

Sorbent Opportunities for Native Biomass



Calvin Ernst
May 21, 2014



- Introduction to ECS
- Introduction to Ernst Biomass
- Benefits of Switchgrass
- Existing and Potential Markets
- Industrial Sorbent
- Considerations

Ernst Conservation Seeds

- Established in 1964 - Meadville, PA
- Family-owned
- Native/naturalized species for conservation, land reclamation, biomass, wildlife habitat, restoration
- Approximately 400 species
- Current production in PA, FL, SC, MD

Ernst Conservation Seeds

- 30+ years' experience with switchgrass establishment, management, seed harvest, processing.
- Currently participating in and encouraging the development of numerous markets for switchgrass biomass.

Ernst Conservation Seeds

- Approximately 9,000 acres under production
- 75+ full-time employees
- 7/19 50th Anniversary Community Field Day
 - 10:00 a.m. – 4:00 p.m.
 - Field/Farm Tours



Ernst Biomass

- Production started slowly in Aug. 2012
- Original target market was residential heating
- Other applications/markets realized
- 6 full-time employees
- One of a kind
- YTD 2014 Production: 2,147 Tons



Benefits of Switchgrass

- Environmental Benefits:
 - Improved soil quality
 - Improved air quality (carbon sequestration)
 - Improved water quality (nutrient uptake)
 - Wildlife habitat
- Economic Benefits:
 - Utilization of idle and marginal land
 - Supports local and rural economies
 - Stable cost of production vs. byproducts
- Domestic Resource



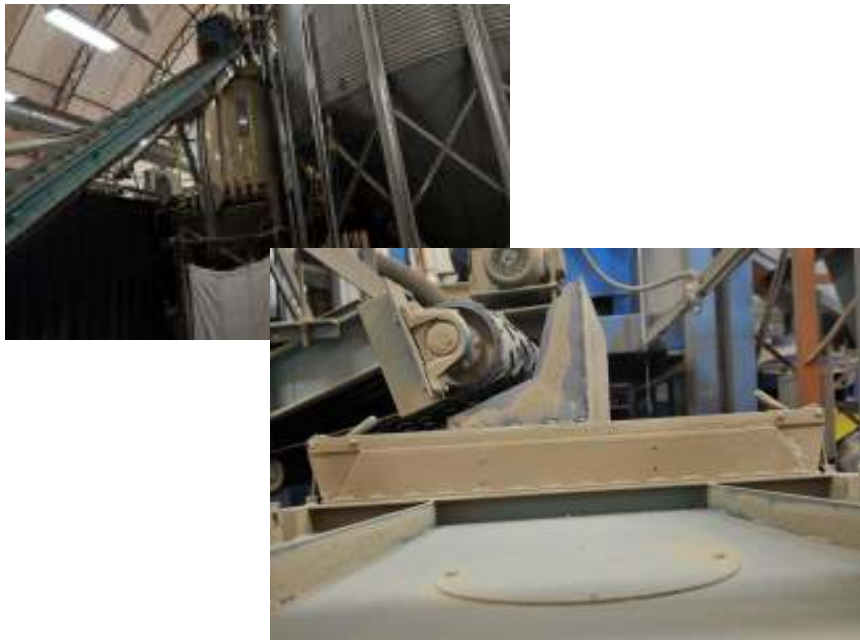
Existing and Potential Markets

- Animal Bedding
 - Horse Bedding (Pellets)
 - Dairy (Ground)
 - Poultry (Ground/Crumbles)
- Compost/Mulch
- Bio Packaging/Building Materials
- Plastic Substitute/Replacement
- **Industrial Sorbent**

Industrial Sorbent – Process







Industrial Sorbent

- Packaged in one-ton super sacks.
- Product must be packaged to sit outside.
- Consistent appearance and balanced packaging are most important factors.



Industrial Sorbent

- Three forms:
 - Pellets
 - Loose, “poor” pellets without the shiny surface
 - Crumbles
 - Fines
- Form is chosen by customer to fit needs.
- Smaller particles have a better volume:surface area ratio which allows for a faster reaction.

