Baxter Biomass Energy Workshop Wrap-up

Dean Schmidt, WesMin RC&D Coordinator

Fueling the Future:

The Role of Woody Biomass for Energy Workshop

April 2, 2009

Brainerd
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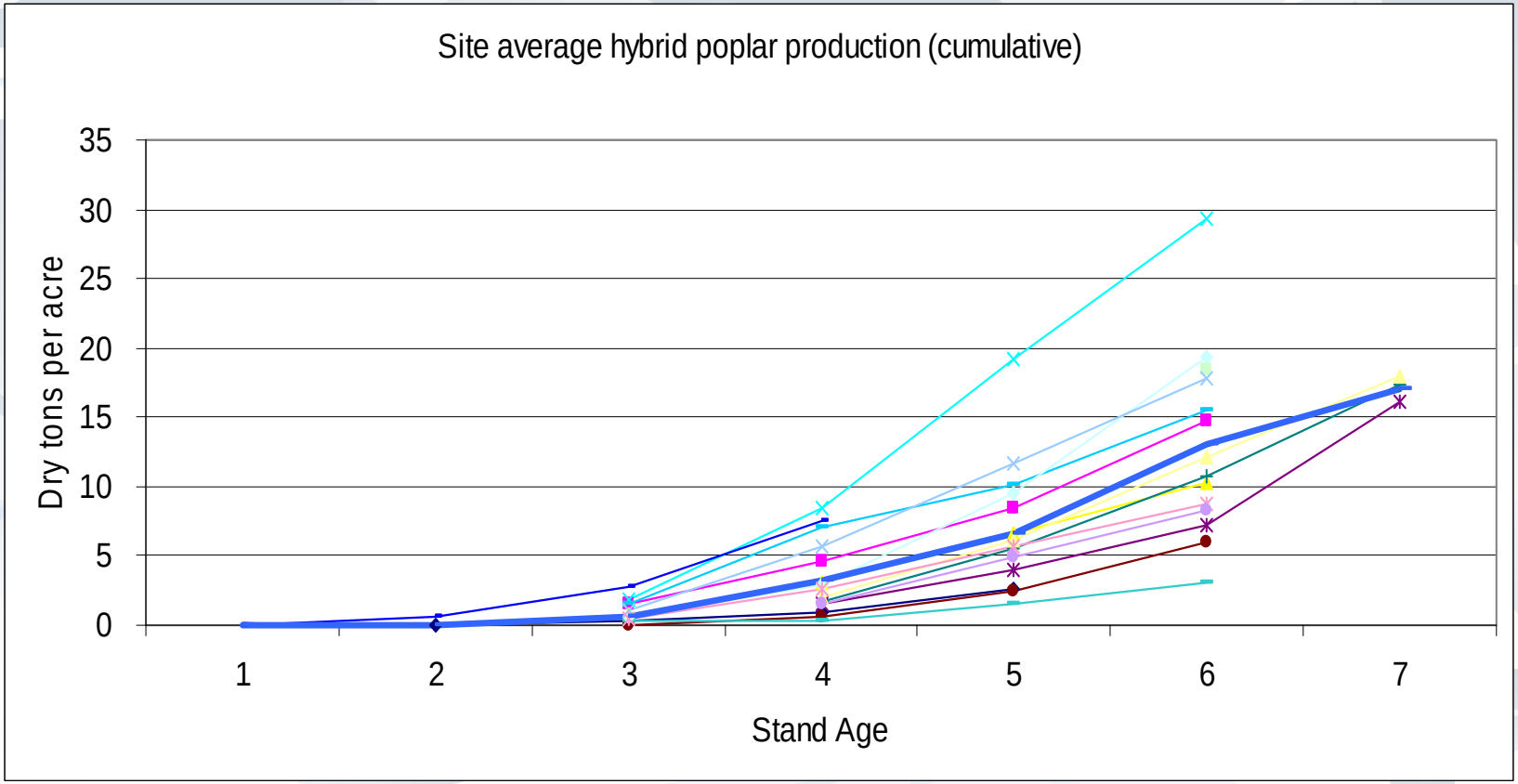
Using Woody Biomass for Energy – The Right Thing To Do

- Locally Produced Energy
- Renewable or Green Energy
- Wisely using MN's Abundant Forest Resources
- Utilization of slash, wasted wood (At recommended levels)
- Reduce use and dependence on fossil fuels
- Local job creation and economic development
- Mutual Benefits- wildlife openings/invasive species removal/fire protection/storm damage/landfill reduction, etc
- Carbon cycle and sequestration rather than carbon dioxide into air when burning in field
- Environmental Protection (Done in sustainable manner)
- Growing dedicated perennial energy crops: soil, water quality protection and improvement, carbon sequestration, crop diversification, reduction of chemical use, etc.

