عنوان مقاله:

Evaluation of K-tree Distance and Fixed-Sized Plot Sampling in Zagros Forests of Western Iran

محل انتشار:

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نویسندگان:

H. Ramezani - *Department of Forest Resource Management, Swedish University of Agricultural Sciences, SLU, SE-۹۰۱ ۸۳ Umeå, Sweden.*

A. Grafstrom - *Department of Forest Resource Management, Swedish University of Agricultural Sciences, SLU, SE-۹۰۱ ۸۳ Umeå, Sweden.*

H. Naghavi - *Department of Forestry, Lorestan University, P. O. Box ۶۶۵, Khorram Abad, Islamic Republic of Iran.*

A. Fallah - *Sari University of Agricultural Sciences and Natural Resources, Department of Forestry, Sari, Islamic Republic of Iran.*

Sh. Shataee - *Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Islamic Republic of Iran.*

J. Soosani - *Sari University of Agricultural Sciences and Natural Resources, Department of Forestry, Sari, Islamic Republic of Iran.*

خلاصه مقاله:

Three k-tree distance and fixed-sized plot designs were used for estimating tree density in sparse Oak forests. These forests cover the main part of the Zagros mountain area in western Iran. They are non-timber-oriented forest but important for protection purposes. The main objective was to investigate the statistical performance of k-tree distance and fixed-sized plot designs in the estimation of tree density. In addition, the cost (time required) of data collection using both k-tree distance and fixed-sized plot designs was estimated. Monte-Carlo sampling simulation was used in order to compare the different strategies. The bias of the k-tree distance designs estimators decreased with increasing the value of k. The Moore's estimator produced the smallest bias, followed by Kleinn and Vilcko andthen Prodan. In terms of cost-efficiency, Moore's estimator was the best and Prodan's estimator was superior to Kleinn and Vilcko's estimator. Cost-efficiency of k-tree distance design is related to three factors: sample size, the value of k, and spatial distribution of trees in a forest stand. Moore's estimator had the best statistical performance in terms of bias, in all four-study sites. Thus, it can be concluded that Moore's estimator can have a better performance in forests with different tree distribution.

کلمات کلیدی:

Boundary correction, Monte-Carlo simulation, Oak forest, Plot less sampling, Variable plot sampling