



**Seed Connect**

**Edition 10**

A monthly newsletter of Federation of Seed Industry of India

September 2019

A success story has come out in India, a collaboration between the Indian Council of Agricultural Research (ICAR) and ICRISAT gave us major breakthrough in developing a drought tolerance and disease-resistant chickpea. These are two desi chickpea (Bengal chana) varieties namely, 'Pusa 10216' and 'MABC-WR-SA-1'. What makes this accomplishment more unusual is that both varieties were developed in half the conventional time, usually it takes anywhere between 10-11 years.

According to the scientists, Pusa 10216 showed 11.9% increase in yield over Pusa 372 during two-year multi-location testing in drought conditions. With the world's growing population, rising demand for food makes genomics a key to accelerated breeding. It is expected that the research may make India self-sufficient in pulse production, as the country still faces increasing production gap. Notably, drought and climate change are said to cause more than 70 per cent of yield loss in chickpea globally and more than 90 per cent chickpea cultivation is in South Asia alone.

The scientists are of the view that this breakthrough will enable breeders to enhance the use of diverse germplasm and candidate genes in developing improved and climate-change ready varieties that will contribute significantly to the increased productivity and sustainability of agricultural development in developing countries.

In this newsletter we have covered various news on agriculture starting from private sector's commitment towards the agri sector, Artificial intelligence, power of social media in diversifying the knowledge-base of different agri techniques, government's intervention in crop planning, news from around the world to new researches taken place worldwide. We hope you will find the newsletter informative and a good read.



**Shivendra Bajaj**  
**Executive Director**  
**Federation of Seed Industry of India**

## **New Research**

### **ICAR develops 2 new chickpeas varieties**

**(The Hindu Business Line)**

Government research body Indian Council of Agricultural Research (ICAR) said two superior chickpea varieties have been developed through molecular breeding and are best suited for cultivation in six states. The two varieties -- 'Pusa Chickpea 10216' and 'Super Annigeri 1' -- have been developed jointly by ICAR and University of Agricultural Sciences, Raichur in Karnataka in collaboration with International Crops Research Institute for the Semi-Arid Tropics through genomic interventions in breeding called molecular breeding. These two chickpea varieties would benefit states like -- Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, and Uttar Pradesh.

### **New research at Nalanda varsity to raise farmers' income**

**(The Hindu)**

At Nalanda University in Bihar, a new research entitled "Aquifer Storage & Recovery for Sustainable Agriculture" (ASRA) is being carried out by the School of Ecology and Environment Studies to create a model of "Aquifer Storage and Recovery" (ASR) technology using floodwaters to provide an opportunity to farmers to raise their income. The research is being undertaken with support from the Australian Centre for International Agriculture Research. The model aims to help farmers of south Bihar to raise their income through agriculture and allied activities with the help of assured irrigation from reuse of water stored beneath the surface during episodes of high rainfall, run-offs and water logging.

### **Early rice farmers unwittingly selected for weedy imposters**

**(Science Daily)**

Early rice growers unwittingly gave barnyard grass a big hand, helping to give root to a rice imitator that is now considered one of the world's worst agricultural weeds. New research from Zhejiang University, the Chinese Academy of Sciences and Washington University in St. Louis provides genomic evidence that barnyard grass (*Echinochloa crus-galli*) benefited from human cultivation practices, including continuous hand weeding, as it spread from the Yangtze River region about 1,000 years ago. Barnyard grass is a globally common invasive weed of cultivated row crops and cereals.

### **Tripling shelf life of macaroni and cheese**

**(Science Daily)**

Washington State University scientists have developed a way to triple the shelf life of ready-to-eat macaroni and cheese, a development that could have benefits for everything from space travel to military use. Currently, plastic packaging can keep food safe at room temperature for up to twelve months. The WSU researchers demonstrated in a recent paper in the journal *Food and Bioprocess Technology* they could keep ready-to-eat macaroni and cheese safe and edible with selected nutrients for up to three years.

