

# MILESTONES IN PLANT BREEDING

## 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

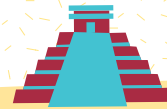
By 2050, we will need **50%** more food to feed a population of 11 billion

## CROP DOMESTICATION

Farmers select the best wild species to develop crops

10,000 BC

Domestication of wheat



1865

## Mendel's laws

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

## PLANT BREEDING BASED ON CROSS BREEDING

Development of improved varieties by combining good characteristics from two parents

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

More vigorous hybrid corn



1926



## MUTAGENESIS

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

1940

Blast-resistant rice



1953

## Understanding the structure of DNA

James Watson and Francis Crick identify the double helix of DNA

## PLANT BREEDING BASED ON GENETIC INFORMATION

Development of improved varieties by working directly with the DNA

## GMO

Introducing foreign genes into the DNA of a plant

1994

Insect-resistant cotton



## MARKER-ASSISTED SELECTION

Locating desirable traits in a plant for efficient selection and breeding

2000

Barley resistant to yellow dwarf virus



## TARGETED BREEDING

Using modern tools such as genome editing for more targeted breeding

now

Waxy corn



future