

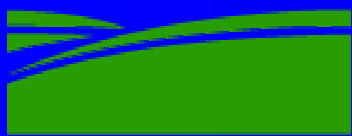
Agricultural Research Service October 2007 Update



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USDA



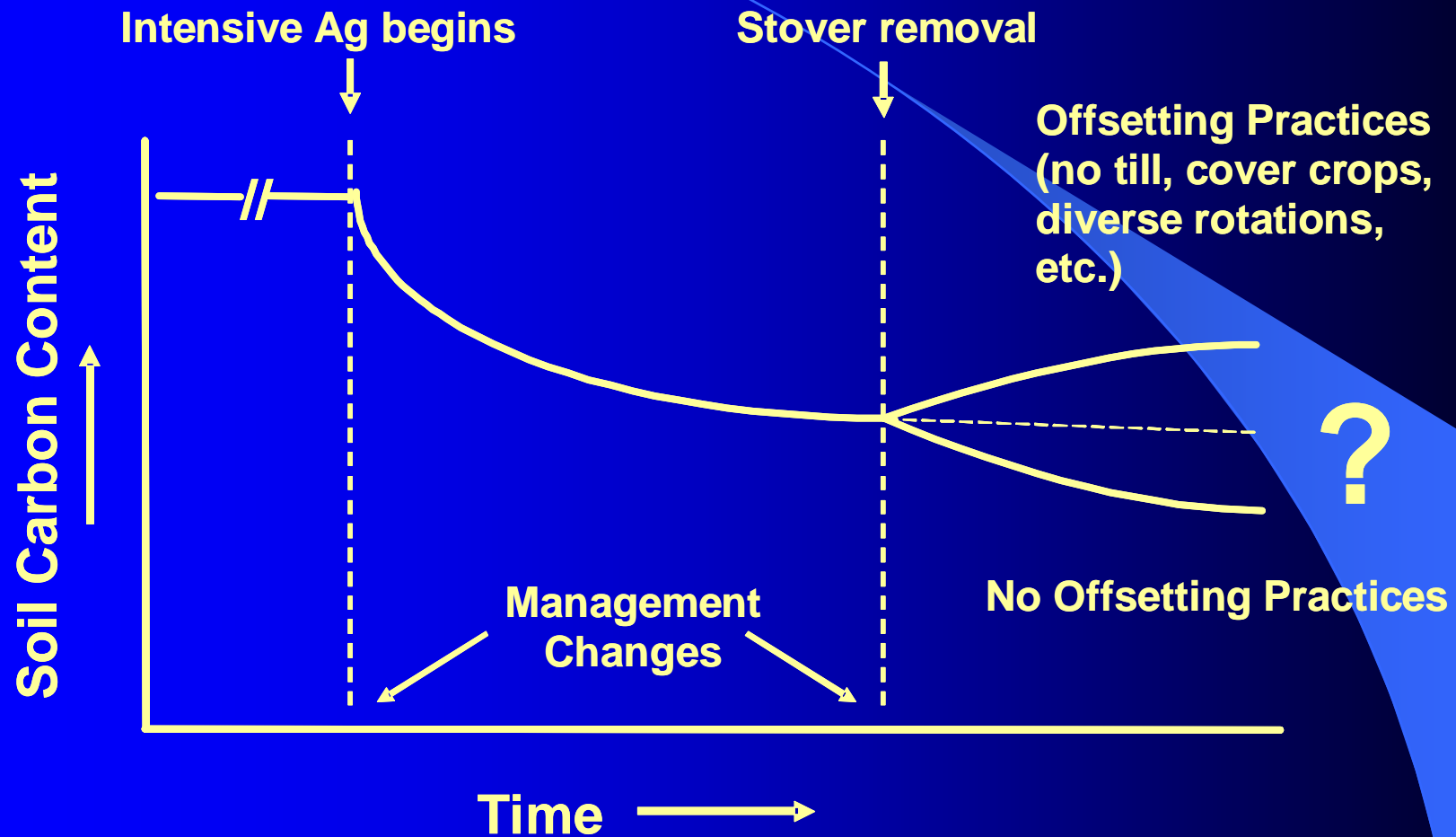
Recent Activities

- Air Quality & Global Change Programs
 - Assessment reports
 - Review panel recruitment
- ARS HQ-Funded Post Doctoral Awards
 - “PM10 Dust Emissions from Agricultural Lands After Biofuels Residue Removal” Lubbock, TX
 - “Effects of Projected Climate Change on Water Availability, Water Demand, and Grain-Crop Production Systems in the Great Plains” Ft. Collins, CO

