



On one hand where we constantly hear about depleting natural resources, climate change constantly presenting new challenges for the environment, Scientists and Researches on the other hand are working towards reviving important crops and trees that are now extinct. Whether it be reviving microbes from 100 million years ago or date trees from 2000 year old seeds or plants of *Silene stenophylla* from a 32000 year old seed, such conservation efforts gives hope for the planet that constantly battles to keep afloat.

Another such effort has been taken by a retired agricultural scientist from Odisha who is reviving aromatic rice varieties from the region which are on the verge of extinction. Dr SR Das, rice scientist and honorary professor in plant breeding and genetics at the Orissa University of Agriculture and Technology (OUAT) has started a project to collect the seed of these indigenous rice varieties and promote its cultivation among farmers.

These indigenous scented rices mainly Kalajeera, Neelabati, Krushnabhog, Govindabhog, Padmakeshari, Tulasiphoola, are predominant in coastal belts, while a few number of traditional scented varieties like Pimpudibasa, Jubaraj, Karpurakranti, Badsabhog, Kalikati, Laxmibilas and Makarakanda are common in the state.

Odisha produces aromatic rice similar to the famous Basmati and have qualities like pleasant fragrance with small and round grains, white colour and softness without much elongation on cooking. Unfortunately, due to lack of systematic effort for the collection, evaluation and genetic improvement of these much valued short grained scented rices of the state, these varieties are slowly disappearing.

The scented rice varieties can provide more yield and profit to the farmers but because of poor marketing efforts there is less demand in the sale of rice. Many of these varieties like Kalajeera can be grown in almost all the 30 districts of Odisha. Similarly Jubaraj variety is excellent traditional rice with hard gel consistency and highest kernel growth, Kalabati is very rich in anti-oxidant and can reduce stress. Dr Das suggests that if the government supports to set up Aroma Village and create seed banks for farmers it would help the agrarian economy in a great way.

We have also covered news around several important developments on agriculture across India, globally and in the area of research. We hope you find it a good read!



Shivendra Bajaj
Executive Director
Federation of Seed Industry of India

News from India and Around the World

[Research shows intermediaries' role is misunderstood. Local market realities more at play](#)

(The Print)

Most Indian farmers have tiny farms that yield meagre incomes. They face a multiplicity of risks, which jeopardises even these low incomes. These twin pressures are particularly acute in eastern India, manifest in the two states that were the focus of our study, Bihar and Odisha. With nearly 80% of the population in Bihar and 70% in Odisha still engaged in agriculture, increasing farmers' incomes in these two states is critical. Agriculture policies in India have largely focused on three policy tools to increase (and stabilise) farmers' incomes: decreasing input costs through input subsidies, improving crop yields through better seeds and farming practices, and increasing output prices while stabilising incomes through the Minimum Support Price (MSP) and procurement. More recently, policy has begun to pay attention to getting farmers a greater share of the marketed surplus, which has led to renewed concerns about the state of agriculture markets, the focus of our study.

[Seven reasons why India's agriculture sector needs a fresh churn](#)

(India Today)

More of the capital deployment in the sector is for immediate needs of farming, rather than long-term investment for growth (land development, technologies, research etc.). The RBI's "Report of the Internal Working Group to Review Agricultural Credit" released in September 2019 said the credit outflow to agriculture is more and more for immediate cropping needs. Long-term credit for investment is rapidly falling - as the graph reproduced from this report demonstrates.

[Rising Above Binary Choices in Indian Agriculture](#)

(Business World)

The debate in agriculture is fraught with binary choices. The prime-time debate of the day, following the reactions to the Farm bill is - Mandis, or Markets? Equally critical questions, with a bearing on long term economic and environmental outcomes include - Should the rural youth persist with agriculture, or migrate? Should food production focus on higher yields, or on better nutritive value? Is it okay to trade off long term ecological sustainability to extract short term gains in productivity? These make for entertaining prime time television debates but in almost every pair of seemingly exclusive options, the answers lie in mitigating the trade-offs and expanding the total opportunity to achieve sustainable development.

