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Patuxent Wildlife Research Center

Runoff Concentrations and Effects from Repeated Applications of a Glyphosate-based Herbicide in Small Aquatic Systems

- ***The Challenge:*** Glyphosate-based herbicides have been used since the 1970's to reduce weed competition in agricultural fields. Use of these herbicides has escalated significantly since the late 1990's when the Monsanto Company introduced its genetically-engineered, glyphosate-resistant soybean which was followed by development of resistant varieties of corn and alfalfa. Herbicide-resistant crops allow repeated herbicide applications throughout the growing season of a crop, but potentially threatening nearby aquatic communities with repeated exposures during the warm reduced flows typical of summer.

- ***The Science:*** This work is being conducted to examine herbicide effects on first-order streams adjacent to fields planted with resistant soybeans. It includes determining concentrations of herbicide components in the water before and after application and after significant rain events and monitoring effects on caged invertebrates (amphipods and freshwater clams) and the aquatic invertebrate communities in those streams.

- ***The Future:*** Sample collection is complete and data is currently being analyzed. These results may be influential in establishing new labeling requirements and use restrictions when glyphosate-based herbicides undergo evaluations for relicensing in 2012.

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