ULTRASTRUCTURAL CHANGES DURING EARLY DEVELOPMENT OF SOMATIC EMBRYOS IN LOBLOLLY PINE *(PINUS TAEDA* L.)

X. Y. Li, K. S. Kim, and F. H. Huang

Departments of Horticulture and Plant Pathology, University of Arkansas, Fayetteville AR 72701

Abstract. Ultrastructural changes of somatic embryos at early stages were studied in loblolly pine *(Pinus taeda L.).* Proliferation and maturation media of Gupta and Pullman (1991) have been used to obtain embryogenic tissue and somatic embryos, respectively. Some degenerating and declined suspensor cells were observed in well-maintained embryogenic tissues. This may explain why the embryogenic cultures have to be subcultured frequently and sometimes loses embryogenic ability. In stage 1 embryos, starch granules started to accumulate in plastids, but lipid bodies showed no significant increase. In comparison to the stage 1 embryos, embryos at stage 2 contained increased number of lipid bodies. Cytoplasm 0f embryonic cells was also richer in free ribosomes, which may be an early sign of storage protein synthesis. Vacuoles in stage 1 and 2 embryos were larger and/or more numerous than that 0f embryonic cells in maintained embryogenic tissue. Lack of osmoticum in maturation medium was suspected as one of the potential causes of vacuolated embryonic cells with no protein accumulation, which has a very important role in somatic embryos.

Keywords: