

## INTRASPECIFIC NEIGHBOUR EFFECTS ON THE GROWTH AND MORPHOLOGICAL PLASTICITY OF *SALVINIA MOLESTA*

S.M. SOLANGAARACHCHI and H.T. HAPUARACHCHI

*Department of Botany, University of Kelaniya, Kelaniya..*

(Received: 17 October 1994; accepted : 23 February 1995)

**Abstract:** The tropical fresh water fern salvinia (*Salvinia molesta* D.S. Mitchell) is a problematic weed and is being controlled biologically by the introduction of a weevil, *Cyrtobagous salviniae*. The plant consists of three morphologically different growth forms; primary, secondary and tertiary, during its growth. The present paper describes how the initial density of primary stage plants affected its morphological plasticity. Primary stage apical cuttings consisting of three ramets (uniform in size) were selected and were grown at densities of 16, 400 and 800 ramets per square metre. The growth and morphological changes were observed for a period of 100 d. Plants remained at their primary stage under the lowest density and they transformed from primary to secondary and then to tertiary growth stages at higher densities. There were significant differences between the growth forms and their growth.

**Key words:** Intraspecific neighbour effect, *Salvinia*.

### INTRODUCTION

A plant may show a change in its development pattern, during its life cycle, which may start with the germination of a seed, continuation with a juvenile phase which grows exponentially and transformation into maturity phase during which the plant is capable of changing from vegetative to reproductive phase producing flowers, fruits and the production of a new generation of seeds. This may be followed by a state of senescence.

As early as in 1889 Goebel<sup>1</sup> concluded that some plants show heteromorphism between the juvenile and mature phases. During this transition plants show distinctive morphology of leaves, stems and other structures, and also change in growth rate. In different plant species the duration of each growth form differs. In *Xanthium* sp. juvenile leaf forms may occur only on the first or first several nodes of the germinating seedling. Juvenile types of stem growth, leaf form and thorniness persist for four to ten years in *Citrus* spp..

A plant may regulate these changes as adaptations to different environmental conditions. The timing of the onset and emergence from dormancy of plants in temperate and arctic climates can also be considered as such adaptations.

The fern salvinia (*Salvinia molesta* D.S. Mitchell) which is an aquatic weed in tropical fresh waters also shows some morphological plasticity during its growth. The plant is sterile<sup>2</sup> and the entire species can be considered as a single genet without any genetic variations. Therefore the population dynamics depend on branching, growth and fragmentation. The plant consists of pairs of floating leaves, submerged root-like structures at each node along the stolon.