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Protocol for Somatic Embryogenesis in Woody Plants

S. Mohan Jain and Pramod K. Gupta
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From Springer : Protocol for Somatic Embryogenesis in Woody Plants (Forestry Sciences) before purchasing it in order to gauge whether or not it would be worth my time, and all praised Protocol for Somatic Embryogenesis in Woody Plants (Forestry Sciences):

World population is increasing at an alarming rate and this has resulted in increasing tremendously the demand for tree products such as wood for construction materials, fuel and paper, fruits, oils and medicines etc. This has put immense pressure on the world's supplies of trees and raw material to industry and will continue to do so as long as human population continues to grow. Also, the quality of human diet, especially nutritional components, is adversely affected due to limited genetic improvement of most of fruit trees. Thus there is an immediate need to increase productivity of trees. Improvement has been made through conventional breeding methods, however, conventional breeding is very slow due to long life cycle of trees. A basic strategy in tree improvement is to capture genetic gain through clonal propagation. Clonal propagation via organogenesis is being used for the production of selected elite individual trees. However, the methods are labour intensive, costly, and produce low volumes. Genetic gain can now be captured through somatic embryogenesis. Formation of embryos from somatic cells by a process resembling zygotic embryogenesis is one of the most important features of plants. In 1958, Reinert in Germany and Steward in USA independently reported somatic embryogenesis in carrot cultures. Since then, tremendous progress in somatic embryogenesis of woody and non-woody plants has taken place. It offers a potentially large-scale propagation system for superior clones.

From the Back Cover Earlier, we edited a well received series on "Somatic embryogenesis in woody trees", volumes 1 to 6. These volumes provided readers extensive reviews on somatic embryogenesis of important angiosperm and gymnosperm tree species; an excellent source of information for newcomers or those already engaged in research. However, these book volumes did not cover stepwise "detailed protocols" for inducing somatic embryogenesis. This book contains 46 chapters, divided into 4 sections: A) 12 chapters on conifers, B) 14 chapters on fruits, C) 14 chapters on angiosperms, and D) 6 chapters on histology, bioencapsulation, protoplasts, cryopreservation, double staining and thin cell layer sectioning. The book provides stepwise protocols for somatic embryogenesis of a range of selected woody plants in order to assist researchers to initiate somatic embryogenic cultures without too much alterations in protocols. Each chapter provides information on initiation and maintenance of embryogenic cultures; somatic embryo development, maturation, and germination; acclimatization and field transfer of somatic seedlings. Some chapters include applications of somatic embryogenesis cultures, e.g. protoplasts, encapsulation, cryopreservation, genetic transformation, genetic fidelity with molecular markers, and bioreactor.