CONCLUSIONS

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The 'green pod' culture technique, based on the ability of the seeds to germinate much before their dispersal, ensures better germination and offers greater possibilities to follow the morphogenetic changes leading to seedling development.

- The technique significantly shortens the time lapse between pollination and sowing of seeds in orchids. The germination potential of the immature seeds (embroys) is correlated with their physiological age, and the seeds germinate best when procured from fruits after about half of the total time (wap) they take to mature.
- The impaired germination of mature seeds is attributed to the quality of food reserves, progressive loss of growth promoting factors and accumulation of inhibitory substances/dormancy factors.
- The epiphytes germinate better than the terrestrials. The requirement for growth factors during subsequent development of spherules into seedlings in the latter taxa, hints at their nutritional complexities.
- Development of the lower half of the protocorm into a fleshy rhizomatous(?) structure, and the upper half into an embryonal shoot, in Pleione maculata and Spiranthes sinensis, seems to support the nutritional function of protocorm.
- Since, the rhizome forming trait in Nephelaphyllum cordifolium, Pleione maculata, Spiranthes sinensis and Zeuxine strateumatica, prior to differentiation of seedlings is expressed

only in certain selected nutritional regimes, it appears that the quality of nutrition influences the direct or rhizome mediated development of the seedlings from the protocorms.

- A great deal of variability discerned with respect to the development of chlorophyll in the germinating entities (prior to, during and after protocorm organization), in the present species appears to be a genetic feature.
- The immature condition of seeds and the undifferentiated embryos, are the probable factors for the callusing of embryos. The protocorms exhibit direct or callus mediated multiplication, depending upon the geneotype and nutritional requirement.
- PDA (chemically undefined medium) proved beneficial during germination and seedling development in epiphytes but the terrestrials responded differentially to this medium due probably to their varied nutrient requirements and/or the quality of the extract in different patches. This is also attributed to the presence of dextrose and/or total sugar contents of the PDA medium.
- The ability of some of the present species to germinate in more than one medium is suggestive of their greater nutritional amplitude.
- The germination of orchid seeds is markedly affected by quality and quantity of inorganic ions (especially NH_4^+ and NO_3^- ions). Poor germination in MS medium appears to be correlated

with its higher ionic concentration, a better germination response in M rather than in MKC medium hints at the selective utility of different ions during the process.

- The variable requirements of vitamins (individually or in various combinations) depends upon the physiological age of the seed, stage of development and the genetic constitution of the species employed, and the total vitamin contents of the medium. Microelements and iron salts, in the medium, also play an important role during development and growth of orchid seedlings.
- The effects of exogenous supply of various growth adjuncts varied with the species, physiological age of the seeds/germinating entitites, and the medium composition.
- AC could be effectively used to provide natural conditions for the growth and development of the orchid seedlings (particularly the terrestrials) as it absorbs light from the substratum and enhances the per quantum energy available.
- The beneficial effects of AC (an active adsorbant) during different morphogenetic processes appears to be due to the ability of AC to adsorb potential growth inhibitors (excess amount of major and minor elements, vitamins, other growth additives added) in the medium or those released (as brown phenolic exudates) by the germinating seeds. Inhibitory effects of this adjuvant (AC) may be due to its ability to adsorb more than required amount of essential media components as well as growth additives.