

# The use of NIRS technology in the traceability of commercial cargo of *Cedrela odorata* from origin to the final consumer in Brazil

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The traceability of commercial timber cargo is one of the preventive measures to combat illegal timber trade in Brazil<sup>1</sup>. Even though there are simple or complex methods to determine the origin of wood<sup>2,3</sup>, there is no standard procedure established yet. NIRS technology combined with multivariate data analysis have proved to be a fast and efficient methodology for species identification<sup>4,5</sup>, as well as a promising tool for geographical origin determination<sup>6,7</sup>. This study aimed to track a commercial cargo of 19,114 m<sup>3</sup> of *Cedrela Odorata* from the legal extraction area in the Amazon region (Jamari National Forest) to the final consumer located in the city of Ubatuba (São Paulo), which totalizes 3,100 km covered by land. The cargo was packed and transported by truck to protect it from weather. The NIR spectra obtained at the origin were used to create a SIMCA model, which was applied to the spectra obtained at the destination of the cargo. It reaches a compatibility rate of 81%. That means that most of the samples were within the model acceptance area and were high compatible with the initial cargo. When applied to *C. Odorata* samples from other origins, the number of samples within the acceptance area did not go over 32%. When testing the model on other species (*Erismia uncinatum*, *Swietenia macrophylla*, and *Micropholis melinoniana*), this rate was no more than 34%. These latter values corroborate the practicality, precision, and reliability of the NIR instrument for in-field tracking of wood cargo.

**Keywords:** near-infrared; illegal logging; chemometrics; tropical wood.

## References

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