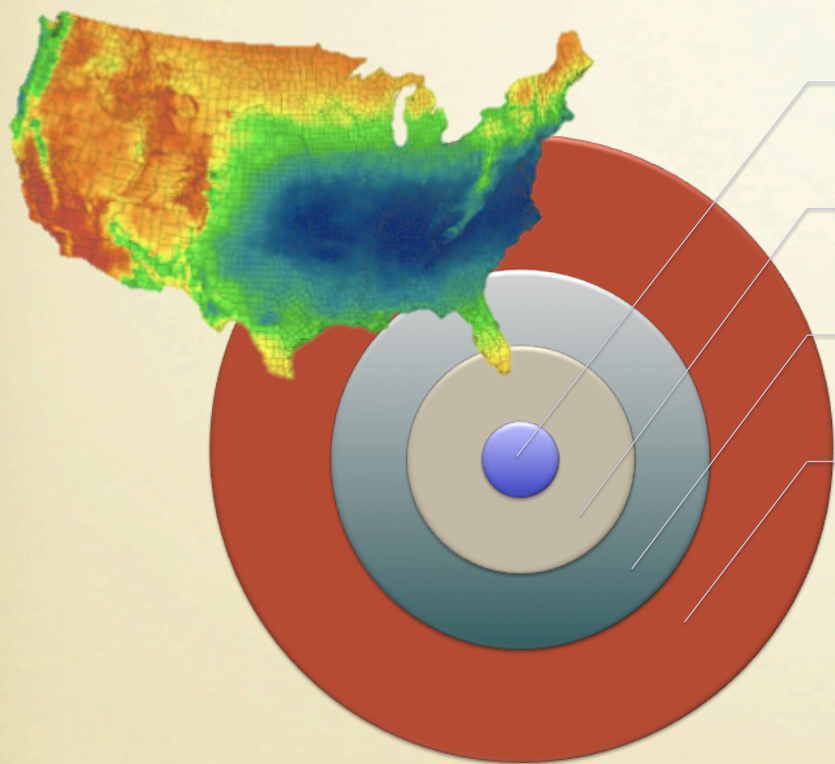


The IBSS Partnership: Advancing Energy Crop Supply Systems In the Southeastern United States

T.G. Rials, Professor & Director
The University of Tennessee
Knoxville, Tennessee



Advanced Lignocellulosic Biofuels



10B gallons

150 plants

\$40B capital

12M acres

Projections are that the SE will provide about 50% of the 21 billion gallon requirement of the EISA.



The Answer is in the Wood



1



Supply Chain

Demonstrate real world solutions to barriers limiting deployment of advanced biofuels in the southeastern United States.

2



Sustainability

Create, validate, and use new metrics for improved decision-making for regional biorefinery systems

3



Outreach

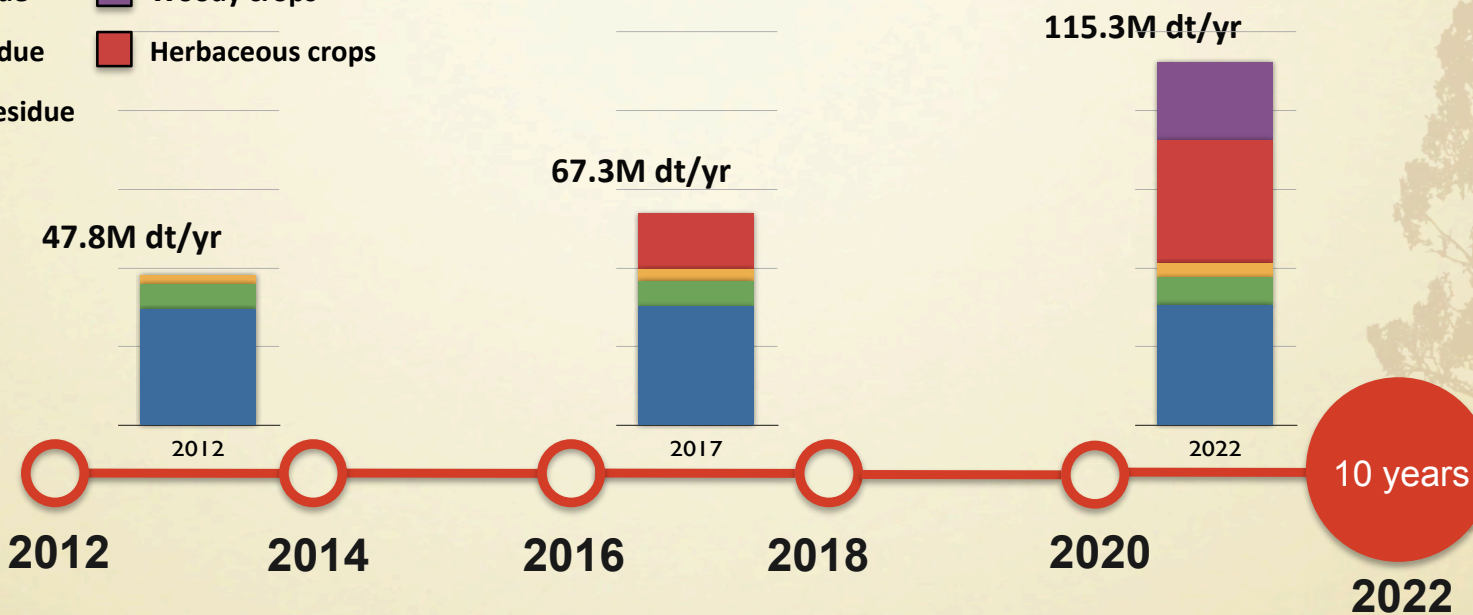
Provide credible and relevant programs to dispense new knowledge for stakeholders



