COMPARISON OF RICE GROWTH AND WEED ABUNDANCE IN ORGANIC, REDUCED AND CONVENTIONAL SYSTEMS: THE FIRST YEAR IN TRANSITION

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Rice (*Oryza sativa* L.) is grown under a wide range of physical environments such as different soils, elevations, hydrological regimes and management systems in Sri Lanka. Although the conventional production practices are widely used in the dry zone, the demand for alternative crop production systems are rising due to economic, environmental and human health concerns. A field trial was conducted at the Rajarata University of Sri Lanka to compare the growth and weed abundance in rice under three input systems; organic, conventional and reduced, during *Maha* season 2018/2019 as the first season of a long-term cropping systems trial. Department of Agriculture (DOA) fertilizer recommendation and 50% of DOA fertilizer recommendation + compost application were respectively used as conventional and reduced systems. The three input systems were arranged in randomized complete block design with three replicates. Results revealed that at seedling and tillering stages, plant height, and plant dry matter were not different ($p>0.05$) among the systems. However, at 50 % flowering stage, plant dry matter was the highest (1464 kg/ha) in conventional system followed by reduced (1222 kg/ha) and organic (1130 kg/ha). At seedling stage, weed density was high ($p<0.05$) in the organic (77%) compared to the other two systems. At 50% flowering stage, no difference was found in weed density among the systems. Weed biomass at 50% flowering stage were high in conventional (56%) compared to organic and reduced ($p>0.05$). Results concluded that organic system at seedling and tillering stages did not show any difference in plant growth compared to the other two systems, but declined at 50% flowering stage indicating a decline in soil fertility. Weed density is high in organic at early growth stages due to inadequate weed control, but weed competition is high in conventional system due high weed biomass growth.

Keywords: Conventional, Crop growth, Organic, Rice, Weed abundance