Simulation of Brush Removal Within an Urban Watershed in Texas. (A03-rosenthal154855-Poster)

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Abstract:

Brush removal has been regarded as one practice to increase water yield (surface runoff and base flow) in semi-arid watersheds. The Soil and Water Assessment Tool (SWAT) model was used to simulate the effects of brush removal on water yield in one urbanized watershed in west central Texas for 1960 through 1999. Landsat7 satellite imagery was used to classify land use, and the 1:24,000 scale digital elevation model (DEM) was used to delineate the watershed boundaries and subbasins. SWAT was calibrated to existing stream gauge flow and reservoir storage. Brush removal was simulated by converting all heavy and moderate categories of brush (except oak) to open range (native grass). Treatment or removal of light brush (<30% cover) was not simulated. Simulated flows at four USGS stream gauge sites were generally within 10% of measured flow. Simulated water yield varied by subbasin from 795 to 2,216 cubic m/(treated ha-yr), but all subbasins showed an increase in water yield as a result of removing brush. This and other similar simulation studies indicated increased water yield was dependent on land use, precipitation, and soil type.

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