The SE Region's Biomass Profile



- Ag residue
- Woody crops
- Mill residue
- Herbaceous crops
- Forest residue



Billion Ton Update

U.S. Department of Energy. 2011. *U.S. Billion-Ton Update: Biomass Supply for a Bioenergy and Bioproducts Industry*. R.D. Perlack and B.J. Stokes (Leads), ORNL/TM-2011/224. Oak Ridge National Laboratory, Oak Ridge, TN. 227p.



The Partnership's Approach



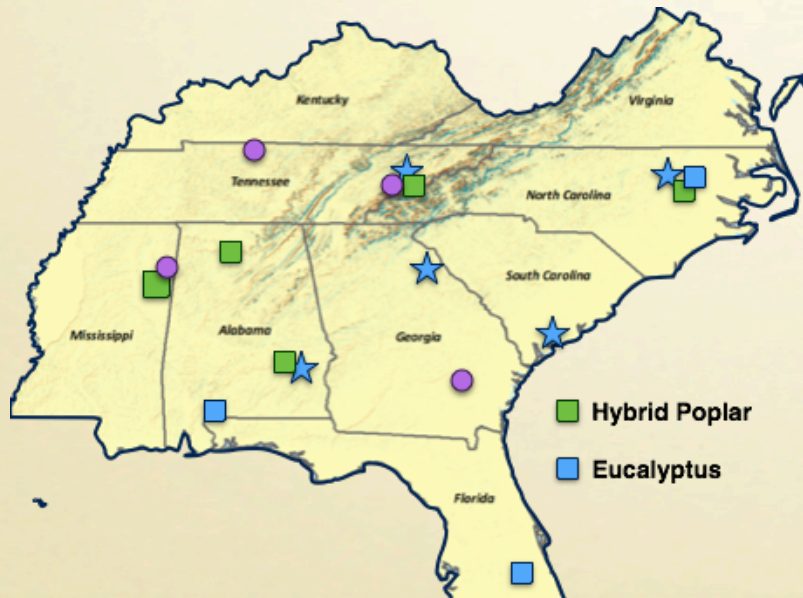
Southern Pine



SRWC



