harvesting residues presented great volumetric expansion. For the tension resistance by diametric compression, the lowest value was observed for coffee husk. The results found show the great potential of energetic utilizing of the briquettes made with coffee husk.

Keywords: briquettes; energetic density; volumetric variation; higher heating value.

PP188

Optimization of Galactoglucomannans and Acidic Arabinans Recovery in Softwood

Lyne DESHARNAIS, Fang DU, Nicolas BROSSE
Laboratoire d'Etudes et de Recherche sur le Matériau Bois
Faculté des Sciences et Technologies, Université Henri Poincaré, Vandoeuvre-Lès-Nancy
lyne.desharnais@lermab.uhp-nancy.fr

The pulp and paper industry is currently in a transition situation and needs to produce additional products which can increase both the mill profitability and the overall mill energy efficiency in order to convert mills into biorefineries. Autohydrolysis of softwood chips, used as raw material in a paper mill, was studied to simulate one of the aspects of industrial hydrolytic steps of a thermomechanical pulping process. Based on industrial process steam conditions, the operations were performed at laboratory scale. Both compositions of pulps and hydrolysates were determined as a function of the residence time and the severity of the treatment. It was found that the amount of glucans and Klason lignin in solid residues showed moderate cellulose and lignin degradation caused by hydrothermal treatment and that acidic arabinogalactans were largely affected and depolymerized, even at low severity ($\log(R0) < 2$). The percentage of residual arabinans in the pulp after hydrolysis seemed to be a good indicator of the severity of the treatment and can provide an effective guide for an industrial process optimization. A hydrolytic step performed at a severity of $\log(R0) = 1.8$ resulted in the extraction of 100% of the water-soluble acidic arabinogalactans. These polysaccharides are released and accumulated into process waters. They constitute the main part of the "anionic trash" released in mechanical pulping, which can form complexes with various cationic polymers used by the paper industry.

Keywords: Autohydrolysis; hemicellulose; thermomechanical pulping

PP189

Seed Oil and Defatted Cake Proximate Composition of Non Timber Product *Annona squamosa* (Annonaceae) Grown in Benin

Tindo Sébastien DJENONTINa,b, Justine DANGOUa, Daniel PIOCHb and Dominique C.K. SOHOUNHLOUEa*
a) Laboratoire d'Etude et de Recherche en Chimie Appliquée (LERCA), Ecole Polytechnique d'Abomey – Calavi (EPAC), Université d'Abomey-Calavi (UAC), Cotonou, République du Benin; b) CIRAD, UR 40 Tropical Wood Products, Biorefinery Team, Montpellier, France.
sebastien.djenontin@epac.uac.bj

Annona squamosa L. is a small tree which grows wild in many places in the tropical regions and locally called "xwingle" in Benin. Its produces edible fruits, typically globular or heart-shaped which are highly appreciated and the seeds are much neglected. Recently, our works have started to be greatly concerned about identifying new oil sources from a large number of oil bearing seeds grown in Benin.

We report here on the chemical composition of seed oil (ASSO) and defatted cake (ASDC) of A. squamosa. Fatty acid composition, chemical properties of oil, unsaponifiable fraction, amino acids, lignocellulose and carbohydrates were analyzed by standard analytical procedures. Our objective is to update and to widen available data in order to check and confirm the interest of the seeds as a readily available by-product resulting of the consumption of the fruit pulp for human food.

The extracted lipids (33.7%) were examined for fatty acid composition by gas chromatography. Linoleic (25.4%) and oleic (47.4%) acids were the predominant unsaturated fatty acids, while palmitic acid (12.6%) and stearic acid (11.6%) were the major saturated acids. The iodine value of 92g/100g indicates that the seed oil is a non-drying type. The unsaponifiable fraction (1.0wt-%) whose composition was not investigated previously especially for the sterol fraction, the major sterol is β-sitosterol (68.7wt-%) and tocols (143ppm) show α- and γ-tocopherol as major components (26.5 and 73.5wt-%). The defatted cake is rich in proteins (25.5g/100 g), potassium, and fibers (Van Soest; NDL 60.1%, ADF 34.7% and ADL 7.4%).

This work is part of a study aiming at adding value to underused forest biomass. Next step will deal with anti-termite properties of A. squamosa cake.

Keywords: Non timber product, Annona squamosa, seed oil, defatted cake, chemical composition, Benin.

