**Socioeconomic Dynamics Associated with Integrating Perennial Vegetation into Midwestern Agricultural Landscapes**

**Issue At Hand**

The demands on agricultural lands in the US Midwest are at an all time high and increasing – food, fiber, fuel *and* ecosystem services are sometimes complimentary yet often competitive components in the array of societal expectations regarding our farm landscapes.  Farmers in turn are challenged by rising land values (and therefore opportunity costs and risk), tenure issues, competitive stewardship interests, conflicting commodity and conservation programming, knowledge regarding jointly produced ecosystem goods *and* services – all the while, farmers must balance the dynamic risk inherent in agriculture (from weather to markets).  Agriculture produces both private and public benefits and costs all of which are contingent upon individual farm level activities which aggregate at the watershed scale in generally unplanned, complex ways. While there theoretically exists an optimal situation that maximizes aggregate private and public goods and services while minimizing total costs, finding this optimum in a dynamic agro-ecosystem isn’t possible. Yet perhaps it is realistic to come close! The overall goal of our collective research at the Neal Smith National Wildlife Refuge is to approach that "sweet spot" – where aggregate provision of ecosystem services and goods is nicely balanced by the pragmatic reality of economic costs at individual farm scales *and* to be able to track this sweet spot (by guiding site level management) across time.

Here at Neal Smith we are in the process of demonstrating a landscape's capacity to produce ecosystem goods and a broader array of services: biodiversity and water quality in particular.  Broadly interconnected, our socio-ecological research examines the impact of strategically integrated perennial vegetation into a commodity defined landscape – testing the effects of perennial structure on ecological process and function which in turn contribute to the complexity of multi-scale ecosystem services experienced by society. Simultaneously we are interested in characterizing the social challenge of managing dual public and private responsibility toward ecosystem services: farmers balancing (or avoiding) trade-offs associated with adopting these new perennial practices and society expressing demand for these ecosystem services via a willingness to help pay for them. All in all, targeting conservation based on comprehensive understanding of the ecological functionality underlying production and services can lead to more economically efficient systems that provide more "ecosystem bang from production oriented bucks."

<http://www.nrem.iastate.edu/research/STRIPs/index.php>

**How We Go About It**

Broad-based civic support is increasingly seen as essential to environmental improvement. Values and attitudes regarding human-environment relations, beliefs and knowledge regarding current land use and its environmental impacts, degree of community and sense of "place," and levels of civic engagement are potentially important meditates of social willingness to pay for or otherwise support initiatives toward improvement of ecosystem services. The long-term success of efforts to improve water quality and increase biodiversity through strategic establishment of perennial vegetation depends on support among both farmers and the general public.

Accordingly, a survey will collect both sociological data and public "Willingness to Pay" estimates to enhance our understanding of citizen "demand" for environmental improvement through perennialization of the landscape.  Likewise, to better account for the driving role that farmers play in ecosystem service management we developed a farmers' survey to estimate their interests/concerns and ultimate "Willingness to Accept" compensation toward adopting incremental perennial land-use. In order to balance the full private cost of partial perennial adoption in a landscape context, the full private returns to such a landscape will also be assessed.

**What We Hope to Accomplish**

Our *working hypotheses* are: 1) the economic and social value of environmental services outweighs the costs of making the required changes and associated losses in productivity, up until some threshold; and 2) a better understanding of citizen preferences for multifunctional agriculture is needed to guide the most appropriate and effective policy initiatives. Therefore citizen knowledge of multifunctional agriculture, proximity to diverse landscapes and learning about ecosystem services and associated trade-offs affect willingness to pay for conservation.

**Questions?**

For more information, please contact us directly:

* John Tyndall: [jtyndall@iastate.edu](mailto:jtyndall@iastate.edu?Subject=STRIPs%C2%A0Project); (515) 294-4912
* J. (“Jay”) Gordon Arbuckle: [arbuckle@iastate.edu](mailto:arbuckle@iastate.edu?Subject=STRIPs%C2%A0Project); (515) 294-0592