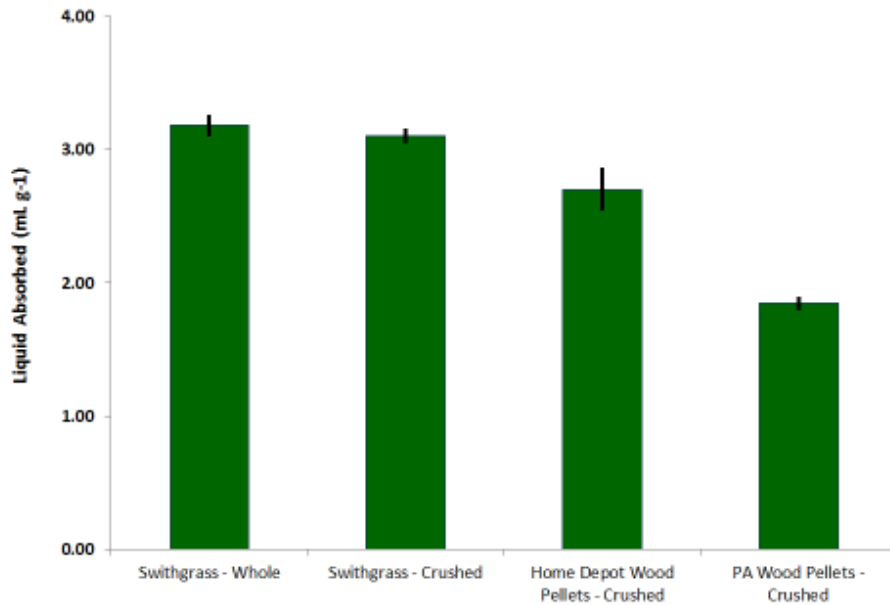


Industrial Sorbent- O&G

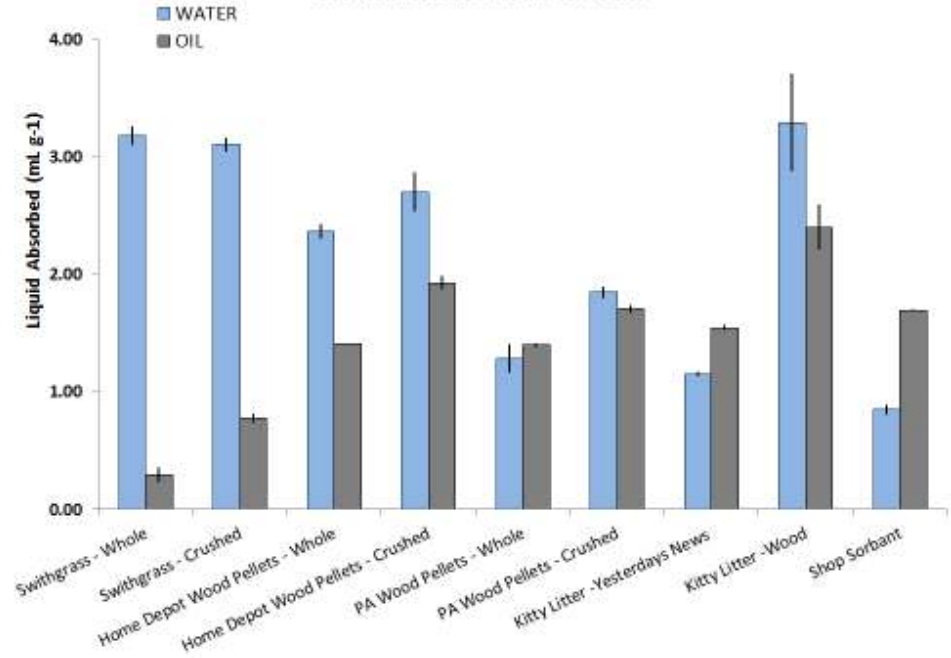
- Used to solidify drill cuttings/tailings.
- Allows for easier disposal.
- Must solidify any free liquids in the mix prior to waste leaving drilling site.



Material Absorbency of Drilling Cutting



Material Absorbency Oil vs. Water



Considerations

- Biomass markets are currently available.
- Focus must be regional.
- The highest market value with the lowest processing cost will attract the most fiber.
 - Lower processing costs equate to lower capital costs.
- Within the same industry, similar markets can usually be found.

Questions??

- Calvin Ernst
 Ernst Conservation Seeds, Inc.
 Ernst Biomass, LLC
 8884 Mercer Pike
 Meadville, PA 16335
 (814) 336-2404
 dan@ernstseed.com