Nitrogen recovery from forest industry side streams

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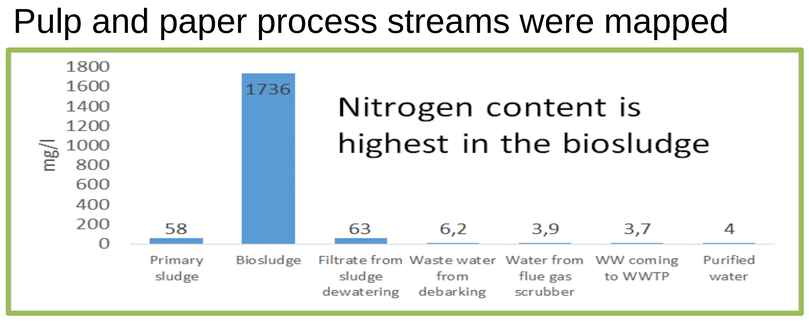
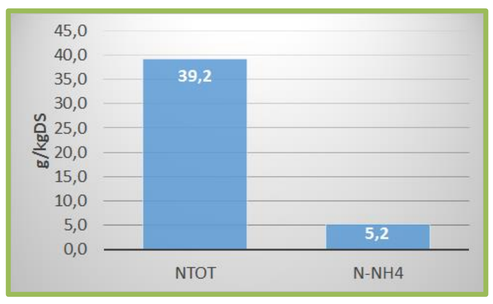
Mapping of P&P side streams

- Pulp and paper process streams were mapped

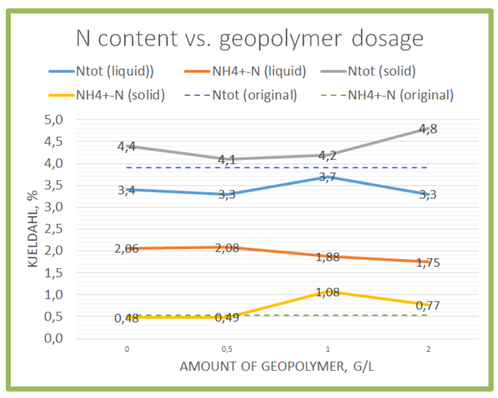


- Biosludge was chosen for further investigation
- Biosludge contains nitrogen 3-5%, which is mainly organically bound and most of it is not readily available for the plants



Results

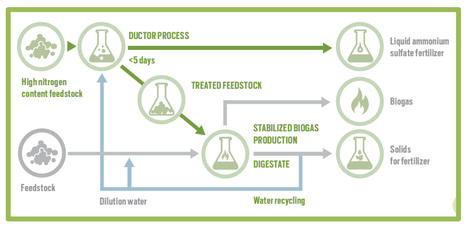
- Ductor: 20% of organically bound nitrogen was convert to ammonium nitrogen. The share of the transposition should have been higher to be able to see the respond in cultivation tests.
- Adsorption: ammonium nitrogen can be attached to solids by adding geopolymer



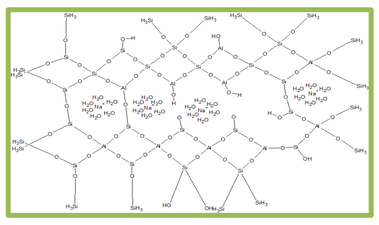
- Drying and the drying temperature: higher the end solid content, more ammonium nitrogen is lost

Methods tested

- Ductor – predigestion to solubilize organically bound nitrogen as ammonium nitrogen



- Adsorption: powdered metakaolin-geopolymer to attach the ammonium nitrogen into solid fraction of the biosludge



- Influence of drying and drying temperature on nitrogen content in the biosludge

Conclusions

- The most reasonable source for nitrogen recovery or utilization is biosludge that is originated from waste water treatment plant.
- Ammonium nitrogen content is so low in the biosludge that its recovery exclusively is not reasonable
- Most valuable outcome would be to find out the cost efficient solution for solubilizing higher share of organically bound nitrogen into ammonium nitrogen.

Contact information

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