An ARS Researcher's Perspective on the Revised Billion Ton Report (BT2)

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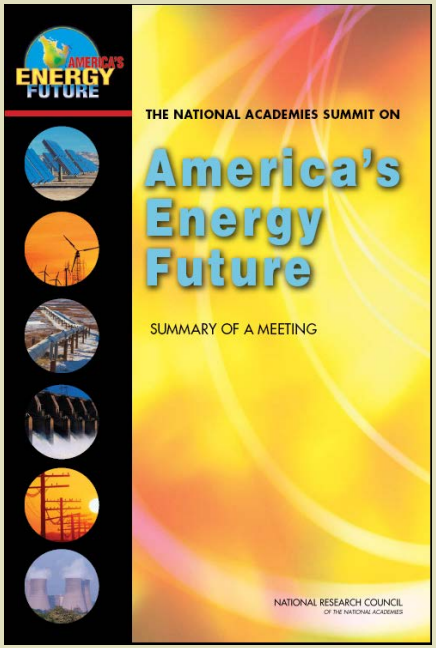
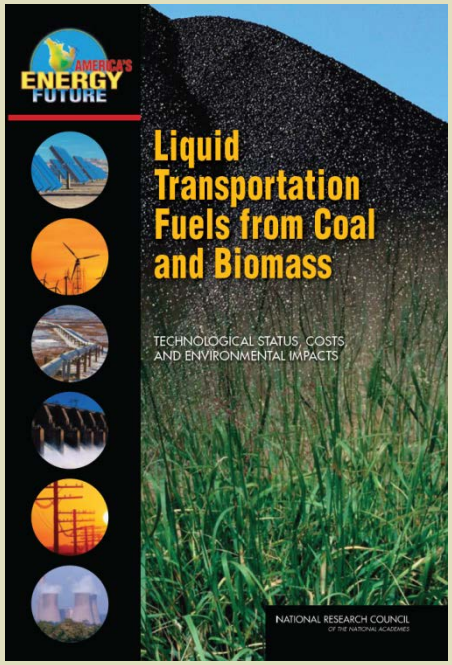
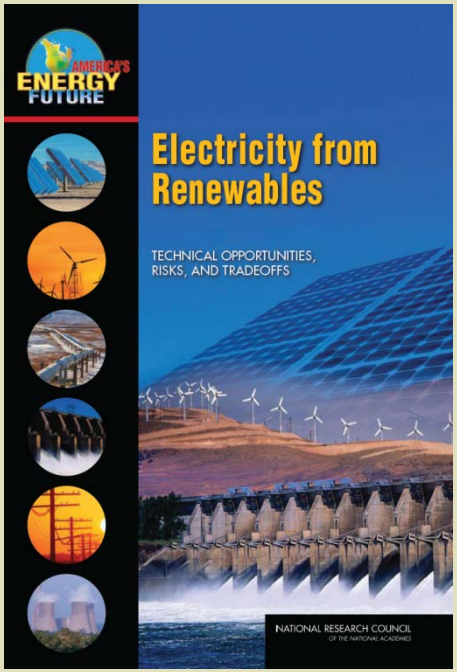
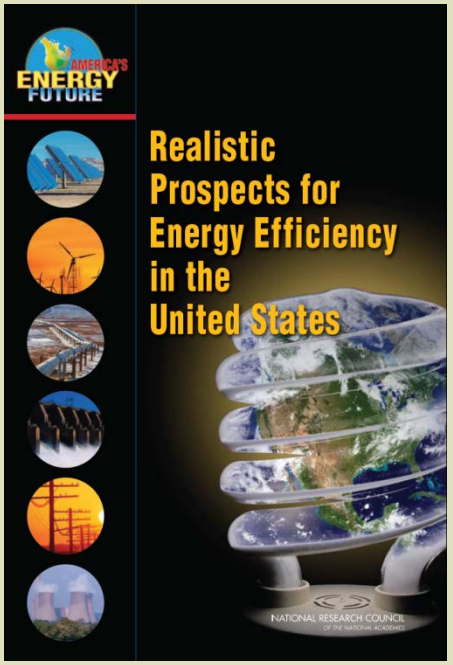
Sustainable Biofuel is Essential









