

Post-doctoral Opportunity

Boreal Ecosystem Research Initiative, Grenfell Campus, Memorial University of Newfoundland, Corner Brook, Canada

Project Title: Study of Corner Brook Pulp and Paper Limited byproducts and potential uses for food production

Position background and summary:

Corner Brook Pulp and Paper Limited (CBPPL) generates significant amounts of wood ash (fly ash and bottom ash) that has been traditionally disposed of through landfilling, with an associated cost for both tipping fees and transport. The rising costs of disposal, combined with increasingly stringent environmental legislation motivates the investigation of alternate uses for the wood ash waste. CBPPL also produce a large amount of secondary sludge with a moisture content of 88-95% resulting from clarifying and settling wastewater used in the paper process. Mechanical pressing removes some water, but the resulting material still has a high water content and must be disposed of. Currently, sludge is burned with other biomass in the co-generation unit, which is another expense for the CBPPL.

Wood ash contains inorganic and organic residues that are known to be a good source of nutrients to plants, such as potassium, phosphorus, magnesium, calcium, and micronutrients. It is generally believed that wood ash can serve as a liming agent due to high pH and its application to the soil is a convenient way to recycle nutrients. Besides the stimulation of microorganisms, ash is also known to promote plant growth and yield of crops. CBPPL has undertaken a preliminary consideration of alternative uses for this wood ash and sludge as byproducts of forestry waste. This consideration has included discussions with key representatives of the Boreal Ecosystems Research Initiative of Memorial University, located at Memorial's Grenfell Campus, to lead a research and development initiative to examine utilization of the wood ash and sludge as liming and nutrient amendment source for the production of agronomic and horticultural crops. An additional aspect of the project includes the assessment of excess heat energy for greenhouse production.

The overall goal of this study is to determine the feasibility, parameters, and processes related to improved utilization of byproducts resulting from CBPPL operations. The proposed activities and ideas relate to monitoring and understanding the nature of the composition of the mill's production of wood ash over time, determining the suitability of the ash and sludge as an agricultural soil amendment, and the possibility/feasibility of improving mill competitiveness through alternate/improved processing of ash, sludge and waste heat. The combined possibility of more environmentally sustainable processing, potential reduction of current expenses, and creation of new revenue streams all provide opportunities to increase competitiveness for CBPPL while strengthening university-industry collaborations between Memorial University, Grenfell Campus and CBPPL.

Duties and responsibilities:

The successful individual will lead project activities aimed at comprehensively assessing the wood ash, sludge and compost as nutrient source, as well as the potential for utilization of waste heat energy, under a controlled environment and field conditions for production of agronomic and horticultural crops.

The successful candidate is expected to generate peer-reviewed publications in top-tier scientific journals, be able to supervise undergraduate and graduate research assistants, and serve as Co-PI on future proposals.

The post-doctoral fellow will work with a core team that includes an agronomist, soil scientist, plant scientist and a hydrologist at Grenfell Campus, Memorial University of Newfoundland, Canada, and including advisors from industry and government. This will include assisting with the oversight of the current research program and building a long-term collaborative research program in conjunction with Corner Brook Pulp and Paper.

Preferred qualifications:

PhD in agricultural sciences or related fields.

The candidate must have expertise in setting up of greenhouse and field experiments, in addition to carrying out laboratory analyses, sampling, collection, and monitoring equipment and protocols. Experiences in conducting greenhouse experiments and field conditions under different management systems are required. Estimation of crop growth, yield and quality parameters, nutrient kinetics, soil microbial activities, and nutrient use efficiency are essential. A good understanding of experimental design and statistical analysis are also necessary.

Additional skills and qualifications: demonstrated proficiency in controlled and field experimentations, statistics and database management including, but not limited to, skills in SAS/Minitab or equivalent. Proven track record of creativity/innovation in research. Team management, report writing, maintaining funder and research partner relationships and proposal writing skills and experience and are also beneficial.

Project support:

This is initially a two-year position with a one-year trial period. A starting stipend of \$45,000 per annum is available (this is the gross amount and candidate is responsible to pay applicable taxes and contribute to University Benefits package).

Please send a letter of interest, complete CV including publication list, specific laboratory, field, and statistics expertise and experience in the application and cover letter and complete contact information for at least 3 academic references by Dec. 15, 2018. The position will remain open until filled and is contingent on funding.

Please send your information via e-mail in pdf format to mcheema@grenfell.mun.ca

For further scientific information relating to this position, please contact Dr. Mumtaz Cheema; mcheema@grenfell.mun.ca or Dr. Lakshman Galagedara; lgalagedara@grenfell.mun.ca or Dr. Raymond Thomas; rthomas@grenfell.mun.ca

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