AGRICULTURAL BIOMASS

ISSUE: Focus on the natural rural resource
ITINERARY 7C
Date: Thursday, September 12, 2013
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PROMOTER and SPEAKER

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Presentation of the issue:
Our region was faced with a considerable amount of unused land. We were looking for ways to use this land. The economic conditions provided the answer. The price for oil skyrocketed, and the fight against greenhouse gas emissions became a global priority. So, the table was set for the development of energy crops.

Project description:
Founded in 2010, BioÉnergie is a cooperative composed of six producers of agricultural biomass. Its main goal is to develop an industry for agricultural biomass. In practical terms, its members established a high-yield species, reed canary grass, from which fuel pellets are made. In parallel, the cooperative installed a pilot boiler (500 kW) in a school yard of Lac-Mégantic, operated by the cooperative members. The energy produced is sold in the form of hot water to the school board, who in turn uses it to heat a school complex.

The business challenges: field production performance, harvesting and transportation costs, densification cost, boiler efficiency, diversification of markets.

As well, the biomass production cost must be lowered. Different aspects are affected: fertilization, harvesting and transportation system, combustion parameters' optimization, clinker reduction, minimizing air pollution emissions.

The key elements to remember according to the promoter and speaker:

- strong technical and financial support from different regional and national partners;
- participation of the school board;
- development of the cooperative.

RESEARCHER

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Summary of the researchers' presentation:

Presentation of the Agrosphère Project, a pilot plant producing 2nd generation sugar and cellulosic ethanol, incorporated into a farm of the Lanaudière region. This plant harvests corn residues in a radius of 30 km. The project required one million dollars' worth of grants.

The project is characterized by a clean and sustainable harvest. Minimum plowing is done, thereby reducing GHG emissions. We harvest just enough residue to keep the soil fertile. The wet residue conservation eliminates the need to rewet the matter before usage, and consequently reduces the consumption of water. A flexible fractionation process uses less water and chemicals; a method that adapts to the available biomass. Within the scope of the project, we managed to extract 45-53% of cellulose from the initial biomass.

This is a leading model for a regional agricultural biomass conditioning center. The objective is for all aspects to be handled locally. This has a very positive impact on the regional agricultural economy.

Presentation of the project to establish a biorefinery concept at the community level in the Haut-Saint-Maurice region. This is a project for the upgrading of forest biomass. The promoters are testing mobile pyrolyzers in the Haut-Saint-Maurice region. They would like to provide biofuels for the La Tuque sector.

Presentation of the project for the production of biochar obtained from the torrefaction of agriculture crop residue, and intended for use directly on the production site, or locally. They produce biochar in order to help upgrade the garden soils for Mauricie truck farmers.

QUESTION PERIOD

Questions for the sponsor and speaker:

Q.: How can we compare the combustion of oil with this system, in relation to GHG emissions?
A.: The plant holds the CO_2 in the culture. The standards for agricultural biomass are twice as severe as those for forest biomass.

Q.: Are the pellets produced in the region?
A.: Yes, the Energex company in Lac-Mégantic manufactures the pellets.

Q.: Who pays for the boilers, and has the school board made any cost savings with the system?
A.: This system normally uses 40% less heating energy. At this stage, we are talking about small savings. The project partners pay for the boiler and the rest.

Q.: What is the estimated fuel efficiency from the combustion?
A.: For seasonal efficiency, it is around 80-85%.

Q.: Is reed canary grass demanding for the soil, and is it grown by farmers in the region?
A.: Yes, local farmers are growing it. The plant does not require any more attention than other types.

Q.: Who are the members of the cooperative?
A.: The coop is essentially composed of agricultural producers and serves as a vehicle to obtain funding.

Q.: What is the average tonnage per hour burned by the boiler?
A.: Between 2 and 3 tons.

Q.: How many hectares of land do you require to operate the boiler for one year?
A.: It takes 300 tons of biomass, which means about 600 acres or 40 hectares of land.

Q.: Could this kind of system be implemented in remote areas?
A.: Yes, but the equipment is quite heavy. If the system is too big, the advantages from pelletizing are reduced. Profitability could be more difficult to achieve.

Questions for the researchers:

Q.: Where does the producer find his financial gain?
A.: Upon the sale of the co-products.

Q.: Is pyrolysis effective?
A.: Making the pyrolysis process profitable is not obvious. We are working to make it mobile; that is its strength.

Q.: Are there any untreated releases from the Agrosphère project?
A.: No, we manage to upgrade every component.

Q.: Is there a potential for greater development in Quebec? Is there a pool of buyers for this type of fuel?
A.: Yes, for development. For the customers, there is still work to be done. But foremost, the project must be profitable locally.

Q.: Are you thinking about recovering agricultural plastic?
A.: We are leaning more towards producing biodegradable plastic.

Q.: Have you ever thought about using reed?
A.: Yes, but the transport cost would be too high since it is spread out over the territory.

ADDITIONAL DOCUMENTATION

NOTE: All *linked* documents (PowerPoint, Prezi, etc.) are only available in their original French version.

PowerPoint from Mario Blais, André Piette and BioÉnergie Mégantic, CLD du Granit
PowerPoint from Simon Barnabé, UQTR, Jean-Philippe Jacques, UQTR and Mario Parenteau, Cégep Trois-Rivières