

# Biomass and North Dakota BioOpportunities Initiative

## Oilseed-based Energy and Products

Discussion Summary: BioOpportunities Workshop – May 17, 2007

### Positives

- European demand
- Large canola producer, will need more
- Large producer of soybeans
- Developing other oil crops
- Byproduct development
- Tax incentives (also a challenge if we lose it)
- Biochemists, but need more
- Developing "designer" coproducts
- County agents out in the field doing education
- NDSU has good understanding of plants and does good research
- Engaged land-grant University (but needs to do more)
- Crop rotations (also a challenge if producers move away from good rotations)

### Challenges

- Need higher percentage of oil in fuel
- Need to improve crop yields
- Costs of raising crops
- Food costs
- Need to find (separate) byproducts
- Need to increase oil content
- Emissions
- Need to monitor fuel quality
- Need replicated research for better data
- Voiding warranties in vehicles
- Need to map out best sites for plant locations
- Need to develop other products
- Need to improve economics of alternative fuels
- Need to do a better job of marketing coproducts
- Need GIS help
- Need a strong educational effort
- Trucking – backhaul problems from plants to back home
- Need more domestic demand – mandates?
- Need more collaboration with private/public sector
- Who to call if a community is interested in a plant

- Not enough acres
- Competition from gasification and other technology
- Financial risks high – need discussions with banks, industry etc.
- Not the best of climate in some areas for growing oil crops

#### **Afternoon session with industry people**

- What is target date for having X amount of biofuel?
- How much should be manufactured?
- Need to create "small island" refineries that are sustainable
- Need the right price to charge for fuel
- Strong need for education on the quality of fuel for industry and public
- Need research of growing Brassical Jencea
- Soybean quality and oil content
- Minnesota 25 by 25 initiative good for North Dakota because it will raise demand
- People may need more "pain" before reacting

Demand for bio-fuels and bio-products is being driven by national policies of several nations, such as US and EU.

North Dakota produces several major oil crops (canola, soybeans, sunflower) and has room to produce more oil crops

- ND produces several minor oil crops
- ND does NOT have room to produce more oil crops without displacing other crops ???
- Production costs of oil crops is high relative to other crops (e.g., corn)
- Increase production by planting more acres to oil crops (at the cost of displacing other crops, at the cost of reducing CRP acreage), increasing oil content, or increasing yield.
  - Need agronomic research to increase yield and oil content, and otherwise lower production costs
  - Government policy impacts whether CRP acreage will be brought into production
  - Government policy impacts whether risk of producing oil crops is comparable to risk associated with producing other crops (e.g., crop insurance)

There is competition in oil processing; e.g., Canada is building several processing plants

There is a need for financial resources and risk management in pursuing these opportunities

- What is the domestic demand for these products?
- Do consumers need to “feel more pain” before they switch?

Will we have the workers needed to staff the bio-industry?

How will rural community react to bio-industry?

- Will our local educators engage the community, investors, business leaders, lenders, etc in timely discussions?

Does the industry produce jet fuel?

What will be the balance between large agribusiness and smaller firms?

Need a variety of disciplines to address the full system – crop production, processing technology, co-product use, transportation, geo-sciences, bio-chemists, rural sociologists

- Can bio-chemist help develop new products?
  - How do we balance food and non-food uses?
  - Can value of co-product be enhanced by using it for food purposes?
  - Can we design gourmet co-products, such as polymers, feeds, specialty chemicals
  - Will bio-chemist work with plant breeder?
- Can geo-sciences help in locating processing plants and facilities that use co-product, such as livestock feedlots?
- Can rural sociologist help prepare community for bio-processing and co-product utilization?
- Can plant scientist help increase yield, oil content, crop tolerance, ability to grow crop in new regions?
  - Where does bio-engineering fit into this vision?
- Can researchers address processing technologies?
- Can economist, transportation expert, and others help in processing co-product for export to other states and nations?
- What will be the environmental impact of bio-fuels and bio-products?
  - What will be the emissions from bio-fuels?
  - What impact will bio-processing have on local water resources?

- What impact will bio-processing have on local air resources?
- Analyze impact of current and alternative national tax policies
- Will engine manufacturers recognize/accept bio-fuels; e.g., will use of bio-fuels void engine warranties?
- Will our local educators engage the community, investors, business leaders, lenders, etc in timely discussions?
- Will our transportation experts address transportation and transmission costs? Truck, rail, pipeline, power lines, etc?

Need to replicate research results to assure confidence.

Need to work with others – make the most of our statewide extension and research resources, and our strength in bio-sciences.

- I would add the following expertise to “what can NDSU contribute to this effort”
  - plant production -- capture more of the sun's energy in the desired plant form -- oil, starch, cellulose, etc
  - ag policy as it impacts how producers produce
  - ag use of co-products
  - industrial use of co-products
  - food use of co-products
  - community preparation for bio-processing and ag use of co-products
  - impact on environment
  - what about wind and use of electricity generated by wind?

NDSU needs to be an engaged land-grant university

- NDSU needs to provide objective accurate information
- Are we disseminating research results?
- Are we working with others?
- Are we facilitating local discussions?

#### Comments from visitors

- Focus on NDSU customers – remember, we are NDSU
- Do not overlook conservation and other practices to reduce energy use; what is the role of education and technology in reducing energy use?
- Recognize that this is a system (from feedstock to consumer); identify the bottlenecks in the system and find solutions
- Ethanol and DDGs are not the end; they are means to the end.
- NDSU must commit to being a leader to help ND be a leader in bio-energy system
- Do not overlook the importance of the energy title in the 2007 farm bill
- Prioritize the many topics identified today
- Continue the dialogue
- Reach out to existing industry in state—ask them what NDSU can do to help them; discuss product, co-product, etc.
- Give priority to the activities that bring the greatest benefit to ND business, producers, residents, etc.