



Backyard biofuel?

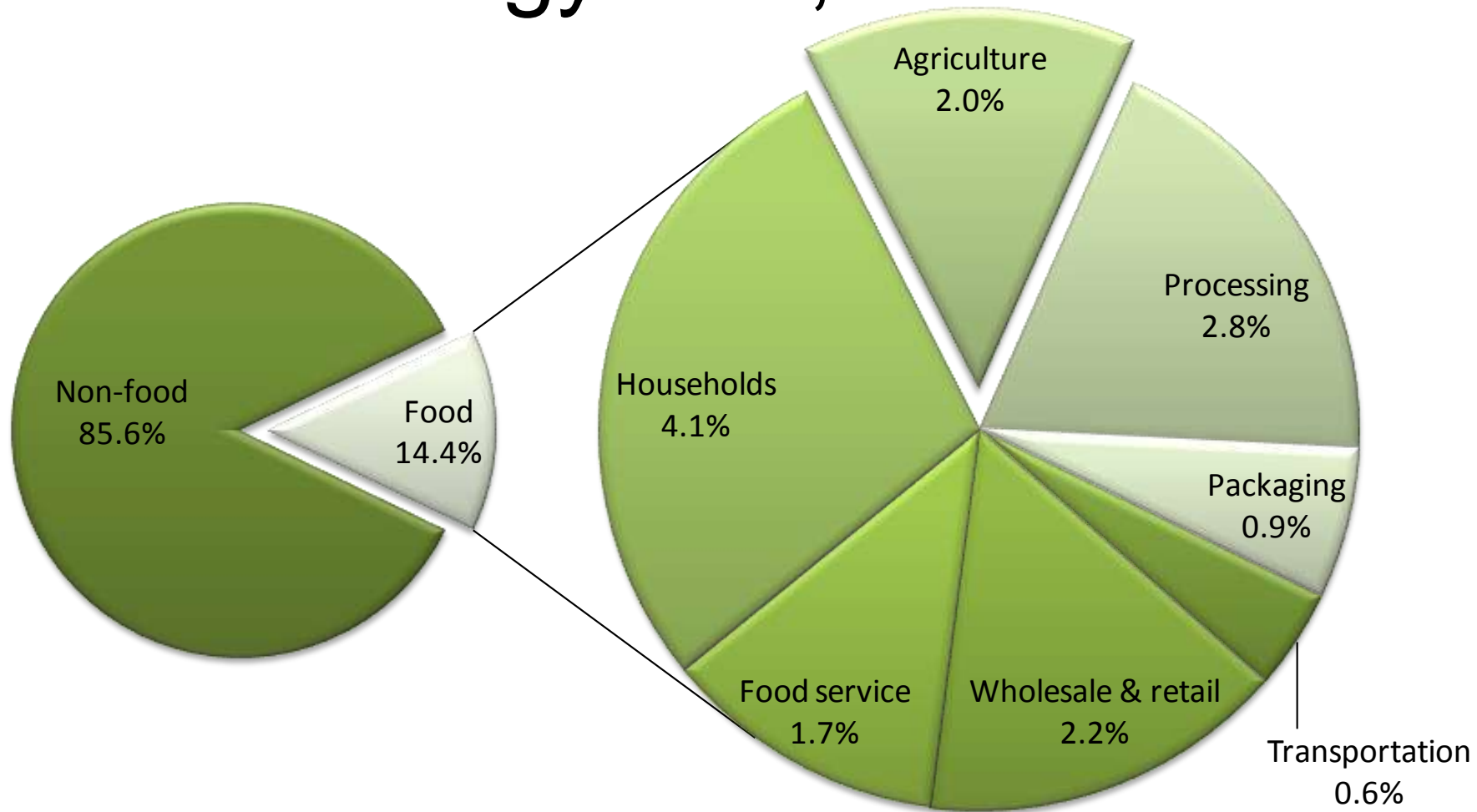


Michael Bomford





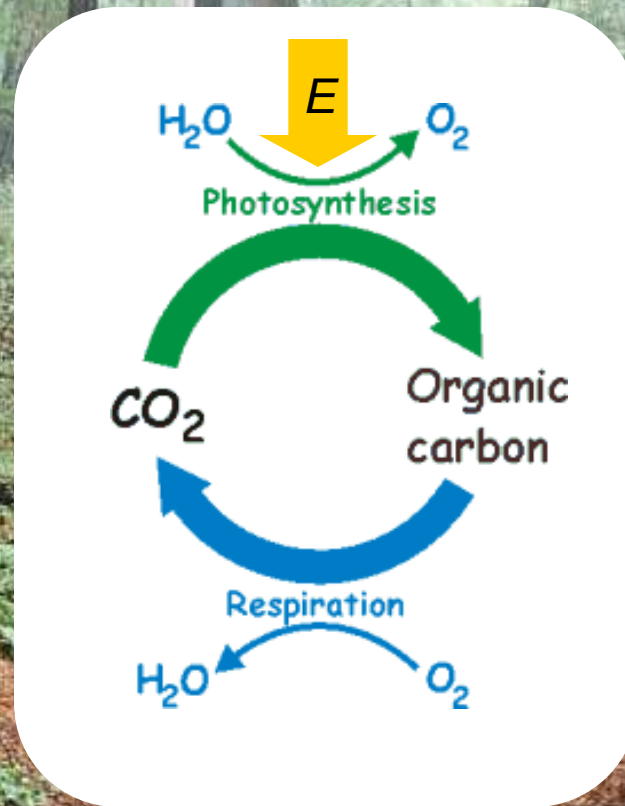
US Food System Energy Use, 2002



