosa (CV KHS) – the private company supplying the two-wheeled G1000 BOXER tractors. Mr. Ramazi, who from the age of 16 worked as an

agricultural machinery and equipment operator in Fiji, said that: “This training was very important for me since the aid of two-wheeled tractors from the Indonesian Government encouraged me to develop agriculture in my country”.

*Author: Tri Saksono, Government Public Officer, MOA, Republic of Indonesia*



## NEW APPOINTMENTS

### Deputy Minister of Agriculture and Head of the Agricultural Research, Education and Extension Organization (AREEO), Iran



Prof. Kazem Khavazi, born in Mashhad, Iran in 1968, received his M.Sc. and Ph.D. degrees in Soil Sciences (soil microbiology) from Tarbiat Modares University, Iran. Twenty-three years ago, he was employed at AREEO as a researcher in soil sciences. He then served as the Director of Soil and Water Research Institute (SWRI), and AREEO's Deputy for Education and Extension. In 2018, he was appointed as Deputy Minister and Head of AREEO. He is a member of the Iranian Soil Science Society, also serving as an Editor-in-Chief in the Iranian Soil Research Journal.

His research interests include biological phosphorous fertilization, plant growth promoting factors and soil biology and biotechnology. He has contributed over 150 scientific articles in national and international journals and presented over 120 papers at seminars and conferences. He was also involved in training and supervision of over 50 Ph.D. or M. Sc. students. Prof. Khavazi received the prestigious Khwarizmi International Award in 2015 and also other prizes for outstanding research projects in agriculture in 2004 and 2008.



### Dr. Peter Carberry, Director General, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Dr. Peter Carberry, an Australian national, received his PhD in Agriculture from the University of Sydney. He previously served as ICRISAT's Deputy Director General – Research (from January 2015) and the Director of the CGIAR Research Programme on Grain Legumes and Dryland Cereals (since January 2018). Before joining



ICRISAT in 2015, Dr. Carberry was a Chief Research Scientist in the Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia. His expertise is in crop physiology and in the development and application of systems models. He is a key developer of the Agricultural Production Systems Simulator (APSIM) cropping systems model.

Starting his career as a Research Scholar at ICRISAT-India in 1982, over the years Dr. Carberry has held positions of Theme Leader, Economic and Environmental Performance of Australian Agriculture, CSIRO Agricultural Sustainability Initiative (2006-2009); Deputy Director, Agri-Industry and International Relationships (2009-2013), and Theme Leader, Partnering for International Food and Fibre Security, CSIRO Sustainable Agriculture Flagship (2009-2014).

He has held several important scientific positions, including Board Director of the Australian Institute of Agricultural Science and Technology and President, Australian Society of Agronomy.

He received the Australian Medal of Agricultural Science from the Ag Institute, Australia in 2013, the Officier de l'Ordre National du Burkina Faso from the Government of Burkina Faso in 2012, and is an Elected Fellow of the Australian Academy of Technological Sciences and Engineering, and the Australian Institute of Agricultural Science and Technology. He has published over 100 journal papers and many book chapters and conference papers.



### Dr. N. H. Kelawala, Vice Chancellor, Kamdhenu University

Dr. N. H. Kelawala graduated from the Veterinary College, Anand (1986), with Masters (1989) and Doctoral (1995) degree in Veterinary Surgery and Radiology from the Gujarat Agriculture University (GAU), and Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), respectively. He then served in different capacities from



Veterinary Officer to Professor, Department of Surgery, Anand Agricultural University (AAU) until January 2009. For his Doctoral Research, he was honored the “Jawaharlal Nehru Award for Outstanding Agricultural Research” by ICAR (1996-97). Dr. Kelawala was deputed under the bilateral collaborative exchange programme of the Indian National Science Academy, New Delhi, to Peoples' Republic of China and Brazil during 1999-2000 and 2005-2006, respectively. In 2009 he joined as Dean at the Veterinary College, Navsari Agricultural University, and was instrumental in obtaining its recognition by the Veterinary Council of India. He also

guided MVSc and PhD students, and published more than 50 research articles in reputable journals. On 26 October 2018 he became Vice Chancellor, Kamdhenu University.



