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Evaluation of coffee selections and crosses for the yield in mid country intermediate zone, Sri Lanka

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Coffee is undoubtedly the most valued of the stimulant crop, which is a member of the family *Rubiaceae*. Among the several coffee species, commercially cultivating coffee species in Sri Lanka are arabica coffee (*Coffea arabica* L.) and robusta coffee (*Coffea canephora* Pierre). One of the major objectives of a crop improvement program is to produce a promising coffee variety, which is having better yield than the existing varieties. It is clear therefore, that further improvement in *C. arabica* and *C. canephora* will depend more on artificial hybridization among varieties that are genetically divergent, followed by selection with in progenies of subsequent generations of selfing.

The study was conducted at Research Station, Department of Export Agriculture, Matale in 1998. In this study, seedlings were raised from selected mother plants IMY 1, 2, 3, 4, 11, 12, 13, 14, 1-P-4, 1-P-6, S274, Q105, Q104, Q36, C2, S9, HDT, S6t and cross pollinated plants of GCR x GCR, S9 x S9, HDT x HDT, S7 x HDT, S9 x S7, S7 x S7. Completely Randomized Design (CRD) was used. The field was arranged into single plant plots. Other management practices were done according to the recommendations published by the Department. Growth performance of each variety was studied using growth parameters such as plant height, number of branches and spread of the canopy. Yield data (Fresh berry weight) were observed for six years of time period. Analysis was done using SAS software package.

When consider the yield data for six consecutive years, eight IMY plants (IMY 44/1, 26/1, 42/3, 42/5, 45/1, 40/1, 11/1, 19/1) and five cross pollinated plants (GCR x GCR 6/3, S7 x S7 6/4, HDT x S7 15/2, HDT x S7 16/3, S9 x S9 10/3) can be selected based on their high yielding ability which the estimated dry yields (over 2500 kg ha^{-1} yr^{-1} and 2200 kg ha^{-1} yr^{-1} respectively). The mean yield was low because of the alternative yearly baring pattern. But, some of the selected IMY plants have showed yield more than 3.5 kg $plant^{-1}$ in dry basis (IMY 26/1 and IMY 44/1). Studying of growth data of above selected individual plants showed that it takes approximately 24 months to reach the top height of growth (150 cm). Even though, some plants contain small canopy and less number of branches they show higher yield because of high number of berries per plagiotrophic branch (IMY 26/1 and HDT x S7 16/3). IMY 44/1 gave the highest yield, though it showed comparatively slow growth. Highest yield may due to its wide canopy. Among the cross pollinated plants there is no significant difference in growth. Therefore, above characteristics are important for future breeding works such as hybridization.

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