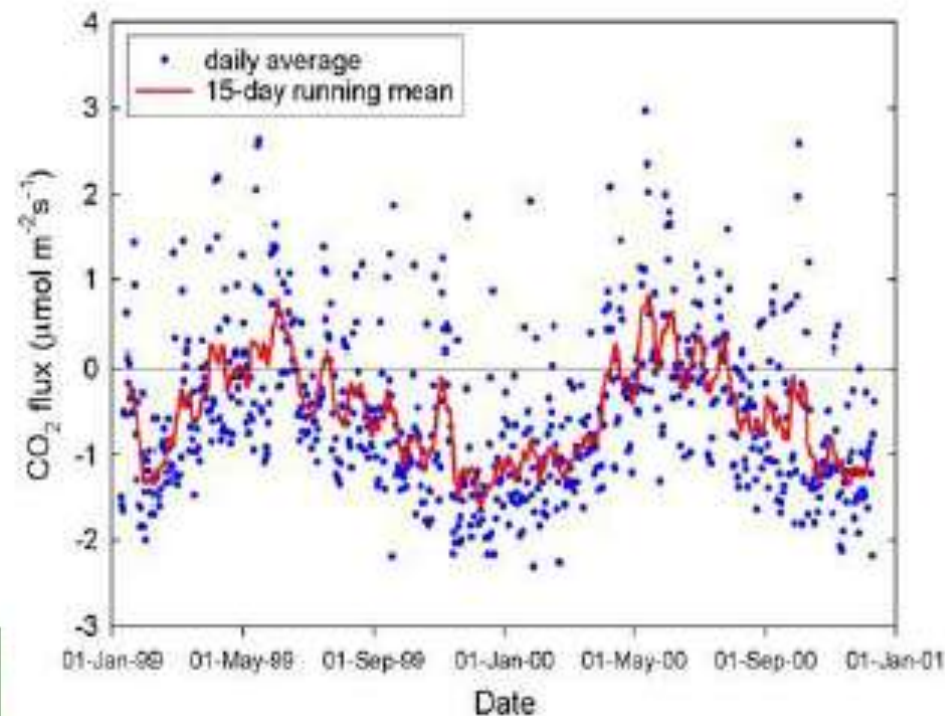
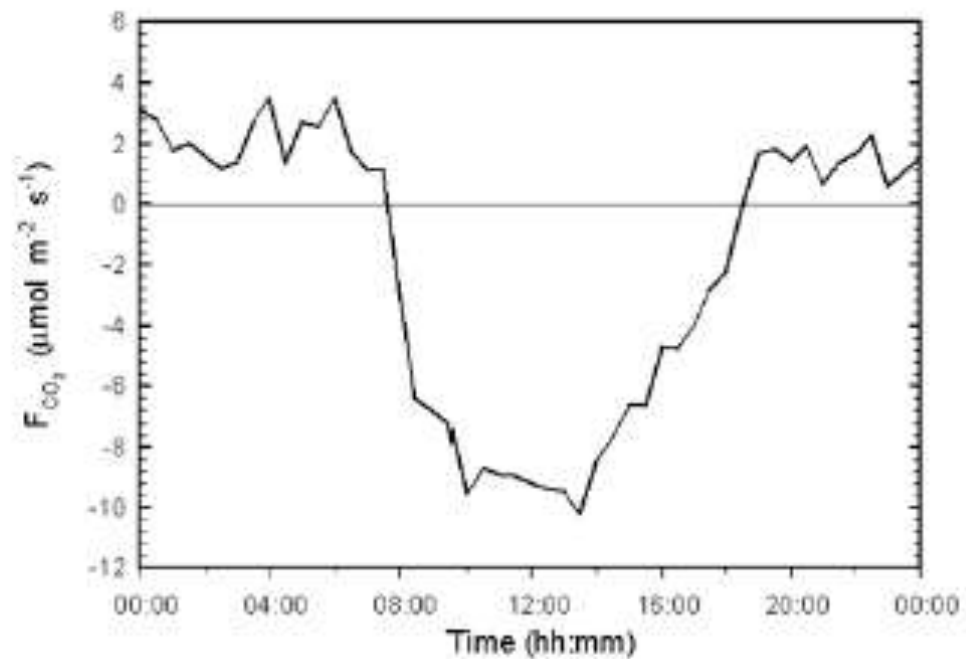
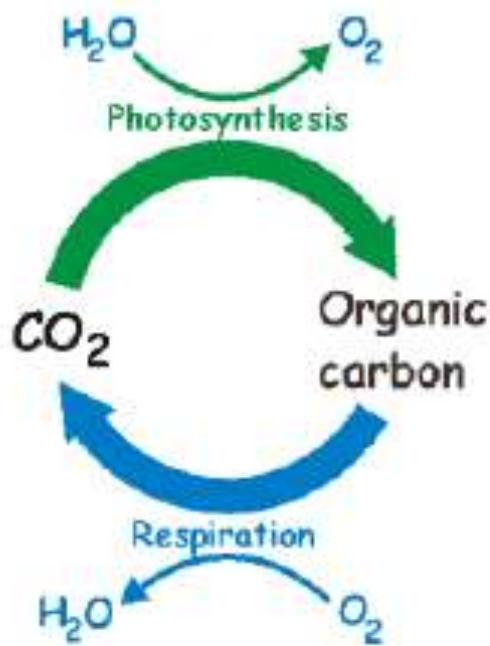
Biofuel

