

Using Floodplains for Biomass Production

Production for fuel, and a variety of
ecosystem services

Drivers for biomass as a fuel

- Increasing cost for fossil fuels
- Increasing concern for economic and strategic security
- Increasing concern that the use of fossil fuels is changing the world's climate

Changing Energy Prices

1972	1 bbl oil = 1 bu corn
1992	1 bbl oil = 9 bu corn
2005	1 bbl oil = 30 bu corn

Energy Prices (\$ per million btu)

Coal	2 - 3
Natural gas	7 - 10
Gasoline	15 - 22
Cellulose (straw/wood)	4 - 5

“We recommend that the U.S. adopt a very ambitious goal of producing 100 billion gallons per year of ethanol by 2025.” (Aspen Institute)

“By 2025 America’s farms, forests, and ranches will provide 25% of the total energy consumed in the United States.” (25x25)

“an energy future based on abundant and clean renewable resources is not only urgently needed, but achievable.” (WorldWatch)

The New Agriculture Model

Opportunities:

- “Increase the economic and sustainable use of cellulosic biomass to produce energy, fuels, heat, and other value added products.
- Foster jobs, wealth, and energy independence throughout the Upper Midwest region.
- Improve water quality, soil quality, wildlife habitat and decrease overall regional GHG emissions.”

(Great Plains Institute)

The New Agriculture Model

	Biomass-06	Corn-15	Biomass-15
Grain yield(bu/ac)	N/A	162	N/A
Grain price(\$/bu)	N/A	\$3	N/A
Biomass yield(t/ac)	6	1.8	12
Biomass price(\$/t)	\$40	\$40	\$40
Total revenue	\$240	\$558	\$480
Variable costs(\$/a)	\$84	\$168	\$84
Amortized fixed	\$33	\$66	\$33
Net return (\$/ac)	\$123	\$324	\$363

Biomass yield -“Perennial crops for biofuels and conservation”-USDA

A New Agricultural Model for Floodplains

- reconnection with the river
- a biomass crop that is flood tolerant
- increased carbon sequestration
- improved wildlife habitat
- restore more natural hydrology - including potential for reduced flood damages
- possible nitrogen uptake

improved river ecosystem functioning