

Testing of Selected Coffee Cultivars for Root Development at Bebeka Stae Farm

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SUMMARY

Bebeka is one of the big coffee (*Coffea arabica* L.) plantations in Ethiopia. There are two sites of this farm known as D10 and F10, which are characterized by different soil types. The soil at D10 is reddish-brown, deep and friable (ideal coffee soil) and that of F10 is ashy, sandy-gravel and shallow with some clay pan formation beneath the ground. Seven cultivars were planted at both sites using RCB design in two replications with 20 trees per plot. The objectives were to see varietal differences in root development on different soil types. The selections were evaluated for yield, survival rate, girth, tap root length, length of laterals and root dry weight.

Differences between cultivars were significant ($P < 0.05$) for yield and other characters except tap root length. The compact cultivar 74112 consistently showed lower mean performance followed by the high altitude cultivar 7332 than others for almost all characters at both sites. Cultivar x location interaction was not significant for all the characters measured suggesting the consistent response of the cultivars to both sites. However, the average performances of the cultivars were consistently greater at D10 than F10 suggesting that the soil at F10 had some degree of obstruction on the characters measured. In general, from the results of the present field and the previous nursery experiments, it was concluded that: (Mesfin Ameha et al., 1989) healthy and vigorous seedlings could be obtained by using seed-beds prepared from mixtures of fine forest soil and sand at 2:1 ratio, respectively, (Bayetta Bellachew et al., 1993) the presence of varietal differences and low yield at both sites (6.45 and 6.13 Qt/ha at D10 and F10, respectively) suggested the need of searching for high yielding and adaptable cultivars for Bebeka area, and (Ferne, 1970) the obstruction effect of the soil at F10 on root development and other characters could be improved by using healthy and vigorous seedlings, larger hole size (60 x 60 x 60 cm) and proper management practices.