

REGULATION OF GIANT SALVINIA (*SALVINIA MOLESTA* MITCHELL) GROWTH BY PH AND AVAILABLE NUTRIENTS. J.D. Madsen and R.M. Wersal. GeoResources Institute and Department of Plant and Soil Science, Mississippi State University, Mississippi State, MS

ABSTRACT

Giant salvinia (*Salvinia molesta* Mitchell), a native of South America, is an invasive floating aquatic fern. Giant salvinia has been a detrimental noxious pest in Australasia, Africa, South America, and the Caribbean. Giant salvinia was first reported to have escaped cultivation in South Carolina in 1995, and has since been reported in Texas, Louisiana, Mississippi, Alabama, Florida, North Carolina, Arizona, California, and Hawaii. Previous studies have reported that giant salvinia is dependent on dissolved nutrients in the water for growth and has optimal growth at circumneutral to slightly acid (pH of 6) water. We examined giant salvinia growth in a three-by-three factorial experiment, with pH levels of 5, 6.5, and 8 and low, medium, and high concentrations of nutrients. Plants were grown in 378 L tanks, with each treatment replicated three times. At two-week intervals, two samples per tank were collected using a 0.01 m² quadrat and dried at 55 °C. End-point analysis was performed using a two-way analysis of variance, with pH and nutrient level. Initial results after 35 days indicate that pH was not a significant factor in plant biomass ($p=0.65$), while nutrient level significantly affected growth ($p<0.001$). Although pH may not be a factor controlling giant salvinia growth, giant salvinia modifies water pH through decomposition of plant material and disruption of the water-air interface. Giant salvinia will likely succeed best in waters with high nutrient loading rates, and may not survive or compete in waters of low nutrient loading rates.