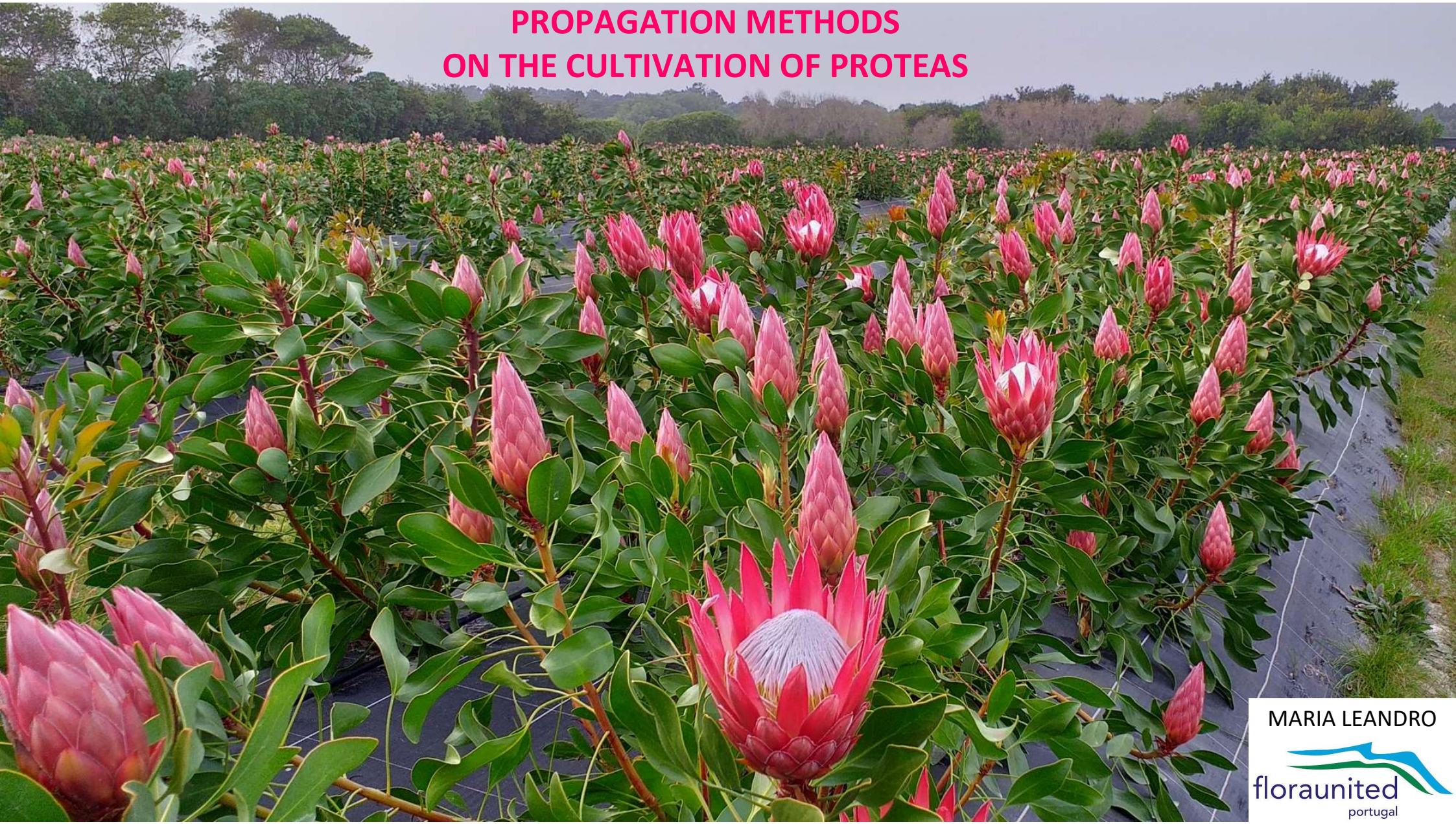
PROPAGATION METHODS
ON THE CULTIVATION OF PROTEAS



