

An ecosystem management approach to biomass production in southern Wisconsin

OVERVIEW: The researcher team is re-creating a multi-disciplinary group – the Agricultural Ecosystems Research Group (AER Group) – to facilitate an ecosystem management approach to research that addresses the intersection of agriculture, energy production, agronomy, economics, and wildlife ecology. Research emphasis of the AER Group will be placed on studying the impacts of biomass energy production with a goal of exploring how to maximize the wildlife benefit of biomass cropping systems without reducing agronomic and economic productivity, energy potential, and soil and water quality.

ABSTRACT: Herbaceous biomass energy crops are important in part for their impacts on Wisconsin's natural environment, including grassland wildlife habitat as well as soil and water quality. And, biomass production has the potential to impact land use at a large scale in the state. This is significant from a broad conservation perspective, as we know that habitats for sustaining grassland wildlife are disappearing from the Wisconsin landscape, and numerous grassland wildlife species – especially grassland birds – are of high conservation concern as a result. For example, the recent increase in corn acreage grown for ethanol production, and concomitant reduction in grasslands enrolled in the Conservation Reserve Program has been detrimental for grassland birds, as corn is poor wildlife habitat.

We propose re-creating a multi-disciplinary group – the Agricultural Ecosystems Research Group (AER Group) – to facilitate an ecosystem management approach to research that addresses the intersection of agriculture, energy production, agronomy, economics, and wildlife ecology. This research will help foster critical interactions and links between researchers, land managers, energy producers, policy-makers, and the public at large. Critical to the formation and function of the AER Group will be putting in place a Research Coordinator to develop and oversee cooperative, inter-disciplinary research studies. Research emphasis of the AER Group will be placed on studying the impacts of biomass energy production, particularly as they apply to wildlife habitat quality and quantity, as large knowledge gaps remain in our understanding of these relationships. The goal is to explore how to maximize the wildlife benefit of biomass cropping systems without reducing agronomic and economic productivity, energy potential, and soil and water quality.

Specifically, the initial project of the AER Group will be to examine the nesting productivity of grassland bird Species of Greatest Conservation Need (as identified in the Wisconsin Wildlife Action Plan) in fields planted to potential biomass crops – in particular, monotypic switchgrass, low-diversity native warm season grasses, and high diversity prairie restorations. This work will be conducted, in part, in cooperation with 2 other research studies currently being conducted by both Michigan Technological University and the Great Lakes Bioenergy Research Center, as well as with current FOE-funded research on switchgrass as a biofuel in southwestern Wisconsin (UWMadison project). Study results can be used to evaluate the ecological and economic trade-offs of growing different seed mixes of native grasses and forbs for biomass energy; management recommendations will also be developed. Emphasis will be placed on

outreach products and activities, including workshops, field demonstration days, popular brochures, and technical publications.

PROJECT MANAGER: David Sample, Wisconsin Department of Natural Resources