

AGRI STIMULUS



Since 1985



This issue marks the completion of one year of the AgriStimulus Newsletter. In this issue we provide a snapshot of news that caught attention of Agri Industry which were broadly categorized into emerging opportunities in **crop production**, changing face of **agrochemical sector**, innovations in **agtech sector**, new approaches on managing the **supply chain** and **policy interventions** impacting agriculture.

EDITORIAL

Higher-income for farmers, diversified crop production, increased output, and higher value addition for produce are essential to take Indian agriculture to break the year-on-year growth barrier at 3 to 4 percent. Globally, economies with a strong competitive advantage in field crops, oilseeds, horticulture, and nutrition-focused crops have further enhanced their competitive advantage, duly deploying high investment in research, and focusing on market-relevant products increasing consumption and global demand. The pace of innovation in crop improvement and value addition has been more rapid in the last decade due to understanding of genomic diversity for crop improvement and process technologies for value addition that are safe and environmentally superior.

Over the last two decades, Indian enterprises in the farm input sector lagged in technology significantly. Our productivity in key cereal crops other than wheat has lagged considerably behind several countries. Bangladesh has higher productivity for rice, and China has significantly higher



K. Vijayaraghavan
Chief Executive Officer (CEO)-
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productivity for many crops, including maize. In horticulture, though we are a significant producer in volumes, the consumption is mainly domestic and in low value-added forms. Our apples are less consumed in Southern, Eastern, and Western markets of India than imported apples from the USA, Chile, New Zealand, and other regions. Our apples are primarily exported to Nepal

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Editorial

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Sathguru Management Consultants

Ag trends 2020 at a glance

- ⇒ Changing face of Agrochemicals sector
- ⇒ Innovations in AgTech
- ⇒ Policies and regulations impacting Agriculture
- ⇒ Emerging opportunities in crop production
- ⇒ New approaches to manage the supply chain

News

and Bangladesh. We produce a high citrus volume, but our process industry almost entirely imports citrus concentrate from South America for citrus-based beverages and value-added products. The bulk of our citrus varieties are not quite suitable for concentrate production.

Where have we lagged in our journey to bring contemporary farm products to markets with a global competitive advantage? The stagnation and deterioration of the competitive advantage may be attributed to:

Lack of investments in genetics improvement: The public research in genetic improvement of a wide range

of crops is affected by meager investment in research. India grows over 40 crops of economic importance, and our competitive edge is currently limited to a couple of tropical nature crops. The meager public research funding is distributed to all these 40 crops with a lack of modern genetic tools adopted in several of these crop improvement programs. The private sector seed companies embarked on a substantial investment in crop improvement with the cotton crop, hybrid maize, and other row crops but were constrained in carrying this forward with the aborting of the development of GM traits along with the abandonment of Bt Brinjal and other transgenic crops by the national regulatory system. Molecular tools globally have triggered doubling crop productivity in less than a decade for several crops. With the deployment of molecular tools in genetic improvement, the US and other regions have demonstrated a significant spurt in productivity with crops resilient to critical stress factors arising due to climate change impact.

In the crop protection segment, we focus on mostly off-patent generic molecules. Plant protection microbes are significantly getting to the fore due to the understanding of plant and non-plant microbes providing bio-stimulant and insecticidal properties and enhancing output traits. While we have seen a couple of Indian companies having patented proprietary activities, getting these products approved for their application is a long-drawn process. It has been easier to register with Central Insecticide Board, products approved elsewhere and generics rather than to register



inventor products from homegrown companies.

Other climate-change mitigating innovations such as solar irrigation systems are slow to be adopted. However, the policy planners have pronounced strong commitment to such an initiative without resource commitment to bring rapid adoption of solar irrigation systems at the farm level.

In the sphere of value addition, we see a spurt of early-stage companies making efforts to adapt to contemporary technologies compared to established large entities. However, their ability to raise capital for real assets and to manage to secure the working funds needed to place their products in the market is significantly limited. A tenth of investment in e-commerce companies focused on food supply has been invested in post-harvest value creators.

We have attracted considerable investment in farm-focused digital technologies and linking solutions that connect farmers to markets. Ubering fresh produce to market is needed, but the entry of many players in this segment will create high mortality in this segment without any significant investment in post-harvest assets. Asset light models for post farm aggregation and delivery is not materially going to enhance the value chain enhancement. Digital farm technologies can be truly effective if appropriate yield-enhancing input

materials are accessible by farmers.

While on-farm solutions with digital technologies are adopted at a demonstration level rather than a commercial level, the lack of policy on drone application and high dependence on China for securing drones and sensors has impacted the ability to adopt these innovations at large scale. A new paradigm with large enterprises investing significantly in post-harvest technologies and digital tools is needed to gain from the application of digital technologies in the realm of farm input and the value chain.

