



*Maximizing Barley Bioprocessing to Create Food and Fuel*



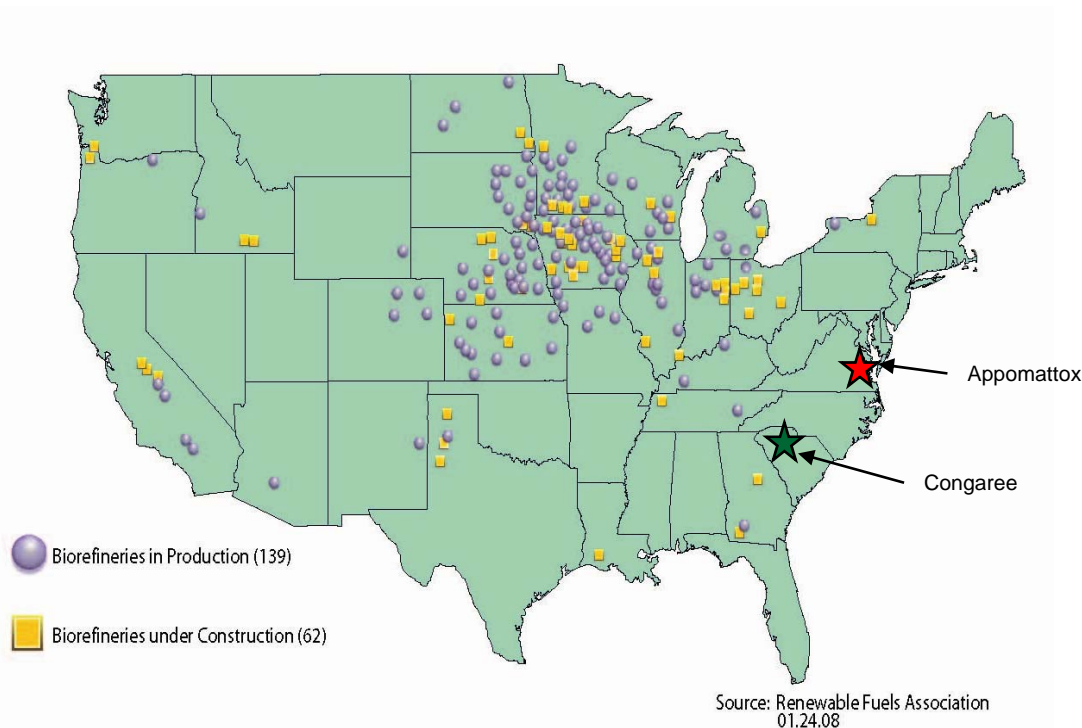
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# Overview of Osage Bio Energy

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- Osage Bio Energy (OBE) is a Virginia-based company that will use regional grain to produce biofuels and related products for East Coast markets. OBE's sister company, Osage Inc, is also a Virginia-based company and is one of the largest ethanol distribution companies in the Southeast.
- Osage Bio Energy is backed by First Reserve Corporation, a leading private equity firm serving the energy sector exclusively, which has committed \$300 million to Osage Bio Energy.
- In addition to ethanol fermentation, our process captures the naturally occurring, high-value proteins in barley. OBE will use these to provide the livestock industry with a competitively priced, nutritionally superior feed product. Our process also separates the fiber fraction (hulls), making it available in a pellet form for use as a renewable fuel.
- Osage Bio Energy's long range plans include developing projects that evolve from emerging technologies.

**OBE's location in the Mid-Atlantic utilizing winter small grain is unique for ethanol producers.**



- Most ethanol producers are located in the Midwest and must ship the ethanol primarily to the East or West Coast where most demand exists.
- Osage Bio Energy intends to procure its feedstock from farmers in barley growing regions on the East Coast.

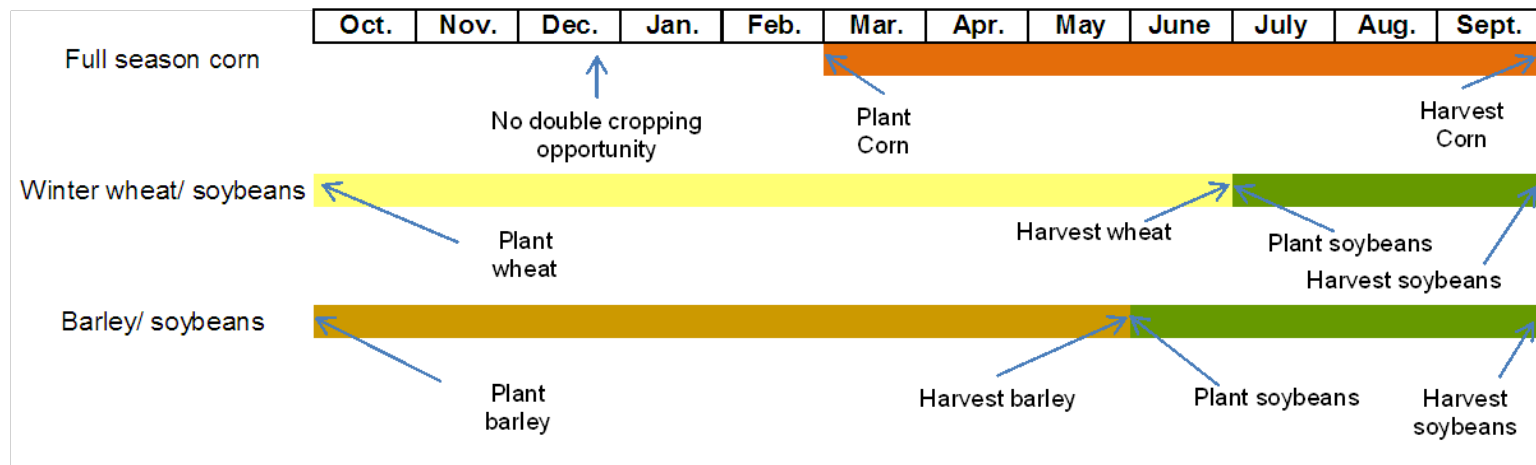
# Why Barley?

