

BIOEFFICACY OF HERBICIDES AND EUCALYPTUS OIL FOR WEED MANAGEMENT AND THEIR EFFECT ON CROP GROWTH IN RICE (*ORYZA SATIVA* L.)

Charu Agarwal, S.K. Guru and Babita Patni*

Department of Plant Physiology, College of Basic Sciences and Humanities,

¹Department of Agronomy, College of Agriculture, G. B. Pant University of Agriculture and Technology, Pantnagar-263145. (U.S. Nagar), Uttarakhand

*Dept. HAPPRC, H.N.B. Garhwal University, Central University, Srinagar (Uttarakhand)

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Abstract: Severe competition from weeds is one of the most important factor affecting productivity and sustainability of rice. The present investigation was conducted during rainy seasons of 2011 and 2012 at Norman E. Borlaug Crop Research Centre, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar to determine the bio-efficacy of various herbicides and eucalyptus oil as well as their effect on crop growth and yield of transplanted rice. The treatments included four herbicides viz. butachlor, penoxsulam, bispyribac sodium and mixture of cyhalofop butyl with penoxsulam and eucalyptus oil at different concentrations. *Paspalum scrobiculatum*, *Leptochloa chinensis*, *Alternanthera sessilis*, *Ammania baccifera* and *Cyperus difformis* were the dominant weeds. Results indicated that butachlor, penoxsulam (22.5 g), bispyribac sodium and cyhalofop butyl+penoxsulam were very effective in controlling all the weeds and reducing their biomass except *Alternanthera sessilis* and *Leptochloa chinensis*. Eucalyptus oil (5%) was found to be effective against weeds but its efficacy was lower than the herbicides. Highest yield was obtained in penoxsulam (22.5 g) followed by butachlor and bispyribac sodium treatments. The higher grain yield of rice could be attributed to higher values of the physiological growth parameters relative growth rate (RGR), crop growth rate (CGR) and leaf area index (LAI).

Keyword: Bio-efficacy, Eucalyptus oil, Herbicides, Physiological growth parameters

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*Corresponding Author

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