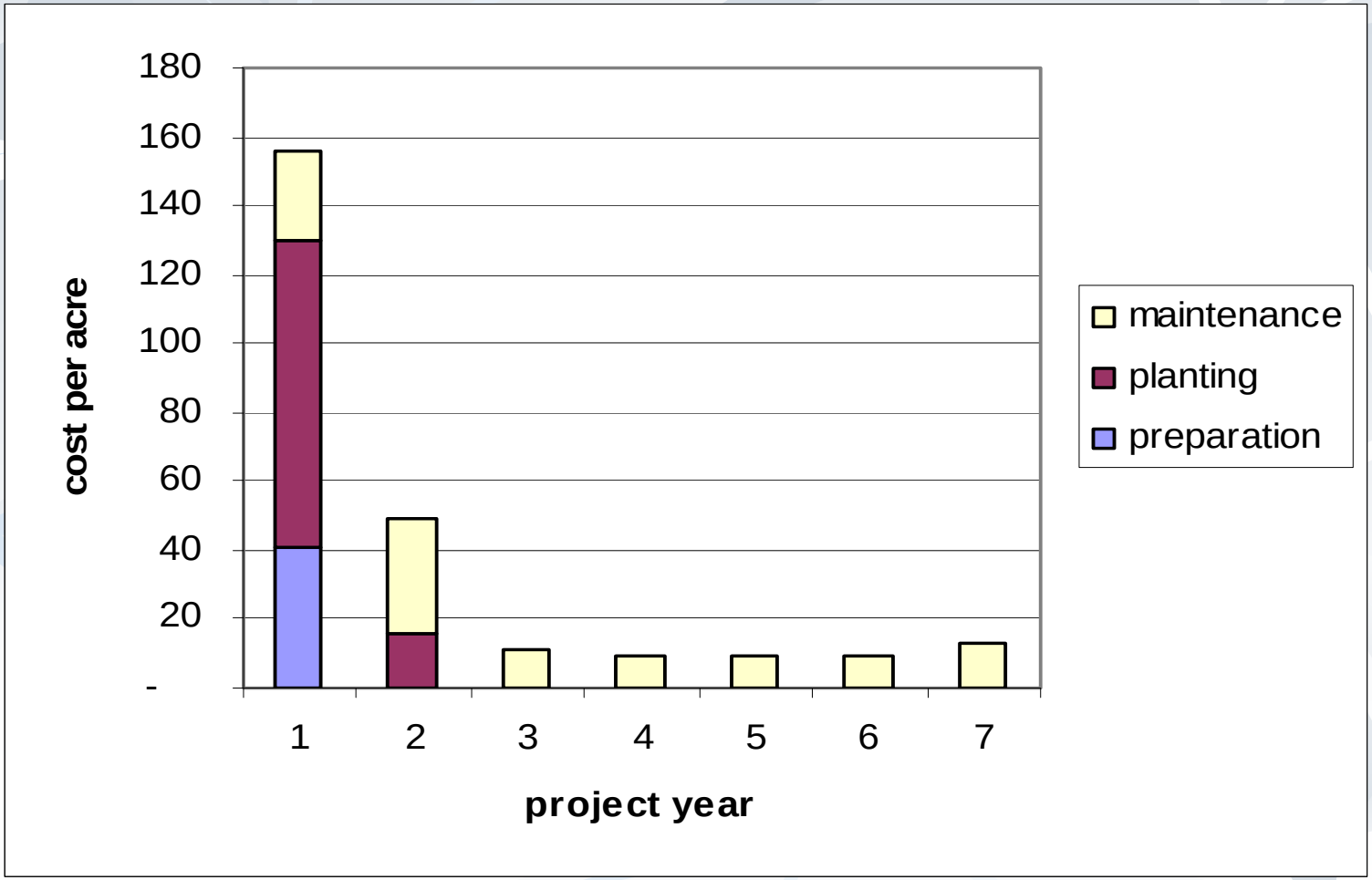
Woody Biomass for Energy Not a New Concept for WesMin RC&D

- Wood Energy Scale Up Project, started 1994 with DOE funding, to grow Short Rotation Woody Crops (hybrid poplars) for Energy.
- 1750 acres on 17 landowners, most of who entered into CRP, within 50 miles of Alexandria
- Measured costs to establish and maintain plantations on private lands, and growth rates (expected yields) of HP
- Wide variety of soils, topography, management
- Funding stopped in 2001 and measurements discontinued, however recently collected some field data working with DNR, CINRAM, and UM and small USDA grant on unharvested fields

