

Using Auxillary Information to Estimate Stand Tables

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ABSTRACT

The problems of estimating stand tables in stands where only a few sample points were collected is considered. The standard point sampling estimate of trees per acre by diameter class is examined along with two alternative estimators - a precision weighted composite estimator and a pseudo-Bayes estimator. A large-scale forest inventory is simulated and stand tables are estimated using each of the three estimators. Both the composite and pseudo-Bayes estimator appear superior(in terms of average absolute error and mean squared error) to the standard point sampling estimator. The pseudo-Bayes estimator appears to perform best (with an 80% reduction in mean squared error versus the standard estimator). Both the composite estimator and the pseudo-Bayes estimator provide methodology to incorporate data from similar stands to enhance the precision of the stand of interest. This research emphasizes the possible increases in precision when taking ancillary data into account in the estimation process. Application of these techniques in a large industrial forest inventory/GIS system will be discussed.