Biological studies on neochetina bruchi, two specific weevils for controlling water hayachinth

Islam Rashed Marzouk El-Zoghby

The perrenial aquatic floating weed, water hyacinth [Eichhornia crassips (Mart.) Solms.] is considered the most serious weed invading ponds, rivers and drainage channels. It causes many problems, as it forms dense mats over water surfaces obstructing navigation & fishery, irrigation and drainage systems, in addition to the great, loss of enormous amounts of water through evapo-transpiration. Programs to control this weed have been initiated, of which the biological control by releasing specific monophagous insects is the most important to assure high rates of control and the safety of water from any pollution. For this reason an Egyptian project for the biological control, financed by the French government has been started in 1999. Two specific weevils Neochetina eichhorniae and N. bruchi which feed and complete their life-cycles on water hyacinth were introduced from U.S.A. to Egypt during year 2000, reared and released for the biological control of heavy infestations in the 4 northern lagoons (Mariout, Edko, Al-Manzala and Al-Borollas).The study presented in this thesis was carried out in two cages constructed under natural conditions in the Faculty of Agriculture at Moshtohor. The study covered the effect of water hyacinth infestation by N. bruchi on the rate of water loss through evapo-transpiration and also on the rate of flowering. Studies covered also the main biological aspects of both species N. eichhorniae and N bruchi. The obtained results may be summarized as follows:1- Role of N. bruchi in reducing water loss through I crassipes:This experiment was carried out to estimate the amount of water loss by free and Neochtina bruchi infested water hyacinth to be compared by amount of water lost from the same quantity and water surface area of exposed water. The highest amount of water loss was recorded from bucket invaded with healthy non-infested water hyacinth plants (107.07 liters) throughout the whole 14 weeks of experiment. While, buckets that harbourd water hyacinth infested by N. bruchi, lost significantly lower amount of water (65.1 liters), i.e., saving of about 42 liters (39.2%) of water. While, the quantity of water lost from buckets containing water only was 57.3 liters (46.5% less than those from free water hyacinth infested water), showing 7.8 liters less than that lost from water harbouring N. bruchi infested water hyacinth.Regarding the daily amounts of water lost from buckets of the three treatments, it was observed that smallest amounts of water were lost from the free exposed water during the first 7 weeks of experiment and during the remaining period, smallest ’quantities of water were lost from water harboring N. bruchi infested water hyacinth.Generally, the obtained data clarified and confirmed the valuable role of Neochetina in saving water loss through evapo-transpiration from water hyacinth leaves. The total amount of saved water, in the experiment, by using this bioagent was 39.2% as a final mean percentage, but this percentage was generally higher during the first 7 weeks, and lower during the remaining 7 weeks of experiment.