

EVALUATION OF DIFFERENT BROAD LEAF AND SEDGE-KILLER HERBICIDES IN LOW LAND RICE CULTIVATION

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Weeds are the most critical biotic factor that limit rice productivity. Hence, more attention has been paid to evaluate and introduce herbicides as a method of weed control in rice fields. In Sri Lanka herbicides are generally evaluated for two cultivating seasons at the research stations of the Department of Agriculture prior to their release. Among the herbicides tested, the broadleaf and sedge-killer herbicides are generally evaluated for their efficacy, with MCPA as the standard control treatment. At present there are seven recommended broad leaf and sedge-killers available in the Sri Lankan market. However, these herbicides have not been evaluated together to compare their efficacy. Hence, an experiment was conducted to compare the weed control efficacy of five broad leaf and sedge-killers recommended by the Department of Agriculture. Except MCPA, all other herbicides tested were Sulfonyl ureas. Bispyribac sodium, a popular one-shot herbicide, which is also an ALS inhibitor, was used for comparison of data. Propanil was used as the standard herbicide to control grass weeds in all herbicide-treated plots, except those of Bispyribac sodium. Hand weeded and un-weeded treatments were used as controls. All the herbicides were applied according to the recommended rates and times given by the Department of Agriculture, in a RCBD with four replicates. A quantitative assessment of the phytotoxicity of herbicides was done using the dry weights of weeds and shoot lengths, tiller count, plant dry weights, SPAD meter readings, leaf area index, yield components and yield of rice plants.

Despite application of propanil, *Echinochloa crus-galli*, the most troublesome grass weed in lowland rice cultivation in Sri Lanka, was dominant in the plots. Weed control efficacy of all the recommended herbicides was greater than 90% when compared to un-weeded plot. However, weed control efficacy of the herbicides varied with respect to different weed species. *Monochoria vaginalis* was not effectively controlled by Carfentrazone ethyl. Root weight and yield of rice were not affected by the tested herbicides. Ethoxysulfuron treated plots gave the highest yield, which was 46% higher when compared to un-weeded plots and 6% higher when compared to MCPA treated plots.