



With the International Women's Day celebrated on March 08 every year, FSII is commemorating this day by honouring the women in agriculture. Since ages, agriculture sector has been predominantly driven by men. However, with the changing dynamics and more women joining this sector, we wanted to share their story of bringing a change and transforming the sector. We bring to you some encouraging stories of women from member organisations and women entrepreneurs in the field.



Meet Ms. **Annapoornamma C J**, an M. Sc (Ag) Crop Physiology who has been working with Noble Seeds Pvt Ltd as a Seed Administrator since 2015. Her initial responsibility was to organize the valuable germplasm used in the breeding program. She used to sort them and ensure that the germplasm is locked in secure carton boxes etc. What started as simple steps grew to become bigger responsibilities. Today, Annapurna takes pride in being able to identify a germplasm within a minute from amongst thousands of germplasms. She has a deep understanding of the breeding processes through her constant and multiple interactions with the breeders and customized softwares. She is also a member of the Internal Complaints Committee (formed to look into Sexual Harassment of Woman at Workplace) and in implementation of company code of conduct and training at the Bangalore Branch.

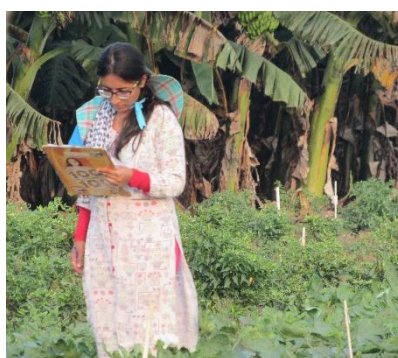
In her words *“There are plenty of opportunities in agriculture for women who chose to assist the plant breeders by maintaining the valuable germplasm and precious data. From my experience I can assure, if one has hunger and dedication to work, there are streams of opportunities in agriculture.”*



Dr **Tanushri Kaul**, Group Leader - Nutritional Improvement of Crops (NIC) at International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi. Under her leadership, NIC is developing glyphosate-tolerant crops like maize, rice, pigeon pea by gene editing. NIC's pioneering initiative to compose the Rice bean (*Vigna umbellata*) with the genome size of ~450MB is the first attempt to achieve rice bean genome by PacBio technology. The group is also involved in developing updated platforms for gene editing along with Artificial Intelligence and Next Generation Sequencing in crops and provide a one-stop junction for sustainable crop improvement. The group is also designing phytase-rich tomatoes, phytate-free cereals, and legumes for alleviating global micronutrient malnutrition by gene editing.



Meet **Kalyani Singh**, a 24-year-old smallholder tomato farmer based in Jharkhand. She grew up in a small farming family in Tutki Nawadih village in Silli, Jharkhand and has been connected to agriculture since her childhood. Following her father's footsteps, Kalyani dreamt of farming on their family farm and introduce new farming techniques. She pursued a formal education in Agriculture & Allied Sciences and graduated in 2018 with a B.Sc degree from Ramkrishna Mission Vivekananda University in Ranchi. Her formal education widened her knowledge on several modern farming techniques and helped her develop an entrepreneurial mindset. After her studies, she worked for a brief period in a private organization to earn money to develop her integrated farm. However, she faced several difficulties due to unsuccessful partnership in farmland and the challenge of wild animals around her farmland. Undeterred, she started farming on her own farm. A female agronomist from Bayer introduced Kalyani to the concept of Better Life Farming at her village and she was keen on practicing it for herself. She started cultivating tomatoes in her three acres farm and with the help from Better Life Farming, she achieved a yield increase of 50% and her farm income raised by 40%. Today she is a proud owner of a Better Life Farming Center in Namkum block of Ranchi and is one of the four women agri-entrepreneurs supported by the Better Life Farming initiative in Jharkhand. Not only has she been able to pursue her dream of entrepreneurship, she is also serving other smallholder farmers in her community with a smile and valuable information. She is currently pursuing a Masters' degree in Rural Development from IGNOU.