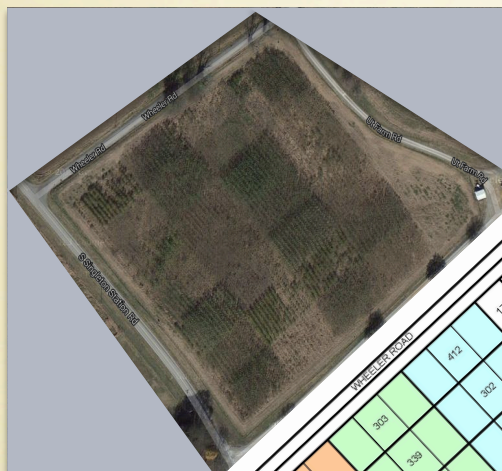
Switchgrass



Collaborators



Assessment of Biomass Quality



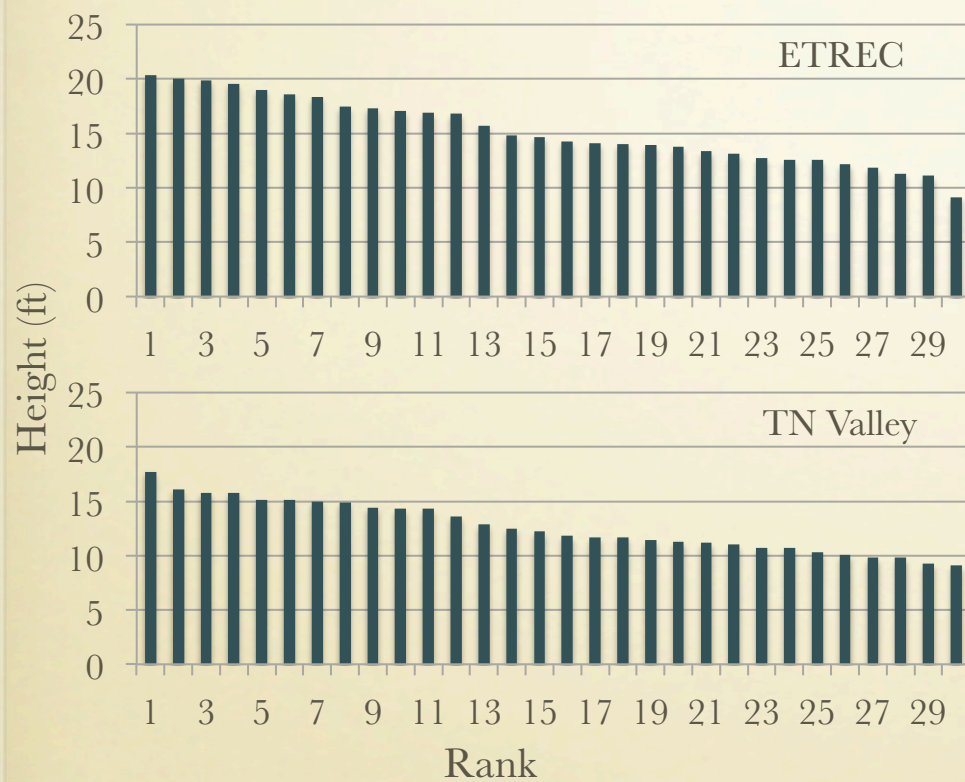
- Established in May, 2011
- 12 deltoides clones
- 3 replicates (2 reps for a few)
- 3 planting spacings
 - 3' x 7'
 - 4' x 7'
 - 8' x 7'
- Survival at the site has been very high, with the exception of one clone – 450.



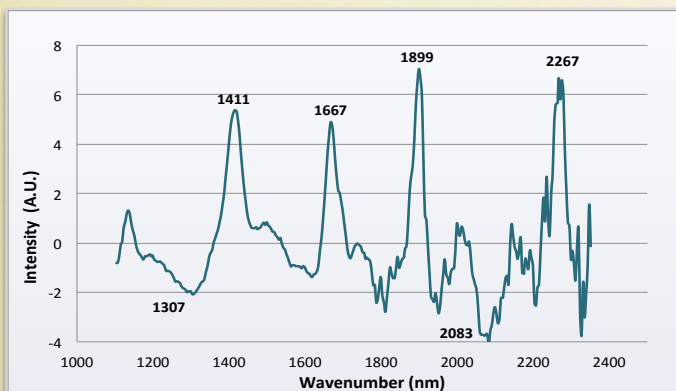
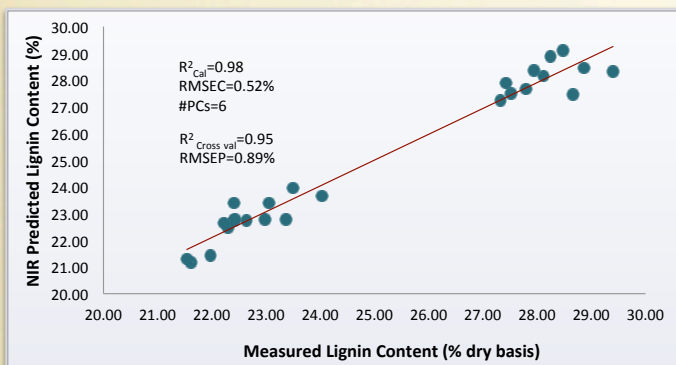
NC STATE UNIVERSITY



