



**EFFECT OF AQUATIC PLANT EXTRACT ON THE GROWTH OF MAIZE (*ZEA MAYS*)  
AND CHICKPEA (*CICER ARIETINUM*)**

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**ABSTRACT**

In present study, pot experiment was carried to study the effect of aqueous extract of *Hydrilla verticillata* and *Eichhornia crassipes* on seed germination and growth of maize (*Zea mays*) and chickpea (*Cicer arietinum*). Aqueous extract of *Hydrilla verticillata* and *Eichhornia crassipes* significantly increases germination and growth of maize and chickpea. Maize shoot showed higher growth at 50% conc. of *Ecchornia* extract whereas chickpea shoot length was observed higher growth at conc. 30 % as compared to that of control. At higher concentration it inhibits the growth and couldn't get better results. Also, at 10% of *Hydrilla* extract chickpea shoot and root length observed higher growth whereas it also showed increase in shoot length for maize as compared to other concentration. So plant extract like *Hydrilla verticillata* and *Eichhornia crassipes* can be used as a liquid biofertilizer for plants. The extract did not showed any effect on the growth of microorganisms present in soil. Soil treatment showed better growth of shoot and root length.

**KEYWORDS:** Aquatic plant extract, maize, chickpea, *Hydrilla verticillata*, *Eichhornia crassipes*.

**INTRODUCTION**

Fertilizers are natural and artificial substance containing the chemical element that improves growth and productiveness of plant. Fertilizers enhance the natural fertility of the soil or replace the chemical element that taken from the soil by previous crops. Water hyacinth (*Eichhornia crassipes*) is rich in protein content and also in high NPK (Nitrogen, Phosphorus and Potassium) value (Majid, 1999). Hence, it might be serving the required phyto-chemicals and nutrients for the growth.

*Hydrilla verticillata* and *Eichhornia crassipes* has become most serious aquatic plants. But these two plant extract contains lots of minerals, vitamin, iron, phosphorus, nitrogen which are beneficial for the plant growth. These aquatic plant extract is non toxic, non-polluting, non hazardous to human, animals, birds and environment.

The extracts of different parts of plants have been used for different purposes since long time ago due to their chemical nature, accessibility, and simple use without side effects. (M.A. I. Talukder, 2015). Some plants showed antioxidant properties (Shah et.al. 2014, Kenny et.al. 2014) while a group of plant species effectively showed antimicrobial activities (Andrade Pinto, et.al.2010, Tascioglu, C. et. al. 2013) and reduced plant diseases like damping-off and wilt (Abdel-Monaim, 2011). Certain plant extracts found to have cytotoxic

effects (Asadujjaman, M. 2004). Present investigation was carried out to observe the effects of aqueous extracts of aquatic plants viz. *Hydrilla verticillata* and *Eichhornia crassipes* on the germination and growth of two crops namely maize (*Zea mays*) and chickpea (*Cicerarietinum*).

Liquid extracts obtained from seaweeds are successfully used as foliar sprays for several crops (Bokil et. al.1974). Green algae *Chlorella vulgaris* stimulates plant growth by production of growth hormones, vitamins, macronutrients (N, P, K) and micronutrients (Fe) [Bajguz and Piotrowska-Niczyporuk 2013]. Different forms of algae have been reported to produce beneficial effects on some vegetable crops (Abdel-Mawgoud et al., 2010). If treatments with seaweeds extracts are applied in the early stages of growth, the stimulating effect is more pronounced (Rayorath et al., 2008).

**MATERIAL AND METHODS**

In rainy season the green *Hydrilla verticillata* and *Eichhornia crassipes* are easily available in pond and fountain of botanical garden of S. G. M. College, Karad. So these are collected from botanical garden of S. G. M. College, Karad, district Satara.

**Preparation of aqueous extract**

The collected samples were washed thoroughly with tap water to remove dirt. Sample (50 gm) was homogenized