

Abstract

The objectives of this research were to study on propagation for the increase of bulbil number of Rain lily, to study on fertilizer formula and suitable rates on growth and quality of Rain lily and to study on effects of appropriate storage temperatures on shelf life of Rain lily. This research were evaluated at Royal Project Foundation Huayluk, Chiang dao, Chiang Mai. Research of study on propagation of *Zephyranthes* spp. was carried out in 3 experiments as follows:

Experiment 1: Study on propagation of the increase of bulbil number of Rain lily were studied in 7 cultivars (Airie, Krakatua, Pride of singapore, Chai prakan sunset, Old rose rimdoi, Pink emerald and Full moon). The research was based on the completely randomized design (CRD) and divided into 4 treatments by cutting i.e., 2 sections/bulb, 4 sections/bulb, 6 sections/bulb and normal bulb was used as control treatment. They were planted in plastic pot size 6 inches and peat moss, perlite, vermiculite and rice husk charcoal ratio 2:1:1:2 were used as growing media. After planting, plant were supplied twice a month (AB ratio 1 :200 (EC 1.9 mS/cm)(100 ml./pot) and watered once every 2 days. The results showed that the highest total bulb fresh weight and average number of bulbils were obtained from 2 sections/bulb in Airie (21.28 grams and 3.80 bulbils), Krakatua (61.34 grams and 10.20 bulbils), Chai prakan sunset (28.64 grams and 8.00 bulbils), Old rose rimdoi (40.22 grams and 7.60 bulbils), Pink emerald (36.90 grams and 5.80 bulbils) and Full moon (38.90 grams and 4.80 bulbils), respectively. While Pride of Singapore showed control treatment and cutting 2 sections/bulb gave the most total bulb fresh weight at 30.75 and 23.88 grams and average number of bulbils at 8.16 and 7.60 bulbils, respectively. Thus, the cutting method by 2 sections/bulb in Airie, Krakatua, Chai prakan sunset, Old rose rimdoi, Pink emerald and Full moon and the control treatment and cutting 2 sections/bulb in Pride of singapore were proper for propagation.

Experiment 2: Study on fertilizer formula and suitable rate on growth and quality of Rain lily were studied in 8 cultivars (Australia candida, Krakatua, Crimson sunset, Eastern pearl, Bangkok yellow, Midas touch, Traubii and Heart throb). The research was based on the completely randomized design (CRD) and divided into 12 treatments in this study including; (T1) AB ratio 1:200 (EC 1.9 mS/cm)(100 ml./pot), (T2) complete chemical fertilizer 15-15-15 at the rates of 1 g/pot, (T3) complete chemical fertilizer 15-15-15 at the rates of 2 g/pot, (T4) complete chemical fertilizer 13-13-21 at the rates of 1 g/pot, (T5) complete chemical fertilizer 13-13-21 at the rates of 2 g/pot, (T6) mycorrhiza + AB ratio 1:200 (EC 1.9 mS/cm)(100 ml./pot), (T7)

mycorrhiza + complete chemical fertilizer 15-15-15 at the rates of 1 g/pot, (T8) mycorrhiza + complete chemical fertilizer 15-15-15 at the rates of 2 g/pot, (T9) mycorrhiza + complete chemical fertilizer 13-13-21 at the rates of 1 g/pot, (T10) mycorrhiza + complete complete chemical fertilizer 13-13-21 at the rates of 2 g/pot, (T11) water soluble fertilizers 10-20-30 (EC 1.9 mS/cm)(100 ml./pot) and (T12) mycorrhiza + water soluble fertilizers 10-20-30 (EC 1.9 mS/cm)(100 ml./pot). The results showed that the most average number of bulbils were obtained from (T11) water soluble fertilizers 10-20-30 (EC 1.9 mS/cm)(100 ml./pot) in Bangkok yellow (5.67 bulbils) Heart throb (4.67 bulbils) and Eastern pearl (3.67 bulbils). And *Austratia candida* showed (T12) mycorrhiza + water soluble fertilizers 10-20-30 (EC 1.9 mS/cm)(100 ml./pot) gave the most average number of bulbils at 10.67 bulbils. However, (T1) AB ratio 1:200 (EC 1.9 mS/cm)(100 ml./pot) gave the most average number of bulbils at 13.33 bulbils in Crimson sunset and (T8) mycorrhiza + complete chemical fertilizer 15-15-15 at the rates of 2 g/pot, gave the most average number of bulbils at 7.50 bulbils in *Traubii*. While Krakatue and Midas touch showed fertilizer formula and rate there were not different on average number of bulbils among treatment.

Experiment 3: Study on effects of appropriate storage temperatures on shelf life of Rain lily were studied in 9 cultivars (Bangkok yellow, Chai prakan sunset, Old rose rimdoi, Full moon, Eastern pearl, Crimson sunset, Pride of Singapore, Pink emerald and Midas touch). The research was based on the completely randomized design (CRD) and divided into 3 treatments at (T1) room temperatures ($23.2 \pm 3^\circ\text{C}$), (T2) $15 \pm 3^\circ\text{C}$ and (T3) $5 \pm 3^\circ\text{C}$ for 2 months. The results showed that Rain lily stored at $5 \pm 3^\circ\text{C}$ had the most fresh weight after storage and the lowest average number of days from planting to the earliest germination at Bangkok yellow (5.95 grams and 20.60 days), Chai prakan sunset (3.03 grams and 20.13 days), Old rose rimdoi (6.77 grams and 37.46 days), Full moon (13.56 grams and 30.66 days), Eastern pearl (4.19 grams and 42.60 days), Crimson sunset (3.15 grams and 30.26 days), Pride of Singapore (7.26 grams and 32.73 days), Pink emerald (10.88 grams and 40.00 days) and Midas touch (7.54 grams and 43.20 days), respectively. However, storage temperatures were not signify different on growth, flower and bulb quality after planting. Thus, the storage temperatures at $5 \pm 3^\circ\text{C}$ for 2 months in Bangkok yellow, Chai prakan sunset, Old rose rimdoi, Full moon, Eastern pearl, Crimson sunset, Pride of Singapore, Pink emerald and Midas touch were appropriate storage temperatures.

Keywords: propagation, Rain Lily