### **Dr. Tek Bahadur Gurung, Executive Director, National Agriculture Research Center (NARC), Nepal**



Dr. Tek Bahadur Gurung was appointed as the Acting Executive Director of NARC on 31 December 2018. Dr. Gurung is serving NARC, Government of Nepal, since its establishment in 1990. He completed his Master of Science (fish and fisheries) from Gorakhpur University, India, as the gold medalist in 1981. Later he also completed his MS and

PhD from Kyoto University, Japan, on energy, material flow and food web dynamics of aquatic ecosystems. He completed his post-doctoral on detritus-based aquaculture and livelihoods as Fulbright scholar in University of Missouri, USA. Dr. Gurung and his team in NARC introduced, developed and scaled up the rainbow business model of trout farming technology in Nepal. He also established the country's largest farmers' cooperative based on methods of bio-manipulation using carp to restore environmentally degraded lakes. Meanwhile, he also served the livestock sector by promoting pasture and low-cost small holder goat, swine, cattle, buffalo farming for dairy, meat and egg industries. As the Executive Director, along with fisheries and livestock, his focus would be socio-economics, crop and horticulture sciences, especially seed sector, rice, wheat, maize, vegetable, potato and fruits to push the country towards self-sustainability.



### **Dr. N. Kumar, Vice-Chancellor, Tamil Nadu Agricultural University (TNAU), Coimbatore, India**



Dr. N. Kumar began his career in 1979 as an Assistant Professor in Horticulture at TNAU, after which he became the Dean of Horticultural college and Research Institute. In December 2018, he became TNAU's 13th Vice-Chancellor. In his career, Dr. Kumar received two fellowships, five gold medals and nine medals. His career path has been defined by

his admirable scholastic aptitude in teaching and sterling contributions in research, practical approach in extension in horticulture along with keen administrative enthusiasm and capabilities to manage multitude of administrative portfolios.

Endowed with passion for writing, he has contributed an array of publications including eight text books, chapters in 14 edited books, 52 internationally acclaimed research papers, 83 research papers in Indian journals, 42 popular articles, eight teaching and extension manuals and 14 technical bulletins.

His textbooks enjoy popularity amongst students and serve as sources of reference by civil service aspirants, graduates and post-graduates undertaking competitive examinations at the state and national level. He has guided 21 PG Students and 13 Ph.D. scholars so to date. Many of his students achieved professional positions of eminence and received important awards.

Dr. Kumar has secured and led 20 externally funded projects including five international projects for the university. Moreover, he played an active role in the development of ten improved crop varieties, and fertigation and high-density planting systems in banana, papaya and mango, which have become popular among the farming community. His research contributions in drip fertigation technologies formed the basis for launching the Precision Farming Scheme by the Government of Tamil Nadu. Dr. Kumar is also an active member in several professional bodies and academic societies in horticultural stream and was honored as Fellow of Horticultural Society of India, New Delhi. He has served as Expert Member in several panels, such as the Quinquennial Review Team for ICAR Central Institute for Arid Horticulture, Bikaner, as well as many other panels.



### **Dr. M. B. Chetti, Vice-Chancellor, University of Agricultural Sciences (UAS), Dharwad**



On 20 September 2018, Dr. Mahadev B. Chetti was appointed as the Vice-Chancellor of UAS, Dharwad, Karnataka State, India, with a four-year tenure. Before this appointment, he served as the Assistant Director General in ICAR since 2015. Dr. Chetti also served UAS-D in various capacities, including Director of Extension, Director of Education, Dean (Agri.)

of the College of Agriculture, Director of Student Welfare, University Librarian, Registrar, Professor, and University Head of the Department of Crop Physiology. He also served as Development Officer at the National Bank for Agriculture and Rural Development (NABARD).

