

- Farmers and scientists have always sought to improve crops. To do so, they have used the natural processes of genetic exchange through breeding, which exploits natural variation in biological traits.
- Plant breeding became a scientific endeavour only after Gregor Mendel formulated his laws on inheritance in 1866. Mendel's basic discovery was that each heritable property in any living organism is determined by a physical factor contained within the cell of the organism. These factors of heredity are referred to as genes.
- In conventional breeding, the genes pre-existing within a species are brought together in new combinations by making sexual crosses. The purpose of crossing, or mating, is to increase the odds of developing an offspring that carries the most desirable traits of the parents – whether that be higher yield, greater disease resistance or higher quality seed composition.
- In practice, many crosses are necessary before the “right” recombination of genes occurs in the plant. What the application of modern techniques like biotechnology has done is simply speed up the process of developing these new varieties.
- The creation of new plant varieties requires a long development time. From the beginning of a selection program until the market release of a new product, development may include work beginning in the laboratory, then in the greenhouses and finally in field trials. This may take as many as 10 to 15 years, depending on the length of the growing cycle for the crop. Successful crop improvement, therefore, requires careful and far-sighted planning of breeding goals to meet the demands of future agriculture (ASSINSEL 1997, *Feeding the 8 Billion and Preserving the Planet*).