Renewable fuel from biomass

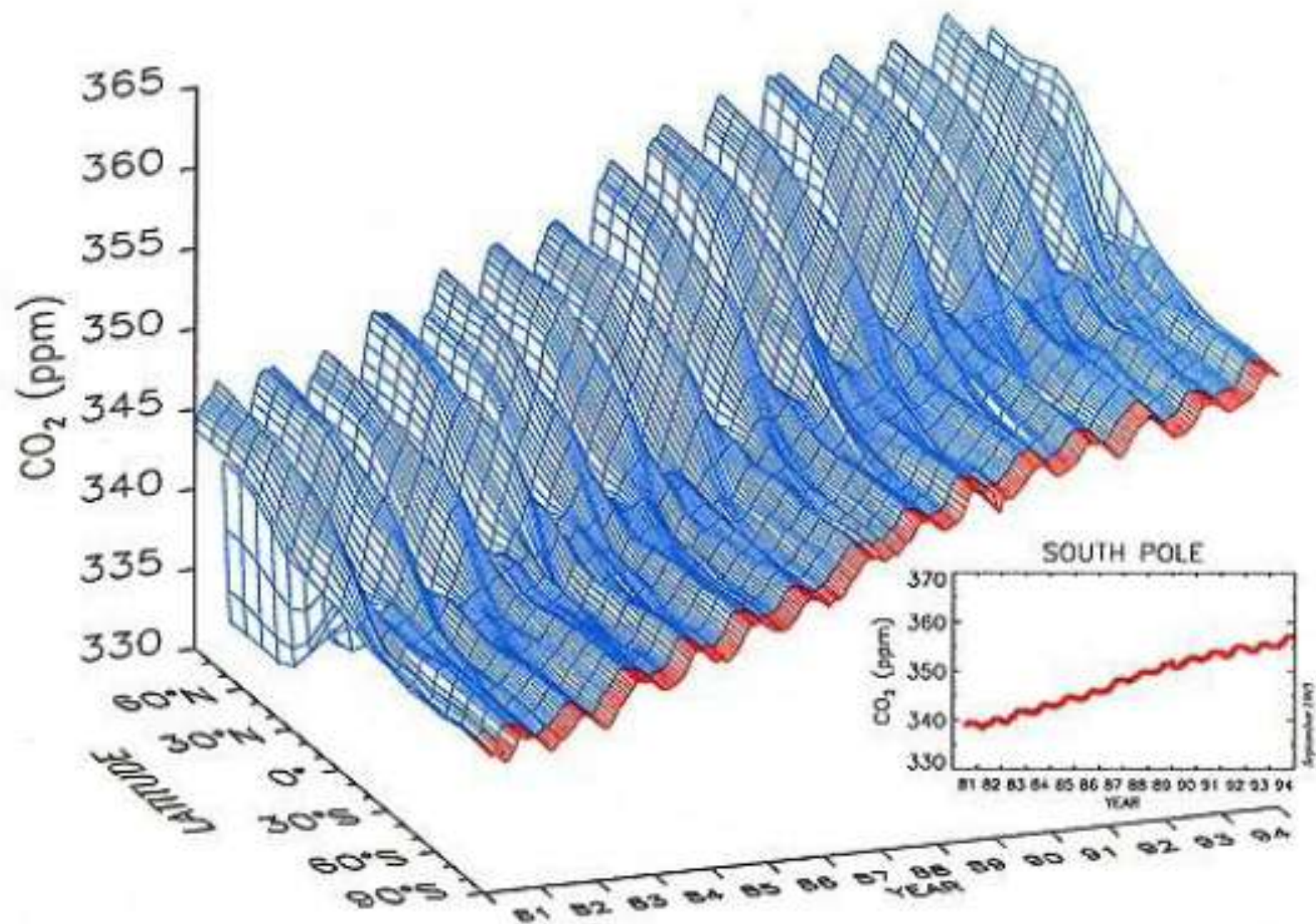
Photosynthesis: *Forests from thin air*



