The Dual Benefits of Poplar in the Pacific Northwest: Sustainable Feedstock and Wastewater Management

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Today’s talk

• About AHB
  ▪ Renewable fuels and chemicals
  ▪ Poplar biomass

• Challenges
  ▪ Price of oil
  ▪ Growers

• Solutions
  ▪ Connect with stakeholders
  ▪ Environmental services
  ▪ Bio-based chemicals

• Road ahead
Overview of AHB

Pacific Northwest Grown Short Rotation Hybrid poplars

Cellulosic Ethanol, Biochemicals, and Drop-in Replacement Transportation Fuels
Renewable Fuels and Chemicals

Renewable Transportation Fuels
- Cellulosic Ethanol
- Drop-In Biofuels
  - Bio-Jet Fuel
  - Biogasoline
  - Renewable Diesel

Biochemicals
- Acetic Acid
- Ethyl Acetate
- Ethylene
Poplar Bioenergy Crops

- Ideally grown
- Non-irrigated
- On marginal land
- Near other feedstock sources
AHB Demonstration Sites

- Four farms, 50 to 100 acres each.
- Alluvial plains and Cascade range piedmont sites
- Level terrain up to 10% slope
- 18 to 45 inches precipitation
- Clay, clay loams, silty loams
Harvesting Poplar
Coppiced Poplar Production
Challenge 1: Economics

U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price FOB

- **Bio-jet***
  - $5.78
  - (25 Mil gal year )
  - $3.44
  - (100 Mil gal year )

*7% discount rate and $80 per dry ton feedstock
Challenge 2: Interest in Bioenergy

• 50% are interested in bioenergy crops

• 33% likely to grow a bioenergy crop in next 5 yrs

• Significantly correlated with profit, risk, water quality, and renewable energy interest
Solution 1: Connect with Stakeholders

Field tours – An excellent way to reach local policy makers
Annual Field Tours

Summer 2016 tours

- Clarksburg, CA May 10
- Jefferson, OR May 15
- Pilchuck, WA May 31
- Hayden, ID June 7
Solution 2: Environmental Co-products

Poplar for Environmental Uses

Biocycle Farm in Eugene, OR. Nearly 400 acres of poplars fertilized with biosolids and irrigated with recycled wastewater.
Multiple Benefits

- Reduces wastewater treatment costs
- Keeps natural waterways clean
- Enhances poplar growth
- Produces a marketable crop

VIDEO: https://youtu.be/zlH-L3jfFmw
Other Environmental Uses

- Phytoremediation
- Riparian Buffer
- Riparian zone protection
- Slope stabilization
- Flood reduction
- Carbon sequestration
- Aquaculture effluent management
- Restore degraded land
Pacific Northwest Poplar

Phytoremediation project at the Riverbend Landfill in McMinnville, OR.

Erosion control project near Mt. St. Helens.
Land Suitability Study

University of Washington

http://nrsig.org/projects/advanced-hardwood-biofuels-northwest
Solutions 3: The Bridge to Biofuels

• Biofuels industry currently in holding pattern

• In the meantime
  ▪ Looking to other products (cellulosic ethanol and acetic acid)
  ▪ AHB is preparing to support future industries and early-adapters of hybrid poplar bioenergy crops
Poplar and Willow Roadmap

- Benefits
- Barriers
- Potential
- Solutions

NEWBio

Advanced Hardwood Biofuels Northwest
hardwoodbiofuels.org
AHB Concluding thoughts

• Biomass
  ▪ Biofuels
  ▪ Co-products
  ▪ Wood products integration

• Solutions
  ▪ Wastewater management
  ▪ Land Reclamation
  ▪ Riparian buffers

• Road ahead

WE love poplar!
Get Involved

Please complete this short questionnaire so that we are able to understand how you would like to be involved with AHB.

1. Which of the following best describes you?
   
   Select...

2. What interests you? (please select all that apply)

   Growing biofuel feedstock
   Economic development in your community
   New business opportunities
   Educational opportunities

   (shift-click or command-click to select more than one item)

3. Would you like to receive our quarterly email newsletter?

   Yes

4. How do you prefer to receive information? (please select all that apply)

   Newsletters
   Printed publications
   Online publications
   Workshops

   (shift-click or command-click to select more than one item)
Questions