

**IN VITRO PROPAGATION OF SELECTED MATURE TREES AND JUVENILE  
EMBRYO-DERIVED CULTURES OF COMMON ASH  
(*FRAXINUS EXCELSIOR* L.)**

**Katja Schoenweiss\* and Andreas Meier-Dinkel**

Lower Saxony Forest Research Institute, Department of Forest Genetic Resources, Forstamtstrasse 6,  
D-34355 Staufenberg-Escherode, Germany,  
Fax: + 49 5543 940861, \*E-mail: Katja.schoenweiss@gmx.de

**REFERENCES**

- Arrilaga I., Lerma V., Segura J. (1992). Micropropagation of juvenile and adult flowering ash. *Journal of the American Society for Horticultural Science*, 117: 346-350.
- Bonga J. M., von Aderkas P. (1992). Collection, sterilization, excision and culture. *In: Bonga J. M. von Aderkas P. (Eds.). In vitro culture of trees. Forestry Science*, 38, Kluwer Academic Publishers Dordrecht: 55-71.
- Chalupa V. (1990). Micropropagation of Hornbeam (*Carpinus betulus* L.) and Ash (*Fraxinus excelsior* L.). *Biologia Plantarum*, 32: 332-338.
- Giri C. C., Shyamkumar B., Anjaneyulu C. (2003). Progress in tissue culture, genetic transformation and applications of biotechnology to trees: an overview. *Trees Structure and Function*, 18: 115-135.
- Hammatt N. (1994). Shoot initiation in the leaflet axils of compound leaves from micropropagated shoots of juvenile and mature common ash (*Fraxinus excelsior* L.). *Journal of Experimental Botany*, 45: 871-875.
- Hammatt N. (1996). *Fraxinus excelsior* L. (Common Ash). *In: Bajaj Y. P. S. (Ed.). Biotechnology in Agriculture and Forestry 35*, Springer Verlag Berlin Heidelberg: 172-193.
- Hammatt N., Ridout M. S. (1992). Micropropagation of common ash (*Fraxinus excelsior* L.). *Plant Cell, Tissue and Organ Culture*, 15: 67-74.
- Hausman J. F. (2002). Auxins in the biology of roots. *In: Waisel Y., Eshel A., Kafkafi U. (Eds.). Plant Roots the hidden half*. Marcel Dekker Inc., New York, Basel: 383-403.
- Huetteman C. A., Preece J. E. (1993). Thidiazuron: a potent cytokinin for woody plant tissue culture. *Plant Cell Tissue and Organ Culture*, 33: 105-119.
- Kim M. S., Schumann C. M., Klopfenstein N. B. (1997). Effects of thidiazuron and benzyladenine on axillary shoot proliferation of three green ash (*Fraxinus pennsylvanica* Marsh.) clones. *Plant Cell, Tissue and Organ Culture*, 48: 45-52.
- Kleinschmit J., Svolba J., Enescu V., Franke A., Rau, H-M., Ruetz W. (1996). Erste Ergebnisse des Eschen-Herkunftsversuches von 1982. *Forstarchiv*, 67: 114-122.
- Lloyd G., McCown B. (1980). Commercially feasible micropropagation of mountain laurel, *Kalmia latifolia*, by use of shoot tip culture. *Combined Proceedings, International Plant Propagators' Society*, 30: 421-427.
- Lydiane K., Kleyn J. (1996). The growing room. *In: Lydiane K., Kleyn J. (Eds.). Plants from Test Tubes: An introduction to micropropagation*, Timber Press, 101-107.
- Meier-Dinkel A. (1993). Untersuchungen zur Phasenalterung und *in vitro* Vermehrung von Stiel- und Traubeneiche (*Quercus robur* L. und *Quercus petraea* (Matt.) Liebl.). *In: Kato F., Kirschner K., Lüpke von B., Müller-Using B. (Eds.). Beiträge zur in vitro Vermehrung und Wurzelentwicklung von Stiel- und Traubeneiche sowie Erhaltung forstlicher Genressourcen. Schriften aus der Forstlichen Fakultät der Universität Göttingen und der Niedersächsischen Forstlichen Versuchsanstalt*, 111, J.D. Sauerländer's Verlag Frankfurt am Main: 7-158.
- Murashige T., Skoog F. (1962). A revised medium for rapid growth and bioassays with tobacco tissue cultures. *Physiologia Plantarum*, 15: 473-497.
- Perez-Parron M. A., Gonzalez-Benito M. E., Perez C. (1994). Micropropagation of *Fraxinus angustifolia* from mature and juvenile plant material. *Plant Cell Tissue and Organ Culture*, 37: 297-302.
- Pierik R. L. M., Sprenkels P. A. (1997). Micropropagation of *Fraxinus excelsior* L. (Common Ash). *In: Bajaj Y. P. S. (Ed.). Biotechnology in Agriculture and Forestry*, 39, Springer Verlag Berlin Heidelberg: 331-344.

- Preece J. E., Christ P. H., Ensenberger L., Zhao J-L. (1987). Micropropagation of Ash (*Fraxinus*). Combined Proceedings, International Plant Propagators` Society, 37: 366-373.
- Preece J. E, Bates S. A., Van Sambeek J. W. (1995). Germination of cut seeds and seedling growth of ash (*Fraxinus* spp.) *in vitro*. Canadian Journal of Forest Research, 25: 1368-1374.
- Raquin C., Jung-Muller B., Dufour J., Frascaria-Lacoste N. (2002). Rapid seedling obtaining from European ash species *Fraxinus excelsior* (L.) and *Fraxinus angustifolia* (Vahl.). Annals of Forest Science, 59: 219-224.
- Schoenweiss K., Meier-Dinkel A., Grotha R. (2005). Comparison of cryopreservation techniques for long-term storage of ash (*Fraxinus excelsior* L.). Cryoletters, 26: 201-212.
- Silveira C. E., Cottignies A. (1994). Period of harvest, sprouting ability of cuttings, and *in vitro* plant regeneration in *Fraxinus excelsior*. Canadian Journal of Botany, 72: 261-267.
- Tabrett A. M., Hammatt N. (1992). Regeneration of shoots from embryo hypocotyls of common ash (*Fraxinus excelsior*). Plant Cell Reports, 11: 514-518.