CO₂ flux

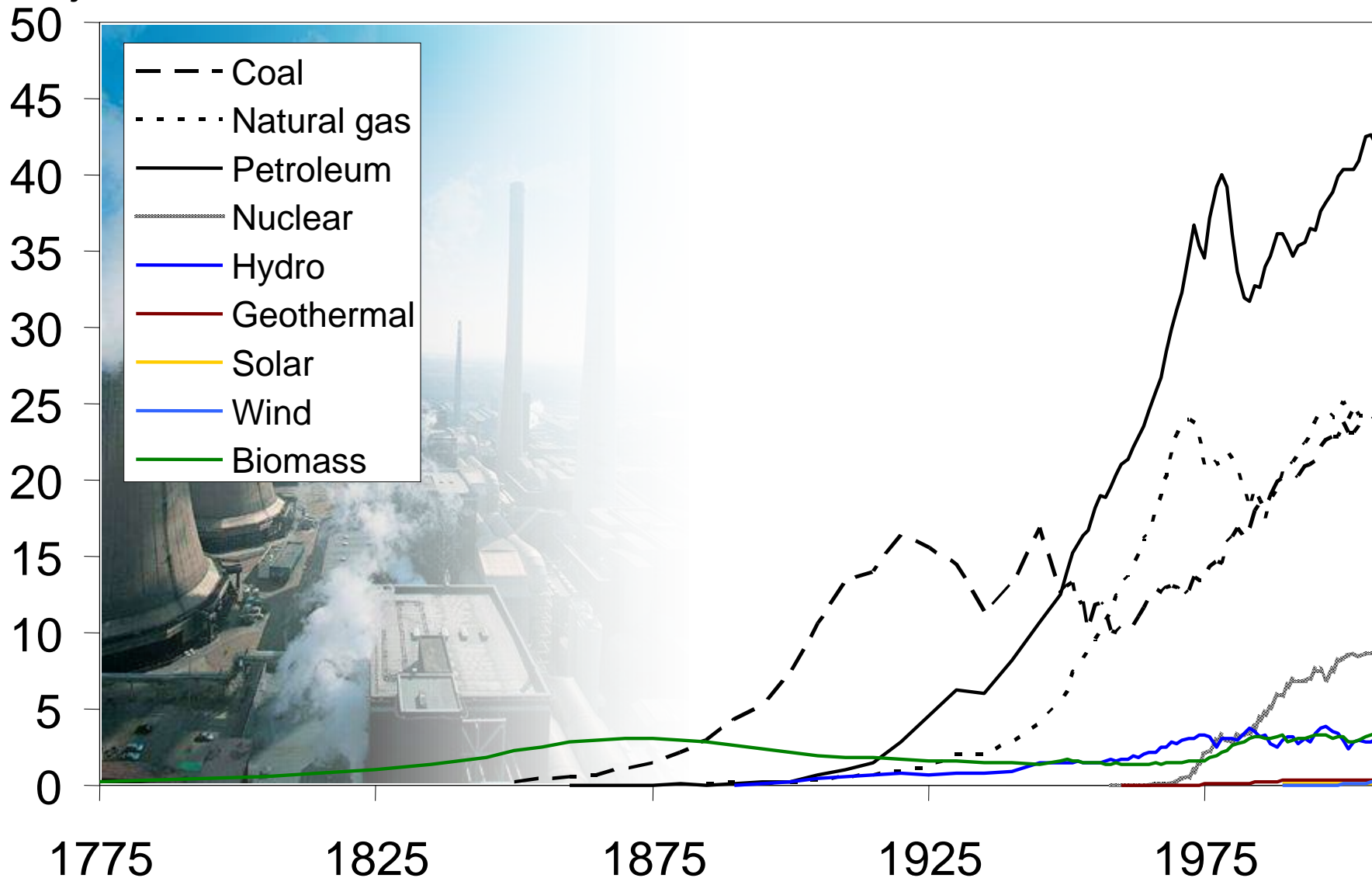


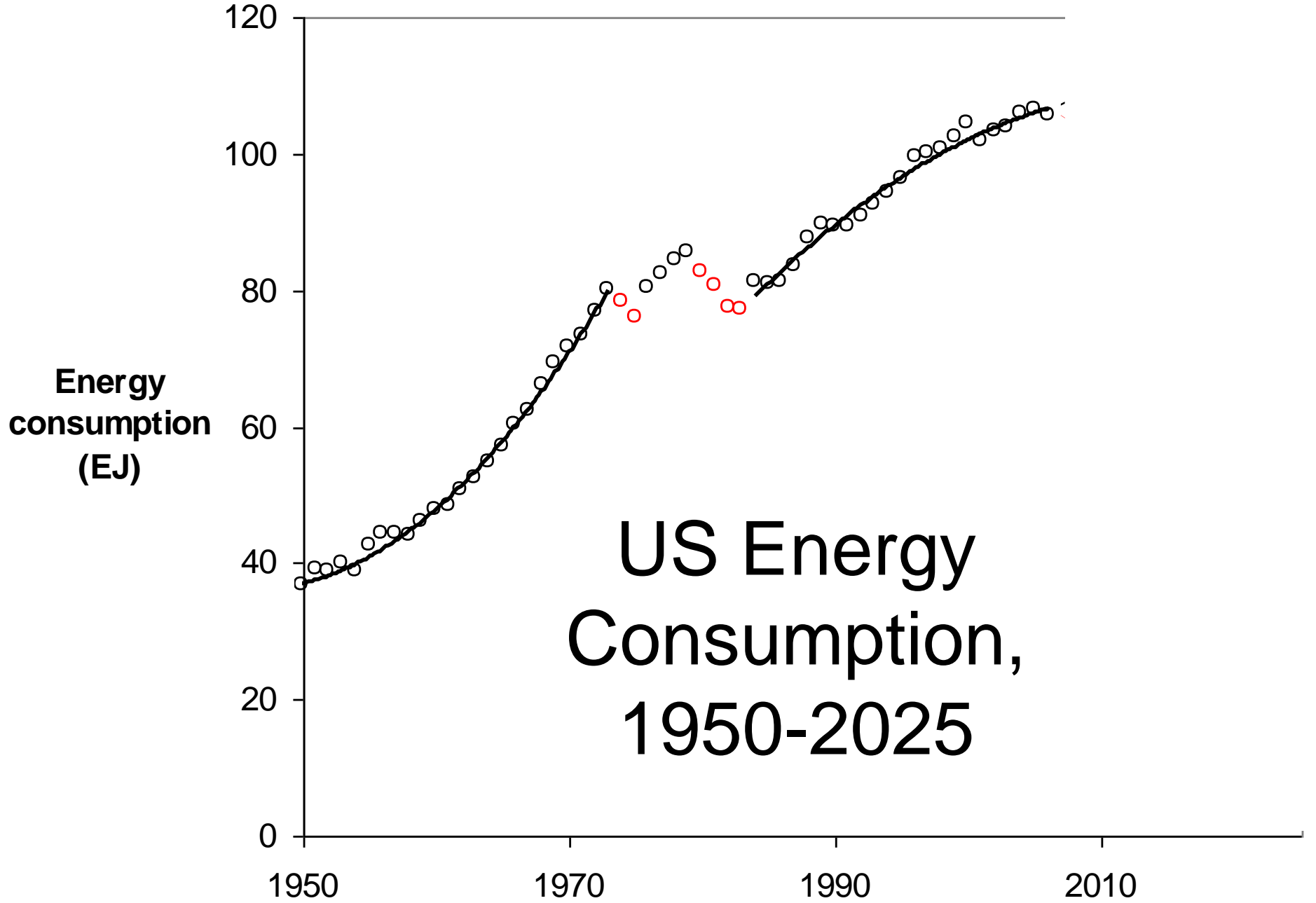
GLOBAL DISTRIBUTION OF