SECTION B

807/B

Growth and initial yield of cardamom (*Elettaria cardamom* Maton.) under *Gliricidia* shade with supplementary irrigation at mid country intermediate zone

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The present national productivity level of cardamom is very low in Sri Lanka compared to other cardamom producing countries such as India and Gauthamala. The eExtent of cultivation is rapidly reducing partly due to the demarcation of highly conserved forest areas such as Knuckles range. Furthermore, most of the existing cultivations have become marginal and one of the reasons seems to be the irregular occurrence of intermittent dry spells in the recent past.

Therefore, cultivation of cardamom under manmade forest at low elevations with supplementary irrigation would be a possible alternative to increase the extent of cultivation and productivity. Therefore, this experiment was conducted with the objective of studying the effect of supplementary irrigation on soil moisture distribution and plant pit size on field performance of cardamom under Gliricidia (*Gliricidia sepium* (Jacq) Walp.) shade. A tissue culture originated single sucker was planted in each planting pit. Two supplementary irrigation treatments namely; irrigation using drippers at three day intervals (T1) and irrigation using mini sprinklers at three days (T2) were compared with no supplementary irrigation (control T3). The irrigation treatments commenced whenever soil moisture content depleted to 30 mm moisture level due to intermittent dry spells. Soil moisture distribution pattern within the wetting zone of each sprinkler and dripper were assessed. Two planting pit sizes were compared namely, P1; 90 cm x 60 cm x 45 cm planting pit and P2; 45 cm x 45 cm x 45 cm planting pit.

The number of pseudo stems (19) as well as new suckers per clump (3) was significantly greater for larger pit sizes (P1) at 24 months after field planting. Total readily available water for the 15 cm of root zone depth was found to be 1.47 cm (the difference between 0.05 bar and 1 bar). Soil moisture observations revealed that the volumetric moisture content has decreased from plant base to peripheral area at root zone depth in each irrigation system. Number of pods per clump was 19, 17 and 11 for the irrigation treatments of sprinkler, drippers and control respectively and this is a significant improvement due to irrigation with the commencement of first flowering. It is important to note that harvesting cycle commenced 27 months after field planting and it is shorter than normal farm conditions which generally take 30 months for flower initiation. But there is no difference between flowering day and harvesting day with the treatments.