Effects of seeding rate and some herbicides on growth and yield of direct-seeded rice

Milad Javadi Rahnamaye Haghighat*,

To study the effects of seeding rate and weed chemical control on growth andgrain yield of direct-seeded rice, a split plot experiment based on a Randomized Complete Block Design was conducted at Rice Research Institute of Rasht, Iran, in 2016 with three replicates. Main plots were weed chemical control in direct-seeded rice (1- pretilachlor pyrazosulfuron applied one week before transplanting and then the application of bispyribac-sodium one week after transplanting, 2- pretilachlor bensulfuron-methyl applied one week before transplanting and then the application of bispyribac-sodium one week after transplanting, 3- pretilachlor bensulfuron-methyl applied one week after transplanting, 4- weedy plots) and subplots were seeding rate (75, 100, and 125 kg ha-1). Moreover, a transplanting plot was added to the experiment. ANOVA showed that the main effect of weed chemical control was significant on weed biomass, plant height, panicle number per m2, grain number per panicle, 1000-grain weight, grain yield, and biological yield. The main effect of seeding rate was significant on plant height, panicle number per m2, grain number per panicle, and biological yield. The interaction between weed chemical control and seeding rate had no significant effect on any traits. Results showed that rice grain yield increased by 13% as seeding rate increased 75 to 100 kg ha-1 and further increase in seeding rate had no significant increase on grain yield. Plots treated with pretilachlor pyrazosulfuron and bispyribac-sodium produced similar grain yield compared to those treated with pretilachlor bensulfuron-methyl and bispyribac-sodium. Moreover, direct seeded plots had lower grain yield (14%) compared to transplanting plots. Furthermore, the lowest weed biomass was recorded for transplanting plots. At the same time, weed biomass was considerably reduced as plots treated with herbicide. Results also showed that weed biomass reduced by 30% as seeding rate increased 75 to 125 kg ha-1.

Keywords : : direct-seeded rice, seeding rate, weed chemical control, yield loss