ATMOSPHERIC CARBON DIOXIDE



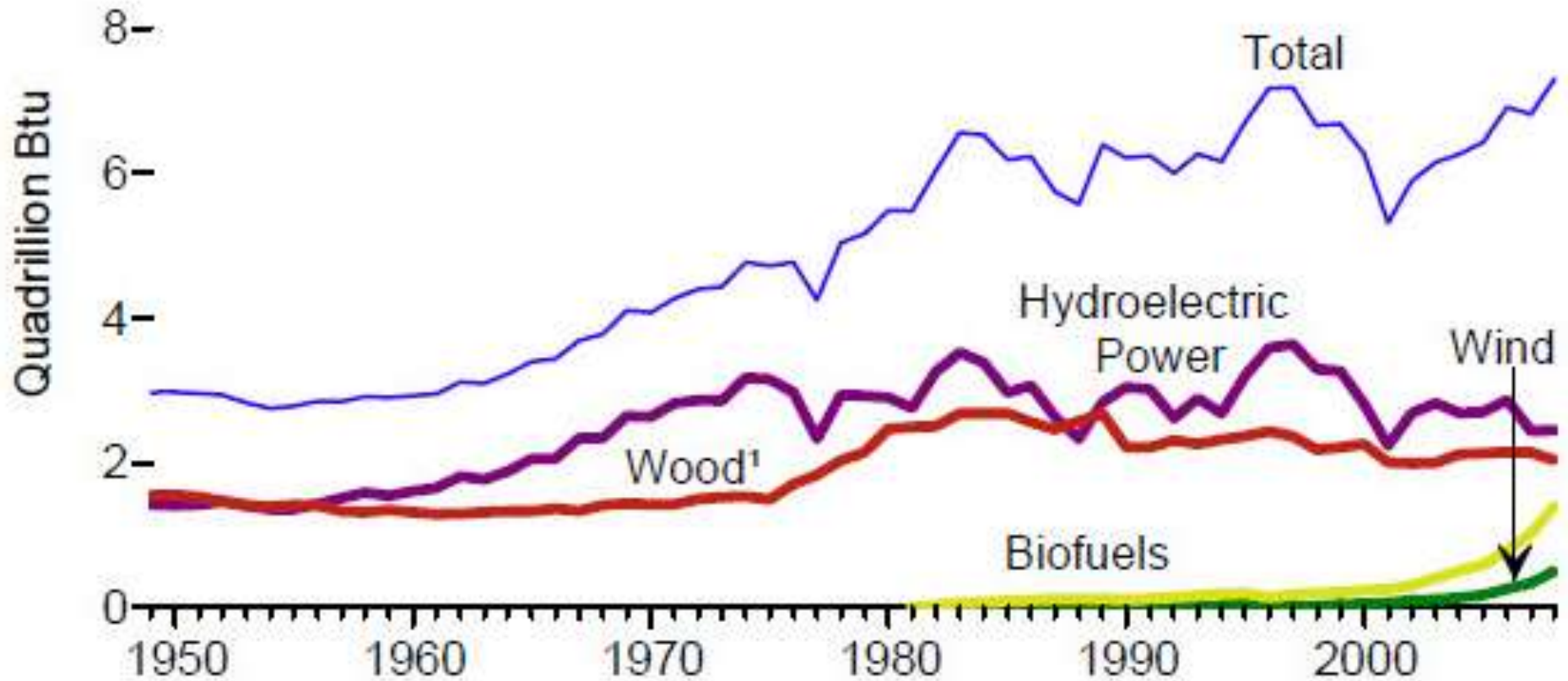
US Energy Consumption by Source, 1775-2006

