

Bayer CropScience Limited

64th Annual Report
2021-22



//////// Science for a better life

On the Annual Report cover:

Bayer is at the forefront of leading positive change in the areas of digitization, collectivization and sustainability in agriculture. Aligned with the nation's vision, the Company is focused on scaling up and introducing new interventions, with a gender-smart approach, to benefit millions of smallholders, promote women in agriculture and make Indian agriculture globally competitive.



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The Future of Farming: Revolutionizing Indian Agriculture with Drones



As of 2021, India stands 71st of 113 major countries in terms of the Food Security Index. With growing consumer demand, diminishing resources, labor shortage and disrupted life sciences and food system value chains, the agriculture sector is at a critical juncture. The industry is tasked with the responsibility to reconcile key issues in order to make strides toward farm productivity, food security and sustainability.

Fortunately, modern technology offers a multitude of potential solutions to alleviate some of the burdens faced by growers from labor shortages and low farm productivity to limited access to the know-how to mechanize agricultural processes, or to credit facilities and new technologies and thereby facilitate positive change. By augmenting investments in technological innovations and digital farming applications, food production capabilities can be enhanced. This, in turn, will increase agri productivity, leading to increased crop yields and sustainable incomes for farmers while transforming Indian agriculture and making it globally competitive.

To this end, Bayer has been working closely with the Government of India, Ministry of Agriculture and Ministry of Civil Aviation, industry bodies, regulators, policymakers and drone manufacturers over the last few years to introduce a conducive policy framework for the implementation of drone

technology in Indian agriculture. As a result of these endeavours, in 2021, Bayer became the first agrochemical company to obtain approval to conduct drone-based spraying trials at 10 R&D locations across the country.

Equipped with global insights and active collaboration with Indian academia and research institutions, Bayer has been supporting India's smallholders to drive significant value from these technological solutions. This aligns with the Company's broader commitment to spurring food security. Specifically, the organizational aim is to support 100 Million smallholder farmers in low and middle income countries by 2030 in producing enough food to feed themselves and others and enhance their incomes.

With the recent encouraging developments, Bayer has secured the first drone application labels in rice crop for two of its flagship brands Nativo & Vayego in India. The recent interim approval given by the Ministry of Agriculture for agrochemical usage through drones has also created an encouraging environment for the industry. All stakeholders related to the segment are eagerly looking forward to the swift adoption of drone technology. With first labels in hand and interim approvals in place, Bayer is eyeing to commence the commercial usage of drone spraying services from Kharif 2022 for smallholders in key states. The commencement of services will benefit farmers across the

states of Punjab, Haryana, Madhya Pradesh, Odisha, Maharashtra, Andhra Pradesh and Karnataka. This move will also benefit Farmer Producer Organizations (FPOs) and progressive farmers and provide opportunities to entrepreneurs interested in utilizing drone services for their enterprises. Bayer will support such entrepreneurs by facilitating technology access, training on technology, crop and product know-how, business support and operational training.

Based on the initial achievements of drones, its benefits have the potential to cascade across different areas of farming, with growers able to potentially explore its application capabilities in aiding multiple crops and integrated with imaging capabilities will also develop digital end-to-end solutions for smallholders.

As more growers understand and become comfortable using this technology, drones have the potential to enable sustainability in various ways, with productivity and sustainability co-existing as a result of advancing science-driven innovations. The precise, focused technique of drones ensures water use efficiency, operator safety, farm operation efficiency and addresses labor issues. Moreover, drone usage in fields is potentially a critical step in reversing the significant impact of climate change on land degradation. It can transform the vital sector, so an era of precision agriculture can take flight.

With these initiatives, Bayer moves a step closer to its digitization and sustainability goals to support smallholder farmers. The Company remains fully committed to continuing its effort to advance such technologies to help shape the future of farming in ways that benefit growers, consumers and our planet.



Working together to create a bigger impact!



Najia Hilal, of the Sahayaka Women Producer Company Ltd.

Doubling farmers' income by 2022 is a national priority, however, a multitude of factors such as access to inputs and credit, adverse seasonal conditions, lack of credible agronomy advisory and poor market linkages continue to create hindrances in reaching this critical target. Aggregation and consolidation through Farmer Producer Organizations (FPOs) will be a critical factor in creating new growth paradigms for smallholder farmers.

FPOs have been recognized as a very effective and appropriate model that seeks to improve a farmer's own economic and social situation and that of their communities. A vibrant and strong network of FPOs not only helps to enhance farmers' income but also supports the 'ease of doing business' for the companies working in the agriculture value chain by providing a platform to reach out to a large smallholder farmers base and enhance farm produce productivity.

To further strengthen grower collectivization drive and support farmer collectives to evolve them into a profitable and self-reliant business entity, Bayer is currently collaborating with 1,000+ FPOs across India and intends to take the lead in capacity building to empower and support millions of smallholder farmers.

From upskilling farmers to training them in alternative and sustainable farming techniques, advancing digitization and improving market linkages to eliminate middlemen, Bayer is empowering smallholder farmers to improve their income and help strengthen agriculture in India. Further, special support and training for women-led FPOs and Farmer Producer Companies (FPCs) to support women farmers is also integrated into mainstream commercial farming operations at Bayer.

Najia Hilal runs one such FPO called the Sahayaka Women Producer Company Ltd. registered in 2016. It has doubled its earnings, by empowering a total of 3,944 member women farmers cultivating over 4,000 acres of agricultural land. From ₹ 82 lakh turnover in 2019-20 to ₹ 1.5 Crore in 2020-21, they have experienced substantial growth in their profits through the support of Bayer.

