

Benefit-cost analyses of alternative Riparian Buffer Strip management scenarios in Denmark - will allowing for more flexible and targeted buffer strips be beneficial?

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Abstract

Riparian buffer strips (RBS) is a commonly used edge-of-field measure in agri-environmental regulation. Most often, it is implemented in practice by a “one-size-fits-all” policy e.g. requiring the same width of RBS along all regulated water bodies. Despite this, it is evident that a more flexible approach targeting and adjusting the physical layout of the RBS to the location-specific natural conditions could increase efficiency. However, costs may also increase. In this paper, we provide several contributions to the literature. First, we propose a simple planning tool, which, based on existing geospatial data, allows for targeting of the physical layout of the RBS to the natural conditions at field-level spatial resolution. Second, we conduct a Discrete Choice Experiment to assess welfare values of RBS co-benefits. Finally, we conduct Benefit-Cost Analyses including co-benefits for alternative stream management scenarios for a case area in Denmark, where the alternative scenarios represent 1) the traditional one-size-fits-all approach to RBS regulation, 2) the more flexible approach using the proposed planning tool, and 3) an approach relying entirely on use of a newly developed edge-of-field measure called Integrated Buffer Zones. Results indicate that benefits outweigh costs in all the studied alternative scenarios relative to the current fixed 2 meter wide RBS regulation in the case area. While the fixed 9 meter width RBS scheme turns out to be superior in terms of Net Present Value, the more flexible approach as well as the IBZ approach are much more efficient in terms of reducing nutrient emissions.