Vegetative Propagation of American Chestnut

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Why vegetative propagation?

- clonal propagation
- early maturity
- simple and affordable
- year round propagation
Vegetative propagation techniques

- traditional grafting
- stem cutting propagation
- etiolated sprout grafting
- tissue culture
Traditional grafting

- time and space consuming
- requires high skills
- low take: compatibility issues, “sudden death”
- short grafting window
- scion quality issues
The cutting propagation

• Two stage process
  – grafted and rooted cuttings: stock plants
  – strike cuttings early in spring
The cutting technique (cont.)

• juvenile softwood cuttings
  - juvenility: shoot-root interface
• cutting preparation:
  - 15-18 cm long (at least 3 nodes)
  - hormone: IBA 1-2 %
The cutting technique (cont.)

- Propagation condition:
  - misting tent: 11 min. for 5 sec.
  - temperature: air (25-28°C); media (18-21°C)
  - day light 16 hrs.
The cutting technique (cont.)

- sanitation and fertility:
  - controlled-release fertilizer (14-14-14)
  - maintained pH 5.5 - 6.5
  - disease and pest management
Etiolated sprout grafting

- year round grafting
  - dormant
  - green scion (terminal bud)
- low level of skills
- possible to overcome incompatibility
- physiological maturity preserved: early pollen production
Etiolated sprout grafting (cont.)

• unlimited source of scion wood
• fast rate of tree multiplication
The technique

• germinate nuts in dark
• sterilize scion with 3% hydrogen peroxide
• keep hands, tools and working area sanitized with 70% alcohol
• do cleft grafting
The technique

• protect union with parafilm
• expose grafted tree to sunlight in stages
• plant grafted tree in early fall