DII 06 Allelopathic potential of nine Sri Lankan improved rice (*Oryza sativa* L.) cultivars for control of *Echinochloa crus-galli*

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The existence of allelopathy has been controversial for many years given that only indirect evidence supports the ability of secreted natural products to exert such effects. Nevertheless, recent research works with rice plants provide strong evidence for natural product mediated plant-plant allelopathy. More modern cultivation methods rely on the application of herbicides, which imposes accompanying economical, environmental, and human health costs. Accordingly, for rice and other staple crops there is significant interest in investigation of the secretion of plant natural products that directly suppress the growth of neighboring plants. However, in Sri Lanka, scare information is available on allelopathic potential of different rice cultivars on weeds. In the present study laboratory, greenhouse and field experiments were conducted to assess the allelopathic potential of 9 improved and 2 traditional Sri Lankan rice cultivars on *Echinocloa crus-galli*. The results showed that there is a significant variation in allelopathic potential of these selected rice cultivars for growth and development of *E. crus-galli*. In all experiments LD365 rice cultivar exhibited the highest inhibition percentages to *E. crus-galli* seed germination, growth and development, while Herathbanda and BG359 showed lowest inhibition percentages. As an example in the green house experiment the LD365 cultivar showed the greatest inhibition percentages on dry weight (75%), Plant height (41.9%) and seed germination (36.7%) whereas Herathbanda a traditional cultivar showed 34%, 23.4%, 18.1% inhibition percentages respectively. In field experiment BG300 also showed highest inhibitory effects by reducing *E. crus-galli* grain weight (60.4%).While BG450 rice residue extracts exhibited the greatest inhibition on *E. crus- galli* seed germination at laboratory bioassay. These results suggest that there is a variation among rice cultivars to suppress *E. crus-galli* growth/development.

Keywords: allelopathy, weeds, rice, *Echinocloa crus-galli, Oryza sativa*