### **Public-private collaboration working to reduce ag water usage**

**(World Grain)**

With the potential of water scarcity issues arising in the future Kansas farmers are supporting research to reduce the need of water usage in agriculture. Specifically, to develop a type of sorghum that utilizes less water. Kansas State University said dryland crops such as sorghum have occupied the middle range of crop-acreage size: viable enough to be part of a commercial pipeline, but not big enough to command the resources of research at universities and major private-sector support. With genome-to-phenome (G2P) breeding that's now changing.

### **Conserving rare species for the maintenance of Mediterranean forests**

**(Science Daily)**

A study led by researchers from the Department of Plant Biology and Ecology at the University of Seville has shown the importance of conserving rare species for the maintenance of complex ecosystems like Mediterranean forests. Therefore, for these species, it becomes essential to understand the factors that make conservation successful.

### [Improving grain yield, stress resilience and quality of bread wheat using large-scale genomics](#)

(Nature Genetics)

Bread wheat improvement using genomic tools is essential for accelerating trait genetic gains. The scientists report the genomic predictabilities of 35 key traits and demonstrate the potential of genomic selection for wheat end-use quality. They also performed a large genome-wide association study that identified several significant marker–trait associations for 50 traits evaluated in South Asia, Africa and the Americas. Furthermore, they built a reference wheat genotype–phenotype map, explored allele frequency dynamics over time and fingerprinted 44,624 wheat lines for trait-associated markers, generating over 7.6 million data points, which together will provide a valuable resource to the wheat community for enhancing productivity and stress resilience.

### [Scientists identify genome regions that lead to better yield, disease resistance in wheat](#)

(The Hindu Business Line)

An international team of scientists, including some from India, has found a way to breed wheat varieties that are of better quality and have a higher yield while also resisting diseases and the adverse effects of climate change. In a study published in the journal Nature Genetics, plant breeders led by Ravi Prakash Singh, a scientist at the Mexico-based International Maize and Wheat Improvement Center (CIMMYT), identified chromosomal regions in the wheat crop that confer favourable traits such as higher yields and disease resistance using the full wheat genome map published last year. The results will speed up global efforts to breed more productive and climate-resilient varieties of bread wheat.

### [Testcross performance and combining ability of early maturing maize inbreds under multiple-stress environments](#)

(Nature Research Journal)

Availability of multiple-stress tolerant maize is critical for improvement in maize production in West and Central Africa (WCA). A study was carried out to assess a set of inbred lines for combining ability under stressed and optimal conditions, determine the performance of the testcrosses under different conditions, and identify outstanding hybrids across the conditions.

### [Most Complete Potato Genome Sequence Published](#)

(Wageningen University & Research)

A group of scientists from Wageningen University & Research (WUR) and scale-up Solynta, the inventor of hybrid potato breeding, have published the most complete genome sequence for potatoes to date. Both sequence and plant material are now available for research (under specific conditions), and this significant effort may result in a potato that is more resistant to heat or drought or has a greater resistance to diseases. The plant, Solyntus, was produced through Solynta's potato breeding program.

### [Biologists Identify Six Genes in Maize Responsible for Production of Plant Antibiotics](#)

(UC San Diego News Center)

Yezhang Ding, Alisa Huffaker, and Eric Schmelz of the University of California San Diego and their colleagues have developed a systematic and combined approach to identify genes in maize that will produce surprisingly diverse antibiotic cocktails that can be produced as defensive blends against numerous disease agents. In the study, the UC San Diego biologists describe how they combined an array of scientific approaches to clearly identify six genes that encode enzymes responsible for the production of key maize antibiotics known to control disease resistance.

## **News in India**

### [Amazon's move into Indian agriculture and health signals coming transformation](#)

(Money Control)

Amazon has seen opportunities of transforming agriculture and healthcare using cloud computing and frontier technology. That would mean increased crop yield, better utilisation of agriculture land, and streamlining trading for farmers. In healthcare, Amazon Internet Services Pvt. Ltd (AISPL) -- the domestic subsidiary of the Amazon Group, which resells and markets of AWS Cloud services -- wants to solve the problem of access, reduce fraud and make sure services reach to deserving communities.

