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Assessment of NPK Fertilizer Use in Association with Growth and Yield Traits of Paddy Rice in Sindh

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Abstract—The nitrogen is a macronutrient element having important vital role in protein synthesis with an essential constituent of amino-acids. This study was carried out for assessing NPK fertilizer use and its association with (paddy) rice yield growth stages in Sindh was performed. The study research based on the RCBD with six different treatments along with three replications, including each plot size was 5m × 4m (20 m^{-2}). Six different NPK doses such as T_1 = Control (No fertilizer), T_2 = NPK 120+60+60 kg ha^{-1} (25% less than recommended), T_3 = NPK 80+40+40 kg ha^{-1} (50% less than recommended), T_4 = NPK 160+80+80 kg ha^{-1} (recommended), T_5 = NPK 200+100+100 kg ha^{-1} (25% more than recommended) and T_6 = NPK 240+120+120 kg ha^{-1} (50% more than recommended) were given in six split doses. The results exhibited the application of NPK positively affected all the studied attributes. The maximum plant height (103.83 cm), tillers (34.63 m^{-2}), panicle length (30.13 cm) crop growth rate (18.59 gm^{-2} day^{-1}), leaf area index (6.75%), biological yield (14.31 t ha^{-1}), straw yield (8.98 t ha^{-1}), seed index 1000-kernel wt., (25.93 g), and paddy yield (5.33 t ha^{-1}) were recorded in plants applied with NPK @ T_6 = NPK 240+120+120 kg ha^{-1} (50% more than recommended). However, minimum plant height (cm), tillers (m^{-2}), panicle length (cm), crop growth rate (gm^{-2} day^{-1}), leaf area index (%), biological yield (t ha^{-1}), straw yield (t ha^{-1}), seed index 1000-kernel wt., (g), and paddy yield (t ha^{-1}) were found in control treatment. It is concluded from presented study that utilization of NPK @ of T_6 = NPK 240+120+120 kg ha^{-1} (50% more than recommended) should be applied to achieve higher paddy (rice) yield under the agro-climatic condition of province Sindh in Tandojam. The study revealed research areas to establish adequate management practices applied through different levels of NPK for the enhancement of quality paddy (rice) production and to overcome the global malnutrition issues.

Keywords—Integrated Management, Paddy (Rice), Nutrition