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Effect of hydrogel and *Trichoderma* on crop growth, root biomass and water productivity in rice varieties under rainfed condition

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Field experiments was conducted during Kharif (Rainy) seasons of 2015 and 2016 at the Agricultural Research Farm, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh (India) to find out the effect of super absorbent polymer (hydrogel) and *Trichoderma* fungus in four rice varieties viz. Swarna, Swarna Sub-1, IR-64 and DRR-42 with six treatments under rainfed conditions. *Trichoderma* has shown effective to improving the root growth and root biomass with hydrogel application. The results of the experiments found that Furrow application of hydrogel @ 5 kg ha^{-1} with sowing of *Trichoderma* treated seed significantly improves the crop growth rate, root growth, water productivity and crop yield followed by Seed treatment with *Trichoderma* @ 10 g ha^{-1} over the untreated control with variety Swarna and Swarna Sub-1 as compare to IR-64 and DRR-42.

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