* To whom correspondence and reprint requests should be adressed:
Prof. Dominique C.K. Sohounhloué, 01 BP 2009 Cotonou (Bénin).
Phone : +229 21 36 09 93 / 182 ; Fax : +229 21 36 01 99 /LERCA ; Email : dominique.sohounhloue@uac.bj

PP190

Experimental TGA device for the determination of cellulose pyrolysis behaviour at elevated pressure

Alfredo NAPOLI, Philippe GALLET, Nabila BOUTAHAR
CIRAD, Centre de Coopération Internationale en Recherche Agronomique pour le Développement,
UPR 40, Production et Valorisation des Bois Tropicaux, TA 10/16, 73 Avenue J.-F. Breton, 34398 Montpellier Cedex 5, France
alfredo.napoli@cirad.fr

Forestry lignocellulosic biomass is a major renewable energy sources in the world. Carbon generated by Nature through photosynthesis process, could potentially be considered as a neutral energy carrier in term of the greenhouse gas emissions, if it is produced is assured through sustainable plantations use. Cellulose is the main component of biomass (50% in weight on a dry basis in average) and its conversion into high density energy carrier like charcoal, gives relatively low charcoal yield (< 15%).

The development of more efficient conversion technologies in terms of yield of charcoal is of primary importance for both developing countries than for industrialized countries. In the first case, the firewood and charcoal are the main sources of energy to the people. In the second case, the development of sustainable energy sources

2012 IUFRO CONFERENCE DIVISION 5 FOREST PRODUCTS

INTERNATIONAL UNION OF FOREST RESEARCH ORGANIZATIONS

8 › 13 JULY'12 - ESTORIL CONGRESS CENTRE, LISBON, PORTUGAL

FINAL PROGRAM, PROCEEDINGS AND ABSTRACTS BOOK

www.iufro2012.org

ORGANIZING ENTITIES

IUFRO

Hinc patriam sustinet
Instituto Superior de Agronomia
Universidade Técnica de Lisboa

Centro de Estudos Florestais (CEF)

DIVISION 5 - FOREST PRODUCTS

Coordinator
Andrew Wong, Malaysia

Deputies:
Jamie Barbour, United States
Dave Cown, New Zealand
Pekka Saranpää, Finland

INTERNATIONAL ORGANISING COMMITTEE

Conference Chair
Pekka Saranpää (Finland)

Conference Co-Chair
Jamie Barbour (USA)

Scientific Committee
Andrew Wong (Malaysia)
Dave Cown (New Zealand)
Helena Pereira (Portugal)
Jamie Barbour (USA)
Jerry Winandy (USA)

LOCAL ORGANISING COMMITTEE

Chair
Helena Pereira
Vice-rector of the Technical University of Lisbon, full professor of ISA (School of Agronomy), president secretary of the Forest Research Centre/ Centro de Estudos Florestais (CEF).

Jorge Gominho,CEF, ISA
Isabel Miranda, CEF, ISA
Sofia Knapic, CEF, ISA
Francisca Lima, AIFF (Competitiveness and technology center for forest industries)
Pedro Cardoso, THE (local PCO)

Congress Agency and PCO Organizing Committee Support

THE – The House of Events
Office contact +351 22 8348940
Contact at Conference Centre +351 21 464 6204

Technical Board
Francisca Lima, AIFF
Jorge Gominho, CEF, ISA
Sofia Knapic, ISA
Luis Leal, ALTRI
Susana Silva, Cortiçeira Amorim
Susana Carneiro, Centro Pinus
José Manuel Nordeste, RAIZ

BEST POSTER AWARDS

The Scientific Committee wishes to encourage scientists to display outstanding posters during the IUFRO Division 5 conference.

An Awarding Body will evaluate all the posters exhibited during the poster sessions, based upon the following selection criteria:

1. Presentation: layout (attractiveness, legibility, creativity)
2. Content: innovative ideas and value of subject matter
3. Presenter's ability to convey the message

The awards will be presented at the Conference dinner, on July 11 and consist of a certificate and a gift sponsored by 3DCork – www.3dcork.com

ACKNOWLEDGMENTS

GOLD SPONSOR

grupo Portucel Soporcel

PREMIUM SPONSORS

altri

SONAE INDUSTRIA

FSC

BEST POSTER AWARDS SPONSOR

3D CORK intelligent nature

CO-SPONSOR

estoril CENTRO DE CONGRESSOS

PARTNERS

anefa Associação Nacional de Empresas Florestais, Agrícolas e do Ambiente

GREEN PARTNERS

Criar Bosques Um projecto Quercus

Pegada Ecológica

SAP/YSP PROGRAM SPONSOR

FOREST SERVICE USDA

MEDIA PARTNERS

GREENSAVERS

planetazul o portal de ambiente e sustentabilidade

SCIENTIFIC COLLABORATORS

IRG

iawa

INTERNATIONAL WOOD CULTURE SOCIETY IWCS

Society of Wood Science and Technology SWST

INTERNATIONAL ACADEMY OF WOOD SCIENCE IAWS

OFFICIAL AIRLINE COMPANY

TAP PORTUGAL | A STAR ALLIANCE MEMBER