

Effect of Root Pruning on Growth and Yield Performance of Potatoes Grown in Aeroponic System

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Production of potato mini-tubers through aeroponics is gaining popularity with the increased demand for more efficient, high-quality seed production methods. Root zone with mini-tubers of potatoes is always wetting with a nutrient solution in the aeroponic system making roots more vulnerable to fungal infections. Disease infected roots can be removed by practicing root pruning. However, proper assessment is needed to identify the effect of root pruning on tuber production. Therefore, the effect of root pruning on growth, mini-tuber yield and, quality of aeroponically grown different potato varieties were evaluated at the Agricultural Research Station, Seetha-Eliya during *Maha* season 2019-2020. Four levels of root pruning (no pruning and pruning $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$ of the potato roots, respectively) and three potato varieties (Granola, Red La Soda, and Arnova) were tested using two-factor factorial design of CRD with four replicates. Growth, yield, and quality parameters such as specific gravity, starch, and dry matter content were recorded. Data were analysed using SAS statistical software. Plant height, compound leaf width, terminal leaf length & width, and stolon number were not significantly affected by root pruning or variety ($p \geq 0.05$). The interaction effect between pruning level and variety was significant for mini-tuber yield where the highest value was recorded by Granola with no root pruning (235.98 g) which was statistically similar to the value recorded by $\frac{1}{4}$ level of root pruning (235.72 g). The highest starch (8.06%) and dry matter (13.53%) contents of mini-tubers were found in Granola at $\frac{1}{4}$ level of root pruning and no pruning, respectively. The specific gravity of mini-tubers was not affected by root pruning or variety. In conclusion, pruning at a level of $\frac{1}{4}$ of the total root length can be recommended for aeroponically grown potato with root infections as it does not cause any yield or quality reduction.

Keywords: Aeroponics, Growth, Yield, Potato mini-tubers, Quality, Root pruning