“Although we had a lot of experience in agriculture, we still were not able to reap the profits we deserved. We didn’t know much about the market rate or even the difference between bad and good quality seeds. But things changed after I joined the FPO supported by Bayer,” says Najia.

To explain the impact she adds, “For instance, earlier to cultivate on an acre of land we would

use around 20 kg of seeds and yield not more than 15 quintals of produce. Now with Bayer’s high-quality seeds, we can reap a yield of over 20 quintals of produce by just sowing 6 kg of seed. This means we are investing less and profiting more.”

Bayer’s ‘Grower Collectives Capacity Building Initiative’, along with value chain partners intends to support many such Najia Hilals by boosting farming revenue aggregation by aiding FPOs across rural India.

Source: The Better India - <https://www.facebook.com/thebetterindia/posts/10159864370789594>



DirectAcres for sustainable rice cultivation



India grows rice on around 44 Million hectares with transplanting being the predominant cultivation practice. Methane emissions from rice, where the land remains in foot-high standing water throughout the season are the highest from cropland and the second highest source in agriculture, surpassed only by emissions from enteric fermentation in livestock. The amount of methane emitted from the rice is strongly linked to the practices (flooding and fertilizing) applied by the rice farmers. This needs to be addressed quickly to safeguard smallholder farmers' livelihood by keeping it economically viable & environmentally acceptable with a sustainable crop system.

Directly Seeded Rice (DSR) has been an alternative viable option for the last many years predominantly in upland areas in rainfed conditions. Farmer's endeavors with DSR in irrigated Puddled Transplanted Rice (PTR)-dominated areas remained limited over the years due to available germplasm fitment issues, yield penalties, weed menace, nutrient deficiencies coupled with poor know-how. The COVID-19 outbreak triggered labor shortage and forced

farmers to opt for DSR in the Northern part of India, which has been significantly supported by agronomic solutions from State agriculture universities, mechanization (availability and affordability) from state governments and incentives to change the cultivation practice.

The transition is not easy and needs cross-industry support to make farmers successful without compromising on ROI. Bayer piloted the DirectAcres project in 250 acres in Punjab & Haryana last year and scaled it up to 3,000 acres in 2022. The key objective of DirectAcres is to make DSR smallholder farmers successful in the first attempt through a seamless agronomic advisory linked with a defined component of inputs (High yielding seeds + Weed management program) as part of the package. Bayer is working hand-in-hand with farmers to ensure uniform, weed-free crop stand in the first 45 days and beyond to ensure PTR equivalent returns on investment. Bayer is also collaborating with International Rice Research Institute (IRRI) and The International Maize and Wheat Improvement Center's (CIMMYT), Cereal Systems Initiative for

South Asia (CSISA) to scale up DSR in Eastern Uttar Pradesh, Bihar and Odisha. All farmers participating in Bayer's DirectAcres program have an option to participate in the Bayer Carbon Project and earn additional revenues from the program by trading carbon credits.



Dekalb 9208: A Golden Launch



Corn is India's third-largest cereal crop (after rice and wheat), with cultivation across ~9 Million hectares. Besides being a staple food crop, corn is used as animal feed & biofuel and finds use in a wide range of industrial food products. This makes corn an emerging cereal crop of significant importance for India's national food security. Currently, corn production in India stands at 27-28 Million tonnes, with an average productivity of 3.1 tonnes per hectare, compared to global averages of ~5.8 tonnes per hectare.

BayerCropScienceLimited launched DKC 9208, a high-yielding hybrid spring season corn seed for progressive corn farmers in Punjab, Haryana and Uttar Pradesh. It is Bayer's latest product offering from its DEKALB® brand portfolio of high-yielding hybrid corn seeds that enjoys immense trust from Indian farmers. DKC 9208 with its high yield potential, wider adaptability and strong plant type has empowered progressive corn farmers of Punjab, Haryana and Uttar Pradesh to boost their corn yields and improve the state's contribution to India's national corn output. Farmers in these states are already leading the way in terms of corn production and the adoption of new technologies. With DKC 9208, farmers were able to achieve higher yields of superior quality corn, this spring season.

As of today, Bayer currently markets ~25 DEKALB® hybrids in India, all of which have been bred and developed specifically to suit India's diverse agronomic and climatic conditions. DKC 9208 in particular provides better plant strength compared to other hybrids and delivers uniform, long corn cobs and shiny grains with strong yield stability and higher yield potential. This new corn hybrid is suited to multiple soil types and a wider sowing window and provides farmers flexibility in their planting

decisions. It is best suited for planting from January to March and will help corn farmers achieve high returns even in difficult weather conditions.

Corn is a key crop for Bayer and it remains committed to supporting corn farmers with innovative seed and crop protection products along with integrated crop solutions to help them achieve higher productivity and profitability per acre.

Partner testimonial



"I have been sowing DEKALB Hybrids in my fields since 2010 and am very much satisfied with the overall performance. DEKALB 9208 is another hybrid launched in the series by Bayer in 2022 and is performing excellently in the Spring Corn segment. I am looking forward to a bumper yield from DKC 9208 in the current season in spite of the harsh weather conditions. It gives me immense pleasure that Bayer is relentlessly working towards enhancing farmers' income by providing good quality seeds, well suited to climate change and expecting the same in near future."

- Harvinder Singh, Shahazadpur Village, Kurukshetra, Haryana



"I have grown DKC 9208 during Spring as part of the initial demonstration and also planted it in Spring 2022. I harvested 3-4 q/acre more as compared to DKC9108. Cob length is more and grain color is attractive. This year, I have planted 20 acres of land with DKC 9208. We are planning to plant this hybrid in Silage."

- Jaswinder Singh Sangha, Jalandhar, Punjab