Dr. Chetti completed his B.Sc. (Agri) and M.Sc. (Agri) from the College of Agriculture, Dharwad, and his PhD from the prestigious Indian Agricultural Research Institute (IARI). He also undertook Post-Doctoral Studies at the University of California, USA (1985-87) and McGill University, Canada (2004-05).

Owing to his outstanding academic, research and administrative contributions, he has received several awards, medals, fellowships and recognitions during his service. Some important ones include: Dr. A. P. J. Abdul Kalam Award for Excellence (2018), Leading Educationist of India Award (2018), Iconic Leaders Creating a Better World for All (2017), Society of Extension Education (SEE) Fellow Award (2017), Fellow of National Academy of Biological Sciences (2014), BASF Crop Protection Asia Pacific Award “Top Ciencia” (2011, 2012, 2013), Bharata Ratna Dr.C.Subramaniam Award for Outstanding Teachers (2001), Sir C.V. Raman Award for Young Scientists from Govt. of Karnataka (2001), J. J. Chinoy Memorial Gold Medal (2001), Fellow of the Indian Society for Plant Physiology, New Delhi (2003), Academy for the Advancement of Agricultural Sciences Senior Award (1998), Air India Broader Outlook Learner-Teacher (BOLT) Award (2004), Rajiv Gandhi Excellence Award (2007), Dr. K. K. Nanda Memorial Lecture Award of Indian Society for Plant Physiology, New Delhi (2011), Best Article of the Year (1996), Gold Medal from UAS, Bangalore, College of Agriculture Silver Jubilee Gold Medal, and Karnataka State Award for M.Sc.(Agri.) (1981).

At UAS-D, he has immensely contributed to the advancement of teaching, research, extension, administration and infrastructural development. His areas of specialization are education management, education technology and human resource management, photosynthesis and crop productivity, hormonal and chemical regulation of plant growth, post-harvest physiology and value addition, pesticide residue and quality analysis. He has nearly 500 publications to his credit including eleven books. He also guided 16 PhD and 28 MSc (Agriculture) students, had extensive international exposure, implemented about 46 externally funded ad-hoc research projects by mobilizing significant financial resources for the university.



## APAARI NEW STAFF

### Ms. Nguyen Thi Pham, Research Assistant, Agricultural Science and Technology Indicators (ASTI) Project

APAARI recruited a Research Assistant, Nguyen Thi Pham, a Vietnamese national, to assist with the current ASTI project supported by IFPRI. She completed a Bachelor Degree in Agricultural Economics from Cantho University, Vietnam, and Master of Science in Agricultural and Resource Economics from Kasetsart University, Thailand. Prior to joining APAARI in July 2018, she worked as Project Assistant and Researcher for Socio-Economics and Policy Department, Mekong Delta Development Research Institute, Cantho University.



## APAARI OUTGOING STAFF

Mr. Fai Collins Dzernyuy, Knowledge Management Coordinator, left APAARI on 31 December 2018. APAARI wishes him all the best in his future career.



