

An aerial photograph of a rural landscape. A winding river flows through the center, surrounded by lush green fields and some brown patches. A road runs along the right side of the river. In the background, there are more fields and a few buildings under a clear blue sky.

An ARS Researcher's Perspective on Uses for 2011 BT2 Data

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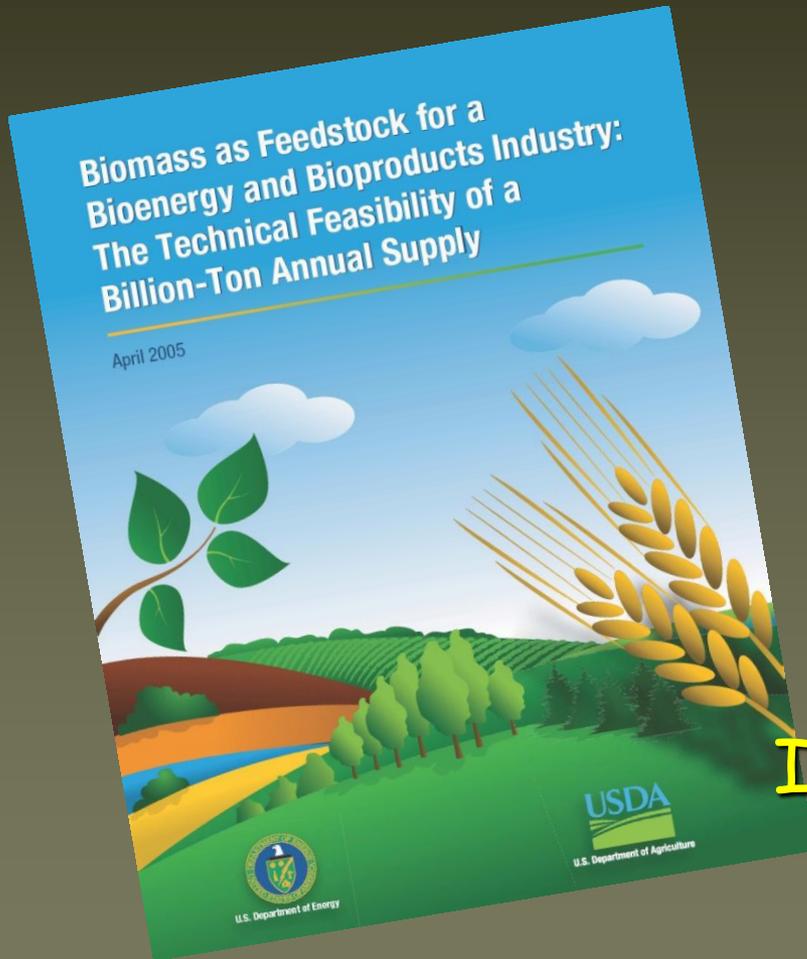
USDA - Agricultural Research Service (ARS)

Presentation Goals

- To share my perspective on the importance of the 2011 BT2 data
- To acknowledge the ARS REAP (Renewable Energy Assessment Project) team for their contributions to the BT2 report
- To predict ARS REAP team uses for BT2 data with regard to research needs and implementation of actual biofuel projects

The 2005 BTS Identified the Challenge

Row of 1000 lb round bales, 5 ft long, placed end-to-end; = 1.89 million miles or (75 times around the earth)



If one ton = 1 sq in
1 billion tons = 145 football fields

The 2011 BT2 Focuses the Challenge



By providing:

