

Present status of *Neochetina eichhorniae* as a biological control agent of water hyacinth in the Western province of Sri Lanka

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Water hyacinth (*Eichhornia crassipes*) is included among the top ten of nuisance aquatic plants in the world. One of the better sustainable solutions to manage the infestations seems to be biological control and the main biological control agent used in many parts of the world including Sri Lanka is reported to be the weevil [*Neochetina eichhorniae* Warner] (Coleoptera; Curculionidae). Fernando and Room used the weevil *N. eichhorniae* for the first time in Sri Lanka in 1988. Although some 15 years have elapsed since the first release, infestation in the areas in which the weevil was released is as high as in the areas in which *N. eichhorniae* was not released. The present study therefore focuses on the evaluation of the role of *N. eichhorniae* in controlling water hyacinth in field and is designed to evaluate the optimum weevil densities required to cause significant damage to the plants. Twenty-five water hyacinth plants per tank of height 21 ± 1 cm were cultured in 6 fiberglass tanks for a period of 8 weeks to complete one life cycle of weevil. Different weevil densities were used, varied from 1, 3, 6, 10 and 15 weevils per plant, and the control with no weevils. The field monitoring was carried out in eight locations within the Western province. Results showed that the treatments with weevil numbers less than 3 per plant did not significantly change ($p > 0.01$) the water hyacinth stands, though there was a slight inhibition of growth during the eight weeks. Hence such combinations are not recommended for the sustainable management of water bodies with the stands of water hyacinth. The treatment with 6 weevils per plant indicates that the biomass could be controlled at a level more or less equal to the original biomass suppressing excess plant growth and vegetative propagation. However for complete eradication of water hyacinth stands, weevil densities more than 10 per plant are necessary. It was observed that 2.04 ± 0.36 per plant was the highest weevil density that was in existence among the study sites. Recommended densities were not found in practice including the sites where Fernando and Room first released the weevil. Disturbances in microclimates, mechanical removal of plants and several hydrological features notably the size of water body affect the degree of biological control. Therefore the success of biological control using *N. eichhorniae* will ultimately rely on host plant quality and the habitat conditions to establish a healthy population of weevil densities for proper management of water hyacinth in Sri Lanka.

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