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GERMINATION AND PLANTLET FREQUENCIES OF HYBRID LARCH SOMATIC EMBRYOS IN RELATION WITH THEIR ENDOGENOUS ABA LEVELS.

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Among the conifers, the hybrid between European and Japanese larches has a great potential for reforestation programmes due to its fast growth and good wood quality. Somatic embryogenesis allows the production of illimited number of genetically identical propagules which represents the best production tool for hybrid larch.

Maturation, leading to the development of cotyledonary somatic embryos, has been improved by the use of exogenous abscisic acid (ABA) in the culture medium. Using an enzyme-linked immunosorbent assay (ELISA), we measured the changes of ABA content in larch somatic embryos during the maturation process. Endogenous ABA level of somatic embryos cultured in presence of exogenous ABA (60 μ M) dramatically increased during maturation reaching its maximum at the end of the culture (week 5). The highest germination and plantlet frequencies (90% and 70% respectively) were obtained with somatic embryos matured for 3 weeks. Extension of the maturation duration from 3 to 4 and 5 weeks resulted in a significant decrease in both germination and plantlet frequencies. Our results show a clear correlation between endogenous ABA levels in somatic embryos and their latter germination and plantlet formation abilities. In consequence, we hypothesize that endogenous ABA levels of somatic embryos were responsible for these inhibitions. Further works are on progress to test this hypothesis.

This the first report dealing with hormonal analyses during somatic embryo maturation and evidence of correlation between endogenous ABA content and further growth abilities of larch somatic embryos.