These limitations point to the necessity for Indian agriculture innovators to adopt contemporary innovation and to support innovators to bring products to markets with ease of regulations and encouragement for innovation to be applied in the marketplace. We have no scientific competency shortage, but taking science to market is possible only when their application's hurdles are removed. We need to recognize that any life science innovation is short in its lifespan, with continuous innovation required to stay competitive.

We believe that there is no shortage of innovation to gain a competitive advantage in Indian agriculture. However, achieving the fruits of such innovation lies in the freedom to apply innovation and acceptance of the reality that we need to leapfrog in our quest for higher productivity in market-relevant product portfolios.

AG TRENDS 2020

Changing face of agrochemicals sector



Agrochemicals are one of the key inputs in agriculture for crop protection and higher crop yields. India ranks fourth in agro-chemical production after the US, Japan and China and has a great opportunity to make itself a global manufacturing hub for agro-chemicals. The sector also demands extensive data to be provided by the companies to meet the regulatory guidelines and to remain competitive. To meet this demand, the companies are exploring outsourcing testing and manufacturing to CRAMS (Contract Research and Manufacturing Services) for economic as well as strategic purposes. However, on the other side, there is also an increasing concern associated with the negative impacts on the environment and health caused by large amount of agrochemicals applied to produce different crops worldwide. Research and Development companies are transforming their activities to provide a more holistic approach to provide solutions integrated with improvements in application technology such as nanotechnology. The agrochemical companies are also developing products based on biochemicals/biologicals that can provide an alternative or supplement to traditional chemical pesticides and provide new modes of action. These developments may raise new questions but provide unique opportunities to reduce potential environmental impacts.

View articles related to Agrochemicals [here](#)

- ⇒ [Nanoformulations for Efficient Delivery of Agrochemicals](#)
- ⇒ [Biochemical & Biological Nematicides – Future of Phytoparasitic Nematode Management](#)
- ⇒ [Controlled release fertilizer driven sustainable agriculture systems](#)
- ⇒ [Opportunity for India becoming a global agro-chemical manufacturing hub](#)
- ⇒ [Role of CRAMS in Evolving Agrochemical Industry](#)
- ⇒ [Revolutionizing Ag-Biologicals industry: Microbiome, an innovative approach](#)
- ⇒ [Recent Advancements in Agrochemical Regulations](#)

Industry speak

[Industry's view on changing dynamics of Indian agro-chemical sector](#)

Prashant Hegde, CEO-Agribusiness, PI Industry Ltd.

New approaches to manage the supply

Agriculture supply chains are extremely complicated mainly due to the involvement of the fragment networks. Each stage of the supply chain demands accountability and multiple decisions by the players. To facilitate monitoring of the different stages, block chains are being implemented by major companies which uses a centralized system that is accessible, ensures storing and synchronization of data across multiple sites, geographies and organizations at consensually agreed nodes. All changes in the documents are immediately updated across all nodes, which makes tracking easier. This ensures traceability and accountability at all the different nodes of the supply chain. The traceability of the various players in the supply chain will enable tracing the product's movement from farm to fork and in turn increase visibility and profitability.

To ease the farmers' burden for agricultural supply chain, the Government is trying to strengthen farmgate infrastructure which will provide impetus to the agri-food value chains. It has started its initiatives such as, e-Nam created for unified national market for agricultural commodities.



View articles related to Supply Chain [here](#)

- ⇒ [Farming as a Service- A promising model to explore!](#)
- ⇒ [Disrupted agri value chain operations: Are the government intervention efforts enough?](#)
- ⇒ [eNAM: Online Mandis bring Relief to Farmers](#)
- ⇒ [Farmgate Infrastructure Development a prelude to Enhance Economic Profile of farmers](#)
- ⇒ [Increased Application of Blockchain Technology in Indian Agriculture Value Chain](#)
- ⇒ [Traceability in Agri - Food Industry and Need for Standards](#)

AG TRENDS 2020

Emerging opportunities in crop production



Agriculture is the main source of food for the world's population and is affected by various factors such as dynamic policies, economic resources, market situations, quality of seed and environmental conditions. Innovative approaches are required to feed the increasing population and also to meet the challenges of reducing arable land, increasing demand for more sustainably grown food, and the threat of climate change. Cereals are considered as the most important source of the total food consumption. However, researchers are trying to unlock the potential of alternative crops which provides opportunities to build spatial and temporal heterogeneity thereby enhancing resilience to biotic and abiotic stresses and also has a tremendous opportunity to build alternative food systems. Few of the alternative crops include Amaranthus, Buck wheat, Moringa, Faba bean, etc. These crops can contribute to food and nutrition security of the country. In addition, crop biofortification also plays an important role in addressing the challenges associated with nutrition security. Choosing new crops with promising marketing outlook can be advantageous and help contribute to the crop production systems.