	East Coast Barley
<b>Cropland</b>	<ul style="list-style-type: none"> <li>• Additional double-crop agricultural opportunities not presently used during the winter months in Mid-Atlantic and Southeast.</li> <li>• Barley can be produced in moderately productive soils.</li> </ul>
<b>Farming benefits</b>	<ul style="list-style-type: none"> <li>• Barley crop is symbiotic with the soybean crop as it reduces double-crop yield drag because of timely harvest (barley) and planting (soybeans behind barley), reduces nitrogen requirements, as well as utilizing the same harvesting equipment.</li> <li>• Winter planting reduces the likelihood of off-target impacts from nutrient loss to the environment, enabling better crop nutrient utilization, as well as help with soil and water conservation efforts in sensitive watersheds like the Chesapeake Bay.</li> <li>• A challenge is the need for added grain storage.</li> </ul>
<b>Co-product</b>	<ul style="list-style-type: none"> <li>• Barley Protein Meal - Improved amino acid composition for dairy, poultry and swine.</li> <li>• Fuel Pellets – Similar to woodchip pellets for pellet stoves.</li> </ul>
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- Each Osage Bio Energy plant will utilize 28 million bushels of barley per year.
  - Will require almost 300,000 acres of winter cropland per year for barley.
  - Will create over 450 seasonal farm jobs.
  - Will provide an economic market value in excess of \$100 million annually to growers.
  - Will offer over 170,000 tons of barley protein meal per year as poultry and swine rations.
  - Will offer over 50,000 tons of renewable fuel pellets per year as a green energy source.
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# Barley's Benefits to Farmers

**Compared to wheat, double cropping with barley and soybeans provides a longer growing season for soybeans, enabling a higher yield.**



## Effect of Cropping Systems on Soybean Yields. Princeton, Ky., 1972-75.

Soybean Cropping System	Planting Date <sup>1</sup>	---Soybean Yield <sup>2</sup> ---	
		Bu/Acre	%
Single-crop	21-May	51.3	100
Double-crop after barley	6-Jun	50.7	99
Double-crop after wheat	24-Jun	42.5	83

<sup>1</sup>Four-year average, 1972-75.

<sup>2</sup>Average of two soybean varieties

- Trials at Penn State and Virginia Tech show “Thoroughbred” cultivar average ‘s 100 bushels per acre in a double-crop production system.
- 3.3 million acres of soybean production in the region, 2.1 million of which is not currently double cropped.

## **Locally produced products from regionally grown winter barley offers key environmental advantages**

- Winter barley offers cropland soil conservation benefits.
- Local production reduces impact of transporting fuel and livestock feed products from outside the region.
- Barley hull pellets as renewable biomass fuel will offset use of fossil fuels.
- Use of ag-based alternative fuels and ag-based fuel pellets provides greenhouse gas reduction opportunities.
- Ethanol produced will primarily be used in regional fuel markets which are non attainment zones.



# Barriers and Challenges

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- Consistent and dependable barley supply is critical. Need to attract the attention of growers and provide assistance with deploying a new crop option.
- Need to attract the attention and business of the livestock industry and demonstrate the nutritional value of barley protein meal .
- The agricultural industry needs help in facing the challenges associated with introducing a new crop to the area.
- Need for increased grain storage to support the new crop production as Virginia's grain storage deficit is a barrier.

Options include on-farm storage and strategically located grain terminals. Significant incentives exist in the New Market Tax Credit program.

- Offer direct financial incentives targeted at capital construction in rural distressed communities. Net benefit is typically 20%.
- Existing allocations are opening up and a new allocation of \$3.5 billion is scheduled for next month.
- Virginia has a relatively weak history in competing for and securing allocations and federal programs like to “spread-the-wealth”.

# Timeline of Key Construction Events

- We expect to start up the plant in Hopewell in Q2 2010.
  - Estimated construction time from ground-breaking to operations is 19 months.
  - Construction contract signed.



- **Osage Bio Energy Products:**

- **Barley Bio Ethanol**
- **Barley Protein Meal (BPM)**
- **Barley Fiber Pellets**

- **Agriculture Gains:**

- **Energy Cash Grain Crop**
- **Nutritionally Superior Animal Feed**
- **Barley/Soybean Double Crop Advantage**
- **Increased Agricultural Revenue**

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**The Confluence of Agriculture, Renewables, Energy, and Biofuels!**