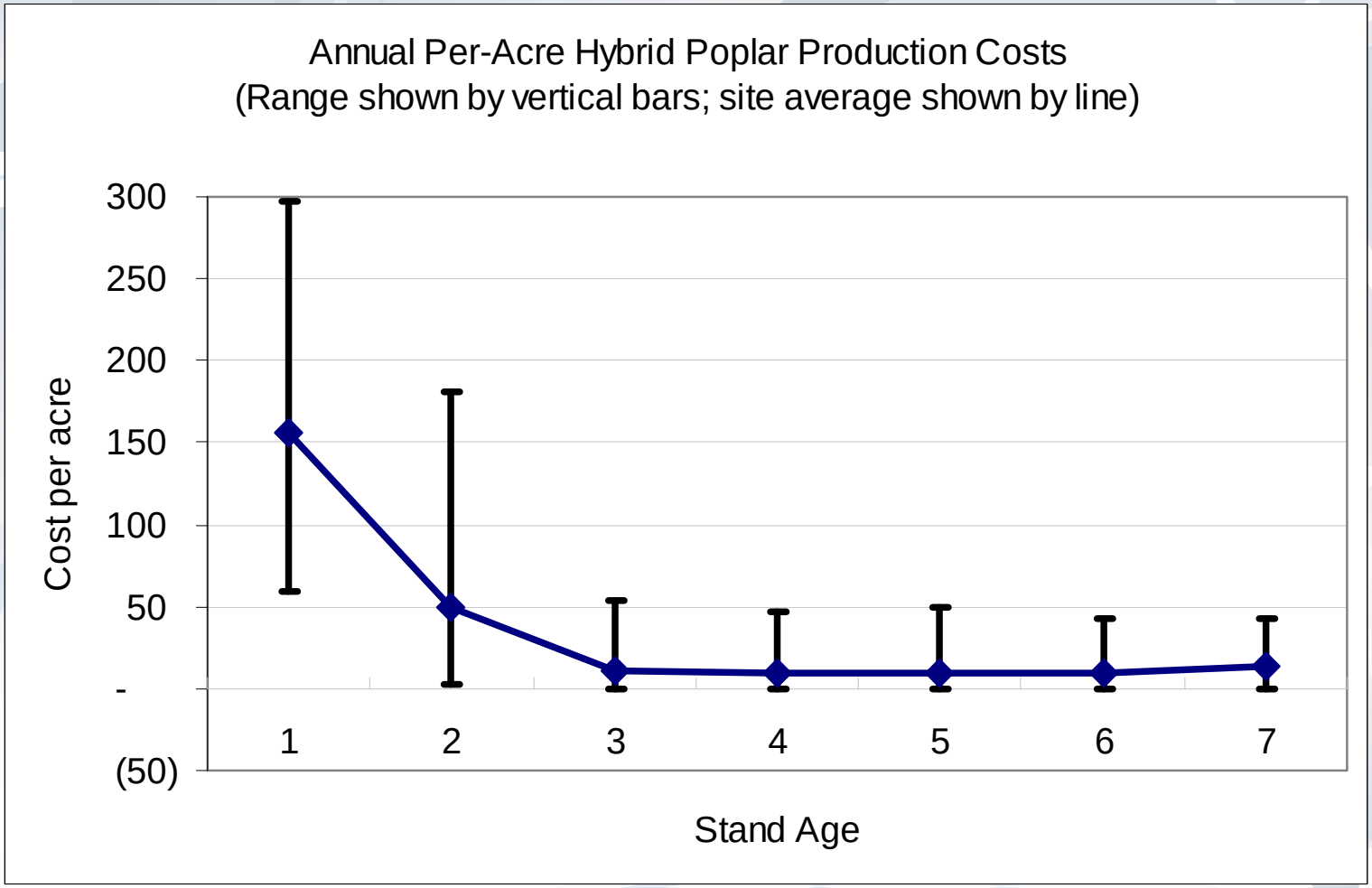
Growth Rates of HP in Wood Energy Scale Up Project (each color is a different landowner)



Average Costs Per Acre to Grow HP



Range Varies by Landowner, Site



Unfortunately (or fortunately for landowners) hybrid poplars being sold for pulp- higher value

- I've always said, the only problem with hybrid poplars is they make great paper!
- Whole Tree Energy Project Never Materialized
- Champion- International- Now Verso Paper begin buying land and planting, now around 25,000 acres
- Economic Development: Office, Nursery, employees hired in Alexandria area
- Good price for landowners for pulp
- Could we get additional income for energy, or is there potential to sell all of crop for energy

Promising Potential for HP for Energy

- Cellulosic Ethanol for Little Falls Ethanol Plant
- Farm Program/Fed Govt Program Help- BCAP?? USDA Farm Bill, 75% establishment, lost opportunity payment while growing crop, up to $45 match with business to harvest, transport, process, store, etc (EIS needed, rules needed) – Must be working with biomass energy facility
- Slash
- Coppicing

So what is wood value for biomass energy?