Ms. Bhumika N. Patel holds an M.Sc (Ag) in Genetics and Plant Breeding degree and is currently working as a Jr. Breeder-Okra at Noble Seeds Pvt Ltd. She started her career with the company in 2018. With ample opportunities to employ her academic knowledge and develop skills in practical aspects of Plant Breeding, she is now independently handling the crop Okra. From its line development program to hybrid development, she actively travels across the major okra markets like Guntur (primary breeding location), and Tamilnadu and Gujarat (Trialing locations). This exposure has further helped her get market knowledge and insights

into consumer preferences.

In her words "It's through this exposure that today I am proud to share I have developed 58 advanced segregating generation lines and 3 hybrids (in advanced stage) of Okra. Of these 3 hybrids, one of the hybrids is resistant to Yellow Vein Mosaic Virus and moderate resistant to Enation Leaf Curl Virus and two hybrids have moderate resistance to Yellow Vein Mosaic Virus and Enation Leaf Curl Virus."

Read more encouraging stories of women achievers in this [link](#) who have brought a wind of change in this sector. Also visit our social media handles as we have celebrated a week-long International Women's Day 2020. #EachForEqual

In this newsletter, we have captured interesting developments and research work from around the world in the agri industry. We hope you find it a good read.



Shivendra Bajaj
Executive Director
Federation of Seed Industry of India-Alliance for Agri innovation

AgBiotech News

[Busia to host 60 pilot farms for Bt cotton](#)

(Star)

Sixty out of the 1,000 demonstration farms to help roll out the cultivation of genetically modified Bt cotton will be in Busia. The remaining 940 farms will be spread across the other 22 cotton-growing counties. Agriculture Cabinet Secretary Peter Munya said that the farms will act as tools for offering extension services where each plot of land will be used for training at least 100 interested farmers. Munya was presiding over the launch of Bt cotton in Busia. He said Busia will play a crucial role in supporting the adoption of the cotton breed expected to revitalise the collapsed apparel industry.

[Why GMOs? 4 farmers make the case for biotech crops, challenging 'clueless' activists to embrace science](#)

(Genetic Literacy Project)

The true experts in food production are farmers, the people who grow the crops and raise the animals we all rely on for sustenance. But for many years, the public conversation about agriculture and biotechnology has been dominated by other voices, namely environmental activist groups with a deep-seated skepticism of genetic engineering. While texting on their state-of-the-art iPhones, activists at nonprofits such as Greenpeace and Organic Consumers Association take it upon themselves to urge farmers to embrace 100-year-old techniques that can't possibly produce enough food to feed the billions of people who need to eat.

[FDA, USDA combat consumer opposition to GMOs](#)

(Food Business News)

The US Food and Drug Administration, the Environmental Protection Agency and the US Department of Agriculture launched a \$7.5 million consumer education initiative focused on highlighting the science behind genetically modified organisms. The goal of the effort, called Feed Your Mind, is to answer the most common questions consumers have about GMOs, including how they are regulated and whether they are safe and healthy. One educational video from the FDA points out that genetically modified soybeans have healthier oils that may be used to replace oils that contain trans fats. Other materials highlight how reduced bruising and browning may help combat food waste.

[Genome editing's potential to reshape agriculture for a better future](#)

(The Cattle Site)

Mention genome editing out loud and many involved in the agricultural industry will twitch in fear while others can foresee the precise benefits it can bring. With climate change, increasing animal diseases and a more demanding consumer wanting fewer antibiotics used, future agricultural production will need to change, but is genome editing part of the solution? In a bid to assess how mind-set is changing Chris McCullough speaks exclusively with Diane Wray-Cahen, Senior Science

Advisor for agricultural biotechnologies at the Foreign Agricultural Service (FAS), an agency within the United States Department of Agriculture (USDA).