Poplar Productivity - Height

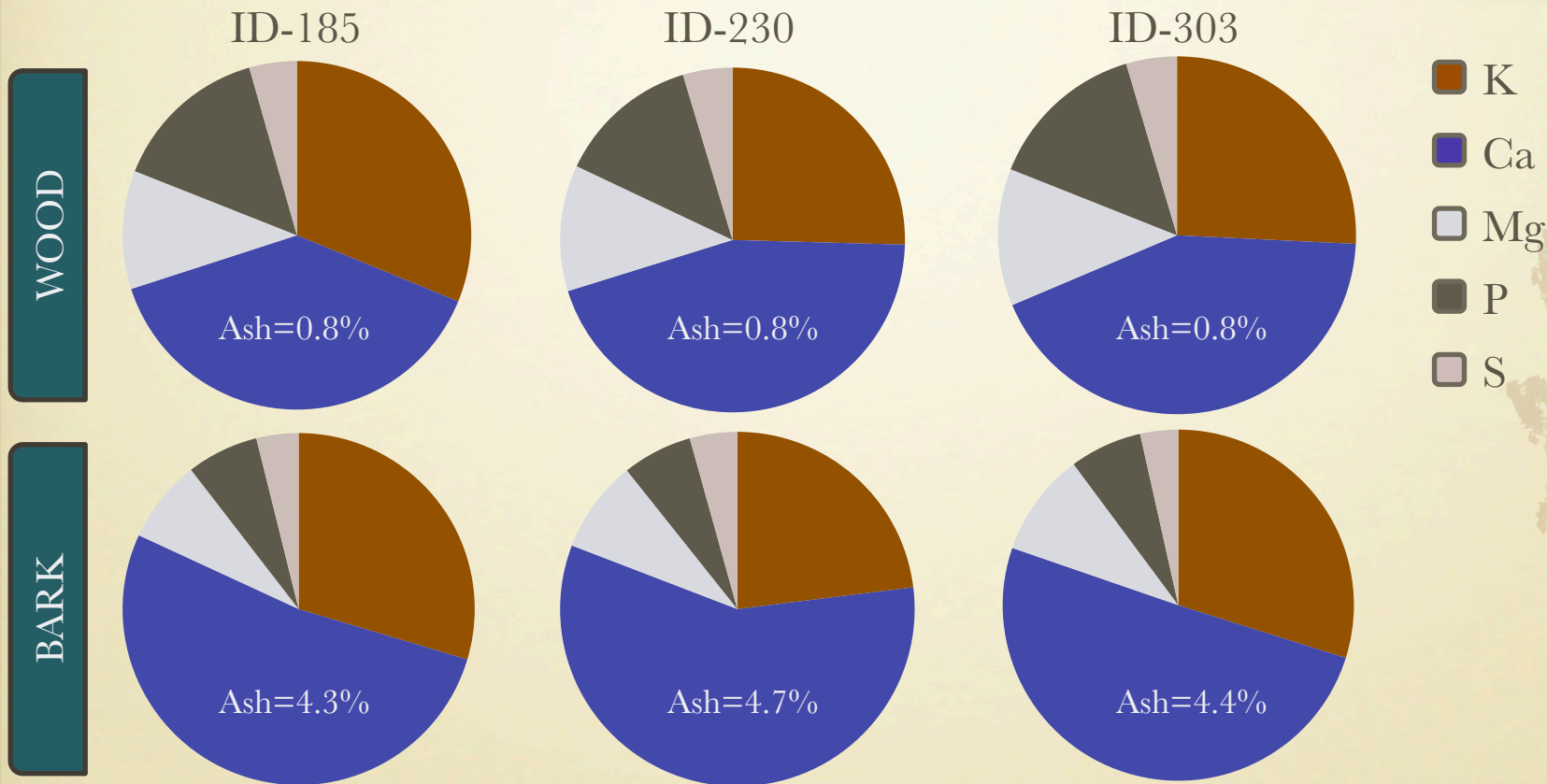


Assessment of Biomass Quality

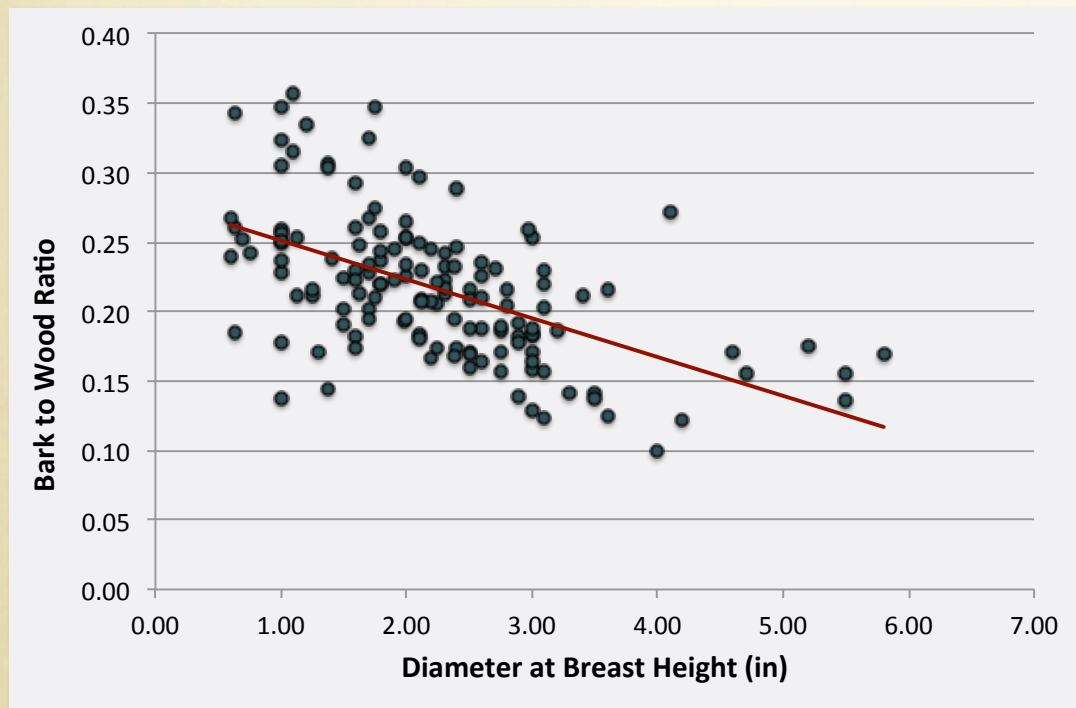


- Sugars content a key metric for biochemical platform
- Developing multivariate models to monitor chemical composition from near infrared spectra.
- Challenge is identifying specimens to cover the complete range
 - Robust lignin model despite data gap
 - Limited cellulose range doesn't allow for model development...yet

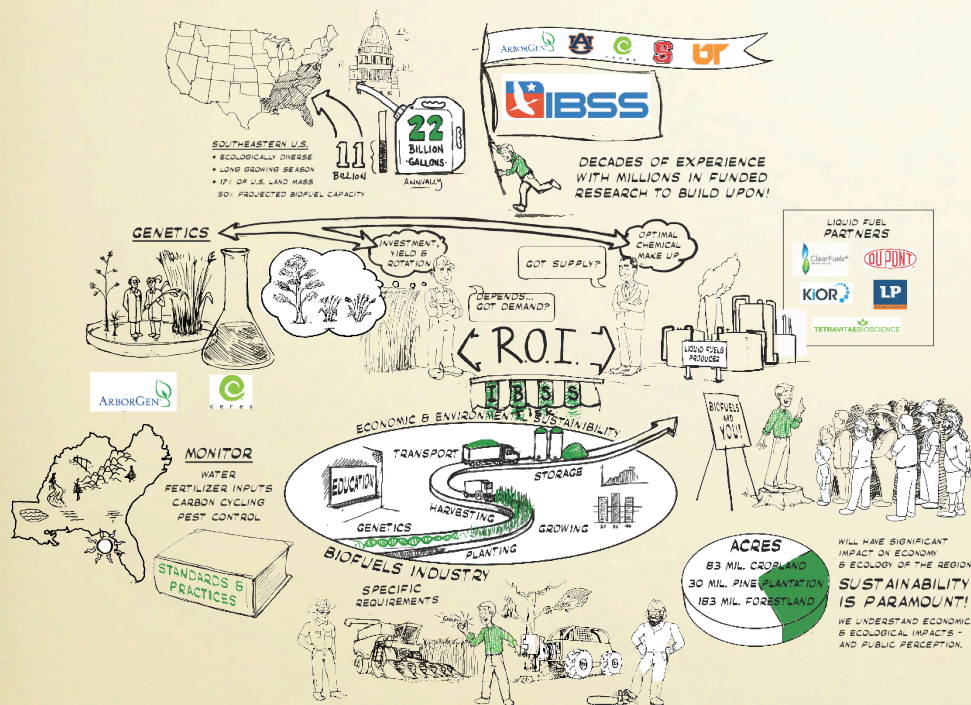
Biomass Quality – Inorganic Makeup



Assessment of Biomass Quality



- Smaller diameter is comparable to herbaceous crops.
- Important consideration for identifying management approach, i.e. single-stem or coppice.



- SRWC systems have a vital role to play in meeting feedstock demands.
- Newer varieties showing increased yields.
- New quality measures need to be considered in breeding.
- Composition is key in determining suitability.

Acknowledgements



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