Exajoules

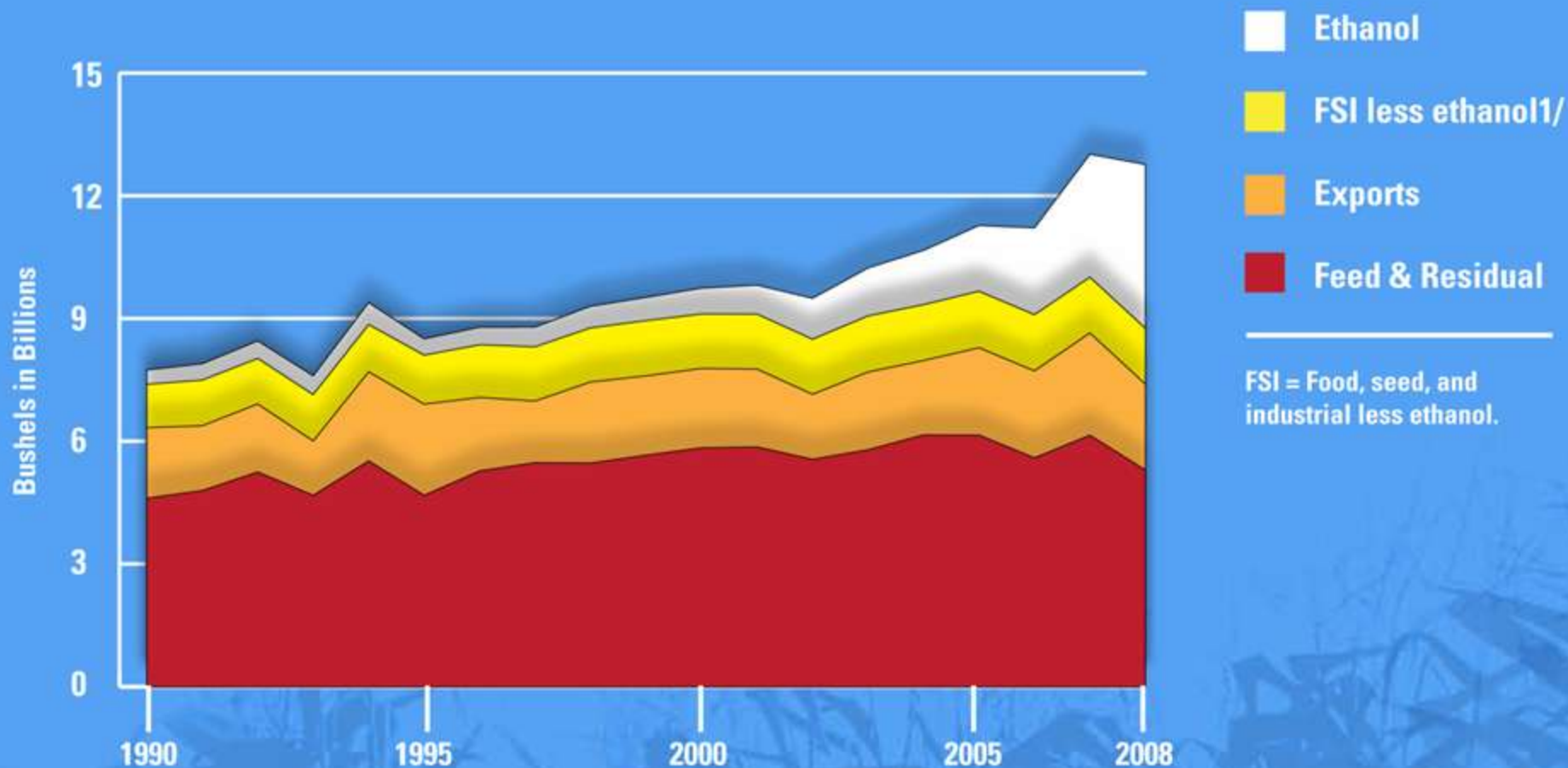




Renewable energy production



U.S. Corn Use, 1990 - 2008



“Because of its reduced energy inputs, organic agriculture is the ideal production method for biofuels.

