Poster Exhibition Friday

75 - The nexus between bioeconomy and forest biomass: Challenges, opportunities and necessary steps in

KG II - HS 2121 (Uni Freiburg)

IUFRO17-2982 **Development of potential new products, processes and markets from secondary metabolites of Uruguayan native forest trees: advances and perspectives**

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Abstract: In a period of almost three decades, Uruguay built a forest industry based on fast-growing and short rotation eucalypts and pines plantations, beside a policy planned native forests conservation. The government is currently boosting a transition to a bioeconomy that considers the potential of new products, processes, supply chains and markets conformation of both plantations and native forests. Secondary metabolites of native trees hold historically a great potential as non-wood forest products but have remained poorly investigated. This work presents advances in bioprospecting, identification, separation and chemical characterization of secondary metabolites of three forest trees, as raw materials for innovative non-wood forest products. The research initiated in 2013 through an agreement between the National Agricultural Research Institute and the Faculty of Chemistry of the Republic University of Uruguay. The activities focused on: (i) the bioprospecting of three species (Prosopis affinis, Prosopis nigra and Quillaja brasiliensis) and (ii) the identification and chemical characterization of selected secondary metabolites. Chemical analysis were realized using HPLC and mass spectrometry. Saponins, galactomannans and alkaloids were separated and characterized at laboratory scale. The next steps point to biomass production to enable an industrial pilot scale phase and economic studies on supply chains and markets conformation.

new products, secondary metabolites, Uruguay

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IUFRO17-2134 **GIS-based approach for land suitability of fast growing tree-energy plantation in degraded land, Thailand**

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Abstract: This study determined the study area as soil degradation area without irrigation system, exclude the area which is located in the six economic crops (Rice, Corn, Sugarcane, Cassava, Para-rubber tree and Oil palm) land suitable map to avoid land competition. Land suitability was evaluated by geographic information technique with weighted sum method.
The land suitability of total potential area was classified into 4 categories, good, fair, low and not suitable, at 22.05%, 77.51%, 0.26% and 0.18%, respectively. From the mathematic model under the hypothesis of production condition, cost and benefit analysis, Eucalyptus genus is the most suitable for recommending to farmers. However to mitigate impacts which may occur from monoculture for examples pests and diseases, other genus such as Casuarina, Leucaena and Acacia were recommended to mix in the plantation. Moreover, agroforestry system was also the good practice to reduce those impacts, and instantly implement to farmers in the potential areas.

GIS, Land suitability, Fast growing tree, Thailand

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IUFRO17-2264 **Performance of dry zone Acacia for biomass energy in degraded soil in northeast, Thailand**

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Abstract: Six species of dry zone Acacia (Acacia auriculiformis, A. plectocarpa, A.leptocarpa, A. brassii, A. difficilis and A. holosericea) were grown in the Randomized Complete Block Design in Manchakiri plantation, Khon Kaen province, northeastern Thailand since 2013. The objective was to screen suitability of species that might have potential to grow for energy plantation in degraded soil. Results up to 2.5 years of age in terms of survival rate, growth and biomass yield showed considerable differences between species. Survival rate of most acacias except A. plectocarpa and A. brassii were more than 80%. For total biomass among six acacias, A. auriculiformis showed highest yield (27.9 ton/ha) while A. plectocarpa provided lowest biomass yield (12.9 t/ha). Important biomass properties such as heating value, ash content, sulfur and chlorine content were analyzed to determine the suitability for using as biomass solid fuel. All acacias showed high performance of heating value between 4,134 - 4,585 kcal/kg with low ash content (0.6 - 1.9%), low sulfur (0.06 - 0.12%) and chlorine (0.01 - 0.02%). The results have implications for selection of most potential species of dry zone acacias which are suitable for degraded soil to provide biomass yield as alternative energy source. Financial analysis should be included to provide significant decision for future extension work in this degraded area.

Biomass, Acacia, Dry zone