

3836532 SCEB/M : MAJOR : ENVIRONMENTAL BIOLOGY ;

M.Sc. (ENVIRONMENTAL BIOLOGY)

KEY WORDS : CARBARYL/ AQUATIC PLANT/ EC<sub>50</sub>/ HISTOLOGY

SIRIORN BOONYAWANICH : THE EFFECT OF CARBAMATE INSECTICIDE ON THE GROWTH OF THREE AQUATIC PLANT SPECIES : *IPOMOEA AQUATICA*, *PISTIA STRATIOTES* AND *HYDROCHARIS DUBIA*.

THESIS ADVISORS : MALEEYA KRUATRACHUE, Ph.D., SUCHART UPATHAM, Ph. D. 101P. ISBN 974-663-168-3

The purpose of this study was to assess the effects of carbamate insecticide, which is commonly used in Thailand for pest control, on the growth of three aquatic plant species. These plant species, 1. *Ipomoea aquatica*, 2. *Pistia stratiotes* and 3. *Hydrocharis dubia* are used as food for both humans and livestock.

These three aquatic plant species were treated with different concentrations of carbaryl and test durations. The fresh weight increase, the dry weight per fresh weight and the total chlorophyll content of the treated plants decreased with increasing concentration of carbaryl and the test durations. However, the leaf injury index of the treated plants of the three plant species increased with increasing concentrations of carbaryl and the test durations, while the leaf injury indices of the controls were zero. The 96-hour EC<sub>50</sub> values of *Ipomoea aquatica*, *Pistia stratiotes* and *Hydrocharis dubia* were 0.996, 0.785 and 0.334 g/l, respectively. Moreover, chlorosis and necrosis occurred at the leaf margin of the treated plants, then they extended into the inner portion of the leaf blade. Finally, the leaves decayed and died. The histology of the treated leaves showed that the chloroplasts of palisade parenchyma cells were reduced in number when compared with those of the control and the spongy parenchyma cells were plasmolyzed.

The results of this study can be used to develop a simple test for water quality or measuring levels of insecticide.