

Impact of spatial pattern and planting material on yield indices of Cinnamon

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Abstract

Cinnamon (*Cinnamomum verum* J. Presl) is a prominent spice throughout the world which largely produced in the down south of Sri Lanka. As bark is the major harvestable portion, the yield determining factors of cinnamon are quite different from many other crops. Therefore, three yield indices have been recognized for cinnamon in previous studies as number of harvestable stems per plant, length of the harvestable stem and the unit bark weight which determine the bark yield of cinnamon. This study was conducted to identify the effect of spatial pattern and type of planting material on yield indices of cinnamon. Seedlings and vegetatively propagated plants of cinnamon; variety Sri Gemunu of same maturity were planted under three different spatial patterns as 1.2×0.6 m with three plants per hill, 1.2×0.4 m with two plants per hill and 1.2×0.2 m with one plant per hill as two factor factorial RCBD with four replicates at the Faculty of Agriculture, University of Ruhuna, Sri Lanka. The plant density was equal (41,666 plants/ha) for all treatments. First harvest was collected after two years from establishment and the next two harvests were collected in six months harvesting intervals. Four middle trees from the middle row from every treatment were used for data collection. Number of harvestable stems per plant and the lengths of harvestable stems (length with brown bark) were recorded during harvesting. Total dry weight of bark was recorded by oven drying samples to a constant weight and unit bark weight was calculated. The results revealed that, only the impact of planting material was significant for the number of stems harvested per plant during all three harvests. The number of stems harvested in seedlings (22,875 stems/ha) was significantly higher ($p < 0.05$) than vegetatively propagated plants (17,602 stems/ha). When considering the harvestable length of a stem, the interaction effect between spatial pattern and type of planting material was significant ($p < 0.05$). Reduced spacing with less number of plants per hill has been affected favorably for seedlings (189 cm) while wider spacing with higher number of plants has been affected favorably for vegetatively propagated plants (125 cm). Interaction effect between spatial pattern and type of planting material or effect as an individual factor has not been influenced on unit bark weight of cinnamon during first three harvests. The knowledge gathered during this study will be helpful for the future productivity enhancement studies of cinnamon.

Keywords: Bark yield, Cinnamon, Seedlings, Spatial pattern, Vegetatively propagated plants

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