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1- Line Intersect Sampling
2- Coarse Woody Debris

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$$\left\{ \begin{array}{l} V_s = \frac{\pi * (d_1^2 + d_2^2)}{40000} * l \\ W_s = V_s * D \end{array} \right.$$

$$\left\{ \begin{array}{l} V_h = \frac{\pi * d_m^2 * l}{40000} \\ W_h = V_h * D \end{array} \right.$$

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(:W_h, V_h

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:W_h, V_h

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$$P_{ij} = \frac{2 \times L \times (l_{ij} \times \cos \lambda_{ij})}{A \times \pi}$$

(Yij)

(Pij)

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$$Y_i = \sum_{j=1}^{m_j} \frac{Y_{ij}}{P_{ij}}$$

(Time Study)

Yij

$$Y_i = \sum_{j=1}^{m_j} \frac{V_{ij}}{P_{ij}}$$

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A

Yi

i

j

Vij

j

i

Pij

$$V_{ij} = \frac{\pi \times d_{M_{ij}}^2 \times l_{ij}}{40000}$$

(d)

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$$P_{ij} = \frac{2 \times L \times l_{ij}}{A \times \pi}$$

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$$Y_i (m^3 / ha) = \frac{\pi^2}{8L} \times \sum_{j=1}^{m_j} \frac{d_{ij}^2}{\cos \lambda_{ij}}$$

i j : dij
: L
i j : Cos λ_{ij}
: Y_i
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$$W_i (ton / ha) = Y_i (m^3 / ha) \times D$$

() : D
: Y_i

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μ _x	/	/	/	/

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μ_x	/	/	/	/

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	$S\bar{v}$	/	/	/
	$S\bar{v}\%$	/	/	/
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	E%	/	/	/
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	s_w^-	/	/	/
	$s_w^-\%$	/	/	/
	E	/	/	/
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()		/	/	/

()	\bar{V}	/	/	/
	$S\bar{v}$	/	/	/
	$S\bar{v}\%$	/		/
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	E%	/	/	/
()	\bar{w}	/	/	/
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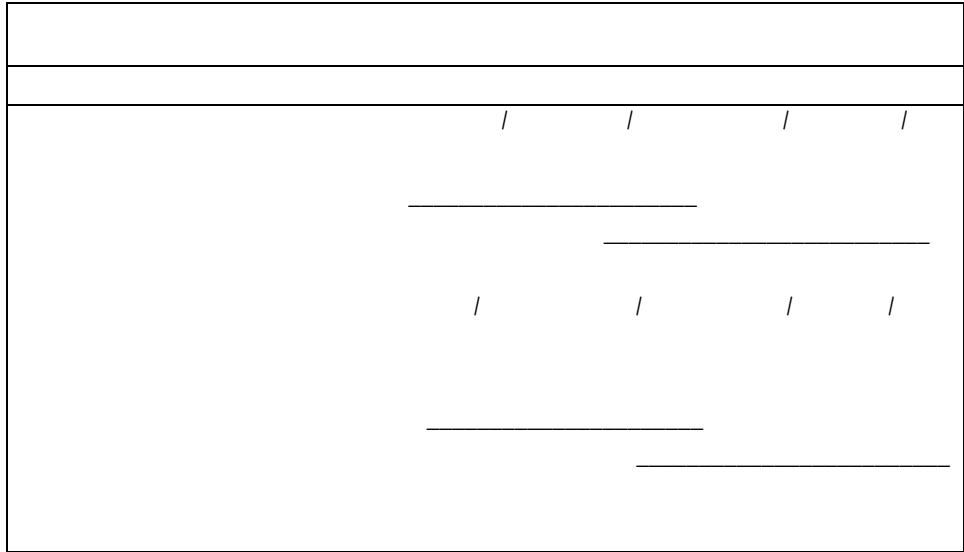
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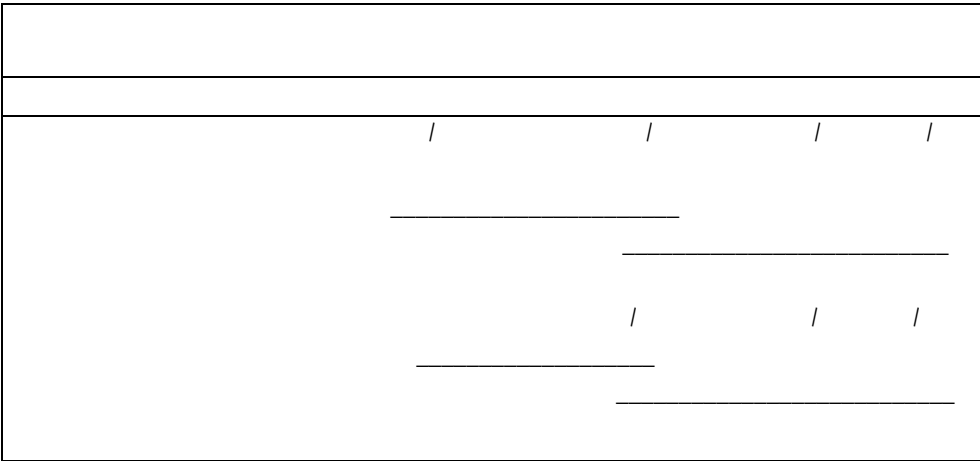
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Volume and weight assessment of residuals by Line Intersect Sampling (case study: Chafroud watershed)

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Abstract

In this study, the line intersect sampling method was employed in order to estimate residuals produced in northern forests. The parameters evaluated in this study were volume and weight per hectare. The results were compared based on the theory of probability, Huber formula and Smalian formula in order to find the best method. The study was carried out in three parcels with a total area of 107 hectares. 100% inventory was used to specify real indexes of the statistical population and then a linear sampling was conducted within a 100m*100m grid with transects with a length of 100 m in order to measure the volume and weight in a hectare. Based on the Tukey's method, the comparison test conducted with the real mean values and the mean values gathered in sampling showed there is no significant difference between real mean values and the mean values calculated in linear sampling based on the Huber formula. Furthermore, as regard the three methods of measurements, the linear sampling includes confidence limit. However, because of the inhomogeneity of the population and the lack of a plenty of sampling line, inventory errors in the linear sampling method is beyond the acceptable level (10%). Regarding the results, it was concluded that a linear sampling method based on the Huber formula is the best alternative to estimate the amount of residuals in forests.

Key words: volume and weight assessment , residuals ,Line intersect sampling , probability theory