[How oil from GMO plants could help prevent heart disease, preserve our oceans and cut fossil fuel use](#)

(Genetic Literacy Project)

Crop biotechnology is beginning to take pressure off our vulnerable oceans. The ultimate source of omega-3s is the algae that fish consume, not the fish themselves. As a result, scientists can take the relevant genes from algae and insert them into oilseed crops like canola. These genetically modified plants have been approved in Australia and the US for use as food and animal feed, greatly reducing the amount fish we need to harvest for omega-3 production. According to one estimate, a single hectare of this GMO canola could produce the same amount of DHA oil (an omega-3 found in salmon and anchovies) that can be extracted from 10,000 one-kilogram fish.

[Top European science council demands 'radical' GMO regulatory reform](#)

(Alliance for Science)

A top European science council calling is demanding a "radical reform of the legal framework" that regulates genetically modified organisms (GMOs) in the European Union. In a strongly worded commentary, the European Academies Science Advisory Council (EASAC) said the current EU regulations are "no longer fit for purpose" and warned of serious ramifications if the rules are not eased to allow new plant breeding techniques to move forward.

[Genome Editing Strategy Could Improve Rice, Other Crops](#)

(Seed World)

Scientists at UC Davis have used CRISPR technology to genetically engineer rice with high levels of beta-carotene, the precursor of vitamin A. The technique they used provides a promising strategy for genetically improving rice and other crops. The study was published in the journal Nature Communications. Rice is a staple food crop for more than half the world's population. Golden Rice, a genetically engineered rice with high levels of beta-carotene, has been approved for consumption in more than five countries, including the Philippines, where vitamin A deficiency in children is widespread. Because of the social impact of Golden Rice, the researchers chose the high beta-carotene trait as an example.

[Farmers clamour for GM cotton in Kirinyaga](#)

(Star)

Farmers in South Ngariama settlement scheme in Kirinyaga county are adopting cotton farming with enthusiasm. They are anxious to plant high yield BT cotton, a genetically modified variety that produces an insecticide to kill bollworms and other pests. Farmers abandoned cotton more than 20 years ago because returns were poor and quality was damaged by pests, including the bollworm. And there was no domestic textile industry.

[Canada can become a leader in sustainable food production in the 21st century](#)

(The Globe and Mail)

The introduction of GM canola and re-engineering of planting equipment reduced production costs, increased yields, and improved the environment. The Canola Council of Canada found that adopting GM canola resulted in herbicide use being reduced by 18 per cent while decreased soil tillage cut diesel fuel consumption by the equivalent of eliminating 500,000 cars from our roads. At the same time, crop yields doubled, making canola the most profitable field crop for prairie farmers. Lana Awanda at the University of Saskatchewan studies greenhouse gas emissions of prairie farms. She has found that the changes in farming methods have increased carbon sequestration by 400 per cent since the mid-1990s. Prairie grain farmers now are storing more carbon than they emit. In total, they now store 16 million metric tonnes annually, the equivalent of the emissions from 3.47 million cars.

[Government stands firm on GM crops freedom](#)

(Mirage News)

The Marshall Liberal Government will stand firm in its support for South Australian grain growers' campaign to enjoy the same freedom of choice available to their interstate neighbours when it comes

to growing genetically modified crops. Minister for Primary Industries and Regional Development Tim Whetstone said the Marshall Liberal Government will oppose SA Best's flawed legislation and will continue to re-introduce regulations lifting the GM moratorium on the South Australian mainland if SA Best, Greens and Labor Party disallow them in Parliament.

[Food safety body plans GMO labelling on products](#)

(The Daily Star)

Bangladesh Food Safety Authority (BFSA) is planning on making declaration of genetically modified (GM) crop in food products mandatory. A genetically modified organism, or GMO, is an organism that has had its DNA altered or modified in some way through genetic engineering. In most cases, GMOs have been altered with DNA from another organism, be it a bacterium, plant, virus or animal; these organisms are sometimes referred to as "transgenic" organisms. There is a huge distrust amongst the public about the safety of GMO crops.

