

## ABSTRACT

**Title of the thesis** : Optimization of *in vitro* Organogenesis in Passion Fruit  
(*Passiflora edulis* L.)

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**Major Subject** : Plant Physiology

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Passion fruit is a woody vine with fruits filled with juicy pulp predominantly grown in tropical and sub tropical climatic conditions. The major issues associated with commercial cultivation of passion fruit are self incompatibility, low germination rates and viral diseases. In the view of above problems in order to obtain plantlets free from viral infestation, the present study entitled "**Optimization of *in vitro* Organogenesis in Passion Fruit (*Passiflora edulis* L.)**" was carried out under the objectives namely, standardize the different sterilization agents used for *in vitro* culture of Passion fruit, to standardize the different plant growth hormones in the *in vitro* culture of Passion fruit and to standardize the procedure of hardening. The explants were collected from the donor plant and sterilized using various types of sterilants. The explants were inoculated on the callus induction media with various combinations. Callus induction was observed after 25-29 days after inoculating on the callus induction media. Shoot and root formation was noticed after a period of  $6\pm 1$  weeks after inoculation on the callus regeneration media. After that the plants were hardened in a various mixtures of sand, FYM, coco peat and vermiculite for a period of 3 weeks. The root and shoot length were measured subsequently. All the data obtained was subjected to one way CRD analysis. From the treatments and the results obtained it was evident that treatment with the combination of fungicide, 0.1%  $HgCl_2$  and 70% of alcohol for 30 sec was effective in controlling the contamination. Amongst the callus induction media treatments combination of 2,4-D and BAP with concentrations of (3.12 mg BAP+ 4 mg 2,4-D)\L was effective in producing callus followed by 3mg\l of 2,4-D and 4mg\l of IAA and in the callus regeneration point of view, amongst the various combinations that were taken (1.5 mg IBA+2.75 mg BAP)\L was effective in callus regeneration. Amongst the various explants taken tender shoots were the best to give the overall best results.

Therefore it was found that amongst the various explants, using tenders shoots were the best. Combination of alcohol along with fungicide gives best aseptic cultures and a combination of 2,4-D and BAP gives best callus induction and a combination of BAP and IBA gives best

regeneration. The mixture of coco peat and vermiculite gave the best plant survival rate in hardening.

**Keywords:** *passion fruit, organogenesis, sterilization, regeneration, callus.*

**Signature of Major Advisor**

**Signature of the Student**