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BIOLOGICAL CONTROL OF *PARTHENIUM HISTEROPHAROUS* AND ITS UTILIZATION AS BIOCOMPOST

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ABSTRACT

The weed proved to be harmful to crops all over the world. Different methods have been adopted in India to control the weed biologically but so far none of the method proved to be satisfactory. Each method had some limitations such as high cost, impracticability, environmental safety, temporary relief. *Zygogramma* has been established and reduced *Parthenium* up to 90%. Results also revealed that *Parthenium* proved to be very useful as biocompost comparing with other biocompost.

KEYWORDS: Biocompost, *Parthenium, Zygogramma*.

INTRODUCTION

Parthenium is a tall herbaceous pant growing to the height about one meter. It has branched tap root system. The stem is whitish hairy, striated and much branched. The leaves are simple, dissected, and alternate. It produces large number of minute flowers arranged in head or capitulums type of inflorescence. The florets produce large number of seeds. The seeds are actually cypsela type of fruits. (i.e. One seeded fruits) Fully grown plants can produce more than 25000 seeds within 4-6 weeks. The seeds remain viable for long time. *Zygogramma* bicolorata pallister is an introduced bio agent from Mexico to control the *parthenium* . *Zygogramma* does not involve in any environmental pollution. It is ecofriendly method to control the growth of *parthenium*. It does not harm to the other cultivated crops in the field. In recent past this approach gained momentum after reports that sercea can be used to control *parthenium* (Mahadevappa and Ramaiah, 1988) some efforts were also done by Bala et al., (1997). Kauraw and Bhan (1995) also did some successful research regarding biological control of parthenium.

Biocomposting is one way in which some of the problems associated with the utilization of various organic crops can be resolved. It is an ancient practice where farmers have converted organic waste into nutrients. It improves the crop productivity and soil fertility. Through composting organic waste is decomposed, nutrients are made available to the plant. Pathogens are destroyed and malodorous are abated. It also improves physical properties of soil like increase in organic matter content etc. In addition, compost application adds nutrients to soil and suppresses soil born diseases.

MATERIALS AND METHODS

Soil samples were collected before the *partehnuim* grown and after growth within 5-6 weeks and soil analysis was carried out.

The physico chemical characters like pH, water holding capacity, organic matter, nitrogen, phosphorous, potassium, cadmium and sodium were carried out using standard methods. For biological control of parthenium zygogramma was feed upon it.

Biocomposing was done with digging a pit. 50 kg *parthenium* was spread over the surface area of pit then 5-7 kg cowdung was mixed in 20 litre water and sprinkled over the spread *parthenium* and 500 gm urea and 3 kg superphosphate was spread equally over it. Also 50 gm of trichoderma viridi and trichoderma Harjinia fungi powder was used. Lastly the pit was covered with cowdung and soil.

RESULTS AND DISCUSSION

Soil pH: Soil sample before growth of *parthenium* (Sample-I) showed 8.60 while soil after *parthenium* growth (Sample-II) showed pH-8.68.

Texture: The texture of soil was clay type.

Nitrogen: The results obtained from the soil sample-I and soil sample-II are 64.8 kg/ha and 60.7 kg/ha respectively.

Phosphorous: The Phosphorous content in soil sample-I was 0.55 ppm and in soil sample-II it was calculated 0.38 ppm.

Potassium: The amount of potassium obtained in sample-I was 28 ppm and in sample-II it was 22 ppm.

Cadmium: Cadmium content in soil sample-I was 302 ppm and in soil sample-II it was calculated 123 ppm. It reveals that *parthenium* suck more cadmium from soil.

Calcium: In the present investigation values of calcium before *parthenium* growth was 28 ppm and after *parthenium* growth it was found 23 ppm.

Sodium: Sodium was estimated by Flame photometer. In the present study sodium content in soil before and after *partthenium* growth was 64 ppm.

Biocompost: Biocompost obtained from *parthenium* had more percentage of phosphorous, potassium, calsium and magnesium comparing with other biocomposts.

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