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Chemical Properties of Yushania alpina and Bamusa oldhamii Bamboo Species

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Abstract : This research aims to examine the chemical composition of bamboo species in Ethiopia under the effect of age and culm height. The chemical composition of bamboo species in Ethiopia has not been investigated so far. The highest to the lowest cellulose and hemicellulose contents are Injibara (Y. alpina), Mekaneselam (Y. alpina), and Kombolcha (B. oldhamii), whereas lignin, extractives, and ash contents are Kombolcha, Mekanesealm, and Injibra, respectively. As a result of this research, the highest and lowest cellulose, hemicelluloses and lignin contents are at the age of 2 and 1 year old, respectively. Whereas extractives and ash contents are decreased at the age of the culm matured. The cellulose, hemicelluloses, lignin, and ash contents of the culm increase from the bottom to top along the height, however, extractive contents decrease from the bottom to top position. The cellulose content of Injibara, Kombolch, and Mekaneselam bamboo was recorded at 51±1.7–53±1.8%, 45±1.6%–48±1.5%, and 48±1.8–51±1.6%, and hemicelluloses content was measured at 20±1.2–23±1.1%, 17±1.0–19±0.9%, and 18±1.0–20±1.0%, lignin content was measured 19±1.0–21±1.1%, 27±1.2–29±1.1%, and 21±1.1–24±1.1%, extractive content was measured 3.9±0.2 –4.5±0.2%, 6.6±0.3–7.8±0.4%, and 4.7±0.2–5.2±0.1%, ash content was measured 1.6±0.1–2.1±0.1%, 2.8±0.1–3.5±0.2%, and 1.9±0.1–2.5±0.1% at the ages of 1–3 years old, respectively. This result demonstrated that bamboo species in Ethiopia can be a source of feedstock for lignocelluloses ethanol and bamboo composite production since they have higher cellulose content.

Keywords : age, bamboo species, culm height, chemical composition
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