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U.S. Geological Survey
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USGS Maryland-Delaware-District of Columbia Water Science Center

Seminar Series

Tuesday, February 21, 2017 11:00 a.m.

Cost sharing for agricultural conservation practices and water quality impacts in the Chesapeake Bay Watershed

David Allen Newburn, University of Maryland Department of Agricultural and Resource Economics

We evaluate the importance of simultaneously incorporating three farmer behavioral responses to incentive payments in the context of a cover crop cost-share program aimed at reducing nutrient and sediment loads in the Chesapeake Bay. Using farmer survey data in Maryland, we estimate a two-stage simultaneous equation model to correct for voluntary selection into cost-share enrollment. We examine the direct effect of the cover crop program on cover crop adoption, the indirect effect on conservation tillage adoption, and the slippage effect on vegetative cover. Econometric model results are integrated with the Chesapeake Bay Program watershed model to estimate the statewide pollution abatement of nitrogen, phosphorus and sediment loads delivered to the Bay. Estimated additionality is approximately 94% for enrolled farmers when only the direct treatment effect of cover crop adoption due to the cover crop program is taken into account. Indirect and slippage effects are consequential and should not be ignored. The slippage effect is particularly large among currently unenrolled farmers, indicating that loss of vegetative cover may offset pollution abatement substantially if cover crop cost sharing is extended to this group. The estimated average cost for pollution abatement is much higher for unenrolled farmers after accounting for behavioral responses. This has policy implications for evaluating cost-effective approaches to comply with water quality improvement requirements. Unenrolled farmers are often seen as a potential low-cost source of pollution abatement, but the cost-effectiveness for unenrolled farmers is less optimistic after accounting for behavioral responses.

David Newburn is an Assistant Professor in the Department of Agricultural and Resource Economics at the University of Maryland—College Park. Dr. Newburn received his Ph.D. from the University of California—Berkeley in environmental science, policy and management. He has developed an applied research and extension program focused on the: 1) adoption of best management practices (BMPs) for both agricultural and residential sectors; and 2) water quality and the Chesapeake Bay. He currently serves on the Chesapeake Bay Program Scientific and Technical Advisory Committee (STAC) and Land Use Workgroup.

This presentation will also be available remotely via Webex:
https://usgs.webex.com/usgs/j.php?MTID=m998418e4aa16f1e5712d722529c10684
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