

The effects of calibration on measurement errors of Ponsse H7 harvester head

Abstract

Harvesters account for more than 65% of the total harvested volume, in Quebec, Canada. Most contractors do not calibrate the measuring apparatus of their harvesting heads. Some adjust log lengths by modifying the limiting values for the “bucking window” (i.e., the values that the computer uses to determine when to cut a log) rather than by calibrating the system. This practice harms bucking productivity, value recovery, limits the usefulness of stem and log data gathered by the onboard computer. This paper compares measurement errors (length, diameter and volume) from “non-calibrated” to fully calibrate harvesting head as per the manufacturer specifications.

Three Ponsse H7 harvesting head were monitored from June 2017 to February 2018. Every day, three stems per species were measured by the harvesting heads and counter-measured using an electronic compass. Differences in length, diameter and volume errors were then compared between the non-calibrated and calibrated state for the same three heads.

All measurements errors improved from a non-calibrated to a calibrated state. The diameter measurement errors laying within the ± 5 mm tolerance range increased from 41% to 62%. Regarding length measurements, 48% of measurements laid within the ± 2 cm tolerance for the non-calibrated while 68% fell within the tolerance for the calibrated state. Errors on volume were also reduced from 5.86% for the non-calibrated state to 0.70% for the calibrated state. The results of this study support the use of an active calibration for the harvesting head.

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