[Agripreneurs add flavour to mint farming](#)

(The Hindu Business Line)

BharatRohan, that was founded in 2016 and began commercial operations a little over a year ago, uses hyperspectral imaging, one of the most advanced remote sensing tools to capture warning signals about pest attacks, disease outbreaks and nutrition deficiency in crops at a very early and actionable stage. “Remedial action at this early stage helps farmers eliminate crop losses. It can be one of the most important innovations in agricultural early warning systems. The potential is humungous,” says Kondapi Srinivas, CEO, Association for Innovation Development of Entrepreneurship in Agriculture (a-IDEA) at ICAR’s National Academy of Agricultural Research Management (NAARM) in Hyderabad that incubated the start-up. It is estimated that India loses a whopping 15 per cent of its farm output, or in excess of \$40 billion each year to pest and insect attacks

[Tech churn for Indian agriculture](#)

(The Financial Express)

The mobilisation of Punjab farmers against the new farm laws that intend to make agriculture more market-oriented might give the impression that Indian agriculture is stuck in the past. Here are protestors who are agitating for assured procurement and prices, and for the primacy of trading platforms instituted to address the problems of the 1960s. With changing diets, there is higher growth in foods that provide proteins and other nutrients, and not just calories. But agitating farmers seem not to want to shift out of low-value cereals.

[Fertiliser Subsidy and Indian Farmer: How Does It Operate?](#)

(Business World)

The government has recently cleared the dues of the fertiliser companies. This is being done by adding Rs 65,000 crore to an already existing subsidy regime of Rs. 71,309 crore. Clearing of dues would serve as a motivation for industries, especially given the upcoming production link incentive schemes by the Indian government. With a substantial amount of government subsidy going towards fertilisers, it is worthwhile knowing the entire process from supply to payment, and the lacunae therein. Subsidy as a concept originated during the Green Revolution of the 1970s-80s. Fertiliser subsidy is purchasing by the farmer at a price below MRP (Maximum Retail Price), that is, below the usual demand-and-supply-rate, or regular production and import cost. Fertiliser subsidy ultimately goes to the fertiliser company, even though it is the farmer that benefits. Before 2018, companies were reimbursed after the material was dispatched and received by the district railhead or designated godown.

[This agritech startup aims to make trading of commodities simple and transparent](#)

(Yourstory)

In the vast agricultural ecosystem – starting from the farmland to putting the food onto your plate, the two very critical elements in this entire cycle is the supply chain infrastructure and financing. For the farmers, the top challenges after the harvest are about getting the right storage infrastructure and getting also a fair price. Other players involved in this ecosystem like traders and millers also face similar concerns.

[India grows more food, wastes more, while more go hungry](#)

(India Today)

Between the ongoing farmers’ protests highlighting cries of no proper remuneration for what the “annadata” (food provider) produces and India’s 103rd position in the Global Hunger Index (GHI) lies Indian agriculture’s third shocking reality farm produce wastage. Statistics back Prime Minister Narendra Modi’s oft repeated line on India’s needs to move up fast on capability to store and distribute farm produce. If India spends almost Rs 1.5 lakh crore on cheap and free food grain each year, a study in 2016 estimated that Rs 92,651 crore is lost annually in farm produce wastage. Worse, the cost of wasted procured grains is a bone of contention between the Centre and states like Punjab. The government’s conventional reply for decades when it comes to wastage of food grain procured, secured and distributed by it has been it ain’t much.

[What agriculture needs: Risk mitigation](#)

(Hindustan Times)

Market price realisation of agricultural produce is usually uncertain. When sowing, farmers have to guess the price their crops will get after four or five months when harvest occurs. After sowing, they have limited ability to change their decision. Price risks are exacerbated by policy. India abruptly changes export restrictions on crops like cotton and onion, often multiple times between sowing and harvest. Thus, farmers are unable to make informed decisions; when international prices are too high, export bans also keep farmers from making a profit. Globally, governments provide farmers with various risk-mitigation instruments. In India, Pradhan Mantri Fasal Bima Yojna (PMFBY), the government's crop insurance programme, deals only with production risks. It does not cover livestock. Enrollment remains low and operational challenges leave much scope for improvement.

