

# COLOURED WHEAT enriched with anthocyanins and zinc

Wheat is staple food crop and important source of calories for all economic sections of society especially in North India. According to Global Food Security Index 2016, 15.2% of the Indian population is undernourished. India also has the high diabetes prevalence (9.3%) according to Diabetes Atlas 2015 and it is on rise in urban poor population. This is the result of sedentary lifestyle and bad food choices. NABI has developed Biofortified coloured wheat (black, blue, purple) with high anthocyanin content 40-140 ppm) compared to white wheat (5-15 ppm). It is rich in Anthocyanins- a pigment that can impart health benefits similar to fruits like blueberries. But fruits are also rich in sugars that have bad effect on health. Anthocyanins act as antioxidants and remove free radicals from the body and help in prevention of cardiovascular diseases, diabetes, inflammation, cancer, obesity and aging. Coloured wheat developed at NABI also has enhanced Zinc content –one of the most deficient micronutrients in the developing countries. Zinc deficiency leads to skin problems and reduced ability to fight infections.



It has been developed by routine way of plant breeding. It has been developed by crossing high yielding Indian cultivars PBW550, PBW621, HD2967 with colored wheat procured from Japan and America. The color is due to genes from wild species. Our work has been published in American journal of cereal science.

We have carried out biochemical, cell lines based and mouse model studies on this wheat. These lines showed good antioxidant activity, anti-inflammatory activity, reduced obesity (high fat diet induced), helped in reduction of blood glucose and cholesterol levels, and formed good quality bakery products.

This year around 850 quintals of wheat has been cultivated at farmers field. Average yield of the crop was 13 quintals per acre, some farmers could get as high as 17 quintals per acre in the late sown condition. Average yield of normal white wheat at farmers field was 20 quintal per acre. Coloured wheat was purchased at double the minimum support price i.e. Rs-3250/- per quintal. So most of the farmers were benefited by the cultivation of colored wheat. We wish to increase the farm income and at the same time give the benefit of its good nutritional quality to the public.

Coloured wheat products have been protected by filing patent and registration with plant variety protection and farmers rights authority (PVPFRA). Besides this material has been registered with National Bureau of Plant genetic resources (NBPGR)

Price of products will be higher due to lower yield and benefit transfer to farmers, but compared to the price of milled rice that sells from Rs. 22/- per Kg to as high as Rs. 150/- per Kg, colored wheat flour price would be much lower (Rs. 35/-) with significantly higher health benefits attributed by anthocyanins and dietary fibers. These days health is gaining priority. Nutritionally enriched wheat will benefit malnutrition population as it can be consumed in significant amount is reasonably affordable. Coloured wheat is a healthy product that can be consumed daily without guilt. Several multinational companies are interested in coloured wheat.