CONCLUSIONS

The following conclusions emerge from the present studies on germination and regeneration response of some Indian orchids.

- The germination of orchid seeds, though dependent upon a suitable mycorrhizal association in nature, can be affected without the intricacies of host fungus relationship in vitro by suitably augmenting the nutrient pool.

- The immature seeds, though their nutritional requirements are complex, germinate better in vitro than the mature ones, which variously develop and/or accumulate certain inhibitory substances, the inhibitory substances in Epipactis verrucifolia are accumulated in the embryonal cells themselves.

- 'Green pod culture' technique based on the ability of the seeds to germinate much before their dispersal, significantly shortens the time lapse between pollination and sowing of seeds in orchids.

- The inherent pölyembryonate potential of the orchid seeds, expressed in the development of multiple protocorms during germination, can be profitably exploited for raising multiple seedlings in vitro.
The nutrient requirements are species specific and these differ during germination, differentiation and growth of seedlings in vitro.

The amenability of the present cultures to a medium which contains a variety of vitamins, minor salts and appropriate quantities of ammonium, nitrate, phosphate and calcium ions suggest its wider utility in orchid culture.

While most of the species showed a medium specificity for germination, the ability of Dendrobium aeneum, D. bicammatum, D. chrysanthum, D. heterocarpum, Schoenorchis gemmatus, and Thunia alba to germinate in more than one media formulations indicates their wider nutritional amplitudes.

Variable response of the cultures to the changing levels of auxins and cytokinins in the medium suggests further studies in the biochemical aspects of their nutritional complexities.

Present studies suggest a better utility of organic growth supplements (CH/P/or YE) in promoting accelerated germination and growth of orchid seedlings in general.

The regeneration response varies with the physiological age and nutritional environment of the explants.
The explants from fresh mature organs failed to respond, whereas the ones from immature organs proliferated readily in an appropriate nutrient pool due probably to the significance of juvenility for regeneration.

The requirements of growth adjuncts for regeneration are species specific in orchids and their effects vary from beneficial to harmful depending upon their level (suboptimal, optimal, supraoptimal) in the medium. Harmful effects of these supraoptimal ones can be successfully alleviated by using AC, an effective adsorbent, in the medium.

The orchids are slow growers and take 5-7 years to reach flowering in nature. Induction of in vitro flowering in 22-40 wk old seedlings of Dendrobium stephan and Cypripedium calceolus offer exciting opportunities in raising blooms in orchids.