## [How IT, communication can boost sustainable farming in India](#)

(DowntoEarth)

In a research, conducted in China in 2013 on agriculture-based on cloud computing and IoT (Internet of Things), the integration of IoT in farming mainly facilitated soilless culture, solution control technology, artificial photosynthesis technology, growing environment control technology and intelligent irrigation technology. China's industry and information ministry has achieved remarkable success in projects like 'Every village project', 'Golden Agricultural Project', 'The three Dian project'. However, as more emphasis was laid on hardware than software, there was a lack of communication of right information to the farmers. This led to the development of an agricultural information cloud with integration of IoT and RFID (radio frequency identification) technology.

## [Darshan Singh, A Farmer Who Is Using Youtube To Answer Agriculture Queries](#)

(The Logical Indian)

A new age of youtubers have emerged, particularly in India, who are helping farmers yield more. Breaking the stereotype, that Youtube is only for educated, these youtubers are arduously making videos for 70 per cent of our population. With over two millions, Darshan Singh has set an example of how technology can seep into the rural most pockets of the country and fetch them better livelihoods.

## [The agri-tech start-ups that are transforming agriculture in India](#)

(Business Standard)

When Tiger Global invested \$90 million in Ninjacart in April, it became clear that agri-tech in India had opened up for large scale disruption. Still nascent and mushrooming in small pockets, agri-tech comprises companies disrupting traditional agriculture through technology. Self-controlled irrigation systems, soil and crop testing through IoT devices, using data analytics to improve crop yield, online marketplace for farm produce, and alternate credit for agriculture entrepreneurs are some areas where modern technology has delivered breakthroughs.

## [Desertification in India: Slash-and-burn farming destroys Nagaland](#)

(DowntoEarth)

Deforestation and growing population are resulting in land degradation even in Nagaland, which is known for good monsoons. It is one of the five states where land is degrading at an alarming rate, according to the Indian Space Research Organization's Space Applications Centre (SAC) atlas. In Kohima, the hilly state's capital city, 62.43 per cent of the area is under degradation. Officials blame this on jhum cultivation where people slash trees and burn them to prepare the land for farming.

## [Not all agri-loans are for agriculture, many are diverted](#)

(The Hindu Business Line)

The Centre has been raising the agriculture lending target year after year. But there are still several weak links to the sizeable flow of credit to agriculture. Diversion of agriculture loans for non-agriculture purposes is one such key issue that needs immediate attention. According to the RBI's recent report of the internal working group on agriculture credit, in some of the states, said that agri-credit is far higher than their agri-GDP, indicating the possibility of diversion of credit for non-agricultural purposes.

## [How agriculture R&D could yield better gains than nationalising land revenue](#)

(The Financial Express)

There is no doubt that for India, where the largest chunk of labour is still in agriculture, raising agricultural productivity is the surest ticket out of poverty for millions. This is especially true given how difficult it has been to sustain the creation of non-farm jobs for people to move to. While rising productivity in India has lifted many out of poverty, significant poverty still remains. What is also worrisome is that even though agricultural productivity has gone up across the world, undernourishment is on the rise. Besides, climate change promises to be the most daunting challenge going forward. The FAO estimates a 3–10% decline in average global cereal yields for every 1°C increase.

## [Modi govt tasks agriculture council to ready crop plan for the entire country](#)

(Business Today)



Prime Minister Narendra Modi-led government has asked Indian Council of Agriculture Research (ICAR) to prepare a comprehensive crop plan for India. A committee under the chairmanship of Praveen Rao, vice chancellor, Prof Jayashankar Telangana State Agriculture University, has been constituted for this purpose. The committee is expected to come out with a set of crop recommendations for each geography after considering the climatic conditions, soil health, water stress and the estimated short-term as well as long term demand for the produce within the country and globally.

