

Review of biological control of *Salvinia molesta* in Sri Lanka using the weevil *Cyrtobagous salviniae*

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Salvinia molesta, the floating weed, has invaded many inland water bodies in Sri Lanka affecting agriculture, inland fishing, social life, and aquatic biodiversity. The objective of this review was to summarize the history of the invasion of *Salvinia molesta* and its biological control using *Cyrtobagous salviniae* Calder & Sands (Coleoptera: Curculionidae).

The aquatic fern, *Salvinia molesta*, native to south-eastern Brazil, was brought into Sri Lanka in 1939 for research purpose. Studies were carried out in Colombo and the plant accidentally escaped into the natural environment. By 1952, *S. molesta* was included into scheduled weed under the Plant Protection Ordinance No. 10 of 1924. By 1954, *Salvinia* had invaded over 8,907 ha of paddy and 810 ha of inland water in the Western province. Physical control of *S. molesta* was initiated by Ministry of Agriculture in 1952, followed by chemical control by the Department of Agrarian Development in 1955, and a program for eradication was launched by Department of Agriculture in 1960. Later, *S. molesta* was found in many water bodies in different climatic zones across the country. Mechanical and chemical control of *Salvinia* were not sufficient to provide long lasting effects due to rapid multiplication of the plants and high cost. In addition, chemical control created environment and health related effects.

Cyrtobagous salviniae, native to south-eastern Brazil and northern Argentina, was first imported to Sri Lanka as a biocontrol agent of *Salvinia* from Australia in 1986. Host specificity testing was carried out with financial assistance from the Australian Centre for International Agricultural Research, using 65 plant species including 10 cultivars of rice. Field studies were carried out in 1987 in Battulu oya and Lunuwila tank in North-western province, Kadupahara wewa in Eastern province, Mutukandiya in Uva province, Kadawatha and Gammanpila in Western province. Following mass rearing, insects were distributed to lowland water bodies. An assessment on success rate of biocontrol of *S. molesta* was carried out in 1997 and in 2008 by Department of Agriculture. The distribution and abundance of *C. salviniae* in Medavachchiya was studied by the Rajarata University of Sri Lanka in 2015.

The bio control activities are being continued by the Plant Protection Service of the Department of Agriculture with relevant stakeholders. Though biological control of *Salvinia* is effective, this weed remains a problem in Sri Lanka. However, efficient control could be achieved by an integrated management approach and monitoring the behaviour of the bio control agent in different climatic conditions.

Key words: Biological control, *Salviniamolesta*, *Cyrtobagous salviniae*.