

Success Stories:

Wheat: Unnat PBW343 has been developed by PAU, Ludhiana through marker assisted backcross breeding by pyramiding two leaf rust and two stripe rust resistance genes *Lr76-Yr70/Lr37-Yr17*. *Lr37-Yr17* along with a linked stem rust resistance gene *Sr38* have been introgressed from *Aegilops ventricosa* on wheat chromosome 2AL. Linked pair of genes *Lr76-Yr70* were introgressed from *Aegilops umbellulata* on wheat chromosome 5DS in the wheat wide hybridization programme at Punjab Agricultural University, Ludhiana. Unnat PBW343 is also the first commercial product from PAU wide hybridization programme. This variety is an improved version of mega variety PBW343, has an average plant height of 100 cm. It is resistant to leaf rust and stripe rust. It matures in about 155 days and has an average grain yield of 23.2 quintals per acre.

Rice: Development of Improved Basmati rice varieties with resistance to bacterial blight Indian Agricultural Research Institute (IARI) with the financial support from Department of Biotechnology (DBT), Ministry of Science & Technology, GOI, under the project “Development of biotic stress resistant rice through marker assisted breeding.

Dr. A.K. Singh has recently developed two bacterial blight resistant Basmati rice varieties namely, Pusa Basmati 1728 and Pusa Basmati 1718, which have been release by the Central Variety Release committee after testing in All India Coordinated Research Project. Of these, Pusa Basmati 1728 is a replacement of Pusa Basmati 1401 and Pusa Basmati 1718 is replacement of Pusa Basmati 1121, which are together grown on almost 1.40 million ha. area currently. Since, both varieties have been recently released, the area under cultivation is likely to pick up in years to come. The details are as follows:

Pusa Basmati 1728: It is a MAS derived near isogenic line of Pusa Basmati 6 with inbuilt resistance to bacterial blight (BB) governed by two genes for BB resistance namely, *xa13* and *Xa21* has been developed at ICAR-IARI, New Delhi. It has been released for Punjab, Haryana, Delhi, Jammu & Kashmir, Uttarakhand and western Uttar Pradesh) of the Basmati growing region of India. It has a seed to seed maturity of 140 to 145 days and average yield of 4.18 t/ha. It has shown highly resistant reaction to bacterial blight disease as compared to the severe susceptibility shown by parent Pusa Basmati 6. PB 1728 possesses extra-long slender grains with very occasional grain chalkiness, very good kernel length after cooking and very strong aroma.

Pusa Basmati 1718: It is a MAS derived bacterial blight resistant near-isogenic line of Basmati rice variety “Pusa Basmati 1121” possessing two genes governing resistance to bacterial blight disease namely, *xa13* and *Xa21* has been developed at IARI. It has been released and notified for the states of Punjab, Haryana and Delhi of the Basmati growing region of India. It has a seed to seed maturity of 136-138 days and average yield of 4.64 t/ ha. It exhibited resistant reaction with an SI of 2.0 (2014) and 2.3 (2015) as compared with its Pusa Basmati 1121, which showed SI of 7.0 (2014) and 7.7 (2015) in traditional Basmati growing locations. PB 1718 possess long slender grains (8.1 mm) with very occasional grain chalkiness, very good kernel length after cooking (17.0 mm), intermediate amylose content (22.2 %) and strong aroma.

Maize: The hybrids identified with enhanced pro-vitamin A, Fe and Zn would provide better quality protein and micronutrients, and play a major role in reducing the micronutrient deficiency. Pro-vitamin A rich version of Vivek QPM9 was identified for Northern Hill Zone by AICRP during 2017. This is country’s first pro-vitamin A rich hybrid developed through targeted breeding approaches. It is also rich in lysine and tryptophan, and earns the distinction of being country’s first multi-nutrient rich maize.