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Incorporating Spatial and Operational Constraints in the Sampling Designs for Forest Inventories

In the province of Quebec, Canada, the forest is examined through regular inventories. Requirements for the spreading and the type of trees and for the cost are difficult to manage. We show that modern and advanced sampling techniques can be used to improve the planning of the forest inventories, even if there are many requirements. Our design includes balanced sampling, highly stratified balanced sampling and sample spreading through a two stage sample. The impact of these techniques on the satisfaction of the requirements and on the precision of survey estimates is investigated using field data from a Quebec inventory.