Identification of wood species and provenance of timber to promote trade of legal timber

Production | Demonstration and implementation | Item: Timber | Resource management

Outline

We improved the identification technology for the timber produced in the Southeast Asian region (Fig. 1) to prevent illegal logging. Identification technology is based on the database and the combination of microscopic observation, DNA analysis, chemical analysis, and tree ring analysis.

Background/effect/note

Timber produced in Southeast Asia is estimated to consist of hundreds types of species, and contains wood with a high possibility of illegality during the process of production. The Forestry and Forest Products Research Institute established a comprehensive database comprising approximately 180 types of commercially traded tree species groups originating from Southeast Asia. This database is based on wood samples obtained from around 30,000 specimens representing approximately 8,000 species worldwide[1]. Leveraging this database, the identification of wood species (primarily at the genus level) and estimation of their origin are accomplished through microscopic observation[2]. To enhance the accuracy of identification, we developed a DNA analysis for meranti (*Shorea* spp.)[3], a chemical composition analysis for ramin (*Gonystylus* spp.) (Fig. 2), and a country-of-origin discrimination method based on tree ring analysis for teak (*Tectona grandis*). Since applicable identification methods vary by tree species, careful selection of analysis methods based on microscopic estimation results is necessary.

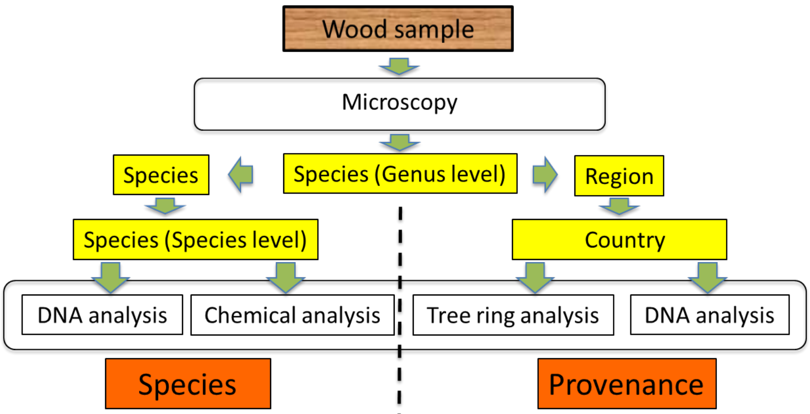
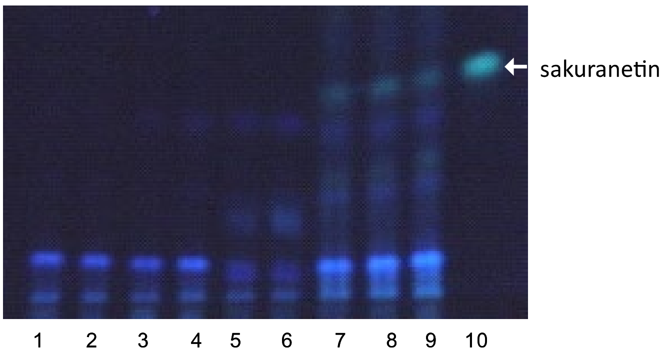


Fig. 1. Flow to identify wood species and origins



1-6 : Wood species similar to ramin
7-9 : Ramin (*Gonystylus banacanus*)
10 : Standard sakuranetin
Ramin can be identified by sakuranetin.

Fig. 2. Identification of ramin wood by thin layer chromatography (TLC)

Technical details:

1) https://db.ffpri.go.jp/WoodDB/index-E.html
2) https://www.kaiseisha-press.ne.jp/ISBN9784860992446.html
3) https://doi.org/10.1007/s10265-010-0348-z

Contact
kouho@ffpri.affrc.go.jp

Forestry and
Forest Products Research Institute