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Allelopathic effect of leaf, stem, root and inflorescence leachates of *Parthenium hysterophorus* on seed germination and early seedling growth of Green gram, Black gram and Cowpea

Parthenium hysterophorus is a noxious weed found in Bean fields in Sri Lanka. Growth reductions have been observed in Bean seedlings grown just after the weeding. In this study the extent of inhibition due to dry parts of leaf, stem, root and inflorescence aqueous leachates were compared by their effect on percentage germination and seedling growth of Green gram, Black gram & Cowpea. The objective of this study was to test the activity of inhibitors in all the dry parts of the weed & to compare the allelopathic potential of leaf, stem, root & inflorescence leachates of this weed by examining their influence on seed germination and early seedling growth of the selected crops. Dry tissues of (6 g) leaf, stem, root & inflorescence of *Parthenium hysterophorus* were collected from natural stand of weed, surface sterilized and soaked in distilled water at 10 oC for 72 hours, leachates were filtered and filtrates were used. Two seeds each of Green gram, Black gram, Cowpea were placed separately in petridishes lined with a single disc of filter paper moistened with 2.5 mL of leachates of leaf, stem, root inflorescence. The petridishes were kept in propagator box in complete randomized design, incubated at 30 – 31 C at 65% R.H, in darkness. Ten replicates were maintained. For control 5 replicates were maintained, here instead of leachate 2.5 mL distilled water was used. Seed germination was noted after 3 days; length of coleoptile and root was noted in 5 days old seedlings. Dry weights of seedlings were noted in 8 days old seedlings.

In Green gram and Black gram there was no significant difference in percentage of germination, but cowpea showed significant difference between control and treatments. In cowpea percentage germination within treatments, there is significant difference between root, stem leachates compare to leaf, inflorescence. The effect of latter is more than the effect of root & stem. Effect of leachates of all parts on Green gram, Black gram and Cowpea showed significant difference in coleoptile length when compared with control, but there is no significant difference within treatments. Effect of leachates of all parts on Green gram, Black gram & Cowpea showed significant difference in seedling root length when compared with control, but there is no significant difference within treatments. In Green gram, Black gram and Cowpea within treatments there is significant difference between the effect of root, stem leachates & leaf, inflorescence leachates. The effect of latter is more than the effect of root & stem. In Black gram there is no significant difference in seedling dry weight, but in Green gram & Cowpea there is significant difference in seedling dry weight between control & treatments. In Green gram and Black gram there is no significant difference in dry weight between treatments, while in Cowpea there is significant difference between the effects of root, stem leachates & leaf, inflorescence leachates. The effect of latter is more than the effect of stem & root.

Therefore burning the weed, not keeping it alive for longer periods in fields, keeping the weed residues away from the field after weeding or deep burying are good agronomic practices for Green gram, Black gram & Cowpea fields of Sri Lanka where *Parthenium* invasion is common.