HYBRID BREEDING
Crossing two genetically different individuals to develop better performing hybrids

MUTAGENESIS
Developing new genetic diversity by exposing crop plants to chemical agents or radiation

FACTS
For 10,000 years, farmers and breeders have been developing and improving crops
For 150 years, plant scientists and breeders have improved plant breeding on a scientific basis

Today, farmers feed at least 10 times more people using the same amount of land as 100 years ago
By 2050, we will need 50% more food to feed a population of 11 billion

MILESTONES IN PLANT BREEDING

CROP DOMESTICATION
Farmers select the best wild species to develop crops

Domestication of wheat 10,000 BC

HYBRID BREEDING
More vigorous hybrid corn

Crossing two genetically different individuals to develop better performing hybrids

1926

PLANT BREEDING BASED ON CROSS BREEDING
Development of improved varieties by combining good characteristics from two parents

Mendel’s laws
Gregor Mendel describes the inheritance of traits from one generation to the next. His laws become the core of classical genetics

1865

MUTAGENESIS
Blast-resistant rice 1940

Developing new genetic diversity by exposing crop plants to chemical agents or radiation

1953

UNDERSTANDING THE STRUCTURE OF DNA
James Watson and Francis Crick identify the double helix of DNA

1953

PLANT BREEDING BASED ON GENETIC INFORMATION
Development of improved varieties by working directly with the DNA

1926

GMO
Insect-resistant cotton 1994

Introducing foreign genes into the DNA of a plant

1994

MARKER-ASSISTED SELECTION
Barley resistant to yellow dwarf virus 2000

Locating desirable traits in a plant for efficient selection and breeding

2000

TARGETED BREEDING
Waxy corn now

Using modern tools such as genome editing for more targeted breeding

future

PLANT DOMESTICATION
Farmers select the best wild species to develop crops

10,000 BC

DOMESTICATION OF WHEAT

10,000 BC

DOMESTICATION OF RICE

10,000 BC

Domestication of rice 10,000 BC

DOMESTICATION OF BARLEY

10,000 BC

Domestication of barley 10,000 BC