

***Parthenium* Based Composting: An Approach to Minimize the Existing Weed Population in Northern Province of Sri Lanka**

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An alien species *Parthenium* is a problematic weed species to native biodiversity and considered as the second most important threat after habitat destruction. Its incursion and quick adaptation in Northern Sri Lanka is considered to be the major threat to the dry-zone agriculture. An investigation was carried out to manage the weed through bio-composting as substitute for environmentally harmful inorganic fertilizer. Before flowering, fresh and healthy *Parthenium* leaves were collected from Vaddukoddai, Jaffna and composted using earthworm and distillery spent wash. Seed germination test was conducted to measure the performance of the compost. In the investigation of *Parthenium* on *Eisenia foetida* growth rate and multiplication were measured. The treatments used were significantly different from other at $p>0.05$. Cocoon production was highly significant ($p>0.01$) in 100 g Teak leaves +200 g cow dung treatment with the mean of 7 ± 1 where as in 10 g *Parthenium* fresh leaves + 200 g cow dung and cow dung+ Teak+ *Parthenium* leaves cocoon formation were also considerably high with the mean of 6.33 ± 0.57 and 6 ± 1 . *Amaranthus* seed germination was high in 100 g Teak leaves +200 g cow dung treatment with the mean of 79.2 ± 4.58 whereas no any germination was recorded in 100 g *Parthenium* fresh leaves + 200g cow dung and 100 g *Parthenium* dry leaves + 200 g cow dung treatments. In distillery spent wash compost *Amaranthus* germination was highly significant in distillery spent wash (5 mL) + *Parthenium* dry leaves (10 g) + cow dung (5 g) with the mean of 69.13 ± 6.02 . But in distillery spent wash (5 mL) + *Parthenium* fresh leaves (10 g) + cow urine (5 mL) and distillery spent wash (5 mL) + *Parthenium* dry leaves (10 g) + cow urine (5 mL) treatments germination percentage was significantly very lower. This investigations concluded that optimum level *Parthenium* can be used for the production of compost with the different combinations of other bio-rationales to minimize the usage of inorganic chemicals. An allopathic chemical present in the *Parthenium* is detrimental to earthworm as well as seed germination. Bio-composting of *Parthenium* is an eco-friendly means to minimize the existing immature (before flowering) *Parthenium* population only.

Keywords: *Amaranthus*, distillery spent wash, earthworm, *Parthenium*