Recent Activities

- ARS Bioenergy National Program Workshop
September, 2007
 - Bob Avant participated
- CA Wine Industry and Perennial Crops Global
Change Workshop, July 2007
- NASA Air Quality Applications Program
Review/Workshop
 - Joint presentation with Ray Knighton (CSREES) on
USDA Air Quality Research
 - Research collaboration discussions

Soil C Change with Management



Credit: Wally Wilhelm, Dec. 2005

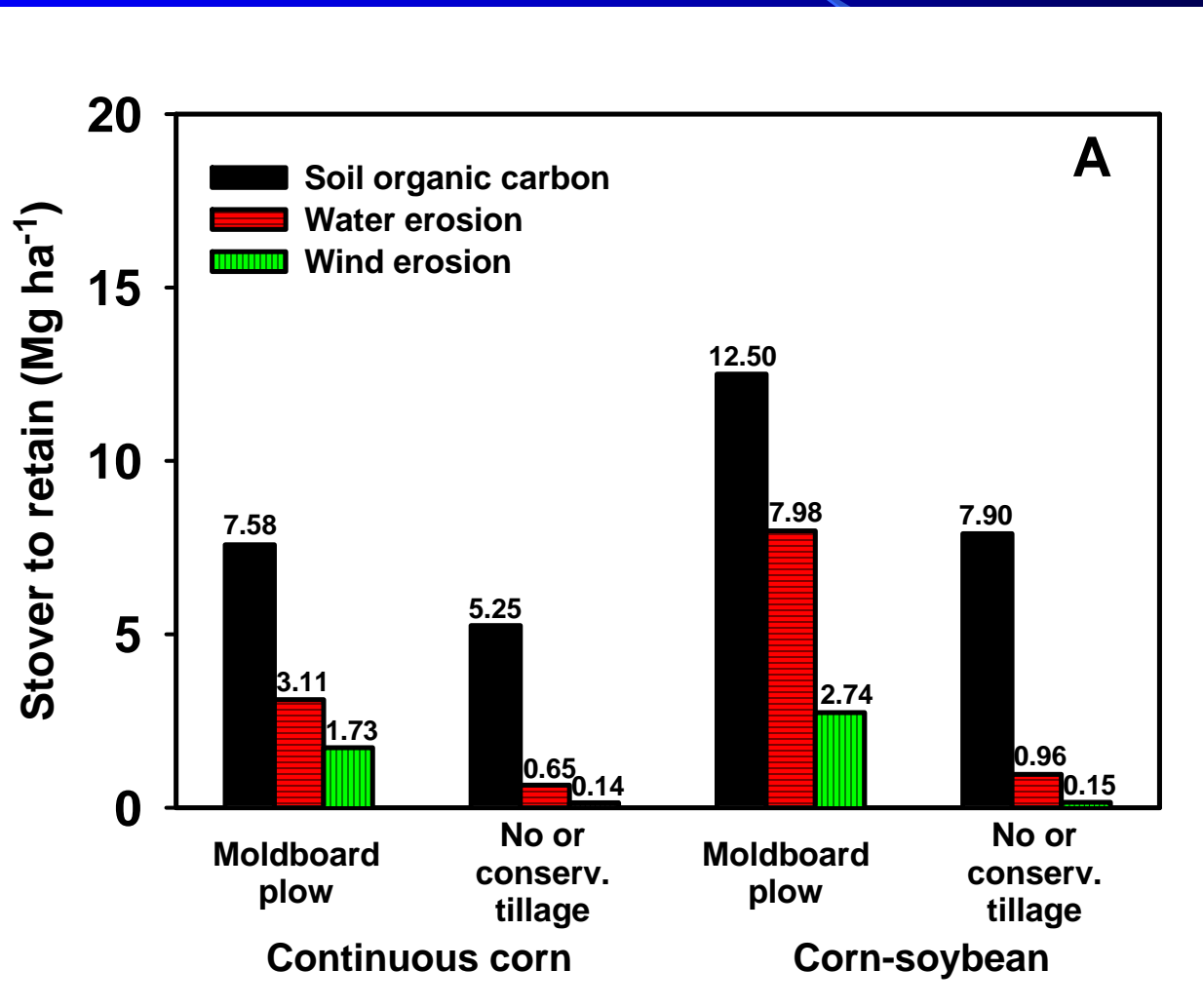
Renewable Energy Assessment Project (REAP)

- Need biomass energy industry based on sustainable management practices.
- What are the tradeoffs between managing crop residues to protect soil from erosion and maintain SOC/SOM while building a biomass energy economy?