[Health officials urge Uganda to pass biosafety law granting consumer access to biofortified GMO crops](#)

(ISAAA)

Representatives from the Ministry of Health, Uganda Medical Association, the National Drug Authority, and Uganda Pharmaceutical Society resolved that the government should pass a biosafety law to regulate genetically modified organisms (GMOs). The health officials were impressed by the biotech research and development especially technologies with health benefits such as micronutrient biofortified crops. This was during a sensitization workshop organized by Uganda Biosciences Information Center (UBIC) to discuss the relevance of agricultural biotechnology in medicine and industry.

[Fighting blight with GMO potatoes](#)

(Alliance for Science)

Dr. Eric Magembe is committed to using the tools of genetic engineering to fight the devastating potato late blight disease in sub-Saharan Africa. Since the onset of his career, Magembe, a research scientist with the International Potato Center (CIP), has been curious to see how science can be translated into solutions. He's now putting that curiosity to practical purposes in his pioneering research at Biosciences eastern and central Africa (BecA) — the International Livestock Research Institute hub on the outskirts of Nairobi.

[Chart a strategy to balance productivity, sustainability in farming, say experts](#)

(The Hindu Business Line)

Amid newer challenges of resource management and achieving sustainability in agriculture, India needs to chart an agriculture strategy to help transforming farming practices in the country so as to strike a balance between sustainability and productivity. Ram Kaundinya, Director General, Federation of Seed Industry of India (FSII), expressed that in a vast country like India, a single technology can't be a uniform solution for the country. India would need a basket of tools and technology solutions to achieve the goal of sustainability and productivity.

New Research

[Researchers establish new viable CRISPR-Cas12b system for plant genome engineering](#)

(Phys.Org)

In a new publication in Nature Plants, assistant professor of Plant Science at the University of Maryland Yiping Qi has established a new CRISPR genome engineering system as viable in plants for the first time: CRISPR-Cas12b. With CRISPR-Cas12b, Qi is presenting a system in plants that is versatile, customizable, and ultimately provides effective gene editing, activation, and repression all in one system.

[Nebraska team links wild wheat gene to drought tolerance in cultivated wheat](#)

(Nebraska Today)

New research from the University of Nebraska–Lincoln has led to the discovery of a novel gene that improves drought adaptation in wheat — a breakthrough that could contribute to increased world

food security. In new research published in Plant Biotechnology Journal, Harkamal Walia, associate professor and Heuermann Chair of Agronomy and Horticulture at Nebraska, and colleagues describe a novel form of a gene obtained from wild wheat that has the potential to improve drought tolerance in cultivated wheat. Introducing this gene into cultivated wheat improved the plant root structure so that it continued to grow in search of water under dry soil conditions.

[Gene explains why some low-lying plants are bald, others are hairy](#)

(BreitBart)

Scientists have discovered the gene responsible for baldness in plants. The gene explains why some alpine plants are hairy while their low-lying peers are hairless. New genetic analysis suggests snapdragon plants living at high altitudes have evolved the ability to turn off the genes responsible for silencing hair. The tiny hairs on their stalks and leaves help protect plants growing on sunny cliffs and hillsides from harmful ultraviolet rays. Meanwhile, plants growing at lower elevations remain bald. For snapdragon plants living in shady valleys, the tiny hairs, called trichomes, are unnecessary.

[Gene-edited, salt-tolerant rice grown at sea could help feed 3.5 billion people sustainably](#)

(Forbes)

Ocean agriculture is an emerging form of food production that could have some real potential. Increased demand for food and exploding population levels are pushing innovators to explore areas where agriculture has never gone before. One crop taking to the sea is rice. A company started by two 24-year-old scientists wants to produce salt-tolerant rice and floating ocean farms by 2021, with small pilot farms by the end of 2020. 3.5 billion people rely on rice every day, and with such an enormous impact, people have long been interested in manipulating rice genes to achieve certain goals. Agrisea wants to grow rice in the ocean by using gene-editing, which would amplify the expression of genes already found in rice that control salt-tolerance.

