

# IMPACT OF LAND PREPARATION METHODS AND HERBICIDES ON WEED CONTROL OF RICE CULTIVATION IN ANURADHAPURA DISTRICT

**D.K.N.R.A. Dewagiri, T.A.B.D. Sanjeewa and K.R.E. Padmathilake**

*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of  
Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.*

Rice (*Oryza sativa* L.) is the staple food crop occupying nearly 29% of the total agricultural land in Sri Lanka. Weeds are the major biotic constraint for rice production causing losses in grain yield. Hence, this study focused on evaluating land preparation methods along with herbicides for weed control of rice cultivation in the Anuradhapura district. The experiment was arranged in split-plot design and land preparation treatments: T1: disk ploughing+harrow+harrow+levelling+sowing (recommended method), T2: harrow+harrow+levelling+sowing (2–3 weeks), T3: harrow+harrow+levelling+sowing (rapid/one-week) and T4: no-tillage (control) were used as main plots. The herbicide treatments: H1: Pretilachlor, H2: Florypyrauxifen-benzyl, H3: bispyribac sodium and H4: no herbicide (control) were used as subplots. Data on weeds and rice plants were collected every two weeks from 1 m<sup>2</sup> quadrat area. The highest yield was obtained from the recommended ploughing method and Florypyrauxifen-benzyl applied plot and it was significantly different ( $p < 0.05$ ). Plant height, root length, number of tillers per plant, plant biomass and 1000-grain weight were significantly different from one treatment to another ( $p < 0.05$ ). The rice yield was significantly different for different combinations of treatments. According to the weed data, higher weed biomass was reported in T1H4 treatment whereas, lower weed biomass was observed in T2H2 treatment. Grasses, sedges and broadleaves were successfully controlled by Florypyrauxifen-benzyl herbicide 25 g L<sup>-1</sup> EC 10 DAS nevertheless, Bispyribac sodium (100 g L<sup>-1</sup> SC 12DAS) was not effective on sedges. Recommended land preparation methods along with Florypyrauxifen-benzyl 25 g L<sup>-1</sup> EC 10 DAS herbicide could control the weeds in rice cultivation resulting in higher yield.

**Keywords:** Herbicides, Land preparation, Rice yield, Weed control