## FORTHCOMING EVENTS

- Basic Wheat Improvement Course 2019, Sonora, México, 4 February- 31 May 2019, CIMMYT
- Fourth Partnership Certified Training, Thimphu, Bhutan, 11-14 February 2019, ICIMOD
- 13th International Conference on Development of Drylands – “Converting Dryland Areas from Grey into Green”, Jodhpur, India, 11-14 February 2019, ICDD, AZRAI, ICAR-CAZRI
- XIV Agricultural Science Congress, Innovations for Agricultural Transformation, New Delhi, India, 20-23 February 2019, ICAR, NAAS
- 15th World Congress on Aquaculture & Fisheries, Osaka, Japan, 21-22 February 2019, The WorldFish
- RCC 2019 Regional Corn Conference 2019, Penang, Malaysia, 26-28 February 2019, MARDI
- National Conference on "Advanced Research Methodologies in Social Sciences", Dharwad, Karnataka, India, 26-28 February 2019, UAS, Dharwad
- Eight International Conference on Management of the Diamondback Moth and Other Crucifer Insect Pests, Tainan, Taiwan, 4-8 March 2019, WorldVeg, Cornell University (USA)
- Africa Vegetable Breeding Consortium Inaugural Workshop, Southern Africa, Tanzania, 11-12 March 2019, WorldVeg, AFSTA
- Launch of the Multi-Sectoral Program Development for SAARC Agriculture Centre, Dhaka, Bangladesh, 16-17 April 2019, APAARI, SAC
- The CDAIS International Forum, strengthening functional capacities in agricultural innovation systems, Sharing the NOW and Shaping the FUTURE, Gembloux, Belgium, 13-14 May 2019, FAO-TAP
- 10th GCHERA Conference on Leadership of Agricultural and Life Science Universities for a Sustainable World, 24-26 April 2018, Bucuresti, Romania
- ISHS VI International Symposium on Tomato Diseases, Taichung, Taiwan, 6-9 May 2019, COA, ISHS, MOST
- The APSA/WorldVeg Vegetable Breeding Consortium Annual Workshop, Tainan, Taiwan, 15-16 May 2019, WorldVeg, APSA
- Conservation agriculture-based innovation systems, El Batán/Toluca, Mexico, 27 May 2019- 28 June 2019, CIMMYT
- Expert Consultation Workshop on Multi-Sectoral Program Development for SAARC Agriculture Centre, Dhaka, Bangladesh, 19 June 2019, APAARI, SAC
- Southeast Asia Vegetable Symposium 2019, Melaka,

Malaysia, 9-11 July 2019, MARDI

- The 4th International Agriculture Innovation Conference, University of Oulu IAIC 2019, Finland, 8-9 August 2019, IAAS



## NEW APAARI MEMBERS

### Associate Members:

- Alliance for Agri Innovation (AAI) and Federation of Seed Industry of India (FSII), India

### Affiliate Members:

- National Chung Hsing University, Taiwan
- Sher-e-Kashmir University of Agricultural Sciences and Technology (Jammu), India
- Indira Gandhi Krishi Vishwavidyalaya, India

### Reciprocal Members:

- Biotech Consortium India Limited, India (BCIL)
- Agricultural and Food Marketing Association for Asia and the Pacific (AFMA), Thailand
- Global Confederation of Higher Education Associations for Agricultural and Life Sciences (GCHERA), Canada



## APAARI EXECUTIVE COMMITTEE 2019-2020



**Ms. Mellissa Wood**  
*Australian Centre for International Agricultural Research (ACIAR)*  
**Chair**

Mellissa Wood is the General Manager, Global Program at the Australian Centre for International Agricultural Research (ACIAR) where she leads ACIAR's engagement with global and multilateral fora, such as the G20 and the United Nations Food and Agriculture Organisation and leads the formulation and implementation of Australia's international stakeholder engagement strategies with the CGIAR and other International Agricultural Research Centres (IARCS). She leads the management of the ACIAR-DFAT strategic relationship and manages ACIAR's strategy of building innovative co-investment alliances with international partners, including donors, private sector and not-for-profits.

Mellissa returned to Australia and joined ACIAR as the Director of the new Australian International Food Security Centre (AIFSC) during 2012-2015. She has a strong research interest in improving the adoption of research outputs for food and nutrition security outcomes, with a focus on partnering with policy makers and the private sector to facilitate this. As AIFSC Director, her research focus included designing innovative partnerships and designing and monitoring for nutrition outputs in food security research. Previously, she was Director, Program Development, Global

Crop Diversity Trust (2007-2012), working with FAO and CGIAR on developing and implementing a global strategy for the conservation and access of plant genetic resources for food and agriculture.

In Australia, Mellissa's experience includes 15 years in the Bureau of Rural Sciences, Department of Agriculture, Fisheries and Forestry supporting evidence-based agriculture and natural resource policy using spatial data and online decision support tools. This included as Program Leader, Information and Risk Sciences where she managed the establishment of the Australian Centre of Excellence for Risk Analysis (CEBRA) in 2006 and ran a team that provided scientific support to Biosecurity Australia.