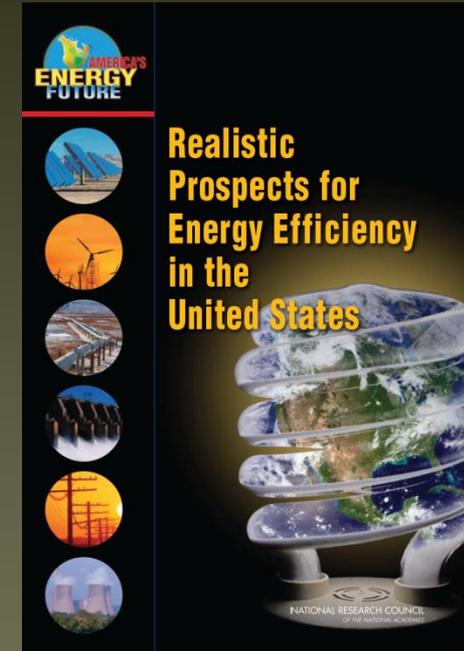
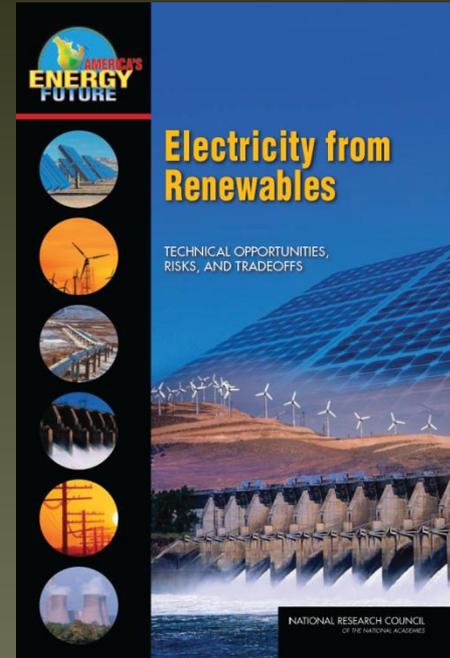
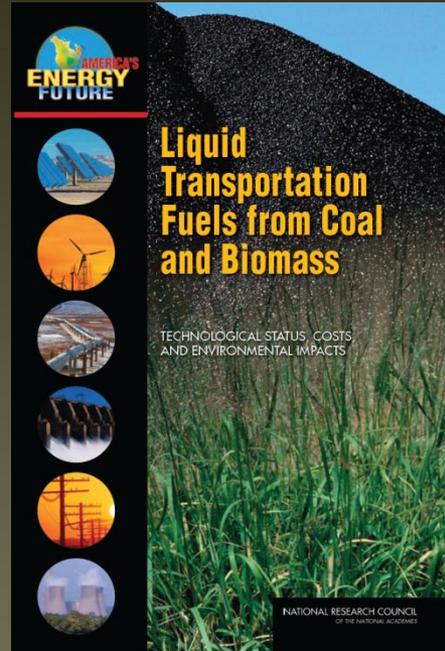
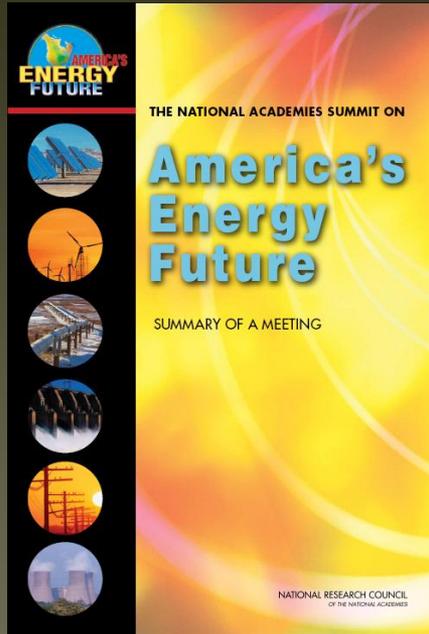
Spatial inventories

Price-based supply
curves

An emphasis on
sustainability

REAP

Site-Specific Data is Essential



For America's Energy Future!