### [Experts urge youth to take up agriculture](#)

(The Times of India)

The Indian Council of Agricultural Research in collaboration with Tamil Nadu Agricultural University through Krishi Vigyan Kendra had jointly organised an environmental awareness and tree plantation drive. V Sundharajan, trustee of Vanam India Foundation (Vanaalayam), Palladam who presided over the event spoke about climate change and its impact on earth, he insisted farmers and youth to come forward and participate in planting more trees and taking up agriculture as a profession.

### [Blockchain Technology: Agriculture's next revolution?](#)

(Observer Research Foundation)

As IndiaChain, the Indian government's blockchain initiative remains in beta stage, private companies like BanQu are demonstrating small-scale successes in linking blockchain technology with the agriculture industry. Blockchain technology connects buyers and sellers and allows farmers, especially those without access to formal financial institutions, the opportunity to create digital identities and build credit histories, making micro loans more accessible. Although IndiaChain is a government entity, BanQu's experiences can offer the government a basis for implementing a successful blockchain for their agriculture industry with the goal of bringing millions out of poverty.

### [Agriculture in India, South Asia not brought by people from West](#)

(Mumbai Mirror)

An international team of researchers including those from Hyderabad-based Centre for Cellular and Molecular Biology (CCMB) have discovered that farming activity in South Asia was not brought by the West, but the locals who were foragers, had adopted agriculture about 5000 years ago. The team comprising geneticists, archaeologists and anthropologists was drawn from North America, Europe, Central Asia and South Asia. It analysed the genomes of 524 ancient individuals in the largest ever study of ancient human DNA, along with the first genome of an individual from the ancient Indus valley Civilisation.

### [Top agricultural scientists body rejects zero budget natural farming](#)

(The Indian Express)

India's premier academic body of agricultural scientists has hit out at Zero Budget Natural Farming (ZBNF), terming it as an "unproven" technology bringing no incremental value gain to either farmers or consumers. Mr Panjab Singh, president of the National Academy of Agricultural Sciences (NAAS) said that the government should not needlessly invest capital and human resources towards promoting ZBNF. We have given our recommendations in writing to the Prime Minister and it reflects the view held by the scientific community.

### [Parliament nod on pesticide and seed bills likely next session: MoS Agriculture](#)

(The Economic Times)

The government hopes to get Parliament nod on two long-pending Bills on pesticide management and seeds in the next session, Minister of State for Agriculture Parshottam Rupala said. The Pesticide Management Bill that will replace the Insecticides Act, 1968 seeks to regulate the pesticide sector by fixing prices and setting up of a regulatory authority. Whereas the Seeds Bill, which will replace the Seeds Act 1966, seeks to regulate the production, distribution and sale of seeds. The Bill was put on hold in 2015 after it drew flak on enabling provision for genetically modified crops.

### [Bacterial strain from IIT-Bombay soil removes pesticide](#)

(The Hindu)

Researchers from IIT Bombay have identified a soil bacterial strain from the campus that helps in “complete remediation” of the carbaryl pesticide. The newly isolated bacterial strain utilises the pesticide as its source of carbon and nitrogen for its growth. The team was also able to identify the genes responsible and the metabolic pathway involved in the complete metabolism and bioremediation process.

### [Google to set up AI research lab in Bengaluru](#)

(The Hindu)

U.S.-headquartered Google announced the setting up of a research lab in Bengaluru that will work on advancing artificial intelligence-related research with an aim to solve problems in sectors such as healthcare, agriculture and education. The new lab will be a part of and support Google’s global network of researchers. It is also exploring the potential for partnering with India’s scientific research community and academic institutions to help train top talent and support collaborative programmes, tools and resources.

### **News Around the World**

#### [Chinese vice premier stresses inspiring farmers' enthusiasm for agriculture](#)

(Xinhua)

Chinese Vice Premier Hu Chunhua has called for efforts to increase farmers' passion for agriculture. Hu made the remarks when participating in a series of activities celebrating China's harvest festival for farmers in Beijing, which falls on the Autumnal Equinox each year. Hu also stressed the significance of promoting Chinese agricultural civilization, highlighting the value of rural areas and enhancing farmers' sense of honor and pride in a bid to facilitate rural vitalization and win the battle against poverty.

