Estimation of pretreatment with sweet sorghum bagasse for cellulosic bioethanol production

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In this study, the effective pretreatments technology for sweet sorghum bagasse is presented. Temperature and pressure-controlled expansion reaction system and CO_2-mixed physicochemical pretreatment method were used to pretreatment of sweet sorghum bagasse. This Pretreatments system consists of reactor in upper side, and separator in bottom. To the hydrolysis of biomass, 3MPa of CO_2 was loaded into the reactor. After reaction, the sample was spouting into the separator with 6MPa N_2 pressure. The material of sweet sorghum bagasse, milled into 0.3~0.5mm and drying at 50℃ for 24 hours was used for pretreatment. At that time, the water content of the sample was 3~5%. Composition analysis of sweet sorghum bagasse was performed by NREL protocol and it consisted of 38.1% cellulose, 15.9% hemicellulose, 13.8% lignin, and 4.0% ash. The sample was pretreated with 1M sodium hydroxide solution at 150℃ for 30 minutes using our new developed pretreatment system. Especially sodium hydroxide and CO_2 mixed solution were used for pretreatment of sweet sorghum bagasse.