

## Abstract

Research of the efficient increment of Ornamental *Curcuma* production in Highland (budget year, 2016) was carried out in 5 experiments as follows:

**Experiment 1:** The effect of paclobutrazol soaking on growth of ornamental *Curcuma* was studied. The result indicated that the rhizome soaked in paclobutrazol solution at 500 mg/l gave shortest plant height of 'Chiang Mai Pink' at 16 weeks after planting (WAP). While in 'Doi Tung Red' cultivar, it was not significantly different in plant height, however rhizome soaked at 2000 mg/l paclobutrazol gave the shortest stalk length. In krajeaw 'Mannee Siam' cultivar, it also found that rhizome soaked at 2000 mg/l paclobutrazol showed the shortest plant height but there did not affect on stalk length after 20 WAP. In addition, in 'Buachan' cultivar, the results indicated that all levels of paclobutrazol solution gave the lower plant height than control and soaked at 2000 mg/l paclobutrazol showed the shortest of stalk length.

**Experiment 2:** The effect of paclobutrazol drenching on growth of ornamental *Curcuma* was carried out. The result showed that 'Chiang Mai Pink' was not different in plant height and flower quality at 12 weeks drenching after (WAP). However, all levels of paclobutrazol solution by 1 times drenching gave shorter plant height than control in 'Doi Tung Red'. Moreover, drenching with 1500 mg/l paclobutrazol gave the shortest stalk length. In Krajeaw 'Mannee Siam', it also found that drenching with 1500-2000 mg/l paclobutrazol by 2 times gave the shortest plant height and stalk length after 12 WAP. In 'Buachan', the results indicated that drenching with 1500 mg/l paclobutrazol by 2 times gave the shortest plant height and drenching with 2000 mg/l gave the shortest on stalk length.

**Experiments 3:** The increasing rhizome yield of ornamental *Curcuma* by using rhizome dividing technique before planting was studied. The results showed that in small size rhizome treatment, 4 pieces dividing rhizome by long section gave higher number of total new shoots per cluster and total yield in term of rhizome fresh weight than other treatments, in 'Chiang Mai pink', 'Doi tung red' and 'RT Golden reign' cultivars. While, in 'Krajeaw Som' cultivar it was found that 4 pieces dividing rhizome by cross section gave higher number of total new shoots per cluster and total rhizome yield than other treatments. In big size rhizome treatment, the results showed that 4 pieces dividing rhizome by cross section gave higher number of total new shoots per cluster and total rhizome yield in 'Chiang Mai pink', 'Doi tung red' and 'RT Golden reign' cultivars than other treatments. While, in 'Krajeaw Som' cultivar it was found that 4 pieces dividing rhizome by long section gave higher

number of total new shoots per cluster and total rhizome yield than other treatments

**Experiments 4:** Effect of low temperature storage and preservative solution to extend vase life of *Curcuma* cv. Red Shirt, Lanna Snow, RT 'Golden Reign' and Manee Siam was studied. The objective of this study was to improve postharvest of *Curcuma* for cut flower export. The result showed that *Curcuma* cv. Red Shirt stored at room temperature with wet packaging for 7 days had the most percentage of losing about 60%, 55% when stored at room temperature with dry packaging for 7 days and 25% when stored at 15 °C with dry packaging for 7 days. For *Curcuma* cv. Lanna Snow, stored at 15 °C with dry packaging for 7 days had the most percentage of losing about 100%, 70% when stored at 15 °C with wet packaging for 7 days and 30% when stored at room temperature with wet packaging for 7 days respectively. *Curcuma* cv. Red Shirt stored at 15 °C with dry packaging for 3 days had the most vase life days (9.07 days) and 8.40 vase life days when stored at room temperature with dry packaging for 3 days that it was significantly different other treatments. *Curcuma* cv. Lanna Snow, the vase life was 15.13 days when stored at 15 °C with wet packaging for 3 days, 13.53 days when stored at room temperature with wet packaging for 3 days, 13.13 days when stored at 15 °C with dry packaging for 3 days and 13.07 days when stored at room temperature with dry packaging for 3 days and different significantly from other treatments. *Curcuma* cv. RT 'Golden Reign', stored at 15 °C with dry packaging for 3 days showed the long vase life (9.33 days) significantly different from treatment which stored at room temperature and 15 °C, with dry and wet packaging for 7 days. *Curcuma* 'Manee Siam', stored at room temperature and 15 °C, with wet packaging for 3 days showed the long vase life (4.93 days), it was significantly different from treatment at room temperature and storage 15 °C, dry and wet packaging for 7 days.

**Experiments 5:** Screening and testing the antagonistic bacteria to control the soilborne disease of ornamental *Curcuma*. Plant samples were collected from plantation at Phrao, Mae Taeng, Muang and Sunsai district, Chiangmai Province. It was found three isolates of pathogenic bacteria *Ralstonia solanacearum* in Mae Hia, Muang district and Sunsai district, Chiangmai Province. The isolate causing most severe symptoms is isolate SS. Moreover, 173 isolates of antagonistic bacteria were assay to inhibit growth of the bacteria *Ralstonia solanacearum*. Antagonistic bacteria MTR 13, MTR 14 and NS5 showed the high efficiency suppression. Appearance of colonies and gram staining of bacterial antagonists were found three different

isolates and all stained with Gram-positive. The biochemical properties of three bacterial isolates were initially classified as *Bacillus* spp.

