

Hybrid Technology Glossary

Doubled Haploids: Genetically pure plants that are developed through a special cross-breeding and chemical process. This process takes a fraction of the time of traditional inbreeding and provides improved parents for higher performing hybrids.

Genomics: The study of the genetic material in a chromosome set. The information gathered through genomic tools, when used in conjunction with other technologies, helps researchers better understand which genes determine important characteristics and how genes work together.

Germplasm: A collection of genetic resources for an organism. The Pioneer collection of maize genes used to develop hybrids, which is one of the most genetically diverse in the industry, is one example. These collections are critical resources for researchers who are committed to finding genes that improve specific characteristics.

Grey Leaf Spot (GLS): A fungal disease that affects maize, or corn, and is often manifested as brown lesions on the leaves. This disease is most prevalent in hot and humid climates.

Heterosis: A term used in cross-breeding to define when an organism has qualities that are superior to those of either parent.

Hybrids: The offspring of a cross between two different parent plants.

Inbreds: The parents of hybrids, which exhibit desirable characteristics and genetic purity.

Male Sterile Line: Seed that has sterility factor in the cytoplasm of its cells and, thus, does not produce pollen. These lines are crossed with those that do produce fertile pollen, resulting in production of a hybrid seed that has attributes from both parents.

Northern Leaf Blight: A disease caused by the fungus *exserohilum turcicum*, which affects maize, or corn. The lesions are long and narrow.

Open Pollinated Varieties (OPV): Types of plants (for corn, rice, etc...) that develop when the pollination of seeds in a field is not controlled. This process results in more genetic diversity and crops may not be uniform. However, the costs of OPV seeds are not as high as those of hybrids.

Molecular Marker: A piece of DNA that is closely associated with a gene (or genes) responsible for a certain characteristic, like height. By using molecular markers, researchers can better predict which plants will have beneficial characteristics. It also saves time because plant breeders can begin field trials with an improved pool of candidate hybrids that are more likely to succeed.

Stress Tolerance: Strains of seeds that can withstand stresses such as drought, high salinity, floods, cold, or soils that are deficient in nutrients.

Transformation: A process whereby the genetic characteristics of an organism is changed via the insertion of a new gene. The new gene generally comes from the DNA of a different organism. It gives scientists the ability to improve products in ways that may not be possible through conventional breeding, such as improving a plant's resistance to insects.