[Assam app to increase farm productivity](#)

(The Telegraph)

An Assam-based start-up has developed a multilingual smartphone application for farmers to smartly manage their farms and remotely monitor distress activities. AgSpert, the agri-tech startup co-founded by IIT Guwahati students and alumni of NIT Silchar and Dibrugarh University, Assam, have developed the application called AgSpeak. It has an Assamese language option as well, a first among all the agri-tech apps available in the market. The app aims to optimise in-farm productivity through artificial intelligence (AI), helping farmers in making decisions and managing farm activities by the click of a single button on their smartphone or computer. The app along with the IoT hardware has been tested for the past three months with 500 farmers and two tea estates in Assam.

[Agriculture Industry Bets on a New Cash Crop: Carbon](#)

(Wall Street Journal)

U.S. farmers make their living raising crops from the soil each year. Now, some are getting paid for putting something back into their fields: carbon. Big agriculture companies are jockeying with startups to encourage crop producers to adopt climate-friendly practices and develop farming-driven carbon markets. Those efforts would let retailers, food makers and other companies offset their greenhouse gas emissions by paying farmers for their fields' capacity to withdraw carbon dioxide from the atmosphere and trap it in the soil.

[Report looks at importance of highways to agriculture](#)

(Farm Forum)

On Dec. 17, the U.S. Department of Agriculture released a report, "The Importance of Highways to U.S. Agriculture," prepared in close partnership with the Department of Transportation. The report, which can be found at <https://bit.ly/3p2HVkN>, was researched and written by DOT's Volpe National Transportation Systems Center through a cooperative agreement overseen by USDA's Agricultural Marketing Service and its Transportation Services Division. Agricultural producers are the single largest user of freight services, comprising 17% of freight movements across all transportation modes in dollar value and 33% of all ton-miles (U.S. DOT, BTS and U.S. Census Bureau, 2017). In 2017, 2.9 billion tons of agricultural products worth \$2.5 trillion moved on the freight network. "Agricultural freight movement is essential for moving goods from the farm to the consumer's table. Efficient transportation helps keep food prices low for consumers and enables the U.S. agricultural industry to compete in a global marketplace," said USDA Undersecretary for Marketing and Regulatory Programs Greg Ibach.

[Why real wasabi is considered 'green gold' in Japan's sushi restaurants](#)

(Wion)

In Japan, wasabi is difficult to grow because of its knobbly root which is extremely difficult to grow, and consequently expensive to buy, with most of it snapped up by wholesalers. According to 62-year-old Yoshihiro Shioya, a Japanese farmer, "The most important requirement is crystal-clear water, in abundance. It's absolutely necessary that the water temperature stays between 10 and 15 degrees Celsius, year-round", whose family has cultivated wasabi in the region for seven generations. Patience is key -- each wasabi crop can take a whole year or even 18 months to mature in the large man-made terraces, which serve a particular design purpose

[Brazil Keen to Increase Corn Exports To China, But In No Rush-Industry Association](#)

(Successful Farming)

Brazil and China are in talks to boost corn trade between the two nations, though raising exports to the Asian nation at this time is unfeasible due to inter-harvest supply shortages, Abramilho, a corn producers association, said on Wednesday. Only a fraction of Brazil's corn sales went to China last year, or 68,550 tonnes, according to Brazilian government data. Total exports were 42.7 million tonnes in the period. By comparison, China bought almost 80% of Brazil's soy, or 58 million tonnes last year.

[Indonesia To Allocate 9.2 Mln Kilolitres Of Biodiesel Next Year - Ministry](#)

(Successful Farming)

Indonesia is back on track to allocate 9.2 million kilolitres of unblended biodiesel to companies next year as originally planned, the energy ministry said. The announcement comes a week after an official from the National Energy Council said the country may have to lower its biodiesel - palm oil biofuel - allocation next year to 8.5 million kilolitres due to an uncertain fuel consumption outlook due to the COVID-19 pandemic. The Indonesian government requires its diesel to be blended with 30% biocontent made out of palm oil, aiming to be less dependent on fuel imports and sop up palm supply. It sets output targets, subsidises the price difference between palm and crude oil and allocates the product to 20 biofuel companies.

[South Korea's finance of 'green' palm oil drives destruction in Indonesia](#)

(China Dialogue)

In 2019, South Korea imported 745,000 metric tonnes of palm oil, up from 194,000 metric tonnes in 2005. It is one of the fastest-growing markets for the commodity in the world, driven by government policies to boost palm oil as a lucrative green industry and to secure food and energy supplies from overseas. Most of this palm oil comes from Indonesia and Malaysia and until recently was used in processed food, such as instant noodles. But under the country's "Green New Deal" introduced earlier this year, palm oil is being promoted as a source of renewable energy, as biofuel for transport and power generation.

