

Editorial

Advances in Plant Breeding – A Solution to poverty and hunger for the under developed countries?

By seeing the tremendous growth in the Asian and African population the question of the food for everyone is a new threat and hunger and food insecurity is a major problem. According to UN-India, there are nearly 195 million undernourished people in India, which is a quarter of the world's hunger burden. More over the Asian population is increasing with alarming rate and in the last five decade there was a huge surge in population growth hence, in the near future food security will be a great threat and big challenge. Plant breeding is moving through the revolutionary phase. Mendel started with the phenotype and studied the genotypic differences i.e. from phenome to genome level differences and that was the era of forward genetics. Innovative plant breeding is the term we use to describe the constantly evolving ideas and practices which enhance the field of plant breeding and in particular forwarding from genome to phenome level i.e. this is the era of reverse genetics. Plant breeding started from plant domestication and utilization, conventional plant breeding principles and techniques, hybridization and distant hybridization at field and moved further to laboratory. The advanced techniques like molecular breeding, molecular marker-assisted breeding, induced mutations, biotechnology tools like RNAi technology in plant breeding, transgenic pyramiding for crop improvement, in-vitro techniques in plant breeding, haploid breeding and doubled haploid technology, epigenetics in plant breeding, plant cryopreservation for biotechnology and breeding, mutant-based reverse genetics, functional genomics, proteomics in crop breeding, next-generation sequencing (NGS) tools, etc. has played a major role in advancing the science of plant breeding and yielding a meaningful product to sustain the farming in the underprivileged and underdeveloped countries but still the question of the huger to feed their large population is remains the same. Today's innovations in plant breeding are developed using sophisticated science and technologies including cell biology, molecular biology in particular gene mapping, marker-assisted breeding and next generation sequencing methods to understand the trait of interest. More advanced techniques in the area will keep coming and help the breeders in their effective selection for gene of interest. Modern plant breeding methods used to develop new varieties more precisely and rapidly. These techniques reflect the scientific discoveries of the time. All the advanced methods in plant breeding has an increased understanding of plant physiology and molecular biology and accelerated the development of new varieties that would probably not have been achieved by breeders using traditional selection alone. But still the question of hunger and starvation in most of the Asian and African countries is not solved and is major concern. Hence, breeders have to breed the a better crop variety "Super Crop Variety" (CPV) by utilizing the advanced techniques of plant breeding which may provide bigger and better harvests for farmers and could be a viable option in solving global hunger. We anticipate that these CPV's may yield 2-5 times better yielding in the average kind of soil and environment than the normal varieties grown by the farmers.