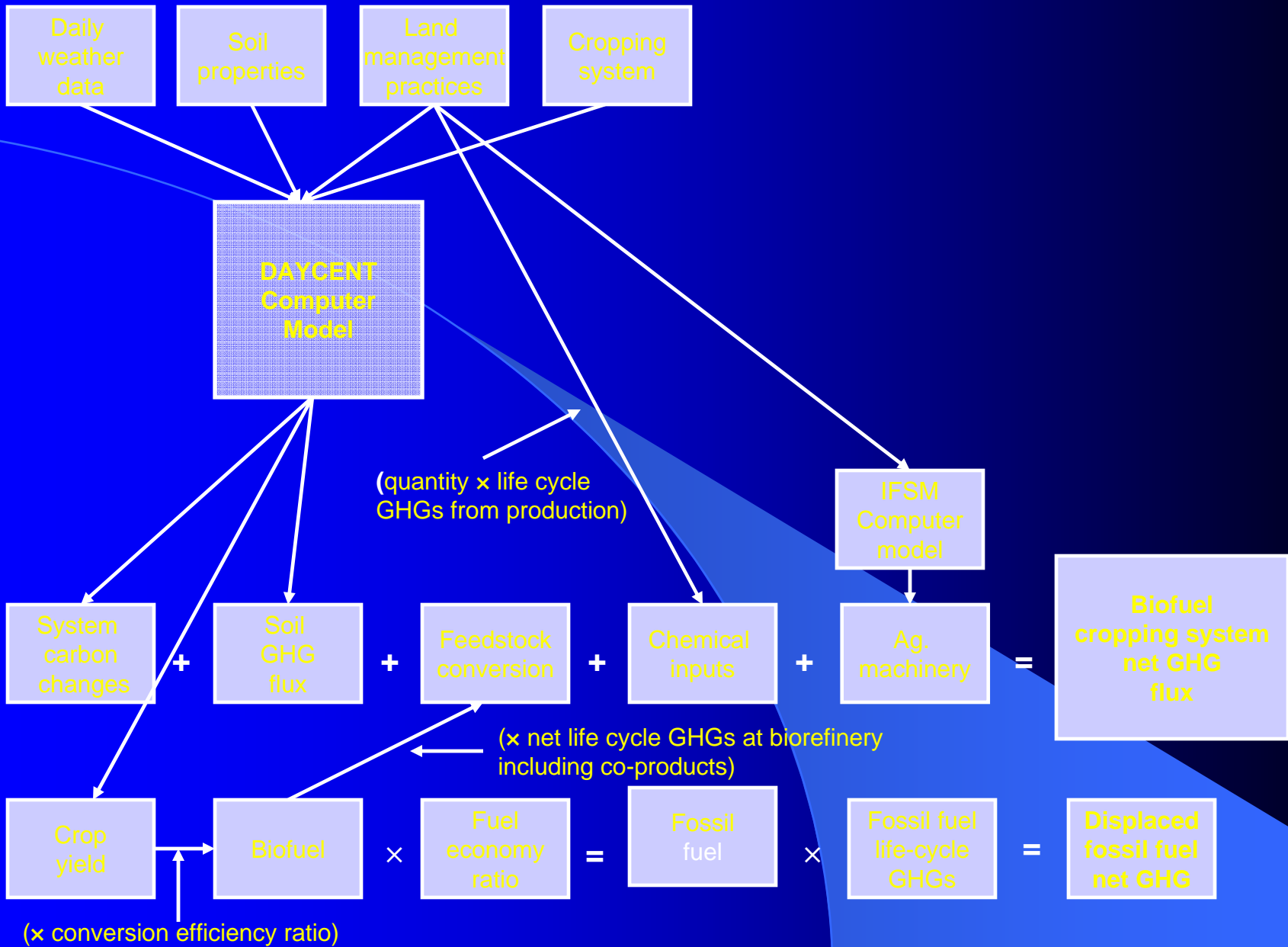
Goals

- Determine amount of crop residue needed to protect soil, water and air resources
- Compare short- and long-term economics of using crop residue as a bio-energy feedstock and as a soil organic input
- Develop guidelines for sustainable biomass harvest