Prior to that, Mellissa was Manager of Australia's National Forest Inventory where she represented Australia internationally on the Global Forest Resources Assessment (FRA) and Montreal Process. Mellissa holds a BSc in Resource and Environmental Management and Master in Public Policy in Development from the Australian National University.



**Dr. Trilochan Mohapatra**  
*Indian Council of Agricultural Research (ICAR)*  
**Vice Chair**

Dr. Trilochan Mohapatra born on 20th April, 1962 at village Kharibil, Dist. Cuttack, Odisha, India and completed his B.Sc. (Agriculture) from OUAT, Bhubaneswar in 1985,

M.Sc. in Genetics from Indian Agricultural Research Institute, New Delhi in 1987 and Ph.D in Genetics from Indian Agricultural Research Institute, New Delhi in the year 1992, is presently holding the position of Secretary, Department of Agricultural Research and Education & Director General, Indian Council of Agricultural Research. Prior to this, he worked as the Director of the prestigious Indian Agricultural Research Institute (IARI), New Delhi and the Director of National Rice Research Institute (Formerly CRRI), Cuttack, Odisha and as a researcher & teacher for over 27 years at the National Research Centre on Plant Biotechnology, Indian Agricultural Research Institute (IARI), New Delhi, India. His area of specialization is molecular genetics and genomics.

Dr. Mohapatra has over 160 research papers in national and international journals of repute and several book chapters. His research accomplishments include development of the first high-yielding Basmati rice variety resistant to bacterial leaf blight through molecular marker assisted selection, and physical mapping and genome sequencing of rice and tomato. His contribution to science is reflected from high h-index and i10 index.

He initiated mega research programmes in frontier areas including genomics, phenomics, bio-prospecting of genes, allele mining and induced mutagenesis for functional

genomics. He created a large pool of trained human resource in the area of molecular breeding that has enabled successful product development following this approach.

Dr. Mohapatra's has been recognized at International level for his professional competence and scientific abilities. He has the distinction of receiving several honours and awards in recognition of his excellent academic and research contributions including the INSA Young Scientist Award, Prof. LSS Kumar Memorial Award, NAAS-Tata Award, IARI-BP Pal Award, DBT Bio-science Award, NASI-Reliance Industries Platinum Jubilee Award, Shri Om Prakash Bhasin Award 2016, IMS Diamond Jubilee Memorial Award 2016, Dr. D. Sundaresan Memorial Oration Award 2017, Prof NG Ranga Memorial Award 2017, Shrikshetra Samman 2018 and Parija Award 2018. He received the Recognition Award of the National Academy of Agricultural Sciences for the biennium 2013-14 for significant contributions in Plant Improvement and also the Lifetime Achievement Award of the Indian Genetics Congress in recognition of outstanding contribution in the field of Plant Genetics and also the Lifetime Achievement Award of the Indian Society of Agricultural Biochemists. Dr. Mohapatra is also the President of Indian Society of Genetics and Plant Breeding, New Delhi (2018-19), Indian Society for Oilseeds Research, Hyderabad (2018-19) and Indian Society of Agricultural Statistics, New Delhi (2018-20).

Dr. Mohapatra is an esteemed Fellow of the Indian National Science Academy, New Delhi, National Academy of Sciences-India, Allahabad and the National Academy of Agricultural Sciences, New Delhi. He has been conferred doctoral degree (honoris causa) by Amity University, Noida; Uttar Pradesh, Orissa University of Agriculture & Technology, Bhubaneswar; Siksha 'O' Anusandhan University; YS Parmar University of Horticulture & Forestry, Solan, Himachal Pradesh; Pandit Deen Dayal Upadhyaya Veterinary & Animal Sciences University, Mathura; National Dairy Research Institute (Deemed University), Karnal and Sathyabama Institute of Science and Technology (Deemed University).



