APPLICATION OF GEOSTATISTICS IN INVENTORY OF NATURAL FORESTS OF IRAN

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This study investigates application of geostatistics for estimating forest growing stock in the broad-leaved Caspian forests of Iran.
Sampling procedure was performed, based on 150 by 200m systematic rectangular grid in form of five plot clusters (50m away). Each sample plot consisted of two concentric circles with area of 300 and 700m^2. Overall, 721 sample plots were measured in 502 hectares. Experimental variogram for the variable of forest growing stock was calculated and plotted using the geo- referenced inventory plots. The calculated variogram showed a large nugget effect, which implies weak spatial auto- correlations between samples, even in short distances. Estimation was made by ordinary block (100×100m) kriging using spherical model. The Cross- validation results showed that all the estimations were biased due to large nugget effect and weak spatial structure in the experimental variogram. Therefore, kriging could not make accurate estimations due to high spatial variabilities of the forest growing stock in this heterogeneous and uneven-aged natural forest.