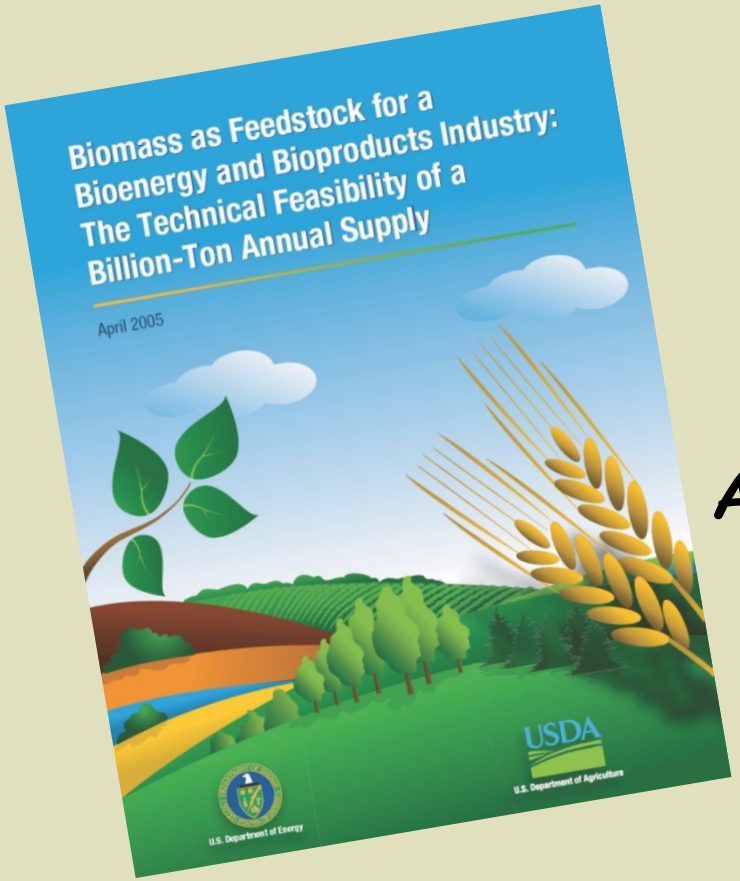
For America's Energy Future!

The 2005 BTS Identified the Challenge

Just how much is a Billion Tons?

If one ton = 1 sq in

1 billion tons = 145 football fields



A billion ton equals a row of 5-ft long, 1000 lb round bales

that if placed end-to-end would wrap 75 times around the earth

The 2011 BT2 Focused the Challenge

By providing:

Spatial inventories

Price-based supply curves

An emphasis on sustainability

BT2 – Involved Many Contributors

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BTS and BT2 Comparisons

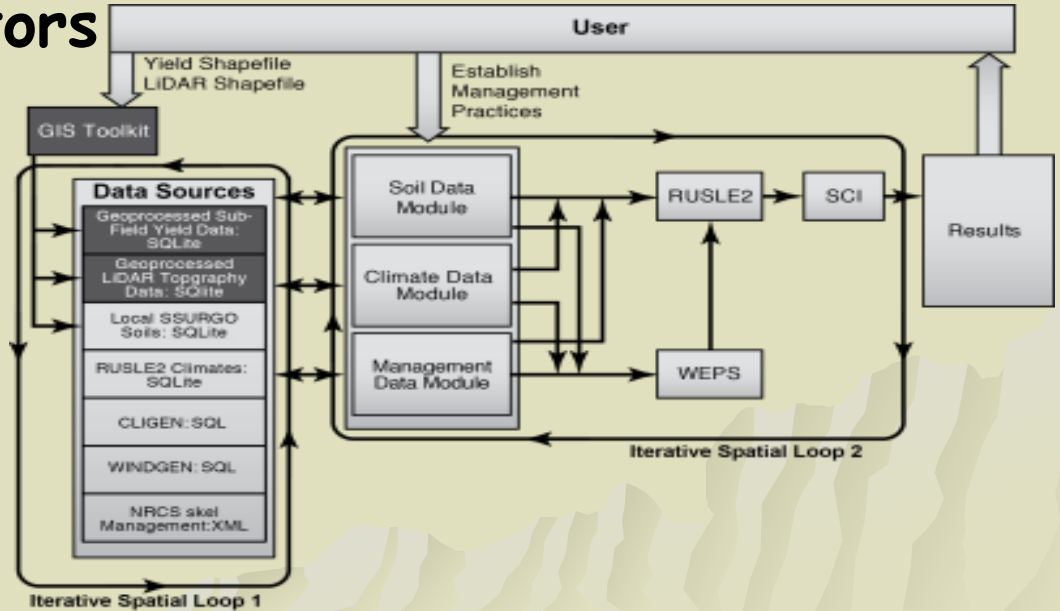
2005 Original	2010 Update
National estimates – no spatial information	County-level with aggregation to state, regional and national levels
No cost analyses – just quantities	Supply curves by feedstock by county – farmgate/forest landing
Crop residue removal sustainability addressed from national perspective; erosion only	Crop residue removal sustainability modeled at soil – scale; erosion & soil C
No explicit land use change modeling	Land use change modeled for energy crops
Long-term, inexact time horizon (2005, ~2025 & 2040)	2010 – 2030 timeline (annual)
2005 USDA agricultural baseline and 2000 forestry RPA/TPO	2010 USDA agricultural baseline 2010 FIA inventory and 2007 forestry RPA/TPO
Erosion constraints to forest residue collection	Greater erosion plus wetness constraints to forest residue collection

