



# PLANT BREEDING

## Introduction and Objectives

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## WHY PLANT BREEDING ?

**Plant breeding uses principles from a variety of sciences to improve the genetic potential of plants. Breeders improve plants by selecting those with the greatest potential based on performance data, pedigree, and more sophisticated genetic information. Plants are improved for food, feed, fiber, fuel, shelter, landscaping, ecosystems services and a variety of other human activities.**

# WHAT IS PLANT BREEDING ?

Art and science of changing ,improving, and maintaining the heredity of plants in relation to their agro-economic importance  
Plant breeding, application of genetic principles to produce plants that are more useful to humans.





# HOW TO IMPROVE PLANTS?


Plant Genetic Resource or Germplasm:  
Some total of the available genes of a particular species.

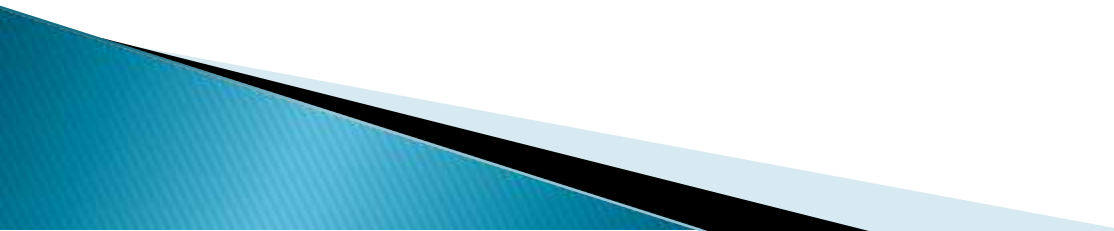
Breeding techniques: Various breeding techniques including selection, hubridization etc.

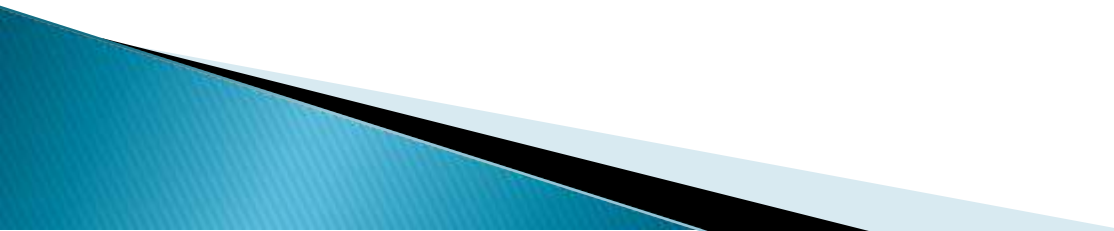
Seed production techniques: Produces improved seeds



# OBJECTIVES OF PLANT BREEDING

- ▶ Higher yield or higher production capacity
  - ▶ Improved Quality
  - ▶ Resistance against pest and diseases
  - ▶ Resistance against abiotic condition
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- ▶ **Wider adaptability**
  - ▶ **Short life span and early maturation**
  - ▶ **Synchronous maturity**
  - ▶ **Desirable agronomic characters**
  - ▶ **Photo insensitivity**
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- ▶ **Determinate Growth**
  - ▶ **Dormancy**
  - ▶ **Varieties for new seasons**
  - ▶ **Varieties for new areas**
  - ▶ **Water tolerance and salt tolerance**
  - ▶ **Elimination of toxic substances**
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# Plant Breeding Research centres in India

- ▶ Indian Council of Agricultural Research, New Delhi
- ▶ Indian Agricultural Research Institute, New Delhi
- ▶ Central Rice Research Institute, Cuttack, Orissa
- ▶ Central Potato Research Institute, Simla
- ▶ Sugarcane Breeding Institute
  - Karnal (Haryana), Kannur (Kerala), Lucknow (UP), Motihari (Bihar)



- ▶ Sugarcane Research Institute,  
Coimbatore
  - ▶ Central Institute of Cotton Research,  
Nagpur, Maharashtra
  - ▶ Cotton Technological Research  
Laboratory, Matunga, Bombay
  - ▶ Jute Technological Research  
Laboratory, Kolkata, West Bengal
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- ▶ Central Tuber Crops Research Institute, Trivandrum
  - ▶ Tropical Botanical Garden and Research Institute, Palode, Trivandrum
  - ▶ Indian Institute of Horticultural Research, Bangaalore
  - ▶ Central Plantation Crops Research Institute, Kasargod
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# **International Institutes**

- ▶ Consultative Group for International Agricultural Research(CGIAR)
  - Established in 1971
  - Food and Agricultural organisation (FAO)
  - World Bank
  - United Nations Development Programme(UNDP)
  - Six international sub centres
  - Headquarter in Montpellier, France

1. International Rice Research Institute (IRRI), Las Banos, Philippines.
2. Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT – International centre for Maize and wheat improvement), *Mexico*
3. Centro Internacional de Agricultura Tropical (CIAT – International centre for Tropical Agriculture), Palmira, Columbia.
4. International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria.
5. West African Rice Development Association (WARDA), Monrovia, Liberia.
6. Centro Internacional de Papa (IIP – International centre for Potato). Lima, Peru.
7. International Crops Research Institute for the Semi - Arid Tropics (ICRISAT), Patancheru, Hyderabad, India.
8. International Board for plant Genetic Resource (IBPGR). Rome, Italy.
9. International centre for Agricultural Research in Dry Areas (ICARDA), Aleppo, Syria.

# Thank You

This class prepared for  
VI Sem Core Course in Botany  
Little Flower College, Guruvayoor

Next Class:  
Plant Genetic Resources

