

Forward

Based on its work merit and professionalism during the presentation, the following talk (by Mr. Ajay Nair) had been awarded the 1st place by the graduate research and presentation competition award committee of American Society for Horticultural Science (Northeast Region) on January 6, 2005 in Washington, DC.

Congratulations, Ajay!

**Rooting and Overwintering Stem
Cuttings of *Stewartia
pseudocamellia* Maxim. Relevant to
Temperature, Medium, and
Hormone**



**A. Nair, D. Zhang and D. Hu
University of Maine
Landscape Horticulture
Orono, ME 04469-5722**

Stewartia

- **Small Ornamental Tree**
- **Theaceae (Tea Family)**
- **Distribution S.E. Asia & N.E. USA**
- **Deciduous in Nature**
- **An Year Round Attraction**









Why *Stewartia*

- **Tremendous landscape value**
- **High demand in the trade**
- **Propagation difficulty**

Objectives

- **Better overwintering temperature**
- **Better medium**
- **Hormone type and concentration**

Material and Method

- 1. Semi-hardwood cuttings**
- 2. Rooting hormones**
- 3. Over-wintering facilities**
- 4. CRB design**

Semi-hardwood cuttings



**Semi-hardwood cuttings were collected from
Arnold Arboretum of Harvard University**

Rooting

Cuttings were rooted using three different hormones:

- 1. 8000 ppm KIBA Quick Dip**
- 2. 8000 ppm Hormodin #3**
- 3. 5000 ppm KIBA Quick Dip
+ 3000ppm Hormodin #2**



Media

Three different medium formulations

a. Perlite + Perennial Mix (1:1 v:v)

b. Perlite + Promix (1:1 v:v)

**c. Perlite + Perennial Mix + Promix (2:1:1
v:v:v)**



Over-wintering

Western Maine Nursery, Fryeburg, Maine



The recorded lowest temperature was 10°F (The temperature was set up for 28°F)

Over-wintering

Inside Greenhouse



Temperature Day/Night (70°F/ 60°F)

