
COMPARATIVE GROWTH ANALYSIS OF TISSUE CULTURED CLONES OF CORSICAN PINE WITH NATURAL SEEDLINGS

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The maturity or the physiological state of the mother plant in which the explants were collected has a greater effect on the growth of *in vitro* plants. Younger explants respond better in the culture medium. The physiological state of the mother plant has a direct effect on the growth *in vitro*. Seasonal changes, also has a greater effect on the growth. Morphological and physiological disorders in the growth of the tissue cultured plants also reported by many researchers. Therefore, this experiment was designed in order to determine: Any deviation of the growth comparing to the growth of the natural seedlings

The effect of the nature /status of the mother plant of which the explants were collected on the growth of the plants produced *in vitro*.

Five clones of Corsican pine (Clone 1 - originated from embryo culture; Clone 2 - Originated from meristems of 21-day -old seedlings; Clone 3 - Originated from axillary buds of 5-year-old plants Clone 4 - Originated from mature shoot tips of 10-year-old plants; Clone 5 - Originated from resting buds from 5-year-old plants) were produced by tissue culture. They were acclimatized and were established in the field for a period of one year. A set of natural seedlings was also cultivated in the same field in order to compare the growth of *in vitro* clones with the natural seedlings.

Natural seedlings were from a same seed lot and the initial height of all the plants were around 15cm at the time of planting in the nursery. They were maintained over a period of one year and the height of plants (cm), mean shoot diameter at the soil level (cm) and number of branches per shoot was observed. Plants were fertilized regularly. There were 20 plants in each clone. The results were analysed using ANOVA and the pairwise comparisons were done with Turkey's test in Minitab Statistical package.

There was no significant difference between clones 1-4 and natural seedlings on height; but the height of the clone 5 – which the original explants from resting buds, was significantly lower than all other plants. There was a slight (non-significant) differences within height between clones 1 and 4-in which the original material from mature (10 years-old) plants. The diameter at the soil level also shows the similar pattern of growth. Branching patterns were almost the same in all four clones and also in plants from natural seedlings.

It can be suggested that there is no significant difference in the growth pattern of the tissue-cultured clones when comparing them with natural plants. There is an effect of the physiological state (dormancy) of the mother plant on the growth of tissue cultured plants in the field but the age of the mother plant does not show any effect on the growth of the *in vitro* plants in the field. Therefore, the use of *in vitro* techniques for mass clonal propagation of Corsican pine for commercial purposes is recommended.