BT2 Contributions

- Better supply estimates for multiple feedstocks

- Greater attention to:
  - Soil carbon issues
  - Harvest strategies
  - Sustainability indicators

- The residue management tool

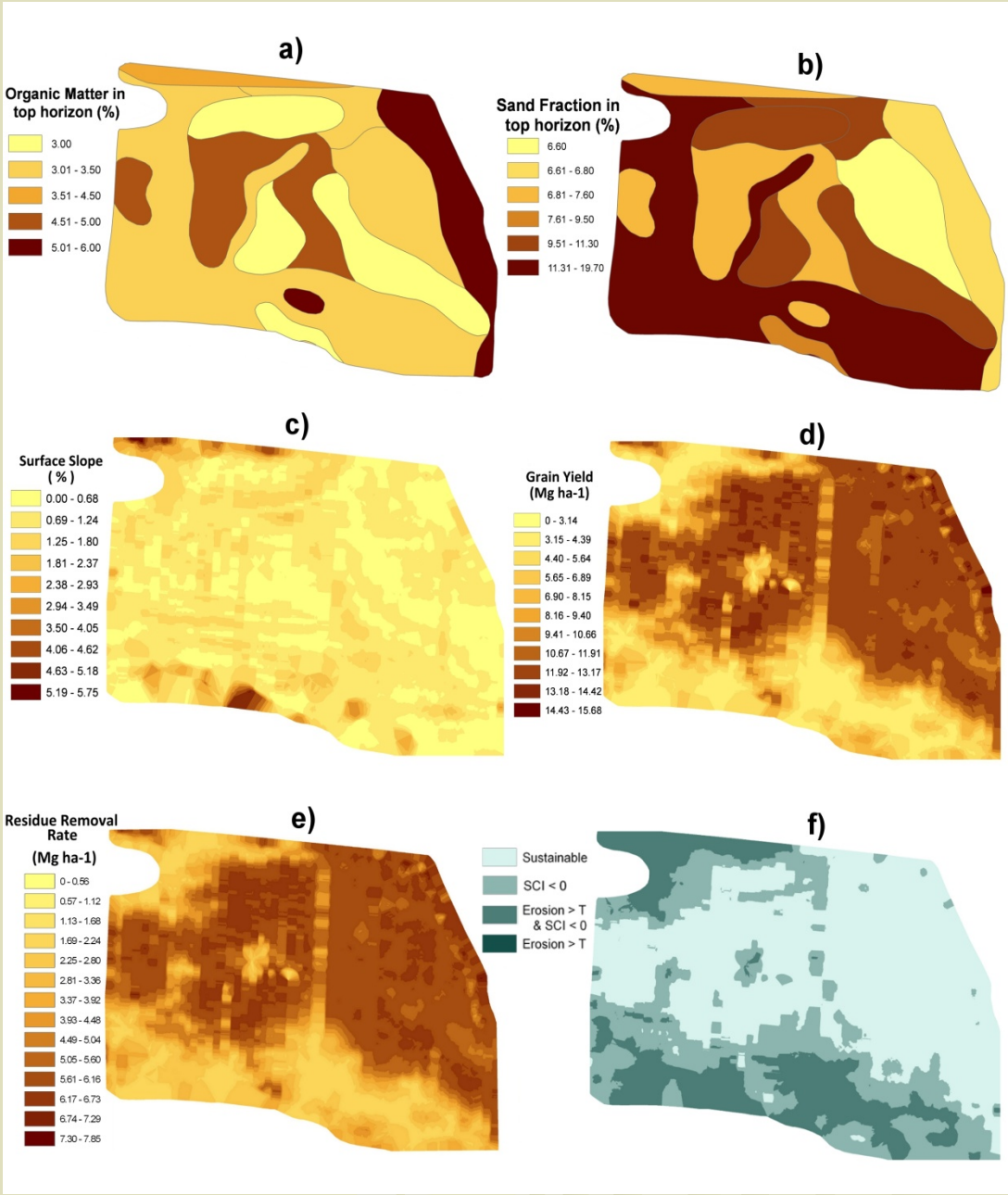


Residue Tool Contributions to BT2

Evaluated multiple soil characteristics including organic matter and sand fraction for all relevant agricultural soils (a & b)

Calculated available residue (e) from those soils using county level yields and average slope