[GEF Approves \\$78mn to Support FAO Projects, \\$8mn Allocated for Indonesia](#)

(Tempo.co)

The Food and Agriculture Organization of the United Nations (FAO) has welcomed the recent decision by the Global Environment Facility (GEF) Council to approve 13 FAO-led projects in 16 countries, totaling some \$78.5 million. The Global Environment Facility (GEF) was established at the 1992 Rio Earth Summit to help tackle environmental problems. Since then, the GEF has provided more than \$21.1 billion in grants and mobilized an additional \$114 billion in co-financing for more than 5,000 projects in 170 countries. The GEF-FAO projects address global environmental crises that impact the productivity and sustainability of agricultural systems on land and water across five continents. They will be implemented in partnership with and co-financed by the governments of the countries involved: Afghanistan, Azerbaijan, Benin, Brazil, Chile, Fiji, Indonesia, Madagascar, Mexico, Nicaragua, Pakistan, the Philippines, the Solomon Islands, Tajikistan, Vanuatu, and Venezuela.

[Women's Livelihood Bond Helps Women In Asia Pacific Struggling Amid The Pandemic](#)

(Forbes)

Building on the track record of its previous two Women's Livelihood Bonds (WLB), social impact finance pioneer Impact Investment Exchange recently announced its latest in the series, aimed at helping underserved women and women entrepreneurs in the Asia Pacific region recover from the pandemic. The \$27.7 million bond targets enterprises in Cambodia, India, Philippines and Indonesia.

[Affordability challenges realization of food resilience in Indonesia](#)

(Antara News)

Affordability is one of the challenges in achieving food resilience in Indonesia, considering the higher rate of nutritive food intake in urban areas, Head of the World Bank Representative to Indonesia and Timor Leste stated. "Food consumption is enjoyed more by those in the cities, and urban areas are now demanding more variety of nutritious foods," Satu Kahkonen, the World Bank country director for Indonesia and Timor Leste, noted in the December 2020 Edition of the Indonesia Economy Prospects in Jakarta. Kahkonen pointed out that Indonesia faced a heavier challenge in terms of

affordability rather than availability, as in the last decade, the production of staple foods, including rice, had increased following the implementation of the green revolution.

[More US wheat moves to China with fifth straight week of exports](#)

(SP Global)

China moved in more wheat from the US ports in the week that ended Dec. 17, registering a fifth straight week of US wheat shipments, indicating Chinese buyers' interest in US wheat has not waned as the country looks to meet its trade obligations and replenish its reserves. After a pause in trade seen in the months of September and November as buyers awaited US presidential election results, China has been shipping in more than 60,000 mt of wheat every week since Nov. 19, data showed. This takes US wheat exports to China hitting 1.6 million mt level in the 2020-21 marketing season, which started June 1. Overall, China remains the third-largest buyer of US wheat in 2020-21, with total commitments hitting a seven-year high 2.2 million mt, according to USDA data. Total commitments include outstanding sales and accumulated exports.

[DA extends validity of sanitary permit for imported staple](#)

(Business Mirror)

Following a dialogue with stakeholders, the Department of Agriculture (DA) said it has extended the validity of sanitary and phytosanitary import clearance (SPS-IC) for rice imports to ensure shipments would arrive in the country. Agriculture Secretary William D. Dar issued Memorandum Circular (MC) 43 which amended his earlier MCs on import rules for rice, corn and wheat. Under MC 43, rice, wheat and corn shipments from Asean countries except Myanmar should arrive in the country no later than 60 days from the issuance of the SPS-IC. Importers are given a 90-day deadline to bring in these commodities in the country if these come from Myanmar and other non-Asean countries.

