Abstract

The study was conducted in JICA Tsukuba experimental rice field RE-2 from April 2018 to September 2018, to determine the effect of different levels of nitrogen fertilizer (Ammonium sulfate) application, on the growth and the yield of IR-28 rice. Four levels of nitrogen fertilizer were applied; 0kg.ha-1 (N0), 40kg.ha-1(N40), 60kg.ha-1(N60) and 80kg.ha-1(N80). For each of the four levels, part of the fertilizer was applied as basal dressing prior to transplanting, and the rest was applied as top-dressing at the panicle initiation stage. The experimental design was a Randomized Complete Block Design (RCBD) with four treatments and three replications. The plant length, the tiller number, and the leaf colour were measured for growth data. The number of panicles per m2, the number of spikelets per panicle, the spikelet fertility rate, the 1000 grains weight, and the calculated yield were determined for yield components assessment. The plant length and the tiller number were significantly higher in N80 and N60 compared to N40 and N0, and N80 showed the highest values. There was no significant difference among the four nitrogen levels in terms of the number of panicles per m2 and the number of spikelets per panicle. The spikelet fertility rate and the 1000 grains weight were significantly higher in N80, N60 and N40 compared to N0, and no significant difference was observed among the three. Calculated yield values were higher in N80 (5.74 tons. ha^{-1}) and N60 (5.38 tons. ha^{-1}) compared to N40(4.88 tons.ha^{-1}) and N0 (4.36 tons.ha-1), but there were no significant differences among the four treatments (5% Level of HSD). These results suggest that a high yield of rice can be achieved through the application of high amounts of nitrogen fertilizers. N60 nitrogen level can be recommended for optimum yield of IR-28. Although N80 showed higher yield and yield components, N60 is the best and the most economical nitrogen level required for optimum yield of IR-28.