ARS REAP Team Contributions to BT2



Field Studies



Provided new and on-going field-based plant and soil data

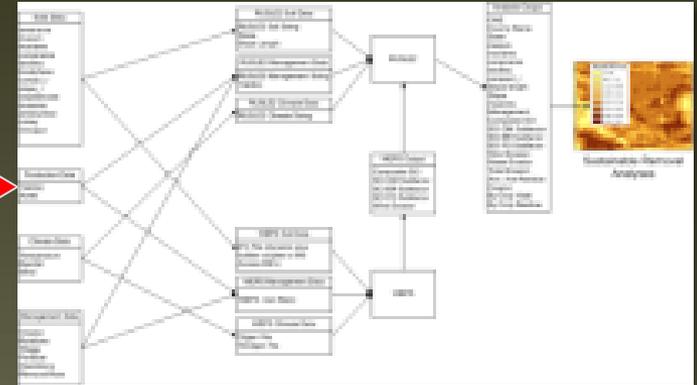
Drew attention to the importance of soil carbon



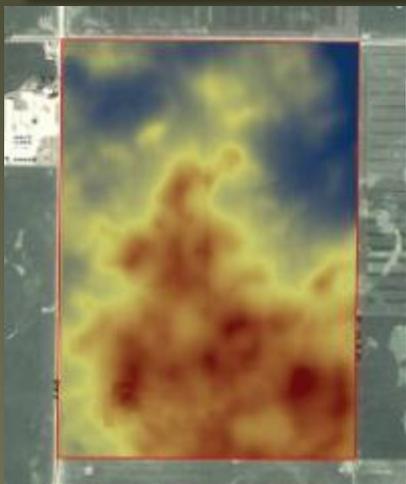
Collaborated with INL and others to develop the Residue Tool *REAP*

Residue Removal Tool

ARS REAP Team and Regional Partnership Field Data



Linked Simulation Models

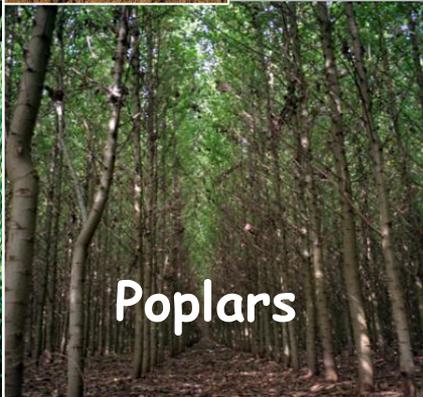
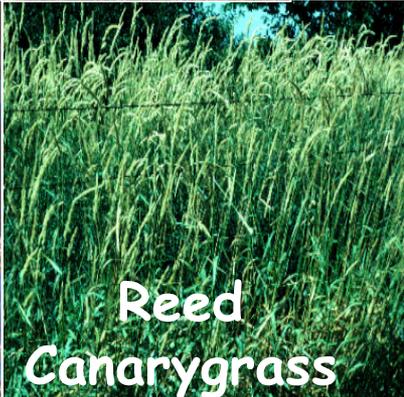
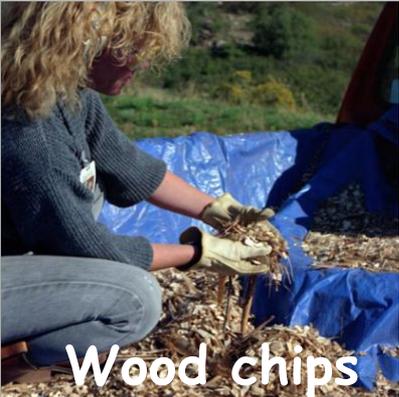
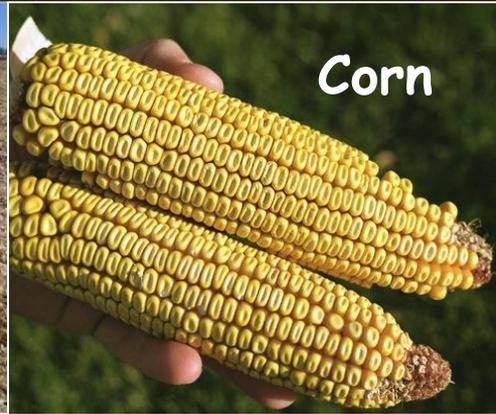


NRCs SURGO Soil Data

Based on the limiting factor model, REAP team, & Regional Project field data, we're building a framework where models can be linked and verified to more comprehensively assess all factors affecting the sustainability of corn stover harvest.