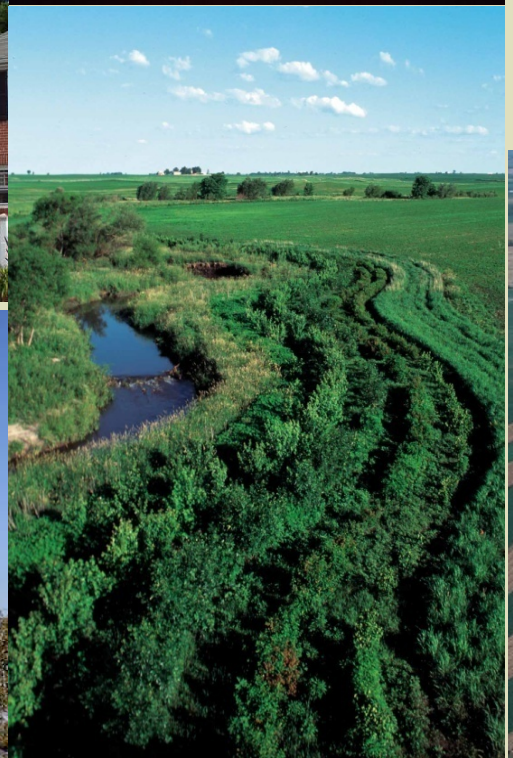
Provided a general guide for available residue, but site-specific slope and yield data (c &d) will provide better guidance for sustainable harvest (f)



BT2 Limitations

- Continued focus on biomass supply rather than demand
- No attempt to project demand for bioenergy or bioproducts
- No attempt to estimate what biomass price might be in an expanded market
- No estimate of how current biomass uses might be affected at a given biomass price

BT2 is a Positive Step, BUT Not the End !



What's next? – Landscape Management

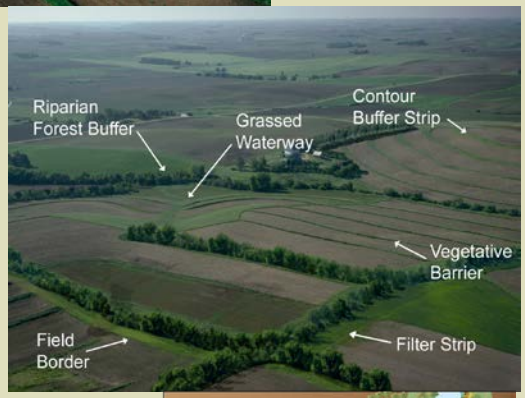
- What is LM? – Recognizing nature's diversity

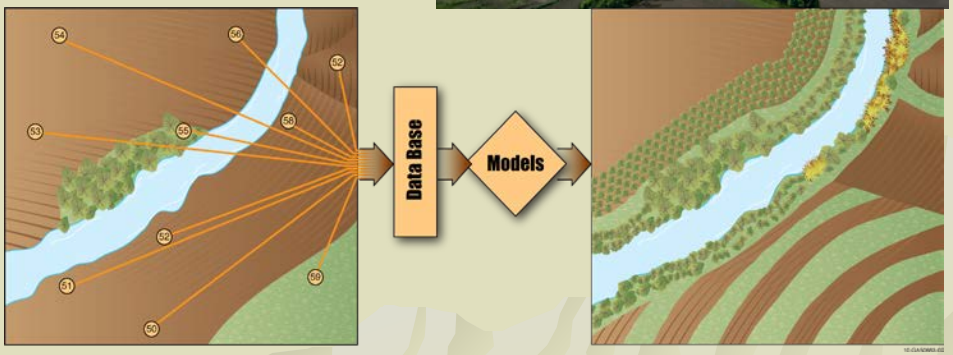
- Why is landscape management important?
  - Diverse landscapes provide multiple ecosystem services

Energy efficiency
Enhanced nutrient cycling
Food, feed & fiber resources
Wildlife food & habitat
Economic opportunities for humankind
Multiple feedstock sources
Multiple C sequestration pathways
Filtering & buffering processes
Soil protection & enhancement

How Can Producers Implement Landscape Management?

- Assess current practices
  - Erosion
  - Soil, water & air quality
  - Livestock management
- Identify management options
  - Buffers
  - Waterways
  - Cropping practices
- Design & implement new strategies
- Verify responses





REAP

What Prevents Landscape Management?

Always focusing on individual problems

Always seeking a single solutions

Bioenergy, air quality, water quality, soil quality, C sequestration, rural development, wildlife habitat, & many other issues must be addressed as an integrated system (e.g. SWAPA+E+H)

Erosion

Water Quality

Switchgrass

Crop Residues

Fermentation

Pyrolysis

REAP

Any Questions?