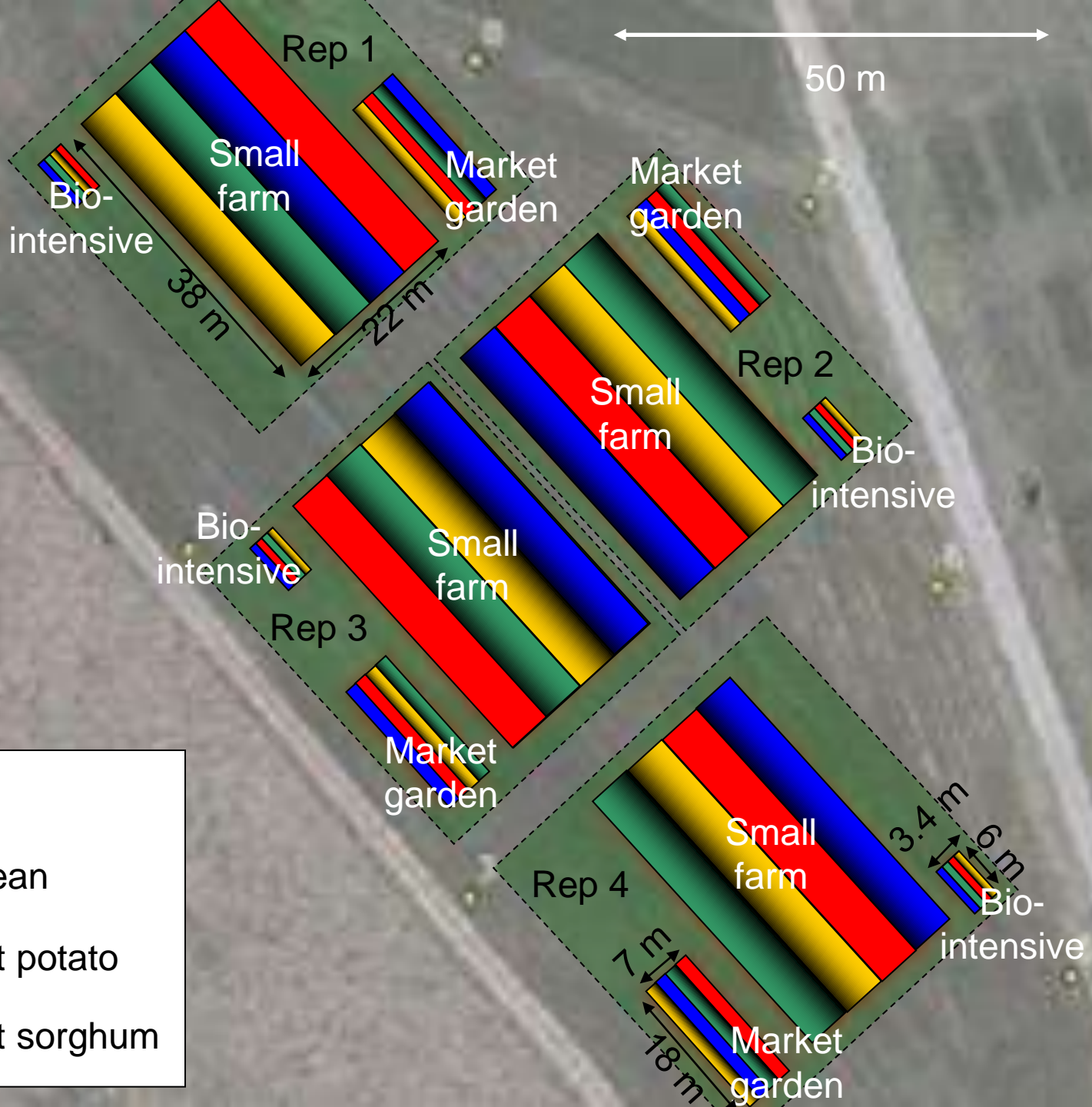
[...]

As the aim of biofuels is to reduce dependency on non-renewable energy sources and to mitigate environmental damage of fossil fuel emissions, organic production of biofuels furthers these goals in a way that conventional agriculture does not.”