#### [Here’s how we can use agriculture to fight climate change](#)

(We Forum)

Pursuing a greener production system requires farmers to embark on uncharted territories with no guarantee of immediate success. Farmers usually experience decreased yields during the transition process, as they gain the required experience to learn and perfect the implementation of more regenerative and beneficial practices.

#### [Need to ‘build trust’ in NI agriculture](#)

(BBC)

Farmers, environmentalists, supermarkets and government need to build trust around the future of food production says a report developed by The Royal Society for the Encouragement of Arts, Manufacturers and Commerce (RSA). The report said that there were "disconnects" around how food is produced, the cost of food and the health of the environment. The report followed 12 workshops in Northern Ireland at which 140 people gave their views.

#### [Agriculture holds the key to offering nature-based solutions](#)

(Relief Web)

Agriculture has a crucial role in providing sustainable solutions to many of today's most urgent environmental issues, provided we change the way we farm, fish and herd livestock said FAO Director-General Qu Dongyu. Transforming the agricultural sectors requires "changing the way we think and changing the way we live and this must be based on consensus," not just between political leaders, but across society, Qu said at a high-level event on building momentum for Nature-Based Solutions to climate change, ahead of the United Nations General Assembly. The event was co-led by China and New Zealand, with wide participation from member states, the private sector and civil society.

#### [Agricultural production: One of Indiana's most hazardous occupations](#)

(Newton Country Enterprise)

Purdue University’s Agricultural Safety and Health Program released the annual Indiana Farm Fatality Summary with Historical Overview, coinciding with National Farm Safety and Health Week, which has been observed the third week of September since 1944. The program reported 34 work-related, on-farm deaths in the state in 2018. The report stated that the fatality data continued to show a general

downward trend that paralleled the decline in the number of farm operations, which has likely contributed more to the reduction in farm-related fatalities than any other single factor.

### [Farm safety week highlights hazard recognition](#)

(Xinhua)

Agriculture experts (L, C) examine the growth of a Chinese softshell turtle in a paddy field in Huzhou, east China's Zhejiang Province, Sept. 3, 2019. Taking advantage of building eco-agricultural system with raising fish and softshell turtles in paddy fields instead of using pesticides and chemical fertilizers, the agricultural co-operative here has not only improved the method of agriculture production but also increased its output.

### [Beekeeper groups sue EPA over pesticide decision](#)

(CNN)

In the latest confrontation between the bee industry and the Trump administration, a group of concerned beekeepers have sued the Environmental Protection Agency over its July decision to expand the use of a pesticide that's known to harm bees and other pollinators. The Pollinator Stewardship Council, the American Beekeeper Federation and beekeeper Jeff Anderson, who are represented by Earthjustice, have asked the US Ninth Circuit Court of Appeals to review the EPA's decision earlier this summer to rollback several restrictions around the pesticide sulfoxaflor, which were put in place under the Obama administration over concerns it might be contributing to plummeting bee populations.

### [Food companies lead the charge to increase biodiversity](#)

(Food Dive)

One Planet Business for Biodiversity, or OP2B, launched Sept. 23 at the United Nations Climate Action Summit. Its purpose is to protect and restore biodiversity within supply chains and product portfolios. OP2B includes 19 companies selling food and other products in more than 120 countries, with combined total revenues of approximately \$500 billion. The companies are, Balbo Group, Barry Callebaut, Danone, DSM, Firmenich, Google, Jacobs Douwe Egberts, Kellogg, Kering, Livelihood Funds, L'Oreal, Loblaw Companies Limited, Mars Wrigley, Migros Ticaret, McCain Foods, Nestlé, Symrise, Unilever and Yara. They agreed to take tangible steps together and separately to protect and enhance biodiversity in agricultural systems, delivering policy solutions next year.

