

# Sustainable Woody Crops Development

- Bill Berguson
- Tom Houghtaling
- Rick Pierce
- Don Riemenschneider
- Michele Schoeneberger
- Marilyn Buford
- Marie Sauer



# Woody Crop Criteria of Choice

- Criteria
  - High base yield
  - Large genetic variability
  - Ability to vegetatively propagate
    - Genetic gain and deployment advantages
  - Substitutable for other uses
- Year around harvest window, self storing
- NC Regional crops
  - Hybrid poplar
  - Cottonwood (native species)
  - Willow

# Feedstock Production & Management

- Available land inventory
- Actual potential supply
- To deploy regionally
  - Regional systematic crop development
    - Systematic breeding, selection, & testing
      - 40,000 potential clones need testing
    - Base agronomic/silvicultural information
    - Precision agriculture techniques
    - Integrated pest management strategy development

# Harvest & Delivery Systems

- Infrastructure optimization for HHT (Harvest, Handling, & Transportation)
- Energy efficiency in harvesting and transport
- Landscape design – roads and plants location
- Operational studies with equipment designed for smaller diameter stems
- Shape of curve relating land value and tree yield is unknown for the region

# Utilization, Products, and Conversion

- Co-products – design flexible integrated systems for multiple products
- Optimize at variety of scales for food, feed, fiber and energy production
- New products & markets

# Policy

- Integration/reconciliation of farm, forest, land use and energy policies to reach National goals
- Nation needs an Energy Crop program
  - Short rotation woody crops
  - Forests
  - Agriculture crops
  - Herbaceous energy crops
  - ... and associated residues
- Sustained mission oriented funding

# R&D needs

- **Regional crop development program**
  - Regional biomass crop testing centers
- Life Cycle Analysis and ecological benefit and challenge analysis for woody crops and other systems
- Designing woody cropping systems into agricultural and urbanizing landscapes to accomplish specific tasks (energy, water purification, flood control, wildlife...)
- Operational demo of mixed crop systems
  - 400,000 dry ton biomass/year
  - Forested, mixed landscape
  - Wood products industry
  - 8-10 thousand acres planted/year
  - Land use, economic, feedstock comparison, risk, and other analysis at scale