

Performance of Potato (*Solanum tuberosum* L.) Under Different Mulching Conditions and Zinc Levels at Rolpa, Nepal

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Abstract

Mulching activities have a positive impact on microclimates and crop productivity. Use of the right mulching techniques is a crucial first step in replacing the issues with irrigation and weed infestation in potato production. To assess the performance of potatoes at two doses of Zinc under different mulching conditions, a field experiment was laid out in two factorial Randomized Complete Block Design (RCBD) comprising 8 treatments with three replications using Rolpa-Local variety in Liwang, Nepal. Silver on black plastic-T1, black plastic-T2, plant residue-T3 and control-T4 were used with two levels of zinc (0 and 4kg/ha). Both plastic mulches were found to have significant influence on germination rate, plant height, tuber number, tuber weight and yield per plant. The highest germination percentage was observed in black plastic mulch (94.67%). However, all other observations for growth and yield parameters were found to be significantly superior in silver on black plastic mulch condition with plant height (87.28cm), leaf count (145.70), number of tubers per plant (22.16) and total yield of 21.83 t/ha. Similarly, all the yield attributing characters were found significantly different among zinc levels with the highest total yield of 17.70t/ha at 4kg/ha of zinc. Silver on black plastic mulch and 4kg/ha of zinc level resulted in the highest B:C ratios of 3.18 and 2.23 respectively. The findings showed that the use of silver on black plastic mulch with a 4kg/ha zinc level significantly enhanced both vegetative growth and yield of potato with propitious B:C ratios leading to higher profitability.

Keywords: B:C ratio, Germination percentage, Silver on black plastic, Tuber yield, Yield parameters.