### [New AI app predicts climate change stress for farmers in Africa](#)

(Science Daily)

A new artificial intelligence (AI) tool available for free in a smartphone app can predict near-term crop productivity for farmers in Africa and may help them protect their staple crops -- such as maize, cassava and beans -- in the face of climate warming, according to Penn State researchers. The team unveiled the new tool -- which will work with their existing AI assistant, called "PlantVillage Nuru" -- to coincide with the United Nations Climate Action Summit at the UN Headquarters in New York City.

### [Plantation crops unable to cover cost in south amid global competition](#)

(Business Standard)

Plantation crops are not able to cover the cost in southern India and there is an urgent need to enhance the income by engaging in other activities, say planters. The region is not able to withstand global competition. A E Joseph, president, United Planters' Association of Southern India (UPASI), an apex body of planters in Southern States, said that the year that has gone by, was quite stressful for all the planters, as they faced distress due to climate change and by not being able to fetch profitable prices for the plantation commodities.

### [India's precarious water security takes toll on farmers](#)

(Financial Times)

Water security is a growing issue for much of the world. It undermines food security. Even before the climate began to change in earnest, rivers and underground reserves were emptying. The situation is made worse in some countries by the huge global trade in thirsty, sun-hungry crops such as cotton and rice, grown in water-short nations such as India for export to cooler, richer nations. As

the developed world deforests poorer nations through its demand for food and other commodities, so it empties their water reserves too.

### [A diet that is healthy for you and for the planet](#)

(Financial Times)

Since the advent of agriculture, only 7,000 plant species out of a known 250,000 have been used by humans as food, according to UN biodiversity experts. Today, just 12 crops and five animal species make up 75 per cent of global calorie intake. This is just one factor driving a new movement: sustainable healthy eating. It is a new aspiration in dietary circles for two reasons: unhealthy diets put more people at risk from death and disease than unsafe sex, alcohol, drug and tobacco use combined; and global food production is the biggest single driver of environmental degradation.

### [Machine learning in agriculture: Scientists are teaching computers to diagnose soybean stress](#)

(Tech Explore)

Iowa State University scientists are working toward a future in which farmers can use unmanned aircraft to spot, and even predict, disease and stress in their crops. Their vision relies on machine learning, an automated process in which technology can help farmers respond to plant stress more efficiently. Arti Singh, an adjunct assistant professor of agronomy, is leading a multi-disciplinary research team that recently received a three-year, \$499,845 grant from the U.S Department of Agriculture's National Institute of Food and Agriculture to develop machine learning technology that could automate the ability of farmers to diagnose a range of major stresses in soybeans.

### Member's Corner



Mr Satish Ganiger, Head of Corn Group, FSII and & MD, BiscoBio Sciences Pvt Ltd delivered a presentation at Balurghat, West Bengal on importance of quality seeds, its varieties & ways of ensuring appropriate supply. It was a training workshop for farmers & extension officers on the modern technology of maize cultivation & integrated management of its pests.



## Upcoming Events

### Regional Expert Consultation on Gene Editing in Agriculture and its Regulations

Date: 10-11 October, 2019 | Venue: International Crop Research Institute for Semi-Arid Tropics (ICRISAT), Hyderabad, India

The Regional Expert Consultation is organized by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Asia-Pacific Association of Agricultural Research Institutions (APAARI), Asia-Pacific Consortium on Agricultural Biotechnology and Bioresources (APCoAB), Federation of Seed Industry of India (FSII), Alliance for Agri Innovation (AAI) and Research Program on Grain Legumes and Dryland Cereals.