[Beneficial bugs can co-exist with Bt crops, new studies show](#)

(GLP)

Genetically modified, insect resistant Bt crops do not have harmful effects on beneficial bugs in farmers' fields, two new scientific papers published this week have shown. These add to the environmental case for GM technology, because by controlling crop pests in a very targeted way using insecticidal proteins (Bt) expressed in plant tissues, farmers can reduce broad-spectrum insecticide sprays and thus protect wider farm-scale biodiversity. In the first paper, an international team led by Chinese scientists reported that after conducting field experiments lasting several years, they found no significant differences in the spider communities populating Bt rice fields as compared to a non-Bt control rice crop.

Upcoming Events

March 2020

World Agriculture Summit

Date: March 02- 03, 2020

Venue: Valencia, Spain

International Conference on Plant Tissue Culture & Plant Biotechnology

Date: March 02- 03, 2020

Venue: Valencia, Spain

International Conference on Food and Agricultural Engineering (ICFAE)

Date: March 02-March 03, 2020

Venue: Abu Dhabi, UAE

Conservation Tillage and Technology Conference (CTC)

Date: March 03- 04, 2020

Venue: Ada, USA

Seminar on Paddy Straw Management Issues in Intensive Agriculture

Date: March 03- 04, 2020

Venue: Ludhiana, India

Plant Genomics and Gene Editing Congress

Date: March 04-05, 2020

Venue: Rotterdam, Netherlands

BioAg Asia (BioAsia)

Date: March 04- 06, 2020

Venue: New Delhi, India

Think Wheat

Date: March 04- 06, 2020

Venue: Assiniboia, Canada

African Farming Agro Investment Summit (AIS)

Date: March 12-13, 2020

Venue: Assiniboia, Canada

Global Summit on Plant Genomics and Plant Biotechnology

Date: March 19-20, 2020

Venue: London, UK

April 2020

Extension Risk Management Education National Conference (ERME National Conference)

Date: March 31- April 02, 2020

Venue: Denver, USA

New Zealand Agricultural Climate Change Conference

Date: March 31- April 02, 2020

Venue: Palmerston North, New Zealand

Residuals and Biosolids Conference

Date: March 31- April 03, 2020

Venue: Minneapolis, USA

Australasian Seed Science Conference (ASSC)

Date: April 05- April 09, 2020

Venue: Canberra, Australia

International Conference on Agricultural Science

Date: April 07- April 09, 2020

Venue: Shimla, India

International Conference on Agricultural and Biological Science (ICABS)

Date: April 13- April 14, 2020

Venue: Brussels, Belgium

International Conference on Biotechnology and Agroforestry Technology (ICBAT)

Date: April 17- April 19, 2020

Venue: Guiyang, China

BioAg Asia (BioAsia)

Date: April 22- April 24, 2020

Venue: New Delhi, India

May 2020

Global Plant-Forward Culinary Summit

Date: April 29-May 01, 2020

Venue: Napa, USA

International Conference on Food Microbiology and Food Market

Date: May 04-May 05, 2020

Venue: Vancouver, Canada

International Conference on Agriculture and Nutrition (ANC)

Date: May 04-May 05, 2020

Venue: Rome, Italy

BioAg World Congress (BAW)

Date: May 11-May 13, 2020

Venue: Sacramento, USA

Global Summit on Plant Genomics and Plant Biotechnology

Date: May 14-May 15, 2020

Venue: Narita, Japan

The Future of Food Conference

Date: May 27-May 28, 2020

Venue: Minneapolis, USA

International Conference on Food and Agricultural Economics

Date: May 28-May 30, 2020

Venue: Alanya, Turkey
