

Abstract

The lack of universally acceptable definition and indicators of forest health has been a major challenge in developing forest health assessment methods. This study evaluated four selected methods (simple systematic sampling (SSS), simple random sampling (SRS), trail-based systematic sampling (TSS) and cluster sampling with annular and nested plots (CSANP)) for their efficiency in assessing forest stocking and structure, disturbances, pathogens and insect pests as health indicators. Surveys were undertaken in 2005 to 2006 to compare and rank the four sampling methods using the total enumeration over one-hectare block as benchmark in both Kakamega and Mt Elgon natural forests, western Kenya. Frequencies of occurrence of each health indicator were used. Absolute errors in % were calculated for each indicator as a measure of accuracy. TSS method ranked the best in accuracy at Mt Elgon and Kakamega in capturing forest anthropogenic disturbances. However, CSANP, SRS and SSS were most accurate in capturing other forest health indicators. More research is still needed to find more refined sampling methods