Summary

*Citrus and Ficus*a deciduous trees are belonging to rutaceae and moraceae families respectively. Keeping in view the importance of these plants the present study was carried out.The results of all the experimentshave been summarisedin this chapter.

Citrus trees are propagated both by seed and by vegetative means. Vegetative propagation is preferred because it ensures true to type plants, uniform quality, regular bearing etc. Tissue culture technique particularly micropropagation, is now gaining popularity due to many reason.

Micropropagation has many advantages over conventional methods of vegetative propagation and its application in citrus is currently expanding world wide. The goal ofmicropropagation is to obtain a large number of genetically identical, physiologically uniform and developmentally normal plantlets preferably with a high photosynthetic potential to survive the harsh *ex vitro* conditions, in a reduced time period and at a lowered cost.Explants of lemon used were collected from elite trees of Sun Agrigenetics farmhouse, Hatipura village, Vadodara and Govind farm, Ghadkan village near Chilloda Chokdi, Ahmedabad.

- In vitro regeneration studies were carried out utilizing different explantsin MS medium fortified with different concentrations of PGRs out of all the explants axillary bud explants from mature branch were most responsive and hence used for establishing cultures.
- Cultures were successfully established utilizing these explants.
- Axillary bud explants were cultured on MS medium gave varied response in MS medium fortified with individual cytokinins and cytokinin with auxin containing 3% sucrose.
- Cultures were successfully established utilizing these explants.

- The highest percent response was obtained with 100% response in presence of BAP (0.1mg/l)+NAA(0.1mg/L)but with only single shoot.
- The highest number of shoots was obtained in BAP (1mg/l) +NAA(0.1mg/L) with highest shoot length.
- For multiplication of shoots the *in vitro* shoots were transferred to fresh media. *In vitro* nodes were cut from single shoot and then placed individually in the culture tube.
- This indicates synergistic effect was operative in shoot proliferation.
- Shoots were simultaneously elongated at every subculture and these shoots were transferred in rooting media for root induction.
- Root induction was observed in shoots transferred to half strength MS media fortified with different concentrations of BAP and IBA. Healthy roots were developed in all with varied percent response.
- The optimum response was obtained in BAP(0.1mg/l) +IBA (1.0mg/l) with highest percent response and number of roots.
- The rooted shoots developed were transferred to different planting substrates like cocopeat, cocopeat: sand, cocopeat:soil, sand:soil, cocopeat:sand:soil for hardening.
- The *in vitro* plantlets directly transferred to greenhouse for hardening in each substrate showed high survival rate as well as growth and healthy development of plants. Especially the cocopeat:soil and cocopeat:sand:soil substrate showed high survival rate and developed healthy plants. Sand:Soil substrate showed poor survival rate. The healthy plants were transferred to soil filled pots for their further growth and development.

Explants of Fig used were collected from Sivuri village, Taluka- Saswad, Pune, Maharashtra and Govind farm, Ghadkan village near Chilloda Chokdi, Ahmedabad, Gujarat.

- In vitro regeneration studies were carried out utilizing different explantsin MS and WPM medium fortified with different concentrations of PGRs out of all the explants axillary bud explants were most responsive and hence used for establishing cultures.
- Cultures were successfully established utilizing these explants.
- Axillary bud explants were cultured on MS and WPM medium gave varied response in MS medium fortified with individual cytokininsand In MS medium fortified with cytokinin with auxincontaining 3% sucrose.
- Cultures were successfully established utilizing these explants
- The highest percent response was obtained inindividualcytokinin in BAP (0.5µM).
- When cytokinin and auxin effects was evaluated BAP(2mg/l) +NAA(0.1mg/l) resulted in highest number of shoots,whereas BAP(3mg/l) +NAA(0.1mg/l) resulted in highest shoot length.This indicates synergistic effect was effective for shoot proliferation.
- For multiplication of shoots the *in vitro* shoots were transferred to fresh media. A*in vitro* nodes were cut from single shoot and then placed individually in the culture tube.
- Elongated shoots were transferred in rooting media for root induction.
- Root induction was observed in shoots transferred to MS media. Healthy roots were developed in all with varied percent response.
- 100% rooting was observed in presence of activated charcoal while highest number of roots was obtained in IBA 5µM.
- The rooted shoots developed were transferred to different planting substrates like cocopeat, cocopeat+25%vermiculite, cocopeat+25%vermicompost and cocopeat+25%sand for hardening.
- The cocopeat was the ideal substrate among all with highest percent of survival.

- The occurrence of AM fungi was in rhizophere of lemon and fig was evaluated.
- In case of lemon plants all 10 samples obtained 25 gm were taken and lowest dry weight obtained was 22.34 and highest 24.27. Sample 3 obtained highest percent moisture ie. 97.08%.
- In case of fig plant all 10 samples obtained 25 gm were taken and lowest dry weight obtained was 23.69 and highest 24.27. Sample 4 obtained highest percent moisture ie. 94.76%.
- All the samples collected from field of lemon had basic pH (7.2-7.8) in different age group of lemon plants
- All the samples collected from field of fig plantation, obtained slightly alkaline pH (7.6-7.9) in different age (6-10.5 years) of fig plants
- Instead of Agar other substrates of gelling agents like Isubgol, Guargum, Natural gum, Rice flour, Singodaflour, Sabudana, Suji use to standardize protocol for tissue culture medium to reduce cost for economical viable in tissue culture commercial industries.
- Instead of only agar if we use natural gum along with agar it will cost only Rs. 1260 for one day for 150 l media as compared to agar if used individually, it will cost Rs. 1680.