

## Efficacy of Water Hyacinth as green manure on test crop, green gram

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### SUMMARY

An *in vitro* investigation was carried out with water hyacinth (WH) as green manure in different concentrations to assess its efficiency on test crop, green gram. The statistical scrutiny of the results of the study revealed that among the five treatments ( $T_1$ - control,  $T_2$ -NPK standard check,  $T_3$ -70mg WH,  $T_4$ -140 mg WH and  $T_5$  210 mg WH).  $T_5$  treatment (210 mg-WH) was found to be efficient in enhancing the biometric parameters like plant height (from 35.23 to 83.93 cm), number of leaves /plant (from 11.33 to 23.33cm), root volume (from 0.72 to 4.96cm), root nodules /plant ( increased from 10.33 to 35.33) nodule weight upto 50 days and declined to 18.33 at harvest), fresh and dry weight of plants (from 0.95 to 2.26g) and (from 0.14 to 0.27g), respectively over the control,  $T_1$ . The yield parameters like number of flowers /plant and pods /plant (from 10.33 to 15.33 and from 11.33 to 16.67, respectively), length of pod (from 4.5 to 6.53cm), pod weight (from 0.23 to 0.45g) and number of seeds /plant and hundred seed weight (from 8 to 10g and from 0.87 to 3.32 g, respectively) also showed a significant increase compared to absolute control,  $T_1$ . Thus, it may be deduced from the present investigation that the nuisance weed, water hyacinth, a source of high concentration of nutrients can be effectively utilized either as a fertilizer or as a green manure to enhance the growth and yield of crops.

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**G**reen manures seem to be an attractive alternative source to meet a substantial portion of nitrogen requirement and provide organic matter to the soil. Water hyacinth, *Eichhornia crassipes* (Mart) Solms is a free floating perennial aquatic plant with broad, thick and glossy ovate leaves. The leaves are supported above the water surface by long, spongy and bulbous stalks and the feathery, freely hanging roots. Water hyacinth has been considered as an uncontrolled nuisance many a time. The capacity of water hyacinth to invade and overtake aquatic habitat is astounding. It can quickly dominate natural areas and can dramatically alter the species composition, structure and function of native plant and animal communities. Water hyacinth plant contains organic matter -75.8 per cent, N-1.5 per cent, Na-1.8 per cent, and Ca-12.8 per cent. Decayed water hyacinth was found to be the perfect medium to cultivate straw mushrooms, a low cost organic fertilizer for farms. If the water hyacinth is

returned to the land, then the nutrients are taken back to the land in an improved form. Water hyacinth can also be used as mulch, compost and as fertilizer, produced by mixing with organic materials and phosphate rock (Sabale and Mane 2006).

The objective of the present investigation was to analyze the efficiency of WH as a green manure on the biometric and yield parameters of green gram (*Vigna radiata*, L.) which belongs to the family Leguminosae.

### MATERIALS AND METHODS

A pot culture experiment was conducted at department of Botany in Avinashilingam Deemed University, Coimbatore in 2008, with five treatments, each with three replications, following a randomized block design (RBD). The pots were filled with 7kg of red sandy loam soil and about seven seeds of green gram were sown in each pot. After germination and establishment, three healthy plants were maintained per pot. The plant samples were carefully uprooted at 30, 50 and 70 DAS to analyze the biometric and yield parameters of green gram.

### Treatment details:

There were five treatments as detailed below, which were evaluated against the  $T_1$ - control,  $T_2$ -NPK,  $T_3$ -WH-

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