htspotlight | MARKERS OF MOHALI

Food for research

SCIENTIFIC MARVEL Mohali is home to National Agri-Food Biotechnology Institute, a state-of-the-art research facility that has scientists working to improve nutritional quality of food. Their latest is the highly nutritious coloured wheat that carries health benefits of blueberries

The key areas that the scientists at National Agri-Food Biotechnology Institute are working on include designer crops with high nutrition, increasing shelf life and processing quality of food. RAVI KUMAR/HT

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MOHALI: It is an imposing building that can be a tad intimidating too, especially when you are told about the scale of innovations that go on here. Housed in the 'agri-food cluster' in Mohali's Sector 81, the National Agri-Food Biotechnology Institute (NABI) is the first-of-its-kind institute in the country. Though established in 2010, NABI moved to its own sprawling campus in March 2017. In fact, the cylindrical entrance to the building has made it quite a landmark and if, like us, you are curious to know what work exactly happens here, read on.

AREAS OF RESEARCH

Step behind the glass doors and you enter a completely different world. There are well-spread out floors dedicated to rows of research laboratories and offices of scientists. That this place is a hub of some of the best minds working on agri-biotechnology becomes apparent as one spots the wall-to-floor panels that list out NABI's recent achievements in agri-food innovation. "The main research focus of NABI is to harness biotechnological tools in the area of agriculture biotechnology, food and nutritional biotechnology. Our aim is to provide sustainable and novel solutions for quality food and nutrition," explains Dr T R Sharma, executive director of NABI.

The key areas that the scientists at NABI are working on including designer crops with high nutrition, increasing shelf life and food processing quality. "While the Green Revolution has saved the country from recurrent problems of hunger, we still need to conquer the menace of hidden hunger because of malnutrition," says Dr Sharma mentioning how India has produced more than 250 million tonnes of food grain but a substantial amount of it lost due to lack of long-term storage and post-harvest processing facilities. "We would like to concentrate more on bringing a nutritional revolution in the country by applying latest molecular biology techniques to develop designer crops for better nutrition, besides developing specialty and functional foods," he adds.

COLOURED WHEAT AND BANANA

Recently, NABI was in the news for developing antioxidant-rich coloured wheat to help combat malnutrition. "According to Global Food Security Index, a significant chunk of Indian population is malnourished, mainly due to micronutrient deficiencies. So we worked on improving the nutritional quality of wheat, a staple crop consumed by a majority of Indians," informs Dr Monika Garg, a scientist at NABI who specialises in wheat processing and nutritional quality.

A post-doctoral fellow from Tottori University, Japan, Garg helped develop coloured wheat (black, blue and purple) adapted to Indian climatic conditions and with an acceptable yield potential.

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"The colour is due to high anthocyanin content. This shows the presence of micronutrients like iron and zinc, and is many times more beneficial than ordinary golden wheat," explains the senior scientist, who is inundated with queries from farmers regarding the new variety.

One often hears of fruits like apples that come with a layer of wax to help prolong their shelf life. "There is an urgent need for saving perishable agri-produce by using biotechnological approaches," points out Dr Sharma. Scientists at NABI are working on non-toxic and edible plant-based film coating made from wheat straw and oat bran to help prolong the life of a fruit. Currently in the final stages, experiments with apple have been very fruitful, assures the scientist.

"The deficiency of micronutrients remains an enormous global problem in developing countries," agrees Dr Ajay Kumar Pandey, another senior scientist working at NABI. Pandey's area of specialisation includes plant molecular biology, functional genomics and phytic acid biology in plants. "Currently, I am working on metabolic engineering of phytic acid pathway for improving iron bioavailability in wheat," explains Dr Pandey, who has been with NABI for six years.

Scientists at the institute are also working on pro-Vitamin A biofortification of banana. "Vitamin A deficiency is on the rise and we are working to increase the level of Vitamin A substantially in certain varieties of banana. It will be most noticeable for its bright yellow colour," Dr Sharma lets us know. Speaking of fruits, NABI is also developing seedless fruits.

PARTNERING WITH INDUSTRY

To make sure that these advances in science help farmers and the community at large, NABI has been regularly issuing Expression of Interest by inviting industries, registered companies or firms wanting to commercialise the breakthroughs at NABI. Recently, the institute also signed an MOU with Farmgrocer Products Ltd Ambala, a company established by a team of young farmers. They will not only cultivate coloured wheat with the help of farmers, but will also make healthy coloured wheat products and take them to consumers through their network.

SCIENCE FOR ALL

NABI is also keen to share its findings with the next generation. "We organise tours for school and college students to showcase our work to them. It always triggers curiosity among students who leave with a better understanding of what scientists here are working on," says Dr Sharma. Currently, the institute has under a dozen scientists working here, but it has a capacity for 110. "In another decade, we will have a large number of scientists working for us," sums up Sharma. The all-inclusive institute has its own farm and housing facilities.

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