**Mr Vincent Lin**  
**Council of Agriculture (COA)**  
**Member**

Mr. Vincent Lin completed Master of Agricultural Economics from National Taiwan University and serving as Deputy Director General, Department of International Affairs of Council of Agriculture, Taiwan. He

is a specialist for farmers' organization service, agricultural trade negotiations and international organization participation of COA. He is also the Secretary of Permanent Mission of Taiwan, Penghu, Kinmen and Matsu to the WTO. He also holds a part-time positions as Board member for Taipei Flower Auction Company, Rural Economics Society of Taiwan, and Alumni Association of Agricultural Economics Department of National Taiwan University.



**Dr. Mohamad Roff Bin Mohd Noor**  
**Malaysian Agricultural Research and Development Institute (MARDI)**  
**Member**

YBhg. Datuk Dr. Mohamad Roff Bin Mohd Noor is currently the Director General of the Malaysian Agricultural Research and Development Institute

(MARDI). He holds a PhD in Plant Virology from University of Reading, United Kingdom. He began his career with MARDI in 1987 as a Research Officer. In 1996, he was appointed as a Senior Research Officer and six years later, he was promoted to assume the role of Principal Research Officer. In 2008, he became the Senior Principal Research Officer. In addition to this core research role, Dr. Mohamad Roff was also assigned to take on leadership roles. He was the Deputy Director of the Pest and Disease Management Program in the Horticulture Research Centre in 2008. He was the Director of The Strategic Planning and Innovation Management Centre for three years (2013-2015) and assumed the Director position at the Crop and Soil Science Research Centre for additional two years (2015-2016). His dedication and commitment lead him to be appointed as a Deputy Director General of MARDI for two years (2016-2017) before taking on his new role as the Director General of MARDI.

Dr. Mohamad Roff believes in sharing his technical know-hows, and thus, has offered his professional services to wide a range of platforms, be it as the international, national, ministerial or institutional levels. He is a member of the Pesticide Board and Animal Feed Board. Recognizing his dedication and leadership qualities, Dr. Mohamad Roff was appointed as a member of the International Integrated Pest Management Committee based in Niigata University, Japan. Despite his busy schedule, Dr. Mohamad Roff continues to offer a helping hand in organising committees for conferences, symposia and seminars. In the academic field, Dr. Mohamad Roff has co-supervised post-graduate students (7 Ms) and (6 PhD). He has also served as external examiner for Masters and PhD thesis at several universities. Due to vast experience of being a researcher and assuming supervisory roles, he has been appointed as independent evaluator for promotional exercises of senior academicians applying for associate professor position at local universities.

In the technical arena, Dr. Mohamad Roff continues to engage in research pertaining to pest management of horticultural crops. He has published over 60 journal articles and shared his research findings in numerous conferences and symposia, abroad and locally. His technical knowledge and skills earned him the appointment of Editorial Board member of the Journal of Asia-Pacific Entomology and the Journal of Tropical Agriculture and Food.

Living up to the notion of a true leader, Dr. Mohamad Roff gives back to societies and communities. He was the 36th

President of the Malaysian Plant Protection Society, life member of the Malaysian Microbiology Society and The Exco member of the Malaysian Society of Statutory Bodies. Dr. Mohamad Roff was awarded the Excellent Service Award by MARDI in the year 2000, 2004 and 2013 respectively, for showing exemplary values and principles.



**Dr. Marco Wopereis**  
*World Vegetable Centre (AVRDC)*  
**Member**

Marco Wopereis is a Dutch national and holds a PhD degree in tropical agronomy from the Wageningen University, Netherlands. He is the Director General of the World Vegetable Center and based in

Taiwan. Prior to his current position he served as the deputy director general of the Africa Rice Center (AfricaRice, Benin). He also worked for the French Agricultural Research Centre for International Development (CIRAD, France), the International Fertilizer Development Center (IFDC, Togo), the West Africa Rice Development Association (WARDA, Senegal, Côte d'Ivoire) and the International Rice Research Institute (IRRI, Philippines).

