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Tools to estimate necessary vegetated ditch BMPs for pesticide mitigation at a watershed scale

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Vegetated agricultural drainage ditches are a potentially important management tool for the remediation of non-point source pesticide pollution in agriculturally dominated watersheds. To utilize ditches as best management practices on a watershed scale, new tools are required to estimate the requisite number and size of vegetated ditches to meet water quality goals.

Publicly available spatial and temporal data were used to create a watershed model of Orestimba Creek, California at a scale relevant to pesticide applications and transport. Partitioning coefficients for the adsorption of chlorpyrifos to plants and soils were used to tune vegetated ditch models to address the impact of plant species selection and growth density under several planting scenarios on mass removal of chlorpyrifos. Site suitability analysis techniques were used to rank sites according to their chlorpyrifos application rate, vegetative cover, soil type, and distance from receiving waters, identify the most promising locations for further investigation.