

People in Ecosystems/Watershed Integration (PEWI): A dynamic land-use and ecosystem service tradeoffs assessment tool

Carrie Chennault – Natural Resource Ecology and Management Department

People in Ecosystems/Watershed Integration, or PEWI, is an interactive, web-based educational tool to develop understanding of land-use and ecosystem service tradeoffs in agricultural watersheds. PEWI is an open-source online tool with a simple approach: users design and evaluate patterns of land use on a virtual US Corn Belt watershed across multiple years and variable climate conditions. PEWI illustrates agronomic, watershed, and biodiversity management principles important for sustainable land use and land management. The tool also facilitates teaching complex principles key to human livelihoods, including resilience and adaptation during periods of climate, and political-economic uncertainty. Our goal is to foster multidimensional and integrative thinking regarding land-management decisions. PEWI differs from other models that stimulate the complex tradeoffs associated with land use in that it does not require guidance from expert modelers. The tool provides instant feedback to any user, reveals both relative and absolute tradeoffs among ecosystem services, and does not require user-supplied data. This innovative approach allows users to simultaneously consider agricultural land use, climate conditions, production outcomes (e.g., crops and livestock), and environmental outcomes such as nutrient and sediment levels in water, habitat provision for biodiversity, soil erosion, and carbon management. PEWI can be accessed at: www.nrem.iastate.edu/pewi.