MARIA LEANDRO

floraunited
portugal

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

PROTEACEA

- 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

florauniteD
portugal

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

florauniteD
portugal

HANDLING AFTER GERMINATION

PROPAGATION BY CUTTINGS

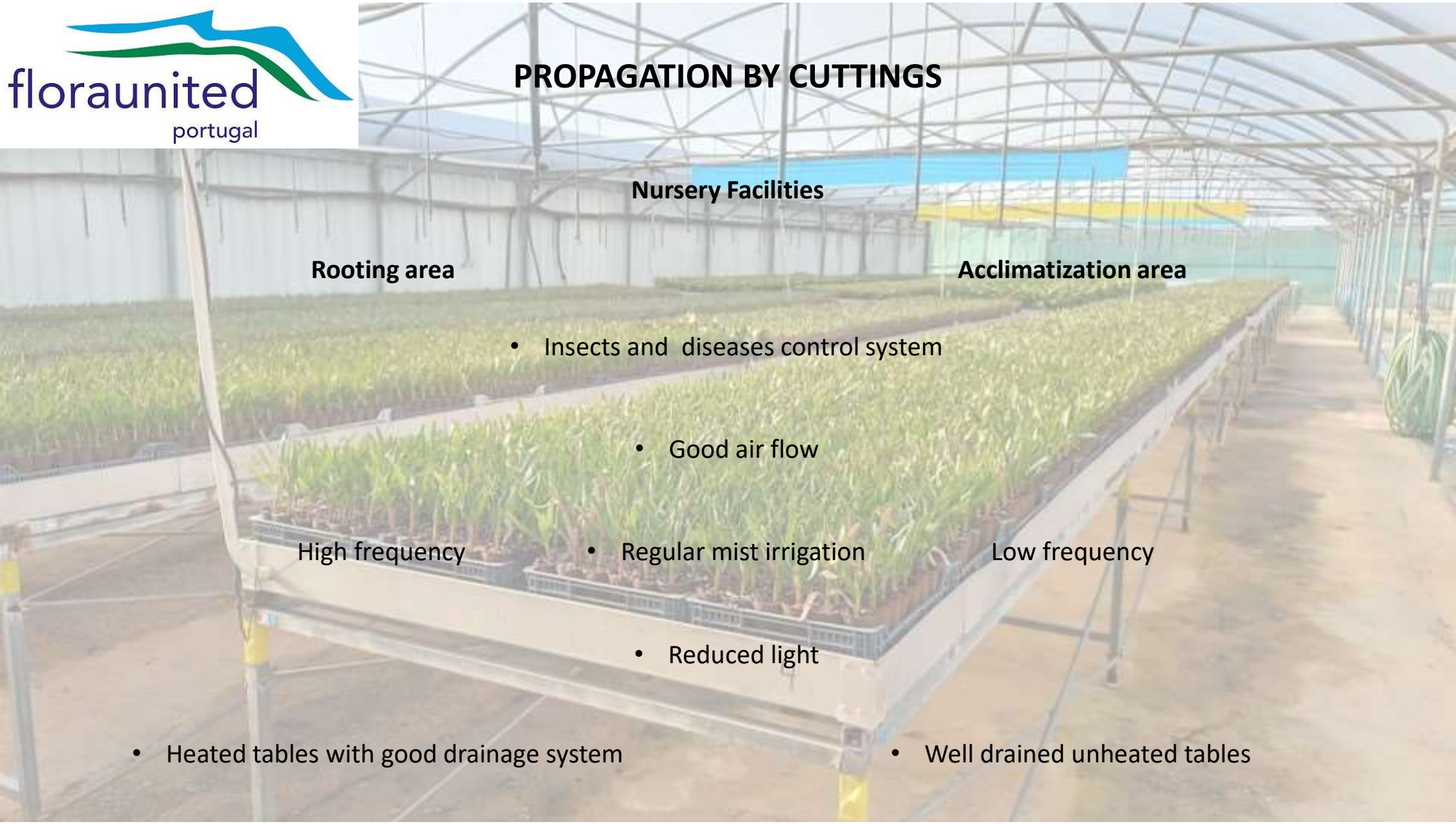
- Presently the most widely used method
- Produces a uniform population
- Plants come into production quicker
- More complex facilities required
- More specialized labour
- Plant material more expensive

florauniteD
portugal

NURSERY FACILITIES

florauniteD
portugal

PROPAGATION BY CUTTINGS



Nursery Facilities

Rooting area

High frequency

- Heated tables with good drainage system

Acclimatization area

Low frequency

- Well drained unheated tables

- Insects and diseases control system
- Good air flow
- Regular mist irrigation
- Reduced light

florauniteD
portugal

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

florauniteD
portugal

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

floraunited portugal

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

GRAFTING AND BUDDING TECHNIQUES

- Wedge grafting on unrooted cuttings
- Wedge grafting on rooted cuttings
- Chip-bud budding (in unrooted or rooted cuttings)


MARIA LEANDRO
FLORA UNITED FARM LDA
+351 917890150
maria.leandro@floraunited.com
THANK YOU