Crop Residue to Maintain Soil C and Limit Erosion



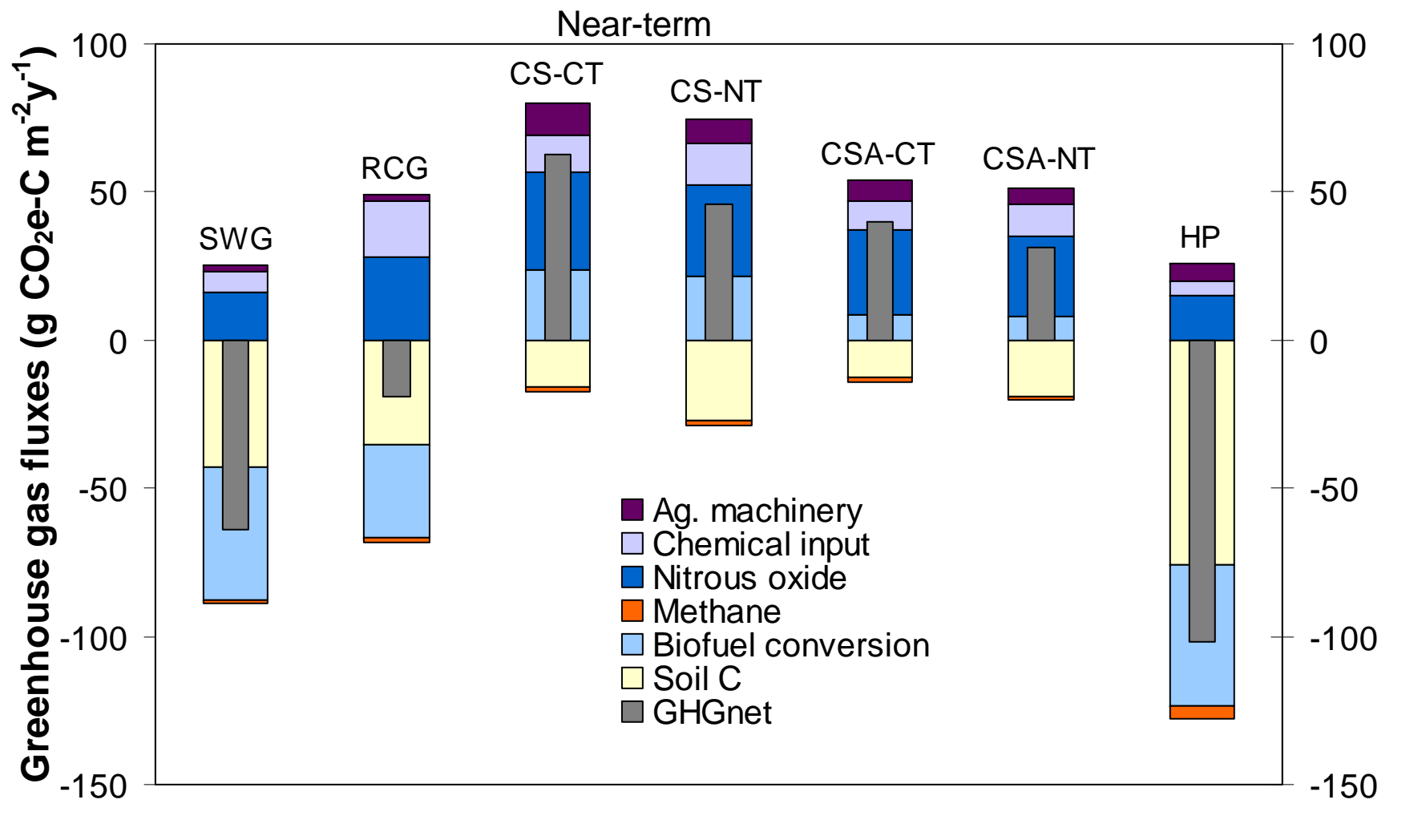
Life cycle net greenhouse gases from bioenergy cropping systems



DAYCENT Biofuel Simulations

- Compared 5 biofuel cropping systems in Pennsylvania
 - Switchgrass
 - Reed canarygrass
 - Corn soybean rotation (2y/1y)
[conventional and no till]
 - Corn soybean alfalfa rotation (3y/1y/4y)
[conventional and no till]
 - Hybrid poplar

Greenhouse gas sources and sinks from bioenergy cropping systems in the near-term



PM Emissions from Conventional vs Reduced Tillage Methods Field Measurement Campaign

- Los Banos, CA, starting October 11, 2007
- Collaborating Organizations
 - Agricultural Research Service (NSTL)
 - Space Dynamics Laboratory
 - EPA
 - San Joaquin Air Pollution District
 - Cannon Michael (Producer)
 - California Cooperative Extension

Objectives

- Determine magnitude, flux, transport of PM emissions produced by agricultural practices for row crops with CMPs compared to no or limited CMP's.
- Quantify control efficiencies of equipment used to implement "conservation tillage" CMP.
- Assess quantitative comparability of these CMPs for a specific crop, controlling for soil type, soil moisture, and meteorological conditions.