

EVALUATION OF ALLELOPATHIC POTENTIAL OF SRI LANKAN IMPROVED RICE CULTIVARS (*ORYZA SATIVA*) IN THEIR EARLY GROWTH STAGE ON BARNYARD GRASS (*ECHINOCHLOA CRUS-GALLI*) GROWTH

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Reducing weed infestation by exploiting rice (*Oryza sativa* L.) alleopathy is being considered as a feasible and sustainable strategy for weed management in paddy fields. Knowledge of allelopathic potential of various rice cultivars and the identification of critical and optimum stage of allelopathic potential in rice plants are key aspects in using allelopathy as a sustainable tool in integrated weed management. Since rice allelopathy activity differs depending on its origin, growth stage environmental and management conditions, this study was undertaken to evaluate the allelopathic potential of 40 commonly cultivated Sri Lankan improved rice cultivars at their seedling stage for control of barnyard grass (*Echinochloa crus-galli* [L.] Baumg.). Plants were grown in trays under green house condition. After 30 days, shoot length, number of leaves and shoot dry weight were measured. With respect to each growth variable percentage growth inhibition of barnyard grass growing with a given rice cultivar was calculated relative to the control.

Significant differences ($p \leq 0.05$) were observed among different rice cultivars in terms of inhibition of barnyard grass plant height, number of leaves, and shoot dry weight. Overall, LD365 (54.7 %) and BW400 (48.4 %) had the highest average inhibitory effects on barnyard grass growth. The highest inhibition percentage on barnyard grass plant height and dry weight were also recorded in LD365 cultivar (58.1 and 93.4 %, respectively). All varieties showed comparatively less inhibition of the number of leaves and AT365 showed the highest inhibition of 13.3 %. Nine varieties including LD365, LD408 and LD356 had total inhibition rates over 40 %. Out of the rice cultivars tested, AT353 acted as a growth stimulant rather than a growth inhibitor. Furthermore, suppression of dry weight of barnyard grass was higher than the other measured variables. According to the results it can be concluded that the allelopathic potential of rice cultivars at early stage varies across a very broad range and out of the cultivars tested, LD365 showed the highest allelopathic potential against barnyard grass growth and development. However, allelochemical extraction and identification is important to authenticate these results.

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