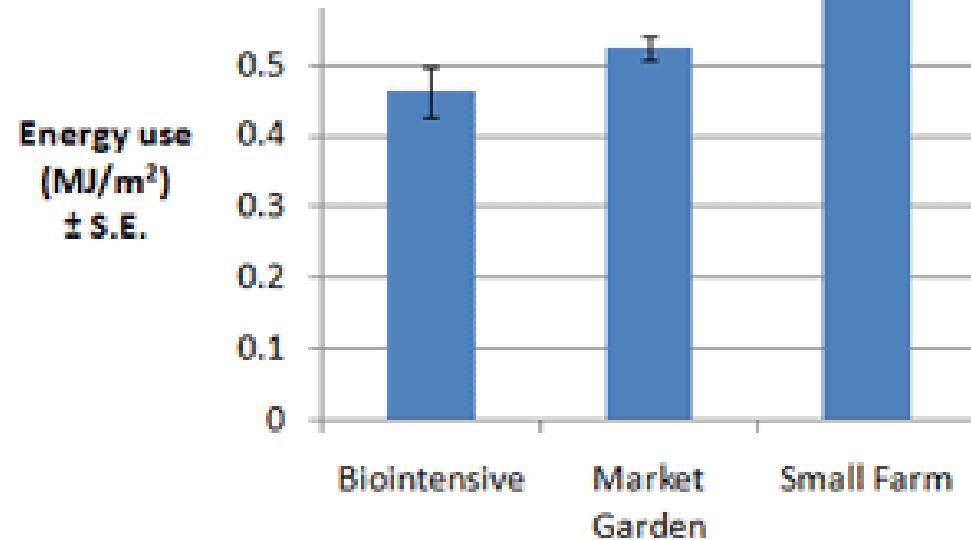
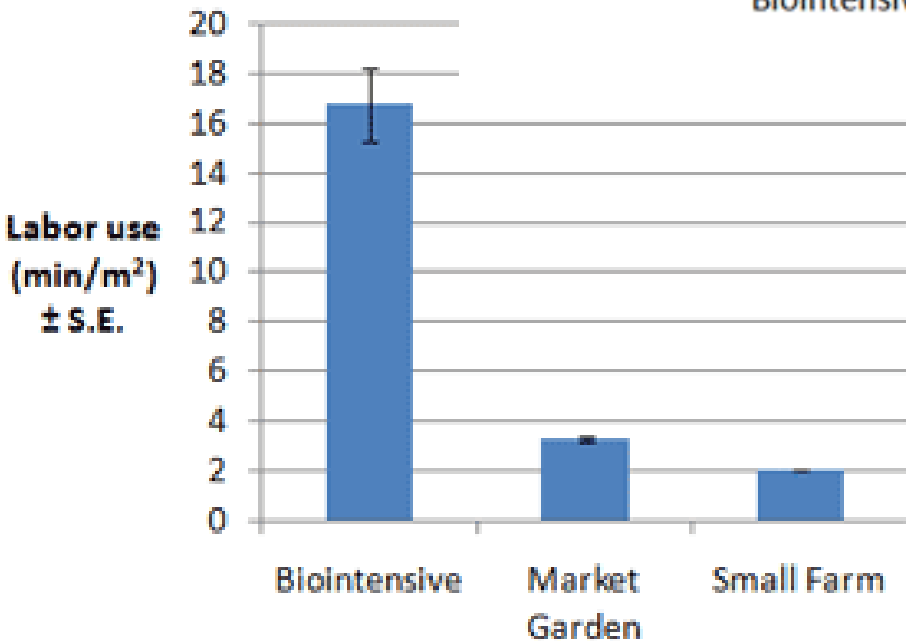
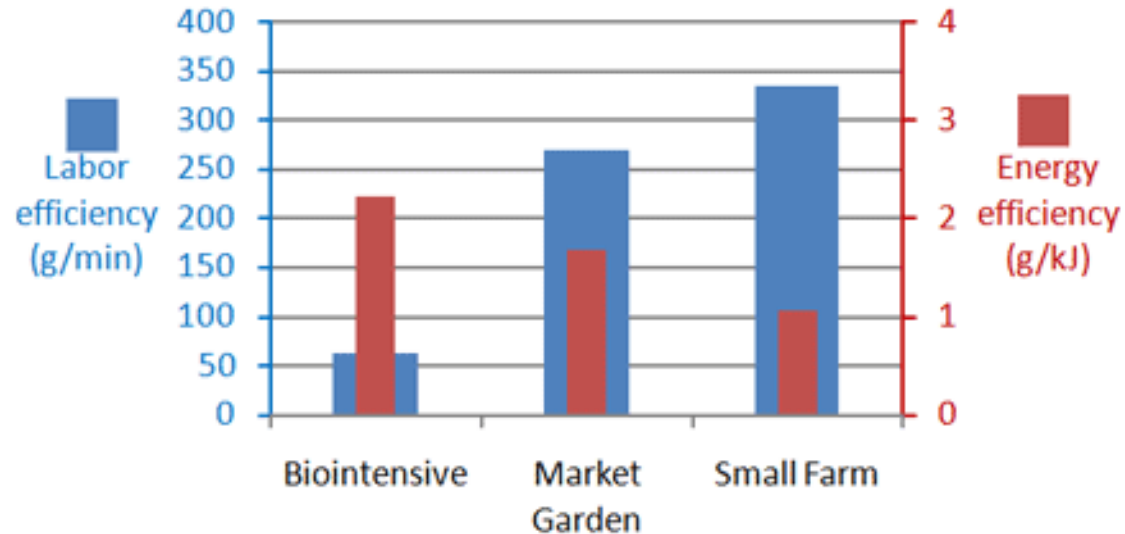
2008

50 m



Food	Corn
Fuel	
Food	Soybean
Fuel	
	Sweet potato
Food	Sweet sorghum
Fuel	

Farm Scale Study, 2009





How much land would it take to fuel a car?

- Sweet sorghum juice to ethanol yield:
 - ~1 gallon/16 square yards
- Ethanol energy density:
 - ~two-thirds that of gasoline
 - 37 mpg car gets 25 mpg
- 10,000 miles of travel:
 - ~400 gallons of ethanol
 - ~1.3 acres of sweet sorghum feedstock (8 backyards)
 - + energy to grow, harvest & process ethanol