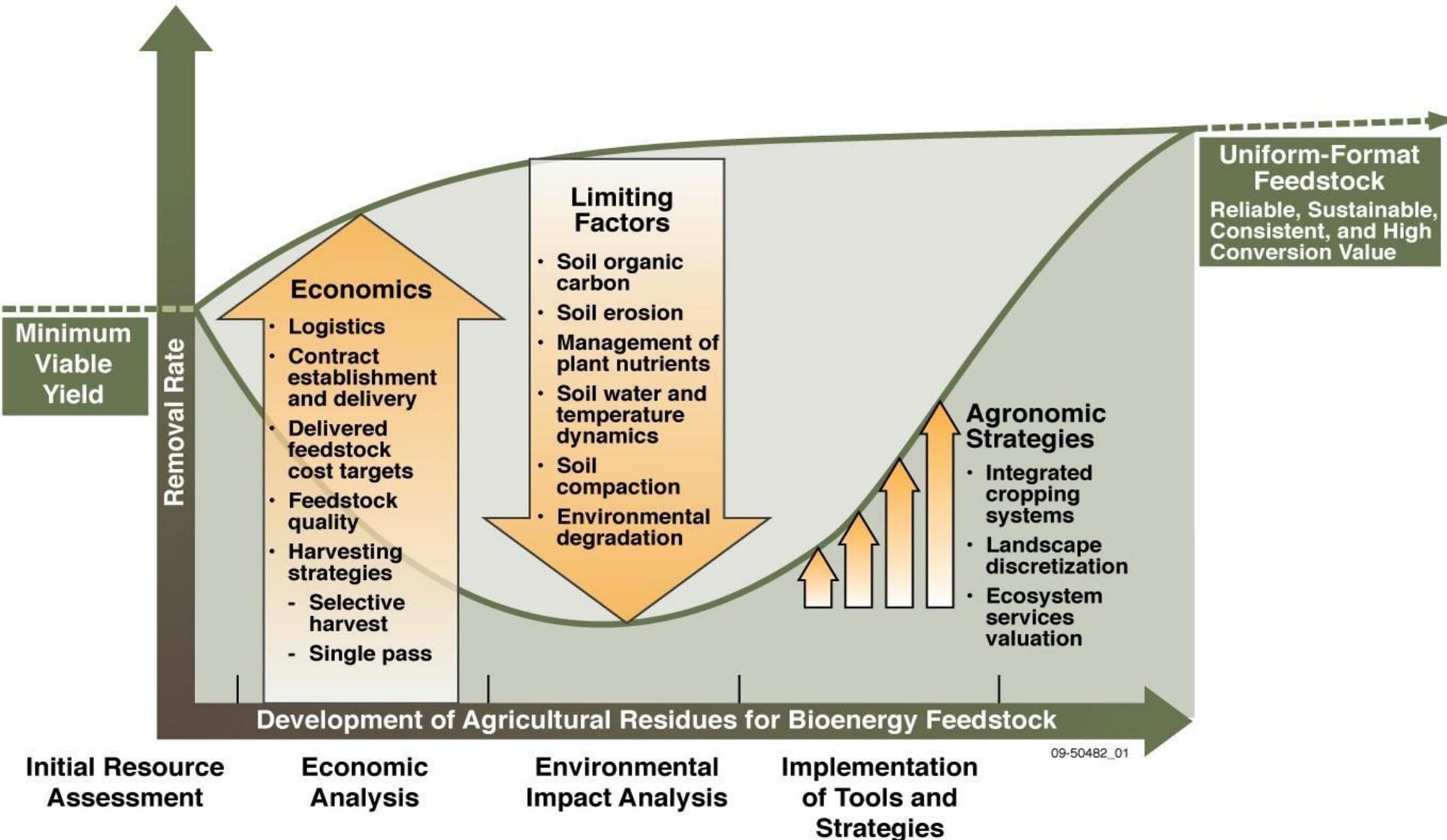
REAP

The REAP Team Provided Scenario Input



Projected ARS Uses of BT2 Data

Designing Research to Help Achieve Balance



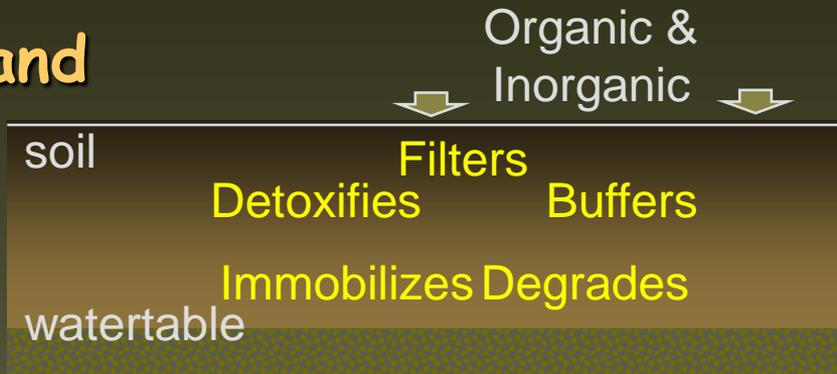
Designing Research to Achieve High-Yield Scenarios

Grain yield bu/ac	Total dry stover ton/ac	Available‡ CC Stover M tons	Available‡ CS Stover M tons	Total Available M tons
150	3.55	40.7	0.4	41.0
200	4.73	80.5	17.4	98.0
250	5.92	120.4	34.5	154.9
300	7.10	160.2	51.6	211.8

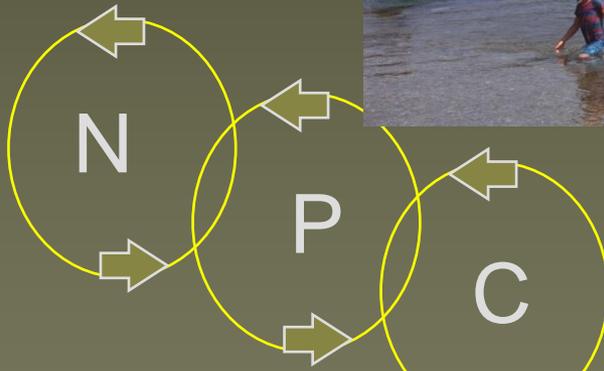
‡ 70% CC, 30% CS, Harvest 60% of the 2005-2011 corn acres (48.1 million acres)