**Mr. David Kolitagane**  
*Ministry of Agriculture, Fiji*  
**Member**

Currently the Permanent Secretary for Agriculture and Acting Permanent Secretary for Infrastructure and Transport. He was appointed to the position of Permanent Secretary for Public



Enterprises in 2016. Before his appointment as Permanent Secretary he was Chief Economist at the Ministry of Economy and also held the position of Deputy Secretary for Economy. He spent a total of 17 years at Ministry of Economy before joining the Ministry of Public Enterprises in 2016. Mr. Kolitagane bring with him a wealth of Knowledge in Economics, Finance and Investment both locally and overseas. He was a Senior Advisor to Executive Director (South-East Asia – Group) World Bank for two years ending in 2014. Mr. Kolitagane is also a Board Chairman for iTaukei Trust Fund (TTFB); Yaqara Pastoral Company Limited (YPCL) and Board of Directors for Amalgamated Telecom Holdings Limited (ATH); Assets Fiji Limited (AFL); and Fiji Investment Corporation Ltd (FICL), to name a few.

**Dr. A. R. Pathak**  
*Indian Agricultural Universities Association (IAUA)*  
**Member**

Ph. D. in Plant Breeding & Genetics from Gujarat Agricultural University, Sardarkrushinagar in the year 1987. Col (Dr) A. R. Pathak, Ph.D., M.Sc., B.Sc. (1970) is the Vice Chancellor



of Junagadh Agricultural University since October, 7, 2014. He was also Vice Chancellor, Navsari Agricultural University, Navsari (Gujarat) for 5 years from 2010. He had also served as Director of Research and Dean of Post-Graduate Studies in Anand Agricultural University for 4 years. He had served at various positions in more than 35 professional/technical and government bodies. He has specialization in plant breeding and genetics. He had developed twenty five new varieties of different crops viz. cotton, mungbean, clusterbean, pigeonpea, cowpea, chickpea, rapeseed, mustard, castor varieties and released for commercial purpose. Also, 43 varieties of different crops were developed under his guidance.

Seven technologies have been developed under his guidance and applied for the patenting. About 471 technologies developed under his guidance. He has published 13 research articles in international journal, 34 papers in the national journals and also 34 papers presented in various conferences. He had visited three countries viz., Sweden, USA & Phillipines.

Under his dynamic leadership various new educational programmes have been started He also initiated an Android based mobile application called "Kisan Mitra" which provides agricultural, horticulture, veterinary and other university technologies to the farmers in vernacular language in their mobile device. Many farmers are currently using this technology. He is the recipient of seven prestigious awards. He was also conferred honorary rank of 'Colonel' in NCC by in the year 2013.

**Dr. Yusuf Zafar**  
*Pakistan Agricultural Research Council (PARC)*  
**Ex-Officio Member**

Presently serving as Chairman, PARC since 5th October 2016 – Apex body of Agricultural Research in Pakistan. Dr. Yusuf Zafar has over 40 years' experience in Natural



Sciences (Life Sciences). He was first amongst the most Productive Scientists of Pakistan (PSP) in "Agriculture" for years 2016 and 2017. He received all Research Productivity Awards (RPAs) in various categories except one year since its launching by PCST. He was awarded prestigious Global Award – Best Cotton Scientist-2012 by ICAC, Washington, DC, USA, Tamgha-i-Imtiaz by the President of Pakistan on 14th August, 2003 in the field of Agriculture and also awarded "Best Senior Scientist of the Year Award and Gold Medal" by PAEC on 28th May, 2001. Dr. Zafar has also served in QAU and PAEC.

Dr. Yusuf Zafar has also served as Minister Technical in Mission of Pakistan to IAEA, Vienna (2012-2014), and Program Management Officer in UN, IAEA. Country Officer for Jordon, Syria, Lebanon, Saudi Arabia & Qatar (2014-2016), Member Board of Governors of ICGEB, Trieste, Italy



(2006-07) and Expert/Consultant of COMSTTECH on Bio-safety for Iran and Bangladesh. He was unanimously elected as Chairman APAARI for 2017-2018. During this period he instituted many reforms in APAARI including; constitutional amendment, new staff recruited, office space improved, funding and memberships increased.



