PROPAGATION METHODS
ON THE CULTIVATION OF PROTEAS
PROTEACEA

- Large family of woody trees and shrubs mainly from the Southern Hemisphere
- Well adapted to drought and fires
- Very small flowers combined in showy inflorescences
- Introduced to Europe in the late XVII century in Kew Gardens (UK)
- Became popular in the european royal houses
- Since then expanded to several countries now being cultivated in more then 20 countries
- 1st flowers exported from SA in the end of the XIX century collected from wild populations
- 1st well organized commercial plantations established in the 1950’s in SA
PROPAGATION METHODS

• By Seed
• Clonal
  ➢ Cuttings
  ➢ Grafting
  ➢ Tissue Culture
SEED PROPAGATION

- Basic and natural method of propagation
- Requires less expensive facilities
- Results in a population with great variability
- Difficult in germination (marked dormancy)
- Longer time to flower
FACTORS INFLUENCING GERMINATION

- Collecting, sorting and storing
  - Two main types of seeds
    1. Nut-like achenes
    2. Winged or hairy achenes

- Seed beds and seedling medium

- Pre-sowing treatments
  - Hot water
  - Hydrogen peroxide treatment
  - Smoke treatment
  - Scarification
  - Oxygen treatment
  - Stratification
  - Diurnal temperatures
  - Hormones

- Sowing
HANDLING AFTER GERMINATION
PROPAGATION BY CUTTINGS

• Presently the most widely used method
• Produces a uniform population
• Plants come into production quicker
• More complex facilities required
• More specialized labour
• Plant material more expensive
PROPAGATION BY CUTTINGS

Nursery Facilities

- Good air flow
- Regular mist irrigation
- Reduced light
- Heated tables with good drainage system
- Well drained unheated tables

Rooting area

Acclimatization area

- Insects and diseases control system
- Light frequency (High frequency vs. Low frequency)
CUTTINGS PREPARATION

❖ Harvesting
  • Healthy and unstressed mother plants
  • Correct physiological state

❖ Hormone and fungicide treatments
  • 4000 ppm IBA solution 50% alcohol
  • Rhizopon and Chryzotop ready to use powders
  • Fungicide powder mixture
    1:1:4 systemic and contact broad action fungicides with talcum
AFTER-CARE IN ROOTING TABLES

- **Planting**
  - In a well-draining sterilized medium
  - On heated beds (temp 18-22 ºC)
  - Under regular mist irrigation

- **Disease and pest control**
  - Regular inspections (removal of diseased or wilting cuttings)
  - Regular preventive fungicide treatment
  - Insecticide treatments if necessary
ROOTING AND ACCLIMATIZATION

• Rooting normally occurs in 8 to 16 weeks

• Rooted cuttings have to be hardened off
  1. Irrigation is reduced to once a day
  2. Light intensity is increased to 50% shade

• Finished the acclimatization period (3-4 weeks) cuttings can be planted in definitive location
GRAFTING AND BUDDING

• Widely used in rose and fruit tree cultivation

• Still limited use in Protea cultivation

• Allows the cultivation of certain cultivars on soils that are not suitable for them

• Allows cultivation on infected soils

• Expensive, time consuming and technical complex process

• Lack of scientific and experimental data
- Wedge grafting on unrooted cuttings
- Wedge grafting on rooted cuttings
- Chip-bud budding (in unrooted or rooted cuttings)
THANK YOU