OPRINS

Bamboo Beauty and Function

Tissue Culture of Ornamental

and Plantation Bamboo

by Jan Oprins
Outline of this Presentation

1. About Oprins
2. Our Products and Services
3. Bamboo Tissue Culture
4. Ornamental Bamboo Applications
5. Bamboo for Plantations
About OPRINS PLANT N.V.

- Established in 1976 as a one man business
- Family Business with an orientation towards quality and innovation
- Expansion during the last 30 yrs.
  - Belgium: 105 ha open field production + 15 ha Greenhouses
  - Tissue Culture laboratories
    - Belgium (temperate bamboos)
    - Indonesia (tropical bamboos)
  - Subdiaries in France, Spain, South Africa, USA, Indonesia
  - 150 employees
OPRINS PLANT N.V.
AREAS OF SPECIALIZATION

BAMBOOS

HYDRANGEAS

ORNAMENTAL TREES FOR LANES, GARDENS, AND PUBLIC PARKS

EVERGREEN SHRUBS FOR HEDGES

H. macrophylla
H. quercifolia
H. sargentiana
Others

ILEX
Buxus

TAXUS
Others
Oprins: Bamboo Nurseries in Europe
Bamboo is our specialty...
Tissue Culture of Bamboo
Tissue Culture of Bamboo

- Motherplants with superior traits are selected and multiplied by means of tissue culture.
- From one superior motherplant, thousands of elite clones are produced.
- **Temperate bamboos**
  - Produced at TC lab in Belgium
  - Mainly ornamental varieties
  - See www.oprins.com

- **Tropical bamboos**
  - Produced at Indonesian TC lab
  - Mainly forestry/plantation species
  - www.bambunusaverde.com
Bamboo Tissue Culture Production Process

- Stage 0: Selection and Preparation
- Stage 1: Initiation in Tissue Culture
- Stage 2: In vitro propagation
- Stage 3: Preparation for transplanting in greenhouse
- Stage 4: Planting in Lab Greenhouse
- Stage 5: Potting and Nursery Care
- Stage 6: Finished Product
Bamboo TC Production Process

Stage 0: Selection and Preparation
- Selection of elite genotypes
- Preparation for in vitro culture
Stage 1: Initiation

- Nodal pieces of mother plants are sampled, sterilized, and initiated in TC media
Bamboo TC Production Process

- Stage 2: TC propagation via axillary branching
  - Genetic stability ensures true-to-type plants
  - Application of precise cutting techniques
  - High efficiency
Bamboevermeerding met in vitro-techniek
- Bamboo plants are grown under controlled environmental conditions.
- On 1 m² shelf area in a conditioned growth room, up to 2000 plants can be grown at one time.
Stage 3: Preparation for transplanting in the greenhouse

- Root induction in Tissue Culture
Bamboo TC Production Process

- **Stage 4:** Transplanting in the Greenhouse
  - in trays with peat
  - high relative humidity
  - controlled growing conditions
Bamboo TC Production Process

- Stage 5: Potting and Nursery Care
Tissue Cultured Bamboos: Vigorous plants with a well developed Root System
Bamboo TC Production Process

- Stage 6: Finished Product
  - ornamentals
  - Plantation species
Ornamental Applications
Fargesia robusta ‘Green Screen’
Phyllocladus murielae ‘Jumbo’
Festuca glabra 'Albostriata'
saella glabra ‘Albostriata’ and Shibataea kumasaca and
Sasa kurilensis
Phyllostachys iridescens
taxa kumasaca & Geranium endressii
lostachys viridis & Parthenocissus
oblastus viridistriatus and Aquilegia ‘Woodside’
Fargesia scabrida 'Asian Wonder'
Bamboo for Plantations
ADVANTAGES of Tissue Cultured Bamboo

- True-to-type plants
- Vigorous growers
- Smaller planting materials
- Available in large quantities
- Better field establishment
- Potentially higher yield
Importance of Mother Plant Selection

TC (and Vegetative propagation in general) offers the possibility of selecting plants with desired traits. This results in reduced variance of traits compared to sexually propagated plants (e.g. bamboo seedlings from natural forests). Cloning of selected elite plants results in a genetic gain which may be expressed in larger or more productive plants and overall increased yield in plantations.
Bamboo For Europe (EU Project)
Field Trial – Merkplas, Belgium
Established in 1998
Field Trial – Merkplas, Belgium
Strip Harvest in 2004
Yield: P. vivax: 17 tons/ha/yr (dry matter)
Collection of chips in Big Bags
Bamboo as Biomass Crop

- From a « combustion » point of view: Bamboo is nearly the same as wood:
  - Ash content ± 1% (similar to wood)
  - NCV (Net Calorific Value) dry basis: 18.16 MJ/kg (wood: 18.55)
  - NCV (Net Calorific Value) at 40% moisture: 9.7 MJ/kg
Field trials in Ireland
(www.outliving.ie)
Field trials in Ireland
(www.outliving.ie)
Field trials in Ireland
(www.outliving.ie)
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Bambu Nusa Verde - Yogjakarta
Bambu Nusa Verde – Yogjakarta
Transferring TC Bamboos into Plug Trays
Bambu Nusa Verde – Yogjakarta
In cooperation with a local NGO in Bali (Yayasan Lingkungan Asri Bersemi)

Field trials of tissue cultured bamboo species in selected plots in Munduk, Karengasem, and Kintamani, in the North of Bali.
Site selection and Preparation
Bamboo results after 1 year

3 Years Later
4 Years Later
Bamboo results after 5 Years Later
Thank you !