IPRO 340

Alternative Uses for Spent Grain
What is the problem?

- What is spent grain?
  - Boiled barley
- Enough to fill crown hall one foot deep every month
  - 50+ breweries in Chicagoland
Goals for Project

Find alternative applications for spent grain

Analyze alternatives

Provide a suggestion for Rock Bottom
Team Organization

Primary Research Groups

- Logistics
- Food Alternatives
- Innovative Applications
Accomplishments

Food Alternatives

- Good source of nutrients
  - Approximately 30% crude protein
- Cooking with Spent Grain
  - Cookies, Bread, Crackers, Granola
  - Animal Feed, Dog Biscuits
- Alternative for flour
  - Can be dried and ground

Innovative Applications

- Biogas Production
  - Aerobic/anaerobic digester creates 1.3 million BTUs per 1 metric ton wet spent grain.
- Charcoal Production
  - Higher energy output than wood, but also a higher ignition temperature.
- Brick Component
  - Used to increase porosity of brick without any negative effects. It may be substituted for sawdust.
- Dye Absorbent
  - Absorbers cadmium, lead and chromium compared to other low-cost biological materials.

Logistics

- Spent grain molds quickly in summer months
- Fuel prices effect Break-Even
- Will someone purchase for more than $0.05/lb?
- Handling can be improved in most breweries
- Product freshness for down stream uses
Major Obstacles

- Ethical dilemma
  - Sharing sensitive information
  - Trade secrets
Anticipated Challenges

- Preservation
  - High moisture content
  - Spoils quickly

- Microbrewers have limited resources
  - Space, capital, time

- Transportation
Questions and Needs

• Collaboration with related businesses and other IPROS

• Additional lab analysis
Questions?

340
Mashing Up Ideas for Tuns of Results
References

