CHAPTER 5

DISCUSSION

Experiment 1: Plant taxonomy study.

There were 31 kinds of plants samples collected which were identified and classified into 16 families, 21 genus and 24 species i.e Family Piperaceae, *Piper* sp. (RPF-KW01); Gesneriaceae, *Aschynanthus jarrettii* (RPF-KW02); Araceae, *Raphidophora glauca* (RPF-KW03, 04), *R. peepla* (RPF-KW25, 31) and *Pothos* sp. (RPF-KW06, 25); Asclepiadaceae, *Hoya* sp. (RPF-KW05, 23) and *Hoya thomsonii* (RPF-KW18); Menispermaceae, *Parabaena sagittata* (RPF-KW07, 08) and *Anamirta cocculus* (RPF-KW16); Smilacaceae, *Smilax* sp. (RPF-KW09); Selaginellaceae, *Selaginella siamensis* (RPF-KW12); Cucurbitaceae, *Gynostemma pentaphyllum* (RPF-KW13) and *Solena amplexicaulis* (RPF-KW21); Apocynaceae, *Trachelospermum asiaticum* (RPF-KW14) and *Parsonsia grayana* (RPF-KW22, 26); Campanulaceae, *Pratia nummularia* (RPF-KW19); Commelinaceae, *Streptolirion linear* (RPF-KW20); Lomariopsidaceae; *Bolbitis sinensis* (RPF-KW24) and *Elaphoglossum angulatum* (RPF-KW28), Ericaceae, *Agapetes* sp. (RPF-KW27) and 3 were other plant species i.e Family Agavaceae, *Dracaena angustifolia* (RPF-KW10); Begoniaceae, *Begonia* sp. (RPF-KW11, 29), *Begonia cathcartti* (RPF-KW17) and Convallariaceae, *Aspidistra longifolia* (RPF-KW30). More studies are needed to make use of those collected creepers as house plants and garden decoration as ground cover or hedge.

Experiment 2: Study on plant adaptation and survival.

2.1 Growth under greenhouse condition.

Fourteen out of thirty-one collected samples have survived. Among the surviving plants, 11 species are creepers. They are *Piper* sp., *Aeschynanthus jarrettii*, *Raphidophora glauca*, *Parabaena sagittata*, *Selaginella siamensis*, *Gynostemma pentaphyllum*, *Trachelospermum asiaticum*, *Hoya thomsoni*, *Solena amplexicaulis*, *Pothos* sp. and *Rhaphidophora peepla*. The other 3 species are perennial plants

named as follows: *Dracaena angustifolia*, *Begonia* sp. and *Aspidistra longifolia*. It could be seen from this research that plants collected from the wild could acclimatize themselves to the growing condition which is a good sign for future development.

2.2 Effects of temperature and light intensity.

The experimental plants significantly responded to the growing condition in terms of plant height, number of branches and leaf area. However, the growing condition did not affect the number of leaf. Fitter and Hay (1987) reported that plants adapted to the low light intensity by increasing chlorophyll content that improved the photosynthesis. The adaptation of plants under high light intensity resulted in the increasing of leaf thickness. Plants have less cell spaces, even though respiring tissues are increased because the palisade-mesophyll could develop well under high light intensity (Wanapat, 1984). Plants grown under low light intensity had a great deal of elongation. It was clearly suggested that the auxin activity affected plant growth as auxin responded well under low light intensity (Bilang *et. al*, 1993).

Experiment 3: Cytology study.

The cytology study conducted by using Feulgen's squash technique showed somatic chromosome numbers of 11 climber plants and 3 others. The results confirmed that all 14 species were different in chromosome numbers. Bhattarai and Malla (1993) studied chromosome numbers of *Cymbidium cyperifolium* Lindl. Karyotypic study of 5 diploid plants showed that one (cytotype A) had a chromosome number of $2n = 36$ and the other 4 (cytotype B) $2n = 40$. This study showed different chromosome numbers of *C. cyperifolium* Lindl.

Experiment 4: DNA Fingerprint study.

Molecular markers generated by RAPD analysis were used to characterize genetic relationships of 6 plant species. It was found that the sample No. 2 and No. 3 were the same plant species (*Parabaena sagittata*). The banding also revealed that *Rhaphidophora peepla* and *E. aureus* were very much closely related. *R. glauca, E. aureus*, *R. peela* and *P. monstera* were genetically different which coincide with the

report of Ae-Kyung *et al*. (2003) who studied the analysis of genetic relationship of *Ardisia* spp.

Experiment 5: Effects of different concentrations of IBA on rooting.

Fourteen plant samples treated with IBA before rooting showed different responses. This result agreed with the studies of Davies (1995) and Taiz and Zeiger, (1998). Stem cutting is the most common method of propagation. This method usually works well with herbaceous plants and can also be successful with woody plants. There are some requirements needed for the success of cutting propagation, for example the use of hormone treatment which helps rapid root development. Auxins also affect several developmental processes including the formation of the embryo, cell division and differentiation, fruit development, root induction and vascular tissue differentiation. Zimmerman *et al*. (1991) studied the micro propagation of wild flower, *Dyssodia pentacheta* (D.C.) by using stem cuttings. The shoot segments were dipped in IBA solution at different concentrations of 0, 3, 10, 30, 100 and 300 mM for 30 seconds; the nodal segments were also dipped for 30 seconds. After 4 weeks of rooting it was found that the percentage and the number of root were high at 3 or 10 mM IBA concentration while the lethal dose was at 300 mM.

Experiment 6: Anatomical study of 5 selected species.

The study on anatomical characters was done on the 5 selected species having potential for future development. The wide morphological variation was found in the selected plant samples. Debenedetti and Berlyn (1994) mentioned that studying only anatomy plasticity could not pin point the genus or the species of the samples. The studies on high ecological plasticity and diverse geographic distribution are needed.

Experiment 7: Study on the vase life of cut green of *Raphidophora glauca* and *R. peepla.*

Citric acid 100 ppm together with $AgNO_3$ 50 ppm was the best holding solution to give the longest vase life of *R. glauca* and *R. peepla*. This agreed with Doorn (1990) who reported the positive correlation between the abundance of bacteria and the decrease in hydraulic conductance of the stem. Furthermore, treatment with germicide, such as silver nitrate and citric acid, inhibited bacterial proliferation maintained hydraulic conductance of the stem. These findings suggest that bacterial proliferation is largely responsible for vascular occlusion which shortens the vase life of cut flower.

Experiment 8: Tissue culture propagation of *Raphidophora glauca* and *R. peepla*.

The study on tissue culture of *R. glauca* and *R. peepla* using standard media (MS) with BAP at 5 concentrations, 0, 2, 4, 8 and 10 mg/l and NAA at 2 concentrations, 0 and 2 mg/l was conducted. The results showed that both *R. glauca* and *R. peepla* on MS with BAP at 8 mg/l and BAP at 10 mg/l gave the best growth in terms of shoot height, leaf number, root number and root length. The survival percentage after 8 weeks of the transplanted plants from all treatments was over 80 percent. However, the culture media MS + 8 mg/l BAP + 0 mg/l NAA cost less, as BAP is not needed, but still give the similar result.