Potential value to landowner for biomass energy

- Negative value – Have to pay someone to remove it, taking up space for trees, crops, unsightly, in my yard. No market, land fill costs
- No value – It is just wood laying in a field, miles from a market. Economic loss to haul it so burn it.
- Some value – Where is market, what does it cost to gather, dry, chip, deliver and what are market specs and gate price

Even at zero to landowner, don't forget site to factory gate benefits

- Jobs and economic development:
  - Handling and gathering material
  - Drying (20% very dry to 50% green)
  - Chipping (2" or 4" minimum)
  - Trucking
- Value to energy plant: jobs, reduce fossil fuel footprint, carbon reduction, energy efficiency, locally produced energy rather than paying someone in ND coal plant, lower plant operating costs at ethanol plant and save jobs
- Site Cleanup
- Sure beats a can of gas and a match putting CO2 back into the air.
- Wish-More $ for landowner- ie hybrid poplar growers are not going to sell dedicated crops as "waste wood" for $1 cord (at 3 cords/ac/yr that's only $3/ac) vs $30/cord 2008 or $90/ac/yr

Industry familiar with harvesting, machinery, handling, processing, value and costs to deliver the logs for pulp, paper, saw logs, OSB, etc

But what to do with this? Added value for biomass energy?

Costs to operate/move in expensive chipping equipment for utilizing slash after harvest for biomass?

Does/will technology help to improve abilty and reduce costs to collect, store, process, woody biomass?

- Huge pile of slash left from hybrid polar harvest
- John Deere 1490D slash bundler or "Energy Wood Harvester" demonstration on hybrid poplar site west of Alexandria 2004.

Timberjack Slash Bundler

Ability to bundle wood for later energy use

- Slash is compressed into slash log: dries, stores, handled, and transports easier.
- 1 Megawatt hour of energy per log
- Approx 100# per foot- these were 8 feet
- Equipment costly to own and transport.

How can we utilize forest resources more efficiently, providing energy for our country's needs, additional economic development

Note amount of merchantable logs vs remaining woody biomass – Utilize or pile and burn putting CO2 in air???

Needs/Problems to Overcome

- Need more/new markets dispersed near wood/forest resources
- Handling/processing/transportation costs and economic research
- Harvesting/Processing/Handling Equipment - Research and Development
- Field demonstration projects to learn/evaluate new technology
- Education for landowners/govt agencies/loggers/businesses
- Financing for projects
- Environmental concerns/Permitting
- A higher price for the landowner/forest owner for energy use
- Transportation/Handling/Storing/ Bulkiness- pelletization could be good solution??

Promising Future for Woody Biomass in MN

- MN has vast forest resources and wood industry
- Woody biomass cleaner for burning (Chlorine in Corn Stover requires NaOH)
- Woody biomass denser for transporting (vs corn stover, grass)
- Not a food or livestock feed
- Many projects started gone to wood, none a few years ago
- AURI work with pelletization
- DNR/RC&D work with dedicated energy crops (hybrid poplars) - DOE project starting early 1994
- Many partnerships started biomass energy priority concern – UM, DNR, RC&D's, CERTS, USDA, SWCD's, MN Forest Resources Council, Tribes, AURI, DOE, State Energy Office
- State support: MN Governor's 25 by 2025
- Resurge of National Support

Current Greatest Potential

- Dual Benefits Great Potential:
  - Thinning and Timber Stand Improvement
  - Fire control
  - Wildlife Openings, Prairie Restorations, Brush clearing
  - Logging residue removal/cleanup
  - Willow and Alder Bogs (Small stems- winter harvest)
  - Land clearing/Construction Projects
  - Urban storm damage, trimmings
  - Diseased Tree/invasive species control
  - Energy savings/fossil fuel reduction/water savings at ethanol plants/local economics
  - Cellulosic ethanol
  - Coppicing of Hybrid Poplars??

Coppicing of HP: Second and successive crops without replanting

Save root system and replanting costs- but multistem biomass crop

What’s Next?

- Collaboration
- Business ventures
- Research
- Grant Writing and Financing
- Field Demonstrations
- Education
- Foundation and Private Business Support
- Local, State, Federal Support
- Legislative support

Conclusion

- Everybody Loves:
- Raymond
- Woody Biomass

Thanks to our partners and sponsors

- WesMin, Onanogozie Resource Conservation and Development (RC&D's)
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- MN DNR (Speakers and Grant)
- University of MN Extension
- MN Forest Resources Council (Sponsor and grant)
- AURI
- Farm Bureau
- MN Forestry Association
- CINRAM

Please Complete Participant Surveys

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