The objective of the Expert Consultation is to:




- Highlight the innovations through gene editing and their impact in the agricultural sector
- Review the status of global regulatory policies around gene editing and particularly in the Asia-Pacific region
- Provide a platform to promote adoption of science-based predictable policies for regulating gene edited crops and breeds. Discuss the impact of regulatory hurdles, delays, associated high cost on technology adoption and communication strategies for enabling policies on plant and animal breeding innovations



It is expected that the Expert Consultation will bring forth:

- Record opinions and inputs from public and private sector regarding the regulatory framework in relation to gene edited products
- A white paper on recommendations for science-based regulatory policies and recommend the best regulatory path forward for India, considering its unique status and influence in the region, and other countries of Asia-Pacific region

Participation will include researchers, representatives of various public institutions & private sector; policy makers & scientists from member countries of Asia-Pacific Association of Agricultural Research Institutions (APAARI); CGIAR centres; Department of Biotechnology, Ministry of Agriculture & Farmers' Welfare, Ministry of Health and Family Welfare, Ministry of Environment, Forest and Climate Change. Recognized diverse set of experts will be invited to make presentations and participate in panel discussion.



APSA   

In association with  

## Asian Solanaceous Round Table III

the Sheraton Grand Bangalore at Brigade Gateway  
22 – 25 October 2019

The program includes current updates, covering everything from breeding to market trends in Solanaceous crops.


The theme of main sessions are as follows:

- The modern breeding technologies for diseases and pest resistance
- Quality traits and disease resistance
- Modern production technology
- Post-harvest technology (processing and value addition)
- Market trends
- Possible collaboration with research institutes


**On 25 October 2019, the field visit is hosted by the Indian Institute of Horticultural Research, Bangalore**

**Registration fee**

• APSA member companies	: 180 USD per person
• Non-member	: 200 USD per person
• Government officials	: 100 USD per person
• Students	: 50 USD per person
• Booth Exhibitor	: 75 USD per person
• Big booth (3m X 3m)	: 500 USD
• Small booth (2m X 2m)	: 300 USD

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For more information, please contact Ms. Kunaporn Phuntunil  
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**FSII is associating with The Asia & Pacific Seed Association (APSA) for the Asian Solanaceous Roundtable III at Bengaluru. The event will take place between 22-25 October 2019, at the Sheraton Grand, Bengaluru. We encourage you to start registering and share your learnings and success stories at the event.**