Designing Research to Quantify Impacts

➤ Filtering and Buffering



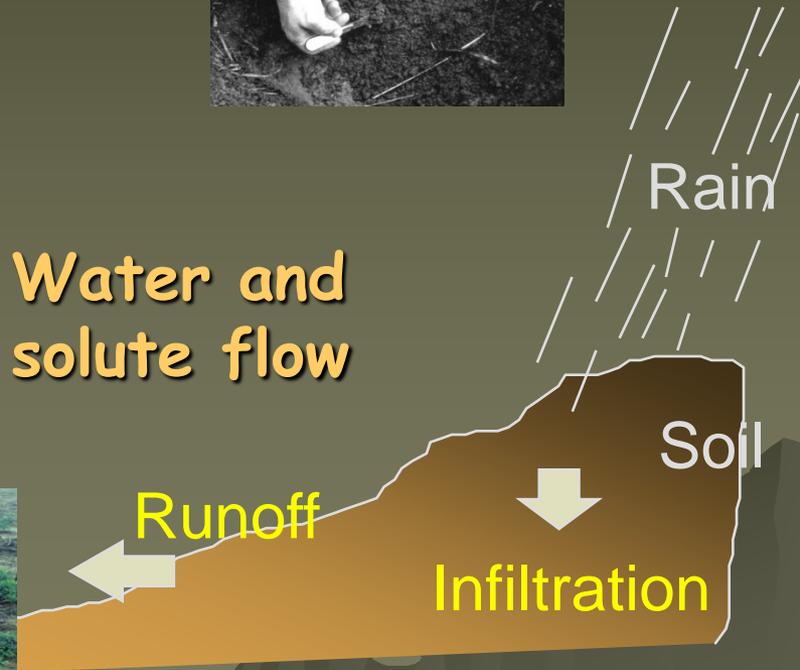
Wildlife
Economics
Community



➤ Nutrient storage & cycling



➤ Water and solute flow



REAP

Designing Research to Identify BMPs

Riparian
Forest Buffer

Grassed
Waterway

Contour
Buffer Strip

Riparian Herbaceous
Buffer

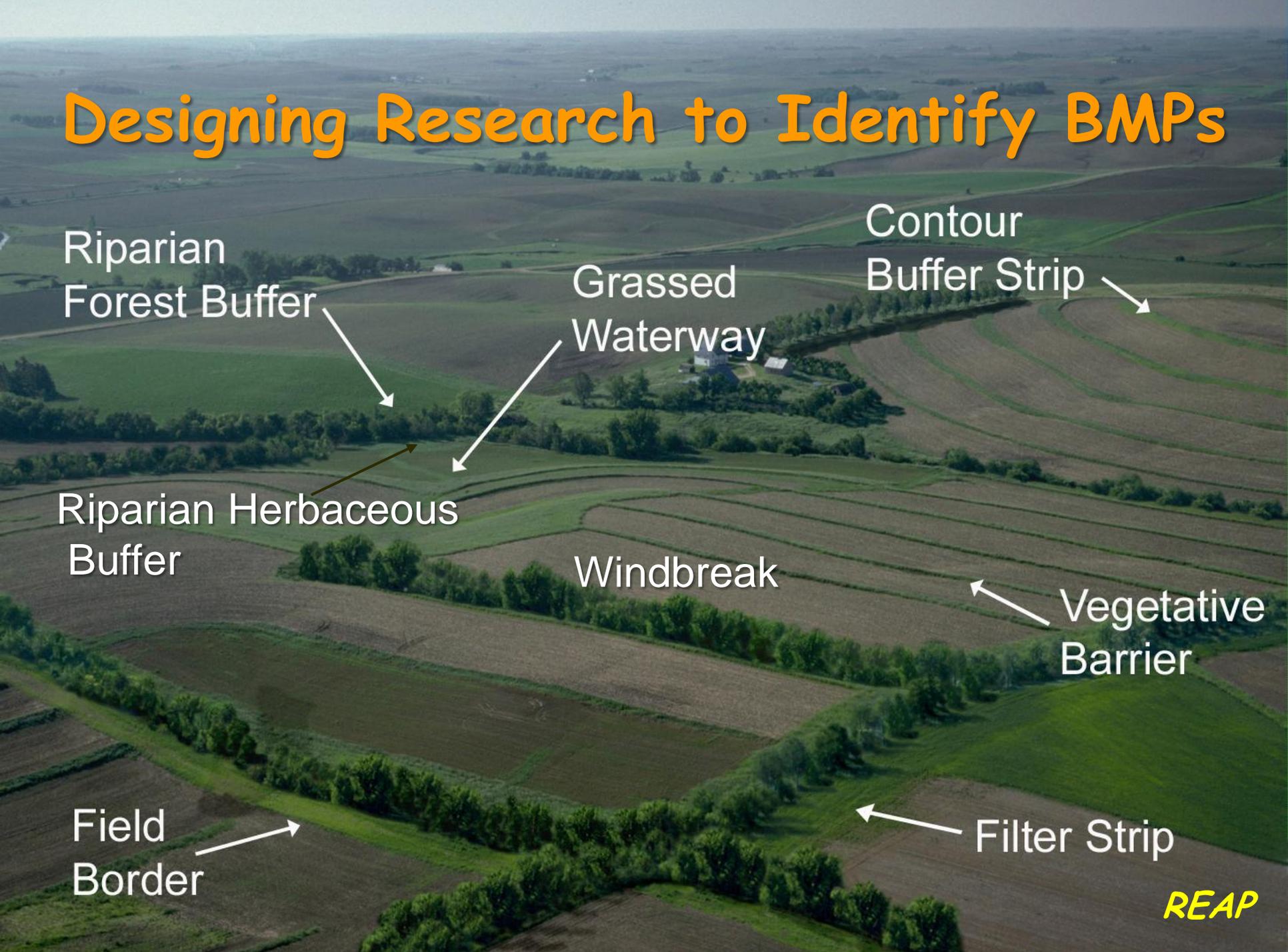
Windbreak

Vegetative
Barrier

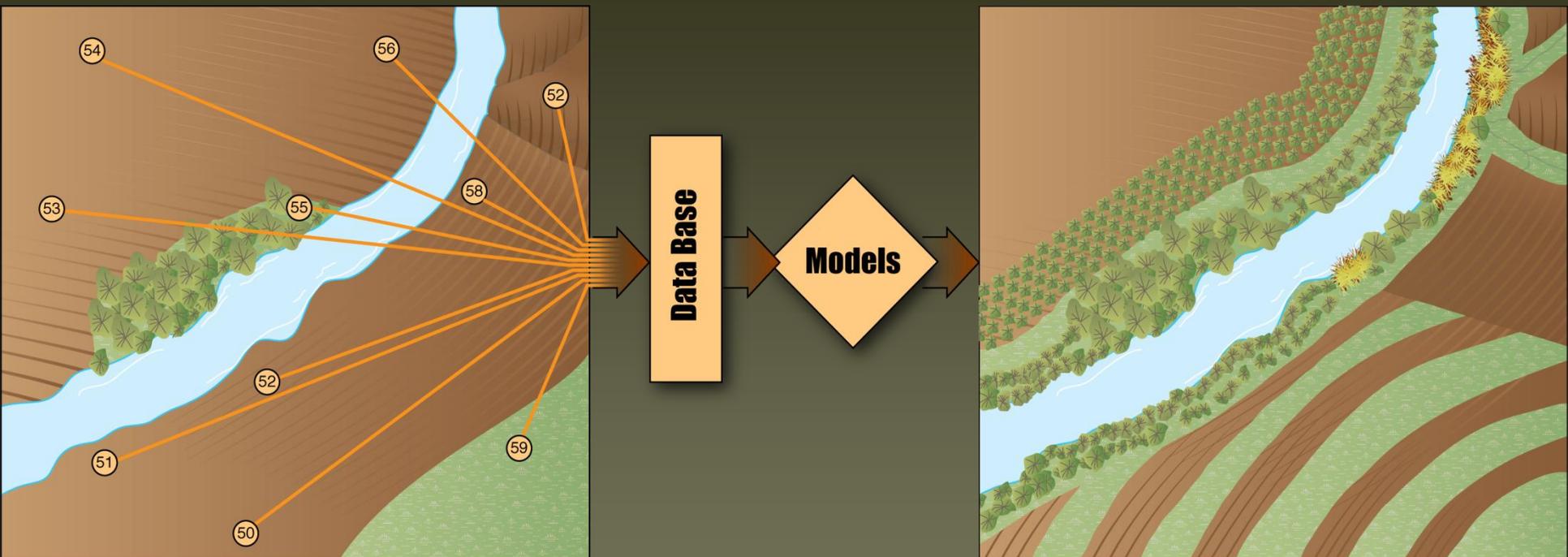
