IPRO 349

Solid Corn-Waste Fuel for Cogeneration
Statement of Problem

• Need a method for efficient conversion of corn stover to solid biomass for cogeneration.

• Objectives
  • Investigate pathways for small scale operation
  • Define optimum location characteristics
  • Construct economic analysis
  • Develop final report
  • Propose a possible test model
1. Purpose
   - To increase mass per unit of volume

2. Process of pelletizing
   - Grinding/ particle reduction ⇒ Compression ⇒ Densification

3. Two types of densification
   - Briquette
     - Less Dense
     - Durability: 67-90%
   - Pellet
     - More Dense
     - Durability: 94-96%
Cogeneration Possibilities

- Gasifier
- Separator
- Purified gas
- Gas Turbine
- Storage
- Water boiler
- Steam turbine
- Condenser
- Heating elements
- Direct combustion of corn stover
Obstacles

• Location of accurate resources
• Getting responses from industries
• Analyzing multiple pathways
• Efficient use of time
  • Planning ahead
  • Individual task definition
To Do List

- Further research
- Continue to contact companies
  - (ADM, John Deere, Monsanto)
- Consult specialists
- Dixon farm visit
- Track energy losses
- Compile detailed information of individual components for most beneficial combination
Ethics

- Seven layers of Ethics
- Law: Must abide by all EPA regulations
- Professional Code of Ethics: Must not represent our team falsely
  - Rather, be smart when contacting companies
- Community: Corn for food – waste for fuel
Questions?