Predicting Environmental Benefits of Agroforestry Practices in Northern Missouri Using APEX. (A08udawatta085011-Poster)

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Abstract:

We used a comprehensive agricultural management model called APEX (Agricultural Policy Environmental eXtender) to simulate environmental impacts of in-field buffers, including contourgrass strips and agroforestry strips (grass and trees). This study evaluated three watersheds at the University of Missouri-Greenley Memorial Research Center in Novelty, Missouri. The control watershed (1.65 ha) is entirely cropped, the contour strip watershed (3.16 ha) has grass strips, and the agroforestry watershed (4.44 ha) has trees planted in the contour grass strips. APEX was calibrated to measured data, including runoff, crop, sediment, and nutrient yields, for four years (1993 to 1996) before buffers were installed. APEX was considered fully calibrated when average monthly output values were within 10% of measured values. Once calibrated, in-field buffers were simulated in the contour strip and agroforestry watersheds, and model outputs were compared to measured data for four years (1997 to 2000). The ability of APEX to accurately predict changes due to in-field buffers in this study lends credibility to its use for planning agroforestry practices in other areas.

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