### September 2019

#### International Conference on Agriculture, forestry, Biotechnology and Food Science

**Date:** September 01, 2019

**Venue:** Vishakhapatnam, India

#### Bordeaux - France International Conference on Agricultural, Environmental and Medical Sciences

**Date:** September 04-05, 2019

**Venue:** Bordeaux, France

#### Plants, People, Planet Symposium

**Date:** September 04-05, 2019

**Venue:** Richmond, UK

#### International Symposium on Buckwheat

**Date:** September 03-06, 2019

**Venue:** Shillong, India

**Asian Pacific Weed Science Society Conference**

**Date:** September 03-06, 2019

**Venue:** Kuching, Malaysia

**Congress of Agrarian Economy**

**Date:** September 04-06, 2019

**Venue:** Lugo, Spain

**Agri-business Conference**

**Date:** September 05-06, 2019

**Venue:** Lincoln, USA

**International Conference on Agriculture, Biological and Environmental Sciences**

**Date:** September 05-07, 2019

**Venue:** Paris, France

**International Conference on Agricultural and Food Sciences**

**Date:** September 17-18, 2019

**Venue:** Istanbul, Turkey

**European Conference on Crop Diversification**

**Date:** September 18-21, 2019

**Venue:** Budapest, Hungary

**International Conference on Agricultural and Biological Science**

**Date:** September 23-24, 2019

**Venue:** Miami, USA

**October 2019**

**Summit on Advancing the Agriculture Economy Through Innovation**

**Date:** September 30-October 01, 2019

**Venue:** Colorado State University, Fort Collins, USA

**Africa Fertilizer Agribusiness Conference**

**Date:** October 01-03, 2019

**Venue:** CTICC (Cape Town International Convention Centre), Cape Town, South Africa

**Conference on Suppliers and Buyers of Fresh Fruits Vegetables and Flowers**

**Date:** October 03, 2019

**Venue:** MCC Mazurkas Conference Centre & Hotel, Ożarów Mazowiecki, Poland

**International Conference on Climate Change, Global Warming, Agriculture and Pollution Control**

**Date:** October 03-04, 2019

**Venue:** YHA Oxford, Oxford, UK

**Agribusiness Conference**

**Date:** October 04, 2019

**Venue:** The StateView Hotel, Autograph Collection, Raleigh, USA

**International Conference on Sustainable Agriculture and Environment**

**Date:** October 03-05, 2019

**Venue:** Selçuk Turizim Fakültesi Uygulama Oteli, Bağrıkurt Köyü, Turkey

**African Grain Trade Summit**

**Date:** October 03-05, 2019

**Venue:** Mombasa, Kenya

**International Conference on Research of Agricultural and Food Technologies**

**Date:** October 03-05, 2019

**Venue:** Mombasa, Kenya

**International Conference on Food and Agricultural Engineering**

**Date:** October 04-05, 2019

**Venue:** GLAD Mapo, 109, South Korea

**International Scientific Agriculture Symposium Agrosym**

**Date:** October 03-06, 2019

**Venue:** Hotel Termag, Jahorina, Bosnia & Herzegovina

**Global Summit on Plant Science**

**Date:** October 07-08, 2019

**Venue:** Hotel Silken Puerta Madrid, Madrid, Spain

**November 2019**

**Training Course on Horticultural Production and Marketing**

**Date:** October 28-November 01, 2019

**Venue:** Datastat Research, Nairobi, Kenya

**AgriBusiness Forum**

**Date:** October 31-November 02, 2019

**Venue:** Elpida Resort & Spa, Serres, Greece

**Sustainable Agriculture Conference**

**Date:** November 01-03, 2019

**Venue:** Durham, USA

**International Conference on Sustainable Agriculture Technologies**

**Date:** November 01-03, 2019

**Venue:** Kaohsiung, Taiwan

**International Conference on Agricultural and Biological Science**

**Date:** November 02-03, 2019

**Venue:** Radisson Blu, Abu Dhabi Yas Island, Abu Dhabi, UAE

**World Congress on Medical and Aromatic Plants**

**Date:** November 02-03, 2019

**Venue:** Yerevan, Armenia

**National Field Crops Conference**

**Date:** November 01-04, 2019

**Venue:** Hotel Kervansaray Lara, Antalya, Turkey

**National Field Crops Conference**

**Date:** November 01-04, 2019

**Venue:** Hotel Kervansaray Lara, Antalya, Turkey

**International Conference on Food, Agriculture, Horticulture and Aquaculture**

**Date:** November 04-05, 2019

**Venue:** Bangkok, Thailand



**Plant Genomics & Gene Editing Congress**

**Date:** November 04-05, 2019

**Venue:** The StateView Hotel, Autograph Collection, Raleigh, USA

**International Society for Biological and Environmental Repositories Regional Meeting**

**Date:** November 04-05, 2019

**Venue:** Renaissance Minneapolis Hotel, The Depot, Minneapolis, USA

**Ontario Pest Management Conference**

**Date:** November 05, 2019

**Venue:** Victoria Park East Golf Club, Puslinch, Canada

**Agri-Food Innovation Council Conference**

**Date:** November 04-06, 2019

**Venue:** Delta Hotels by Marriott Bessborough, Saskatoon, Canada

**Synergy International Conference**

**Date:** November 04-06, 2019

**Venue:** Szent Istvan University, Godollo, Budapest, Gödöllő, Hungary

**Global Agriculture Summit**

**Date:** November 06, 2019

**Venue:** NASC Complex, New Delhi, India

**Pulse Science and Technology Forum**

**Date:** November 05-07, 2019

**Venue:** Courtyard by Marriott Toronto Downtown, Toronto, Canada

**Circular Agri Food Summit**

**Date:** November 07, 2019

**Venue:** Wageningen Campus, Wageningen, Netherlands

**Congress on Soil, Plant and Water Sciences**

**Date:** November 11-12, 2019

**Venue:** Madrid, Spain