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Assessing Trade-Offs Between Crop Production and Ecological Services: The Calapooia Basin

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Abstract Text:

Agriculture-related land uses and practices have affected the quality and quantity of water in many ecosystems at multiple scales. Agricultural fields are often drained to increase production capacity, altering hydrological regimes in watersheds while eroded soils and agro-chemicals are likely to find their way into neighboring water bodies, which may negatively affect ecosystem function. In response, numerous farm conservation programs have been implemented in the US at a cost exceeding 40 billion dollars over the last 2 decades. The purpose of this project is to assess the effects of practices implemented through conservation programs on both farm business profitability and environmental quality. We seek to determine the program efficiency of alternative conservation policies, i.e., identify the most cost-effective of these programs. Ultimately we will quantify linkages between conservation practices and biophysical responses, including water quality and biological indicators (such as aquatic invertebrates, fish, amphibians and birds). In addition we will develop a model to assess tradeoffs between agricultural practices that maximize economic benefits for producers and conservation actions that sustain or improve ecosystem services.

Impact Statement:

This is a dual-purpose project that aims at: 1) quantifying linkages between conservation practices and biophysical responses (including water quality and biological indicators); and, 2) developing a model to assess tradeoffs between agricultural practices that maximize economic benefits and conservation actions that sustain or improve ecosystem services. We are only at the end of our first year of work and concrete benefits are difficult to document at this stage. Nonetheless, the degree of interaction, communication and collaboration among different stakeholders this project has allowed thus far is a clear social impact worthy of consideration.