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Comparison of yield and quality of oil in Ceylon Cinnamon (*Cinnamomum zeylanicum* Blume) among different agro-ecological zones

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Growth parameters, content and composition of oil in Ceylon Cinnamon in five different agro-ecological zones, IL1a, IL1b, WL1a, WL2a, and DL5 were compared. Statistically predefined number of seed propagated cinnamon samples were collected from agro-ecological zones covering three districts, Galle, Matara, and Hambanthota. The oil extraction was carried out by hydrodistillation technique and the oil contents and the composition were determined by using the gas chromatography–mass spectrometry (GC.MS). One-way ANOVA at 0.05 significance level was used in the statistical analysis to find the effects of the variation of ecology on the quality and quantity of cinnamon bark and leaf oil. The length, girth, weight of a stick, dry leaf yield and dry bark yield per stem were significantly higher ($p<0.05$) in DL5 zone compared to other zones. Both leaf and bark oil content in IL1b zone is significantly different compared with other zones. The major components in the bark oil were cinnamaldehyde and cinnamyl acetate (total cinnamaldehyde) while in the leaf oil, it was eugenol or benzyl benzoate. There was no significant difference in cinnamaldehyde content in bark oil among five zones while there was a slight variation in cinnamyl acetate content though sum of these two did not show significant difference among five zones. The population analysis of leaf oil contents showed that 92.5% and 7.5% of total population as eugenol type and benzyl benzoate type, respectively. The lowest mean value of eugenol in leaf oil (68.7%) was reported in DL5 while the highest (81.0%) was reported in IL1a leaving other three zones insignificant.

Keywords: Cinnamon, Agro-ecological zone, Growth parameter, Oil content, Oil composition

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