4. Economic impacts

Giant salvinia can build up into huge biomass that leads to accumulation of debris thereby fouling water by making it unsuitable for domestic and commercial use. The huge biomass easily entangles fishing gears especially gill nets (Plate 5), thus leading to poor fish catches.



Plate 5: Gill nets totally entangled by S. molesta at Kayago landing site, Lake Kyoga, Amolatar District

Recommendations:

1. Since the Kyoga Basin has several satellite lakes, the potential for Salvinia to infest some of these lakes is eminent. It is therefore prudent to collect baseline data and information on the extent of Salvinia infestation in the Kyoga Basin lakes and other associated water bodies such as Lake Albert and the Albert Nile.

2. The outcry of the people as a result of Salvinia infestation is a signal that the environmental and socio-economic impacts of this weed are overwhelming in Salvinia infested environments. This therefore calls for urgent interventions to control this noxious weed in order to maximize use and exploitation of resources in affected waters.

3. Since Salvinia is a fragile aquatic weed which easily breaks under the influence of even slight winds, waves and water currents, mechanical control may not be the best option. Therefore, biological control may be the best alternative from the point of view of environmental friendliness and sustainability.

4. It is essential to find out more about the best management practices for Salvinia from those countries (e.g. Zimbabwe and Kenya) where the weed is non native but has apparently not led to major disruptions to use of water resources.

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A new water weed, Giant salvinia (*Salvinia molesta*), invades Lake Kyoga



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1. Introduction

Giant salvinia (*Salvinia molesta*) is an introduced invasive water weed in the tropics and sub-tropics[1]. It is a free floating weed that grows rapidly and forms extensive dense mats over still or slow-moving waters (Plate 2).



Plate 2: An extensive mat of Giant salvinia in the open waters of on Lake Kyoga between Zengebbe and Namasale landing sites

Its rapid growth results into covering of the water surface by forming a thick mat that blocks light from penetrating into the water. In this way, submerged plants including algae find it unsuitable to survive in such environments due to light limitation. If colonies of Giant salvinia cover a water surface, oxygen depletion and fish kills can occur. However, dense mats of Giant salvinia may provide conducive habitats for some aquatic invertebrates that are important natural food items for some fishes.

Giant salvinia is a water fern that reproduces only by vegetative means. Rapid propagation is aided by its brittle stolons that break easily under the influence of any disturbance e.g. by winds, waves, water currents, movement of boats and any other activity on the water including any form of fishing. The broken pieces easily disperse to other locations where they multiply and form thick mats. Under optimal conditions, Giant salvinia can double its biomass every 2 to 3 days, and can double in size in 4 to 10 days.

2. Environmental impacts

Due to its rapid growth, with a biomass doubling time of less than four days, Giant salvinia may form thick extensive mats that result into destruction of several habitats for fish and other aquatic biota. Its rapid growth also generates a lot of organic matter which, when it dies and rots, fouls water hence impairing water quality for domestic and other uses. The rotting organic matter also creates an oxygen deficient environment that is not good for most fishes and some other aquatic animals that cannot tolerate low levels of dissolved oxygen. The gradient of dissolved oxygen was such that weed-free waters and the outer weed fringe had more than 8 mgL^{-1}, but this reduced drastically as one advances inside the weed mat (Figure 1).

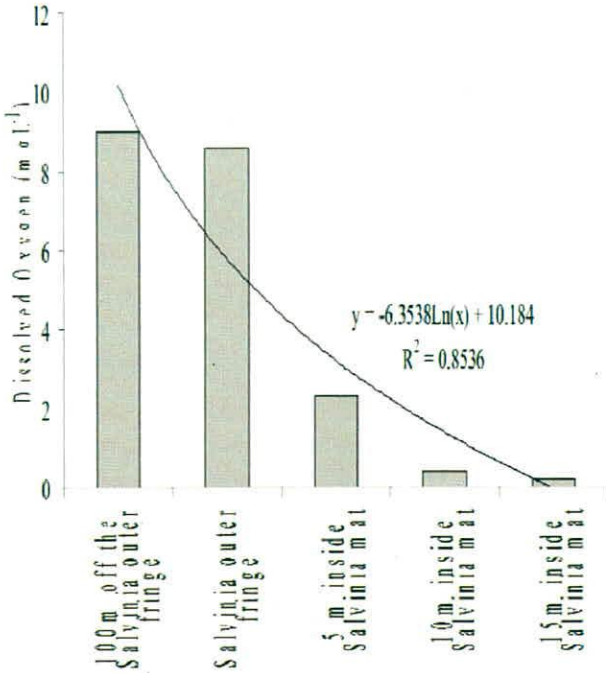

Figure 1: Dissolved oxygen concentration gradient from the open water into the weed mat

3. Social impacts

On Lake Kyoga, this weed is well established along much of the shoreline especially in the central and western zones of the lake. Activities that are commonly done in the near-shore areas such as water abstraction by lakeside communities (Plate 3a),

watering domestic animals, docking and boat take-off (e.g. Plate 3b), bathing and swimming are negatively affected by the thick mats of Giant salvinia.



3a 3b

Plate 3: Giant salvinia had just been blown off Zengebbe landing site in Nakasongola district (a), and Fishing boats trapped in a thick mat of Giant salvinia at Kayago landing site, Lake Kyoga, Amolatar district (b).

This weed endangers fishers and livestock who can become entangled in heavy infestations. The weed also creates micro-habitats that are ideal for disease vectors e.g. malaria-carrying mosquitoes and bilharzia snails.

Giant salvinia also alters the natural beauty of open water, such as dams, rivers and lakes (Plate 4).



Plate 4: Open waters of Lake Kyoga littered with clusters of Giant salvinia