BIOHEAT: A GROWING OPPORTUNITY FOR GREEN ENERGY ON THE PRAIRIES

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A combination of factors including the rising costs for fossil energy, the need to create demand enhancement in the agricultural sector and the need to reduce greenhouse gas emissions are creating unprecedented opportunities for biofuel development. These opportunities include the production of liquid biofuels, biogas and bioheat. To date there has been much pioneering emphasis on liquid fuel development from the farm sector such as grain ethanol and biodiesel. However, second generation agricultural biofuels are now being developed that provide greater opportunities to expand bioenergy development. Bioenergy is becoming a major new energy industry in Europe with 70,000 pellet boilers now installed in Sweden and 3000 on-farm biogas digesters installed in Germany. Recent advances in combustion technologies have allowed densified fuels derived from crop-milling residues and energy crops to emerge as a promising new alternative to reduce heating costs and greenhouse gas emissions while also reducing reliance on fossil fuels.

Pelletized agri-fibres from dedicated energy crop grasses are poised to become a major new source of renewable energy as the world recognizes wood residues are a finite resource. The cost-effectiveness of BioHeat from energy grasses are due to its ability to efficiently capture and store solar energy on marginal farmland, the minimal fossil fuel inputs required in production and conversion to pellets, the efficient conversion of energy to heat in advanced combustion appliances and the fact that grass pellets can replace costly energy forms such as natural gas, heating oil and electricity.

In Canada in 2006, 3 densification plants began operating to process crop milling residues into fuel pellets for the commercial heating industry and for export to European power plants. To greatly expand the agri-fibre resource base, high yielding warm season grasses were commercially planted by Canadian farmers in 2006. The aim is now to create a viable raw material supply base for this emerging industry.

The prairies are well positioned to become an important player in this emerging new biofuel industry because of the large agricultural land base, low-cost forage production, and existing infrastructure and experience in herbaceous crop densification. Western Canada could produce up to 500,000 tonnes of crop milling residues per year as a bioenergy feedstock, the energy equivalent to 1.5 million barrels of oil. Crop milling feedstocks for this emerging industry include oat hulls, wheat bran, flax shives and sunflower hulls. Energy crop grasses such as switchgrass, big bluestem and prairie sandreed are also likely to become commercially viable sources of alternate energy in the prairies. The Prairie Provinces could produce more than 25 million tonnes per year of energy crop grasses for the north American and European markets. Bio-fuel diversification will create genuine demand enhancement in the farm sector, leading in turn to increased commodity prices for farmers.

Contrary to the prevailing wisdom that reducing greenhouse gas emissions will raise society's energy costs, pelletized biofuels can provide consumers with stably priced, low-cost heat while dramatically cutting emissions. Because agricultural commodity prices are declining in real dollars, agri-fibre fuel pellet sources are likely to become cheaper over time, in contrast with wood-based pellets that are rising in cost and in short supply. The development of an agri-fibre biofuel pellet industry has great potential to revitalize the rural economy of North America by absorbing the surplus production capacity of the agricultural sector and cutting on-farm fuel costs in heating intensive sectors like greenhouses.

The presenter

Roger Samson is Executive Director of REAP-Canada (www.reap-canada.com), a charitable organization working to research and develop ecological solutions to challenges in energy, fibre and food production. He has been working since 1991 on bioenergy development systems that use prairie grasses as densified biofuels and for bioethanol production. He is presently involved in bioenergy research and development and consulting on projects in North America, Europe, and a number of developing countries including China, the Philippine and the Gambia. He recently authored a comprehensive paper for Critical Reviews in Plant Science titled: "The Potential of C4 Perennial Grasses as a Global BIOHEAT Source".

SUPPORTING STEWARDSHIP OF ALBERTA'S NATURAL CAPITAL ON PRIVATELY OWNED LANDS

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We are hearing more and more about terms such as Natural Capital, Environmental Goods and Services, Ecosystem Services and Genuine Wealth. These new terms reflect a discussion that is occurring in many communities across the world, in Canada, and at home in Alberta. All of these terms, in part, are attempts to bring understanding, clarity and focus to the benefits or value that we humans derive while living in a healthy, functional and pleasing environment.

Agriculture business today is no different than other business in its important pursuit of economic advance. Paul Heyne, in his book "Private Keepers of the Public Interest" describes the business sector of society as "a sector in which men or women are occupied with the organization of resources for the satisfaction of human wants."

In the case of Agricultural business, ownership and management of land resources is a defining characteristic. Most of Alberta's private land is dedicated to agricultural production. Through deliberate and planned stewardship of specific landscape attributes, the privately owned land base can provide a rich source of Alberta's Natural Capital.

The agricultural landscape in Alberta is a highly modified landscape. However, in relative terms, this landscape still retains a strong element of its "natural character and ecological function." Retaining the diversity and proactively enhancing and securing the natural asset value of the Agricultural landscape is a worthy goal for both the agri- food industry and society.

Dr. Ed Tyrchniewicz, past Dean of Agriculture in both Alberta and Manitoba, looks ahead at the next generation of agricultural policy and asks "What does society want from agriculture? We know that a significant and increasing proportion of the Canadian population has little knowledge of, or interest in, agricultural issues." Alternatively, he notes "society is interested in the quality and safety of their food and environmental protection and stewardship."

The Canadian economy and in particular, Alberta's economy, is driving intensification of the land resource, generating new business and increasing public revenue. Many argue that Alberta's true balance sheet is revealing a significant drawdown of natural capital and that it's time to thoughtfully re-invest in our "environmental infrastructure." – our landscapes and watersheds. An important focus area for such re-investment is our agricultural landscapes, and the stewardship practices that will drive the upgrading of our natural capital.

The presentation identifies "progress indicators" and "challenges" related to current policy development focused on natural capital stewardship.

The potential opportunity and reward associated with a modern and progressive "Natural Capital Stewardship Plan" is identified. The beneficiaries of such an initiative would include the agriculture and food industry, rural communities, producers, landowners and society.