

Management of *Salvinia molesta* in rice field in Sri Lanka

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Abstract

Salvinia molesta, is a free floating water fern. Its rapid growth results in a dense carpet-like cover on the water surface, which depresses dissolved oxygen concentration and increases the carbon dioxide and hydrogen sulfide in the water. It also cuts down the penetration of light. Hence it affects the growth of plankton and fish and existence of beneficial organisms. It has also been identified as a weed in rice fields. The proper management of *Salvinia* is important not only for the rice cultivation but also for the ecosystem conservation. Therefore, field experiments were conducted to investigate the use of *Salvinia* as a biological mulch to suppress other weeds in rice fields and also reduce its population size. The study was initiated in a rice field infested with 100% coverage of *Salvinia* and was conducted over two seasons. Paddy was broadcast with the following treatments. (a) *Salvinia* incorporated into the soil (80 – 100%), (b) Paraquat preplant herbicide sprayed, (c) glyphosate preplant herbicide sprayed, (d) all *Salvinia* removed from the field manually (control), and (e) *Salvinia* kept as it is in the field, on the soil surface. All treatments were not weeded and recommendations of Department of Agriculture for other management practices were followed. There was no significant effect of *Salvinia* on stand establishment of rice, except in the treatment (e), which has 30% lower plant density than the control because of mechanical damages. The mulching effect of *Salvinia* in the incorporated treatment and preplant herbicide-sprayed treatments significantly reduced the weight of weeds and increase rice yield. . The manually removed *S. molesta* treatment showed the highest weed biomass and higher rice yield. The lowest weed biomass and lowest yield were recorded from the treatment where *Salvinia* was kept as it is on the soil surface, in both major and minor seasons. The results indicated that *S. molesta* can be utilized in rice fields beneficially with soil incorporation and reduce it population in water bodies. .

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