Native Grasses as a Biomass Fuel

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Overview

• Introduction – ECS and EB
• Growth and range
• Ecological value
• Various forms
• Supply
Ernst Conservation Seeds, Inc.

- Founded 1962
- Meadville, PA – Crawford County
- Native seed company
- 200+ species
- Applications include wetland mitigation, wildlife habitat, erosion control, land restoration, conservation
- 60+ full-time employees
- 8,000 acres
- Largest producer of switchgrass seed in the East
Ernst Biomass, LLC

• Founded 2008
• Dedicated to the production of solid fuel from native warm season grasses
• First of its kind
• Construction began September 2010
• Due to begin production 1st quarter 2011
• 24,000 tons/year
• Three markets: Residential, commercial, industrial
Switchgrass 101

• Switchgrass is often used for multiple native, warm season grass species, including:
  – Big Bluestem
  – Indiangrass
  – Prairie Cordgrass
  – Coastal Panic Grass
“Switchgrass” Positives

- Perennial
- Planted with seed
- Native
- Utilizes marginal ground
- Harvested with existing equipment
- Efficient use of water and nutrients
“Switchgrass” Negatives

• Establishment phase
  – First year is mostly root growth
• Herbicide
• Competition from weeds
• Minimal development
• Logistics
• Silica content

Range of Adaptation

[Map of North America showing the range of adaptation for switchgrass]
Varieties

Ecological Value

- Native warm season grasses provide:
  - Wildlife habitat
    - Deer, pheasants, song birds
  - Improved soil conditions
    - Breaks through soil striations
  - Improved water quality
    - Provide nutrient capture eliminating from run-off
  - Carbon sink
    - Below-ground biomass
Various Forms

- Ground/Chopped
- Baled
- Briquettes
- Cubes
- Pellets
- Liquid

Ground/Chopped

- Least expensive process
- Extremely limited logistically
  - Transportation
  - Storage
- Material handling equipment must be large
- Trailers
Baled

- Marginally more expensive
- Easier to handle
- Incremental opportunity for existing equipment
- Stability
- Logistics
Briquettes

- Least expensive densification
- Forgiving process
- Increased bulk density
- Stability
- Robust material handling required
Pellets

- Most expensive densification
- Good material flow
- Below “best use”
- Processing can be challenging
Liquid

- Increased energy density
- Theoretical
- Existing infrastructure
- “Drop in” in certain applications with minimal processing
- Other applications require refining
- Lab-scale

Supply

- Independently Owned
  - LaFarge
- Contract-based
- Co-op
- Small vs. Large
  - Economies of scale vs. Management challenges

- The best fit will vary between regions
Contact Information

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