Studies on the vegetative propagation of some nutires

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This investigation was carried out in the Tissue Culture Laboratory, Department of Horticulture, Faculty of Agriculture, Moshtohor, Zagazig University during the period from 1994 to1996 to study the most recent procedures for developing the highest number of healthy and uniform in vitro pecan and pistachio plants at short and exact time beside the production of clonal rootstock from either pecan or pistachio plants..through micropropagation techniques.A bearing Money maker pecan trees and young El-Halaby pistachio plants were selected as a mother plants. New growing shoots were collected, washed, sterilized, and divided into either shoot tips or one node cuttings as explants. These explants cultured on different medium types and states to find out the best medium type and state. Also, different anti-oxidant treatments, additives, and medium strengths were evaluated as well as growth curve for both pecan and pistachio plants was plotted during establishment stage. Meanwhile, medium state, effect of cytokinin and cytokinin -like compounds, and the effect of zeatin and thidiazuron concentrations on proliferation were involved. Besides, the effect of GA3 and medium strength on shoots elongation were studied.Furthermore, the effect of medium state, medium strength,effect of auxin type and concentration in addition to darkening treatment were investigated.The obtained results can be summarized as follows :-VI . A. Establishment stage : -1)Liquid woody plant medium succeeded in reducing necrosis and browning while improved explant development, greening and medium efficiency of pecan plants.2)Solid Anderson medium increased explant development greening, and medium efficiency whilist liquid Anderson medium reduced necrosis and browning of pistachio plants.3)Shoot tips induced the same effect of one node cuttings explant during establishment stage on the measured parameters of explant development of both pecan and pistachio plants.4)Ascorbic acid, anti-oxidant solution, and their combinations were valuable in reducing phenolic compounds in both pecan and pistachio plants which reflected in reducing necrosis and improving explant development, greening and anti-oxidant efficiency.5)Activated charcoal had a harmful effect on the cultured explant as increased necrosis and browning while the other explant development criteria were reduced greatly in both pecan and pistachio plants.6)Continuous reducing of medium strength succeeded in minimizing necrosis and browning of both studied plants.7)Full and one half medium strengths enhanced shoot regeneration uisually while one - quarter medium strength improved greening in pecan. However, shoot regeneration and greening of pistachio plants were increased when either one - half or one - quarter medium strengths were used.8)The Addition of either coconut milk at the rate of 10% (V/V) or 25 mg/L adenine sulphate to the cultured medium enhanced shoots regeneration, greening, and additive efficiency while sharply reduced necrosis and browning of both pecan and pistachio plants.9)Growth development of either pecan or pistachio plants passed through four phases mainly log, lag, progressive, and stationary phases and took about 28 days from culturing time up to the starting of stationary phase in case of the regenerated shoots from shoot tips of pecan as well as the regenerated shoots from both shoot tips and one node cuttings in pistachio plants. However, stationary phase started in case of the regenerated shoots from one node cuttings of pecan only after 32 days from culturing time.10)Subculturing of the regenerated shoots from shoot tips of pecan as well as regenerated shoots from both shoot tips and one node cuttings of pistachio plants after 28 days.l-lowever, subculturing of the regenerated shoots from one

node cuttings of pecan can be done after 32 days.VI . B. Proliferation stage :-11)The semi-solid medium state increased proliferation and necrosis while, both solid and liquid medium states enhanced greatly growth and greening of the cultured explant of both pecan and pistachio plants.12)Supplementation of the cultured medium with 2 mg/L kinetin encouraged greatly growth and greening while reduced necrosis of either pecan or pistachio plants,13)The Addition of 2 mg/L of either 6-benzylaminopurine or zeatin in case of pecan plants and zeatin in case of pistachio plants resulted in enhancement of proliferation.14)Thidiazuron at the rates of 0.5 and 1.0 mg/L induced best greening content and reduced necrosis of pecan plants while growth improved greatly when 0.5 mg/L was used. However, 1 mg/L resulted in increasing proliferation concerning pecan plants. Continuos increase of TDZ concentration up to 2 mg/L led to an adverse effect on all parameters under investigation.15)The lower concentrations of zeatin i.e. 0.5 and 1 mg/L enhanced both growth and greening of pistachio plants while reduced necrosis with great extent.16)Increasing of zeatin concentration up to 2 mg/L was helpful in increasing proliferation of pistachio plants.VI . c. Rooting stage :-VI . c. a. Shoot elongation :17)Lower concentrations of GA3 resulted a reduction in necrosis while higher concentrations (4 and 8 mg/L) were valuable in increasing shoot elongation. Meanwhile, greening was improved greatly when 4 mg/L of GA3 was concerned in both pecan and pistachio plants.18)Continuous decreasing of medium strengths reduced necrosis and increased greening clearly in pecan' plants while .slightly reduced necrosis only in pistachio* plants. However, one-half medium strength enhanced shoots elongation of pecan plants whilist encouraged both shoots elongation and greening in pistachio plants.19)Root initiation of both pecan and pistachio was increased noticeably when one-quarter or one-eighth medium strengths were used with either pecan or pistachio plants.VI . c. b. Root formation :-20)The liquid and solid medium states reduced necrosis while increased both growth and rooting sharply of pistachio plants.21)IBA and NAA auxins induced similar effect in all measured parameters (growth, greening, and rooting) of pistachio plants.22)The lower concentration of auxin (1 mg/L) increased both growth and greening. However, the higher concentrations (2 and 4 mg/L) encouraged root formation.23)Darkening treatments (Surface coverage, outer coverage, and their combination) increased root formation without any effect on growth and greening.