6- CONCLUSION

The best medium for establishment, proliferation and rooting for apricot plants was one-fourth strength of Murashige and Skoog medium and one-fourth modified medium strength of Murashige and Skoog medium for peah and almond plants. Also, shoot-tip explants were preferable for apricot, peach and almond species. In the mean time, the best antioxidant treatment was 100 mg/liter citric acid plus 150 mg/liter ascorbic acid in all stone fruit types under study. Meanwhile, the results of additives indicate that adenine sulphate at 80 mg/liter was the best for studied stone fruits under investigation. Furthermore, kinetin and zeatin encouraged the best growth and chlorophyll. However,thidiazuron and 6-benzylaminopurine enhanced proliferation in all stone fruits under study. Meanwhile, lower concentrations (1mg/L.) of 6-benzylaminopurine induced better growth and chlorophyll than higher concentrations 2.0 and 4.0 mg/L. BAP which encouraged proliferation. In addition, the best thidiazuron concentrations for inducing good growth parameters and better proliferation were in the range between 0.5 to 1.0 mg/liter. Meanwhile, the proliferation curve peak was reached after 28 days from culturing time for apricot, peach and almond plants. In contrast, shoot length increased greatly by using either 2 or 4 mg/liter gibberellic acid (GA_3). Moreover, rooting was increased greatly by applying either 1.0 or 2.0 mg/liter IBA. On the other hand, short day photoperiod (8 hours light/16 hours dark) increased rooting than long day photoperiod (16 hours light/8 hours dark). In the same time, surface coverage combined with outer coverage treatment enhanced rooting of stone fruit plants used in this study. It is easy to conclude that, Hamawy apricot was more responsive than Balady. On the other hand, Nemaguard peach surpassed Okinawa peach in its response to different treatments used in this study. Besides, Bitter almond was more successful than Ne Plus Ultra in micropropagation trials.

7- SUMMARY

This investigation was conducted in the Tissue Culture Laboratory, Department of Horticulture, Faculty of Agriculture, Moshtohor during the period from 1993 to 1996 to study the possibilities of developing the micropropagation techniques for stone fruit trees to cover the high demand for superior cultivars and rootstocks of these plants in a short time.

Mother trees of apricot (Hamawy and Balady), peach (Nemaguard and Okinawa) and almond (Ne Plus Ultra and Bitter) were selected and indexed as free of known viruses. New growing shoots were taken at the beginning of the growing season, washed with running water, divided into small parts and immersed in an antioxidant solution containing (150 mg/L. ascorbic acid and 100 mg/L. citric acid) for 20 minutes. The treated parts were sterilized for 15 minutes using 10% Clorox (commercial bleach) plus two drops of Tween-20, then transferred into sterilized distilled water 3-times for 5 minutes each. Shoot-tips (0.5 mm thick) were excised from the terminal parts, while the rest of these parts were divided into one-node cuttings as explants under aseptic conditions. The prepared explants were cultured on different media i.e. Murashige and Skoog, Nitsch & Nitsch and Anderson. The used basal medium was supplemented with 0.1 mg/L. IBA (Indole 3-butyric acid), 1.0 mg/L. BAP (6-benzylaminopurine), 30 g/L. sucrose and 7 g/L. Difico Bacto agar for the establishment stage. However, during the proliferation stage the same aforementioned supplementations were added also to the used basal medium except BAP

which varied according to the treatment. In the rooting stage IBA was only increased, but other constituents of the established medium were used.

Generally, pH of the used medium was adjusted to be 5.7, and autoclaved at 121°C and 15 lb./in^2 for 15 minutes. The cultured explants were incubated under 16 hours of artificial light (fluorescent light at 30 μM/m^2/sec.) and 8 hours of darkness at temperature of 28-30°C. Subculturing was done regularly at 4 weeks interval for all stages.

Anyhow, the obtained results can be summarized as follow :

7-1. Establishment stage :

1- Shoot-tips surpassed one-node cuttings in explant establishment, and chlorophyll development along with reduced adverse effect of necrosis in all stone fruit plants under study.

2- Solid Murashige and Skoog medium was superior in all measured parameters for explant establishment and development. Anderson medium was the poorest medium for apricots and peaches, while Nitsch and Nitsch medium exerted an adverse effect on explant development parameters of almond plants.

3- Antioxidant solution pretreatment succeeded in reducing the accumulation of phenolic compounds as reflected in decreasing necrosis of apricot, peach and almond explants. Moreover, the combination of antioxidant solution as pretreatment and 300 mg/L. activated charcoal to the cultured medium took the second rank in this respect.

4- Supplementation by 300 mg/L. activated charcoal to the medium resulted in an adverse effect as it increased necrosis and decreased sharply both explant and chlorophyll development.

5- One-fourth strength of Murashige and Skoog medium improved explant development parameters in apricot, while modified Murashige and Skoog medium was preferred in this respect in both peach and almond plants.

6- Explant establishment was greatly improved, while nicroses was sharply less when adenine sulphate was added to the MS medium followed by the use of coconut milk additive. However, the reverse was true when MES hydrolysate was added instead of adenine or coconut milk.

7-2. Proliferation stage :

1- Proliferation was enhanced when BAP was added to MS medium in relation to kinetin, zeatin and thidiazuron.

2- Kinetin at 2 mg/L. improved growth and chlorophyll followed by zeatin in relation to BAP.

3- The lower concentration of BAP (1 mg/L.) encouraged growth and chlorophyll and caused less nicroses. However, using of 4 mg/L. BAP increased proliferation of either apricot or almond plants, while only 2 mg/L. concentration induced the same effect in peach plants.

4- The lower concentrations of thidiazuron (0.5 and 1.0 mg/L.) enhanced proliferation and the other growth criteria. However, the higher concentrations (2.0 and 4.0 mg/L.) caused death of plantlets.

5- The proliferation peak was reached after 28 days from culturing time for apricot, peach and almond plants.

7-3. Rooting stage :

1- Shoot elongation was increased when 4.0 mg/L. GA_3 was used instead of lower concentrations (0.5 and 1.0 mg/L.), where