Over-wintering

Inside Cooler



Cooler Constant 41⁰F

Over-wintering

Outside

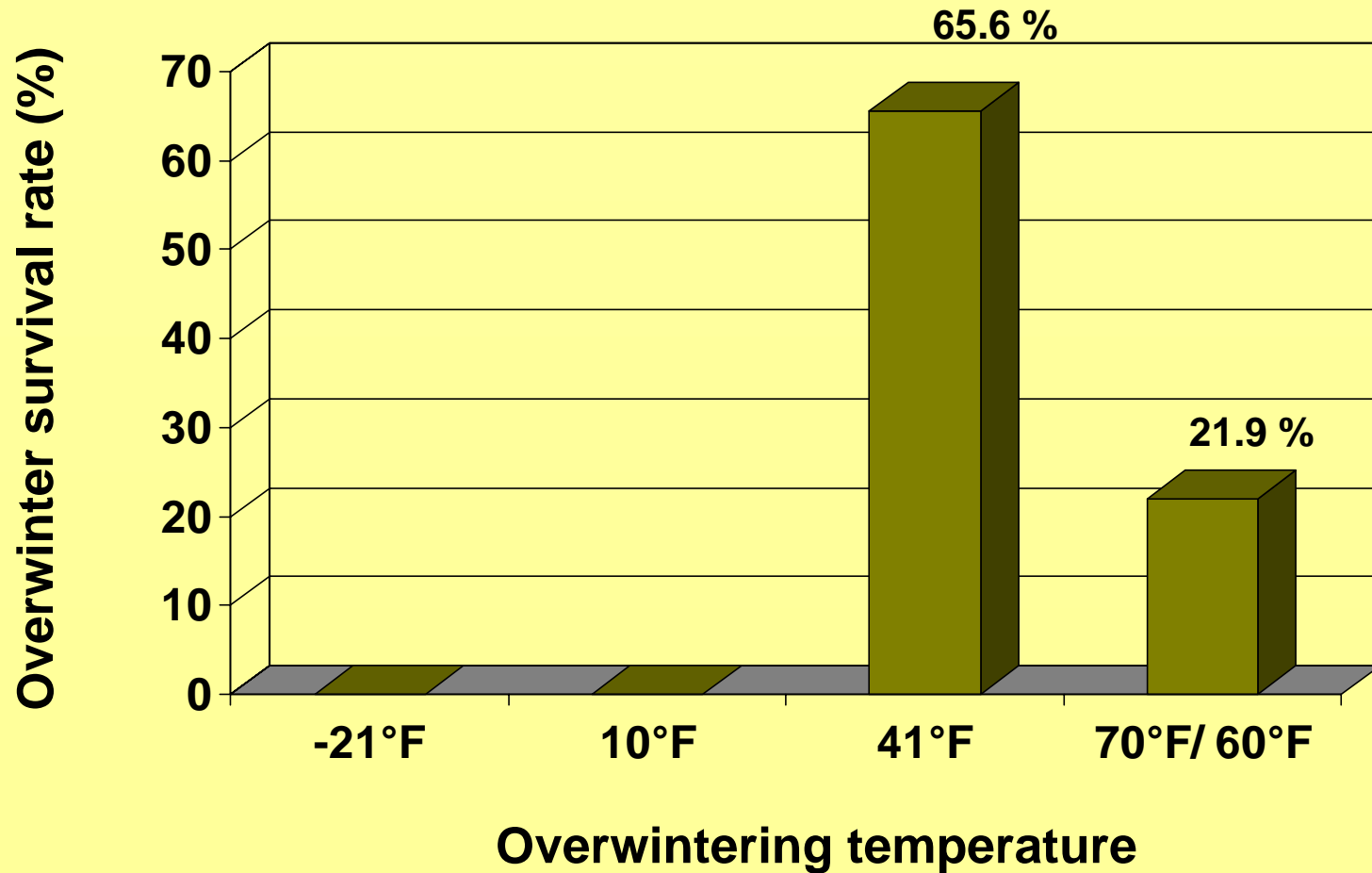


Lowest temperature -21°F

Data recorded

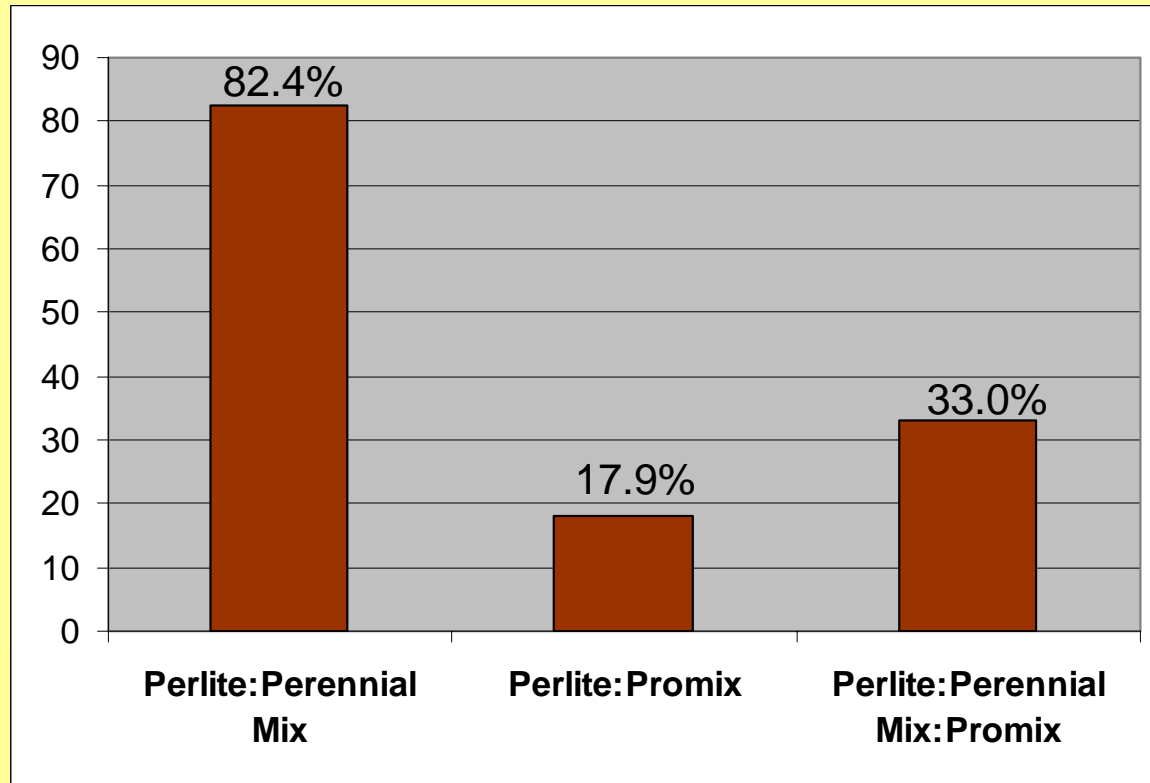
- ❖ **Rooting rate**
- ❖ **Total root length**
- ❖ **Average root length**
- ❖ **Number of roots per cutting**
- ❖ **Overwinter survival rate**

Effect of Temperature



Effect of Media

Overwinter survival rate (%)



Media

Medium Characteristics

Medium	Overwinter Survival Rate	WHC %	pH	EC (mmhos /cm)
Perlite:Perennial Mix	82.4	156.4	5.9	0.36
Perlite + Perennial Mix + Promix	33	186.8	6.1	0.44
Perlite+Promix	17.9	234.7	6.2	0.65

Effect of Hormone

Parameter	8000 ppm KIBA	8000 ppm Hormodin #3	5000 ppm KIBA+3000 ppm Hormodin #2
Rooting rate (%)	90.6a*	71.9a	93.6a
Over-winter survival rate (%)	55.8a*	61.9a	82.3a
Number of roots per cutting	20.0a*	8.7b	22.7a
Average root length (cm) per cutting	2.3b*	2.0b	3.0a
Total root length (cm) per cutting	57.5a	26.9b	71.9a

Conclusion

- ✓ **Cold is required**
- ✓ **KIBA + Hormodin #2 is better**
- ✓ **Perlite + Perennial Mix is better**

Work in progress

- **Fine tune the overwintering temperature**
- **Tissue culture**
- **Field trials at UMaine gardens**



6.17.2004

Acknowledgements

- ❖ **Financial support from a UMaine alumnus made this project possible.
We forever appreciate her encouragement and support.**
- ❖ **Mr. Brad Libby
Green House Manager, University of Maine.**
- ❖ **The Polly Hill Arboretum, P.O. Box 561, West Tisbury, MA 02575**
- ❖ **Broken Arrow Nursery, 13 Broken Arrow Road, Hamden, CT 06518**
- ❖ **Arnold Arboretum at Harvard University, Jamaica Plain, MA 02130**