

Effect of different planting methods (pit sizes) on plant establishment growth and yield of *Elettaria cardamomum* (Maton) [Cardamom]

Cardamom [*Elettaria cardamomum* Maton] is widely cultivated under rain forests at high altitudes in the central hills of Sri Lanka. The growers plant cardamom after making pits of one mamoty stroke where the casualties are as high as 40% with low productive bushes. Majority of the cardamom growing lands are slopy and early stages of the plant establishment. Therefore this study was carried out to determine the optimum pit size foe better establishment, growth and yield of cardamom at the Cardamom Research Station Gammaduwa using cultivar EC/ 403MT. The treatment consisted with pit sizes of 30x 30x30 cm, 60x60x30cm, 45x45x45 cm, 60x60x60x cm, furrow planting (45 cm width x 45 cm depth) and one mamoty stroke (control). These pits and furrows were filled with mixture of topsoil and cow dung and planted vegetative suckers. Plant establishment, growth and yield data were recorded. Planting in larger pits (60x60x60 cm, 60x60x30 cm, 45x45x45 cm) and furrows gave the highest establishment rate 80% whereas smaller pits (30x30x30 cm) and control had gave an rate of establishment 66% and 48% respectively.

Higher number of pseudostems of more than 40 was observed in larger pits, where as in smaller pits and control gave lesser number of pseudostems of 35 and 25 respectively. Height, girth and number of leaves were not significantly different among treatment, except in the control where the parameters were least.

Cardamom plants in bigger pits attained reproductive phase in 18 - 24 months while the plants in smaller pits took as long as 30 months. Furthermore, bigger pits resulted more number of racemes per clump (25) whereas in smaller pits the number was less than 20. Plants grown in larger pits yield 450 or more capsules per clump per year while plants in smaller pits gave 350 capsules.

Therefore it can be concluded that the plant establishment, growth and yield in pits of 60x60x60 cm, 45x45x45 cm and furrows (45x45 cm) are equally good and better than in smaller pits (one mamoty stroke, 30x30x30 cm and 60x60x30 cm). But due to other factors such as digging cost and the greater soil disturbances in larger pits, 45x45x45 cm pits are the most used for cardamom planting in slopy lands considering the additional advantage of soil and moisture conservation.