**Dr. Ravi Khetarpal**  
*Asia-Pacific Association of Agricultural Research Institutions (APAARI)*  
**Member Secretary**

Dr. Ravi Khetarpal is the Executive Secretary of APAARI and he joined on 1 August 2017. Dr. Khetarpal has served for CABI – South Asia (India)

as Regional Director and also as its Regional Advisor on Strategic Science Partnerships for more than seven years. Prior to this he worked for NARS in India for three decades. He holds a Ph.D. in Life Sciences (Virology) from University of Paris and was a Visiting Scientist in an EU Collaborative Project at INRA, Versailles, France for three years. His areas of interest include research, development, policy issues and capacity building in areas of biosecurity, biosafety, seed certification and biodiversity. He has worked as a consultant of twelve FAO/ World Bank Projects notably in Indonesia (as Team Leader), as well as India, Nepal, Mauritius and Cambodia. He represented Asia as a Developing Country SPS Expert in STDF Working Group in WTO during 2016 and 2017. Dr. Khetarpal has published 110 research papers, 19 books, 56 book chapters, 12 review articles and 3 policy papers.



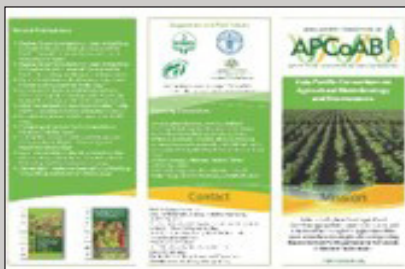
**LATEST PUBLICATIONS**

**ABOUT APAARI**

*APAARI Capability Statement*



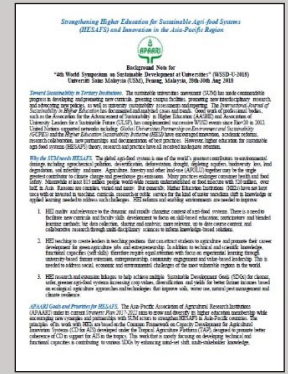
*APCoAB Flyer*



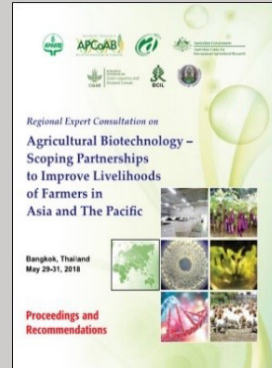
*ASTI Flyer*



*Higher Education for Sustainable Agri-food Systems (HESAFS) Flyer*



**PROCEEDINGS**



*Agricultural Biotechnology – Scoping Partnership to Improve Livelihoods of Farmers in Asia and the Pacific - Proceedings and Recommendations*

**SUCCESS STORIES**

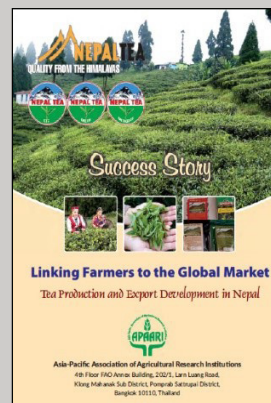
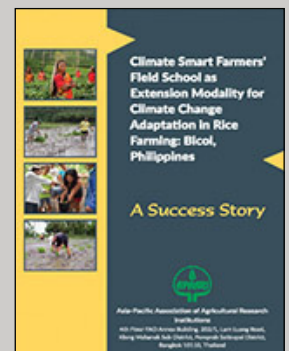
*Success Story on Bt Brinjal in Bangladesh*



*Durian in Thailand - A Success Story*



*Climate Smart Farmers' Field School as Extension Modality for Climate Change Adaptation in Rice Farming: Bicol, Philippines - A Success Story*



*Success Story - Linking Farmers to the Global Market, Tea Production and Export Development in Nepal*

*APAARI acknowledges the partnership and support of all the members and stakeholders*

## THANKS TO APAARI MEMBERS AND PARTNERS



All queries relating to APAARI Newsletter be addressed to:

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