[Philippines: Greenhouse villages planned as part of "Plant, Plant, Plant" Program](#)

(Hortdaily)

The Department of Agriculture (DA), through the Agricultural Training Institute (ATI), has partnered with four barangays in Caloocan and Quezon cities for the establishment of "Greenhouse Village" in support to the urban agriculture initiative of the "Plant, Plant, Plant" Program. Key ATI officials signed a memorandum of agreement (MOA) with representatives from barangays 179 and 180 in Caloocan, and Payatas and Tandang Sora in Quezon City which will serve as pilot areas for this undertaking. Under the partnership, the Institute will provide funding assistance for the establishment of a Greenhouse Village per barangay. This will feature one unit of high greenhouse with an administration office and storage area; one unit of seedling nursery with micro sprinkler irrigation; and one unit of production area with drip kit irrigation system. Ten sessions of training program from the construction phase until harvest time will also be covered by the ATI.

[Diversity In Food Intake Curbs Malnutrition](#)

(Outlook Poshan)

Rising awareness regarding micronutrient deficiencies and their adverse effects on health has consumers paying attention to their vitamin and mineral uptake. However, a large part of our population does not have access nor partakes the recommended nutrients in their diet. Globally, around 2 billion people suffer from hidden hunger, in absence of nutritious food. In 2020 FAO celebrated World Food day with the theme "Grow, Nourish, Sustain, Together". The observation has never been any more relevant as the hike in food system vulnerabilities due to the Covid pandemic.

[The importance of producing food without destroying forests and biodiversity](#)

(Manila Bulletin)

Many forests have been converted to agricultural lands to meet the growing demand for food caused by the escalating human population. The unsustainable use of natural resources in agriculture has been a major contributor to biodiversity loss that threatens not only human lives, but also the animals' existence that is essential for food production. "We have to come up with ways to produce food even in a small space and to maximize the production of food to supply the needs of billions of people on Earth," said Lisa Paguntalan, a biologist and executive director of the Philippine Biologist Conservation Foundation Inc. (PBCFI), on the fourth episode of the Slow Food Negros Community Food Talks series.

[Why hybrid rice is not gaining popularity in Bangladesh](#)

(The Financial Express)

Rice is crucial to ensure food and dietary energy security of Bangladesh. In terms of per capita rice consumption, Bangladesh is ranked as the top in the world, which is yearly per capita 268.5 kg. The share of rice in the daily dietary energy is now nearly 69 per cent and in the daily protein intake contribution of rice is 55 per cent. Thus, food and dietary energy security in Bangladesh is highly rice dependent. Rice is also the most widely cultivated crop of Bangladesh and the source of livelihood of millions of resource poor farmers. Of a total of 8.6 million ha of cropland, 75 per cent (6.5 million ha) is completely under rice cultivation. Bangladesh's labour market has 60.8 million economically active workers, of which nearly 41 per cent (24.7 million) are directly engaged in the agriculture sector. As 75 per cent of agricultural land is under rice production, the employed agricultural labour force in Bangladesh is mainly engaged in rice cultivation.

[IFC extends microfinance loans in the Philippines](#)

(PCC)

The International Finance Corporation (IFC) is extending up to 750 million pesos (US\$15 million) in debt financing to two of the Philippines' largest microfinance institutions, CARD Bank and CARD SME Bank, to help keep businesses afloat and save jobs as the country grapples with the economic impact of the Covid-19 pandemic. The investment aims to benefit over 60,000 companies, of which 44,000 are micro, small and medium enterprises (MSMEs) owned or led by women. The two institutions, which are part of the Center for Agriculture and Rural Development – Mutually Reinforcing Institutions Group (CARD MRI), have more than 120 branches and serve four million customers. Support from the Women Entrepreneurs Finance Initiative (We-Fi) in the form of performance-based incentives will help the banks reach pre-defined targets for lending to women-owned or -led small and medium-sized enterprises (SMEs).

[Sour tamarind research gets DOST boost](#)

(Sun Star)

THE successful promotion and up-scaling of the Aglibut sweet tamarind variety in Pampanga and Central Luzon had prompted the Department of Science and Technology (DOST) to pour P35 million into its research and development. The research will focus on sour tamarind due to its tempting commercial prospects. DOST is aiming at replicating part of the success of the Aglibut sweet tamarind program by increasing the number of sour tamarind trees in the region, increasing the yield of sour tamarind varieties, and augmenting the supply of raw materials for food processing. Marita Carlos, director of the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD), said that sour tamarind has considerable commercial possibilities in the market. The program may even bridge the huge gap between local production and raw material requirements of the food processing sector.

