Thesis Title : Morphological, Physiological and Molecular Biological Analyses of *Heliconia spp.*

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ABSTRACT

The studies were aimed to scale some criterions, which are useful to identify and distinguish the earliest shoot emergence of *Heliconia spp.* Therefore, a number of the plants, which three cultivars of *Heliconia psittacorum*, Lady Di, Sassy, and Andromeda and the hybrid cultivar between *H. psittacourm* L.f. and *H. spathocircinata* Aristeguieta, Golden Torch, and *H. bihai* (Lobster Two Claw) and *H. rostrata* Ruiz&Pavon, were comparative studied their morphologies, physiologies, and total protein contents. Based on some morphological aspects of the 10 days after shoots emergence, the Lobster Claw Two and *H. rostrata* could be identified. The shoot color, the rhizome length, and the length of internode were significant for using as the criterion to identify the two cultivars. However, disseminated black spots at the stem base of *H. rostrata* were unique to separate the species from Lobster Claw Two. Only 30 days emergent shoot of Sassy was certainty to identify the cultivar based on the grey-brown stem hairs and a wavy leaf blade. Golden Torch was able to recognize by the leaf veins and leaf intervening. Neither morphological nor physiological aspects could separate Lady Di from Andromeda; however, the two cultivars were characterized by using the crude proteins, which were prepared from the 30 days after shoot emergence. The protein patterns, which was analyzed based on SDS-polyacrylamide gel electrophoresis revealed the 200 kDa protein, was detected in the 30

days emergent shoot of Lady Di only. The protein band was significant to identify the cultivars. Comparative morphological studies at the reproductive phase of the *Heliconia* cultivars revealed Lady Di and *H. rostrata* required at least 75 and 269 days, respectively, for flowering. Number of shoots and flowers produced by Lady Di was greater than the other cultivar in these studies. The studies gave a strong promise to use as a tool for commercial screening *Heloconia* in a future.