View articles related to Crop Production [here](#)

- ⇒ [Black Rice – the Super food with potential to revamp our food palette](#)
- ⇒ [Asafoetida Cultivation in India – A promising business opportunity!](#)
- ⇒ [Underutilized crops for improving nutritional security](#)
- ⇒ [Adoption of biofortified crops through PPP model](#)
- ⇒ [Challenges and Opportunities for seed companies](#)
- ⇒ [Cold Plasma – An emerging Seed treatment technology](#)
- ⇒ [Oil palm in sustainable cropping system](#)
- ⇒ [Increase in Kharif sowing – Will it be boon or bane for farmers?](#)

Industry speak

- ⇒ [Improving Dairy Productivity by Efficient Nutrition Management using Forage Crops](#)
Prashant Belgamwar, Business Director – South Asia, Advanta Seeds
- ⇒ [Biofortification: A Transformative Innovation to Unlock Agriculture for next Nutrition Revolution](#)
Binu Cherian, Country Manager, HarvestPlus, India
- ⇒ [Seed Enhancement](#)
Dr. Manish Patel, Executive Director, Incotec

Innovations in AgTech



Agtech is revolutionizing agriculture. Combining technology and agriculture has positively impacted crop productivity, postharvest operations, marketing and improved profitability for all stakeholders. Artificial intelligence (AI) offers tools which have proved to increase farmer revenue. Various software to monitor soil and crop health, sowing and harvesting and providing protection from pests are the key areas in which the farmers have benefitted through AI and Agtech. Modern AI based technologies are also being used in seed value chains and are facilitating cost-effective solutions for the industry along with improving operational efficiency across seed business operations. Remote sensing is another technology which is transforming agriculture. It facilitates data collection from complex landscapes and also enables timely estimations of crop related data such as soil health, pest and disease identification, irrigation management, etc. and helps in forecasting and preparing for the same. The current COVID-19 situation has demonstrated the need and the opportunity to invest in such upcoming and promising technologies. This growing market offers a lot of potential which will benefit the industry as well as the farmers.

Industry speak

[Technology in Agriculture– The Path Less Taken?](#)

Venkatram Vasantavada, MD & CEO – SeedWorks International

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- ⇒ [AI Solutions in Agriculture](#)
- ⇒ [Artificial Intelligence Transforming Traditional Farming](#)
- ⇒ [Adopting AI based solutions to transform seed value chains](#)
- ⇒ [Remote Sensing, a promising Agtech tool](#)

AG TRENDS 2020

Innovations in AgTech



COVID-19 may have brought in turmoil in economies of scale, but it has also triggered the urgency to prioritize and actively deploy several regulatory initiatives to drive changes in the sector. Several regulatory advancements and changes have been put forth by the government in the last year to drive growth and build in a more resilient system. The banning of large number of popular pesticides and increasing trend of Bio-pesticides registrations indicate the changing dynamics of the agri-input industry. With regulations in place for the biostimulant industry, farmers will benefit from genuine products and will help in improving the farm yields and thereby drive growth in the industry through encouraging investments in the innovative product development. The newly proposed pesticide management bill aims to regulate the pesticide market by ensuring safe production, distribution, storage, and disposal of effective pesticides. Though this aims at removing the spurious pesticides from the supply chain, but concerns related to addressing technical assistance to farmers on pesticide usage remain unaddressed. While in case of the new Seed Bill, the increase in magnitude of crop registrations will be a major challenge with more than 100 crops from different agro climatic zones and hundreds of seed companies with their Research and Development. Although the government hopes that the new Farm Bills will help in improving farm gate prices triggered through competitive markets and higher private investments in the food supply chain, the bills require few regulatory and statutory provisions to optimize its full potential.

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- ⇒ [Pesticides Management Bill, 2020 – A step towards restricting the use of spurious pesticides and regulating the pesticide market](#)
- ⇒ [Seed Bill, 2019: Time that new Seed Bill sees light of the day; becomes an Act in the near future](#)
- ⇒ [Farm Bills 2020 – A boon or bane for Indian farmers?](#)
- ⇒ [Future of Contract farming: An Ordinance in the Right Direction](#)

NEWS

New cess for agriculture infrastructure and development to improve agri infrastructure

The budget has brought new cess for agriculture infrastructure and development (AIDC) as there is an immediate need to improve agricultural infrastructure. AIDC of Rs. 2.5 per litre on petrol, Rs 4 per litre on diesel, 2.5% on gold and silver, 100% on alcoholic beverages, 17.5% on crude palm oil, 35% on apples, 1.5% on coal, lignite and peat, 5% on fertilizers, including urea and 5% on cotton.

