ADVANCES IN BIOMASS PRODUCTION FOR THE BIOECONOMY

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REGIONAL FEEDSTOCK PARTNERSHIP



ENERGY

JSDA

Assess yield data, including long-term production patterns

Southeastern Regional Center

RFP PRODUCTS & OUTCOMES

- The Regional Biomass Feedstock Partnership has completed 7 years of field trials for dedicated biomass crops and crop residue removal.
- Data from the field trials and resource assessment activities have been and will continue to be uploaded to the KDF and made available for public access.
- Material analyzed by INL for the Biomass Library
- Long-term yield trials critical in increasing our understanding of temporal variability (drought, flood, etc.) in changing climatic conditions and varying soil types.
- Contributed 88 Peer-reviewed publications and other outreach products.





WOODY CROPS

Crop Development



Woody crops (poplar & willow) offer significant genetic variation to draw on for advancement

Presents the prospect of tailoring crops for optimal conversion

Harvest Systems



Woody crops fulfill the need for a portfolio of feedstock sources to:

1) Address varied landowner interests

2) Maximize ecological and environmental benefits

Feedstock Logistics



Woody crops provide an important approach to address annual supply issues

> The supply chain infrastructure is in place due to FPI

Sustainable Production



Woody crops provide material for diverse markets

Flex management targets the range of landowner interests and objectives



Woody Crops - Poplar



- 68 total sites (genetics tests, yield trials, and nurseries
- Created one of the largest collections of new clonal material in the world adapted to northern climates
- Expanded breeding for southern regions using the best parents with proven performance in the South
- Large-scale "family field tests" in Minnesota have developed unique understanding of underlying genetic mechanisms in poplar
- Largest network of field tests including clone test and biomass yield studies in US
- Avg. for 5 clone trials, MN
- 71 clones/site planted, 2008
- Top 10 clones: NM6 = 1.98



WOODY CROPS - WILLOW

Tim Volk,SUNY-ESF



	Pre-2005 Yield Trials (n=11)	Post-2005 Yield Trials (n=5)	One-way ANOVA	
	Yield (dry Mg ha ⁻¹ yr ⁻¹)	Yield (dry Mg ha⁻¹ yr⁻¹)	Percent Change in Yield	p-value (yield)
Top cultivar	10.5 ± 0.7	11.9 ± 0.6	13.3%	0.1755
Top 3 cultivars	9.3 ± 0.4	11.5 ± 0.4	23.7%	0.0017
Top 5 cultivars	8.3 ± 0.3	11.2 ± 0.3	34.9%	<0.0001
All cultivars	5.6 ± 0.2	8.8 ± 0.1	57.1%	<0.0001



MODELING FOREST BIOMASS

- Developed Forest Sustainability and Economic Analysis Model (ForSEAM).
- Data drawn from USDA-FS, Forest Inventory and Analysis database
- Analysis derives from the USFS 2010 Resources Planning Act Assessment
- Updated scenarios based on US Forest Products Model (USFPM)
 - Forest Inventory and Analysis data were updated to 2010
 - Exogenous economic drivers were updated in 2012
- Biomass available after forest products demand met; Pine plantations were not established to meet high biomass demands

U.S. Department of Agriculture, Forest Service. 2012. Future of America's Forest and Rangelands: Forest Service 2010 Resources Planning Act Assessment. Gen. Tech. Rep. WO-87. Washington, DC. 198 p.

Future of America's **Forests and Rangelands** Forest Service 2010 Resources Planning Act Assessment

Concluding Remarks





- Provided key data for biomass productivity to validate and define Billion Ton assumptions
- Brought together the nation's leading experts in biomass production to address diverse questions
- Created a model for effective public/private partnerships





Questions/Comments

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