

INTERACTIVE EFFECT OF NITROGEN AND PENDIMETHALIN PLUS BISPYRIBAC-SODIUM RATES UNDER DRY DIRECT- SEEDED CONDITIONS OF AUS RICE

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Executive Summary

A field experiment was conducted at the research field of Sher-e-Bangla Agricultural University from March 2022 to July 2022 to examine if nitrogen (N) rates and weed management practices using herbicides in combination with pre-and-post emergence herbicide rates can improve crop competitiveness against weeds and increase the yield of direct-seeded rice (DSR). The experiment consisted of two factors, i.e., two-level nitrogen rate viz. 60 and 80 kg ha⁻¹ and pendimethalin fb. bispyribac-sodium rates viz. no weeding, pendimethalin 1000 g a.i. ha⁻¹ + bispyribac-sodium 0 g a.i. ha⁻¹, pendimethalin 0 g a.i. ha⁻¹ + bispyribac-sodium 25 g a.i. ha⁻¹, pendimethalin 500 g a.i. ha⁻¹ + bispyribac-sodium 15 g a.i. ha⁻¹, pendimethalin 1000 g a.i. ha⁻¹ + bispyribac-sodium 30 g a.i. ha⁻¹, and pendimethalin 1500 g a.i. ha⁻¹ + bispyribac-sodium 45 g a.i. ha⁻¹. The experiment was laid out in a split plot design placing nitrogen rate in the main plot and herbicidal treatments in subplot where BRRI dhan98 rice variety was used as a test crop. Results indicated that ten weed species infested the experimental field belonging to four families. The dominant weed species ranges in the experiments were *Physalis heterophylla* > *Echinochloa colona* > *E. crus-galli* > *Cyperus rotundus*. Increasing the N application rate from 60 kg ha⁻¹ caused significant improvement in grain yield when the weeds were well controlled either by pendimethalin or by the combination of pendimethalin fb. bispyribac sodium. However, the un-weeded control condition resulted in a 100 percent reduction in yield. The efficacy of the pre-and post-emergence application of pendimethalin + bispyribac-sodium, against diverse weed flora, including sedges and narrow-leaved and broad-leaved weeds, and the subsequent improvement in the yield, of direct seeded rice (DSR), implies that this herbicides combination can be effectively sprayed for the successful control of weeds in DSR. The best combination for weed control as well as grain yield was pendimethalin 1000 g ai ha⁻¹ + bispyribac-sodium 30 g ai ha⁻¹ where the maximum no of effective tillers, number of panicles m⁻², length of the panicle, 1000-grain weight were found.

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