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DGCA permits Agri ministry to use drones for yield estimation

Directorate General of Civil Aviation (DGCA) has given one year permission to agriculture ministry for the use of drones for remote sensing data collection in farm areas of 100 wheat and paddy producing districts under the crop insurance scheme. One of the condition is that drones can operate only in day time and the ministry will have to maintain records of each flight.

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NEWS

Central Government aims to form 2,500 FPOs in 2021-22

The Farmer Producer Organizations (FPOs) can play a crucial role in successful implementation of new farm laws. Therefore, Central Government plans to spend 700 crores in setting up 2,500 FPOs which will provide better farming ecosystem to around 60,000 farmers and further help in reaching the target of doubling farmer's income.

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Surge in prices for onion, pulses and edible oil

Onion prices are 25- 30% higher than last month mainly because there was yield loss due to excessive rainfall whereas due to shortage in international supply chain, edible oil prices have increased. Masur prices have increased by 10% and urad by 4% than last month.

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Augmenting trading system with agricultural services on eNAM

Government integrates post-harvest agricultural services like quality check, sorting, grading packaging services, insurance, trade finance and warehousing to the trading system of eNAM with an aim to create a holistic agri marketing ecosystem in India.

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Indian rice exports set to almost double this year as importers queue

South American, Eastern African and South East Asian countries have shown interest in importing rice from India. In 2020, total rice exports have shown 80% increase. Shipments of basmati rice has grown by 19%, while non-basmati has increased 129%. With the increasing demand and 1.27% expected increase in production, exports are set to rise significantly.

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Biofortified Vitamin A Orange Maize launched

The vitamin A biofortified orange maize launched recently not only targets nutritional deficiency, but also provides the farmers agronomic benefits as biofortification makes the maize crops more disease and drought resistant.

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Use of CRISPR by targeting the promoter region to increase number of kernels

Cold Spring Harbor Laboratory (CSHL) has collaborated with University of Massachusetts to use CRISPR technique to increase the number of kernels per cob by targeting the promoter region. Their next step would be figuring out which part of the promoter region is crucial and get a better allele for more grain yield or ear size.

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MOUs signed by IIHR with four Private Firms

IIHR signs MOUs with four private firms namely- Rainbow Agro Vet Seri Technologies of Andhra Pradesh, P J Margo from Bengaluru, Greentech Fertilizer Corporation from Thiruvananthapuram and La Ferme De Peter LLP of Chennai to promote and commercialize 14 of its technologies in India.

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SaaS and digital tech to provide transparency and efficiency in agri supply chain

The acquisition of FarmGuide by DeHaat will enable combination of spatial technology and data science platform with DeHaat's digital tech and physical platform to provide fully customized relevant insights and data driven crop advisory solutions to farmers and agri businesses.

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Budget supports Micro Irrigation Sector of India by doubling the MIF

In line with the Government's vision of "per drop more crop", the 2021-22 Budget focuses on Micro Irrigation Sector by doubling the Micro Irrigation Fund (MIF) to 10,000 Crores which will further help to reach the target of micro irrigation coverage across 1 crore ha in five years.

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40% drop in yield of potato likely

Owing to the gum disease and potato melting, it is estimated that the potato yields will be about 30-40% lesser compared to previous year. Lack of appropriate agricultural equipment and high cold storage costs will further burden the farmers.

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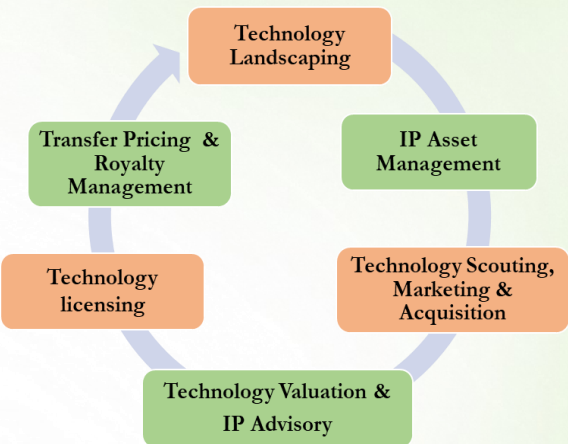
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Blogs



Rebooting agricultural supply chains – how the MP model can benefit every state



Seed regulatory compliance key to ensure FTO for a seed company



Key Enablers Driving Growth of FPOs and FPCs

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