Field
Border

Filter Strip

REAP

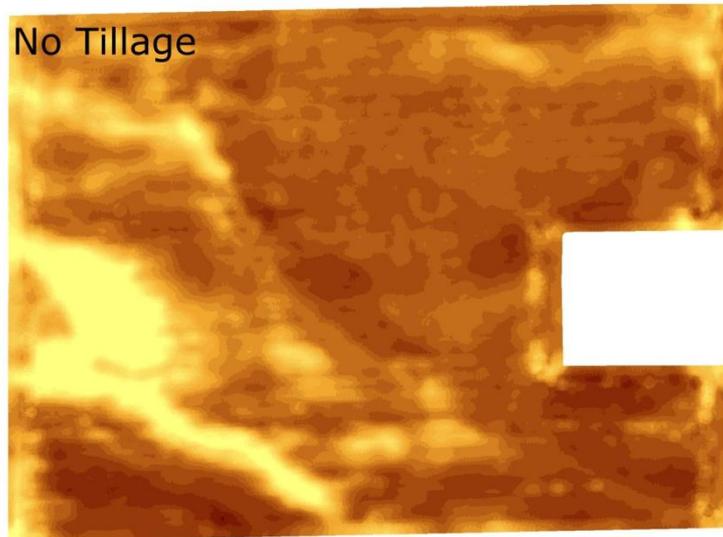
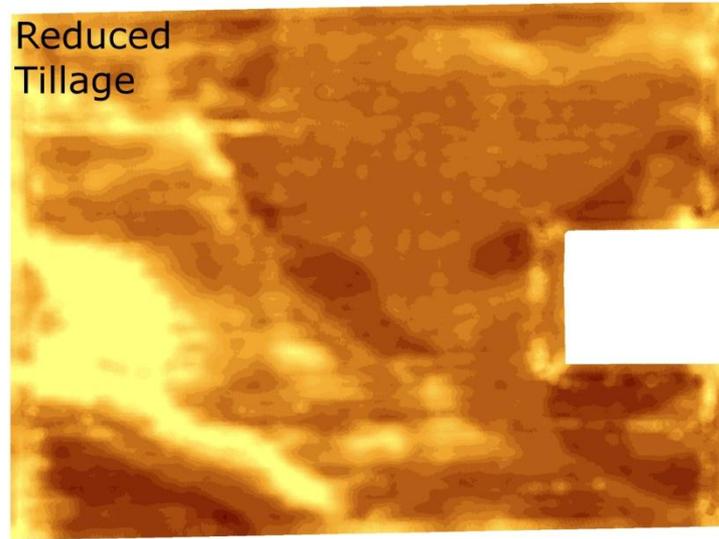
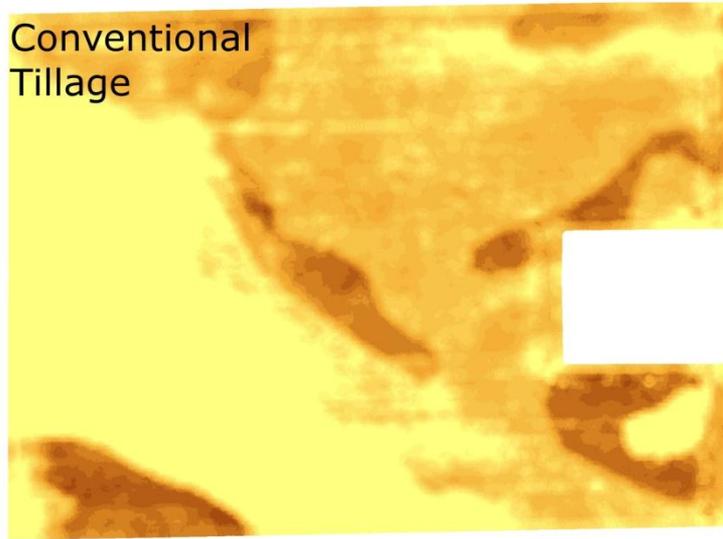


Designing Research to Verify Sustainable Feedstock Production Strategies



- ◆ Site specific management scenarios can be used to integrate bioenergy feedstock crops into sustainable watershed-scale production systems using simulation models that can then verified with measured data.

Assisting Real-World Biofuel Projects With Site-Specific Stover Harvest Guidelines



Sustainable Residue
Removal Rate
(Tons acre⁻¹)

i.e.

POET,

Abengoa,

Monsanto/
ADM/JD,

CSBP,

and
Others

REAP

BT2 Data Is Already Being Used to Update SWCS Chapters



e.g. Chapter 11 - Nitrogen, Phosphorus, and Potassium Requirements to Support a Multi-Billion Gallon Biofuel Industry

BT2 is a Positive Next Step, BUT Not the End!

