Tropentag, September 10-12, 2025, hybrid conference

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Pruning and fertilising effects on yield and yield components of arabica coffee in its centre of origin in southwest Ethiopia

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Abstract

Pruning and nutrient supply following pruning are crucial for high coffee productivity. We conducted a split-plot experiment in southwest Ethiopia for three consecutive years (2019–2021) to investigate the effects of pruning type (stumping, heavy pruning and light pruning) and fertiliser rate (100, 140, 180 and 220 g nitrogen, phosphorus and sulphur (NPS) mixed fertiliser per tree per year) following pruning on yield and yield components of arabica coffee and identify the best combination of pruning type and fertiliser rate for high coffee productivity and yield related traits of coffee. Pruning type significantly affected the number of primary branches and fruiting nodes per tree with higher values being observed for stumping and heavy pruning than light pruning. Fertiliser rate also significantly affected the number of verticals and fruiting nodes per tree, canopy diameter, yield and agronomic efficiency (AE) of fertiliser with higher number of verticals, and fruiting nodes plus, yield and AE being observed for 100 g and lower number of fruiting nodes, yield and AE for 180 g than other rates. The two-way interaction effect between pruning type and fertiliser rate significantly affected the number of fruiting nodes, canopy diameter, AE and yield. The highest number of fruiting nodes and yield were observed for stumping and heavy pruning followed by 220 and 100 g fertiliser, respectively. Stumping and heavy pruning followed by 100 g fertiliser also gave the highest AE while stumping followed by 180 g fertiliser gave the lowest yield and AE. Overall, stumping and heavy pruning followed by 100 g NPS fertiliser application renews coffee productivity.

Keywords: Agronomic efficiency, arabica coffee, bean yield, fruiting nodes, heavy pruning, NPS mixed fertiliser, stumping

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