New Research

[Retired agriculture scientist attempts revival of aromatic rice varieties of Odisha](#)

(The Times of India)

Odisha is home to hundreds of aromatic rice varieties which are on the verge of extinction. To revive the aromatic small grain rice varieties of the state, rice scientist and honorary professor in plant breeding and genetics at the Orissa University of Agriculture and Technology (OUAT), S R Das has started a project to collect the seed of these indigenous rice varieties and promote its cultivation among farmers.

[Philippines releases heat-tolerant rice varieties](#)

(Philstar)

The Department of Agriculture is ready to release for commercialization the country's first heat-tolerant rice variety amid worsening climate change impacts. The national cooperative test of the Philippine Rice Research Institute has approved the release of NSIC RC 600 and RC 602, the first high temperature-tolerant rice varieties. The varieties will be approved and registered by the National Seed

Industry Council for commercialization. Norvie Manigbas and Nenita Desamero, lead breeders of the varieties, said it took 10 years of breeding as a response to the threat of less rice production due to increasing temperature.

[Nutrient removal by rice–wheat cropping system as influenced by crop establishment techniques and fertilization options in conjunction with microbial inoculation](#)

(Nature)

Nutrient uptake by the rice–wheat cropping system (RWCS) is an important indicator of soil fertility and plant nutrient status. The hypothesis of this investigation was that the rate and sources of nutrient application can differentially influence nutrient removal and soil nutrient status in different crop establishment techniques (CETs). Cropping system yield was on par in all the CETs evaluated, however, there were significant changes in soil nutrient availability and microbiological aspects. The system nitrogen (N), phosphorus (P), potassium (K) and zinc (Zn) uptake in aerobic rice system followed by zero tillage wheat (ARS-ZTW) was 15.7–17.6 kg ha⁻¹, 0.7–0.9 kg ha⁻¹, 7–9.8 kg ha⁻¹ and 13.5–23.1 g ha⁻¹ and higher than other CETs. The formulations of *Anabaena* sp. (CR1) + *Providencia* sp. (PR3) consortium (MC1) and *Anabaena*–*Pseudomonas* biofilm (MC2) recorded significantly higher values of soil chlorophyll and microbial biomass carbon and positively affected cropping system nutrient uptake and soil nutrient balance, illustrating the beneficial effect of microbial inoculation through increased supply of biologically fixed N and solubilised P. Zinc fertilization (5 kg Zn ha⁻¹ through ZnSO₄·7H₂O as soil application) increased soil DTPA-extractable Zn by 4.025–4.836 g ha⁻¹, with enhancement to the tune of 20–24% after two cropping cycles of RWCS. Our investigation recommends the need for change in the present CETs to ARS–ZTW, along with the use of microbial inoculation as a means of significantly enhancing cropping system nutrient uptake and soil nutrient status improvement.

[Narrowing uncertainties in the effects of elevated CO₂ on crops](#)

(Nature)

Plant responses to rising atmospheric carbon dioxide (CO₂) concentrations, together with projected variations in temperature and precipitation will determine future agricultural production. Estimates of the impacts of climate change on agriculture provide essential information to design effective adaptation strategies and develop sustainable food systems. Here, we review the current experimental evidence and crop models on the effects of elevated CO₂ concentrations. Recent concerted efforts have narrowed the uncertainties in CO₂-induced crop responses so that climate change impact simulations omitting CO₂ can now be eliminated. To address remaining knowledge gaps and uncertainties in estimating the effects of elevated CO₂ and climate change on crops, future research should expand experiments on more crop species under a wider range of growing conditions, improve the representation of responses to climate extremes in crop models, and simulate additional crop physiological processes related to nutritional quality.

[Discovery of chemical clue may lead to solving cacao's black pod rot mystery](#)

(Mirage News)

The finding of relatively high levels of the antimicrobial compound clovamide in the leaves of a disease-resistant strain of cacao has significant implications for breeding trees that can tolerate black pod rot, according to Penn State researchers who conducted a novel study. The discovery is significant because this fungal disease is a serious problem in all areas of the world where cacao is grown, noted researcher Mark Guiltinan, J. Franklin Styer Professor of Horticultural Botany and professor of plant molecular biology, College of Agricultural Sciences. Black pod rot, caused by the fungus *Phytophthora*, causes pod losses of up to 30% and kills as many as 10% of the trees annually.
