

## Assessing the value of using bagasse as paper pulp



### Project details

#### Key Focus Area:

KFA6

#### Project name:

Process for making bagasse paper pulp

#### Project number:

2012/053

#### Chief investigators:

Dr Thomas Rainey and Prof Bill Doherty

#### Project end date:

01/04/2018

*A major research project is investigating the potential to turn bagasse into paper pulp, which would help greatly lift the value of a resource that is put to an otherwise low-value use.*

In overseas sugarcane industries, using bagasse to create paper pulp is not uncommon. However, there are challenges for the Australian industry to overcome before it could be feasible for adoption.

For example, overseas processes use chemicals that are unacceptable for use in the context of the Australian sugar industry's proximity to the Great Barrier Reef. Also, the lengthy geographic spread of our industry also means a more economic method would be required, as traditional pulping methods usually require many millions of tonnes of fibre.

The aim of this research is to modify the current potash-based processes to achieve a high quality bleached pulp and also a black liquor fertiliser by-product. It is hoped that a new process would reduce the capital cost of a pulp mill by 20 percent, with the possibility of further reductions by using existing mill boiler capacity.

This is where the research from QUT steps in, with a long-term project that began in 2012 and is investigating the potential for new methods, as well as assessing the fertiliser co-product that is created. The research is led by Dr Thomas Rainey and Prof Bill Doherty from QUT and is funded

by SRA. The industry partner is Mr Les Nielsen from EnviroFibre.

The recent work is occurring in conjunction with Central Pulp and Paper Research Institute, India, with 300kg sent to India to test the new process. This followed lab experiments in Australia.

The results indicated that the paper pulp could be useful as high-value bleached pulp and the researchers said the "process performed extremely well at scale-up".

Financial modelling has also indicated an internal rate of return as high as 30.7 percent over 15 years, based on 100,000 tonne/year of bagasse.

The fertiliser co-product trials have been run by Farmacist. Early pot trial results in a range of soils and crops were that the black liquor performed similarly to conventional fertiliser. Soils included sand, vertosol clay and heavy clay.

Early indications were that the black liquor stimulated bacteria population, which could indicate that it improves soil health.

"It is worth noting that if a paper pulp plant is co-located to a sugar mill, the black liquor could be combined with mill mud, bagasse fly ash and biochar to produce pelletised slow release fertiliser," Dr Rainey said.

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