The Washington State Department of Agriculture
Endangered Species Program

FACT SHEET

Surface Water Monitoring Program Report

November 2004

Introduction

Study goal: Measure pesticide residues in salmon-bearing streams during the typical pesticide use season.

Background: In 2002, the Washington State Department of Agriculture (WSDA) contracted with the Washington State Department of Ecology (Ecology) to conduct a three-year surface water monitoring program to characterize pesticide concentrations in salmon-bearing streams.

Data Utility: The data will assist WSDA and the U.S. Environmental Protection Agency (EPA) in developing salmonid exposure assessments for pesticides in Washington State surface waters. In the long term, the data may also be useful in evaluating mitigation measures implemented to reduce pesticide transport to surface waters.

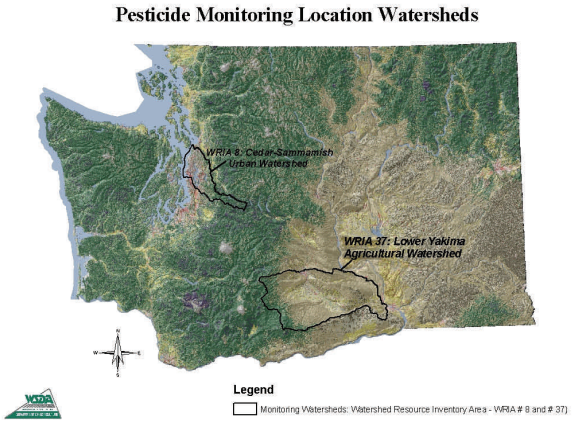

Figure 1 - Urban & agriculture study sites

Study Sites: Year One of the study assessed the occurrence of pesticides in surface water in two index watersheds that represented agricultural and urban land-use patterns. Three drainages in the Lower Yakima Watershed Resource Inventory Area (WRIA) 37 were selected to represent agricultural land use patterns: Spring Creek, Sulphur Creek, and Marion Drain. Thornton Creek, located in the WRIA 8 was selected as the urban watershed. (See Figure 1.)

Sampling: In both the agricultural and urban watersheds, ambient surface waters were sampled for 87 registered pesticides. The surface waters were also sampled for degradates and some historically used compounds such as DDT. In addition to pesticides, sampling for semi-volatile organic compounds (SVOC) was included in the urban basin.

Sampling occurred weekly at all sites throughout the spring (April through June 2003). In the agricultural watershed, bi-weekly sampling at the mouths of the three sub-drainages continued through the summer. Semi-volatile organic compounds were measured in Thornton Creek bi-weekly April through June and also during three storm events in the fall of 2003.

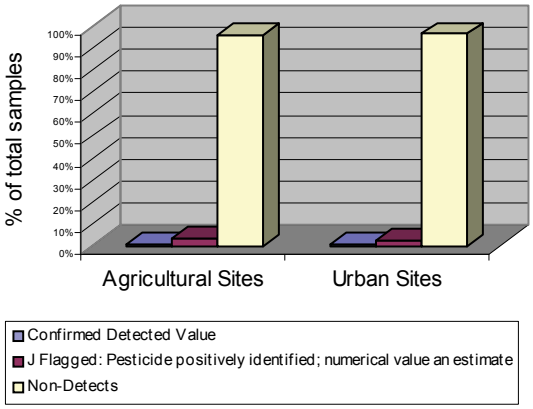

Figure 2 - Overall sampling results

Sampling Results

Overall, the sampling results were very positive. Both the agricultural and urban sampling resulted in approximately 96 percent non-detections with the remaining 4 percent split between validated numerical results and estimated detected values.

Chemical concentrations were generally low and close to analytical detection limits. Forty-six pesticides were found in the agricultural sampling sites and seventeen pesticides were detected in the urban watershed.

Figure 2 depicts the sampling results for both the agricultural and urban basins.

Continued on page 2

Sampling Results

Continued from page 1.

When pesticides were detected, the most commonly found pesticide class for both the agricultural and urban basins was herbicides, representing 82 percent and 88 percent of the detections respectively.

Insecticides were the next most frequent category of pesticides detected. Sixteen percent of the detections in the agricultural basin were insecticides as were 10 percent in the urban basin.

Figure 3 illustrates the category of pesticides detected in each basin.

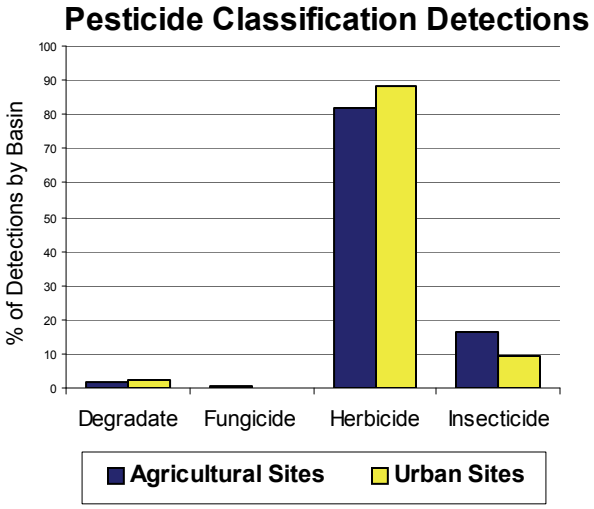

Figure 3 - Detections by pesticide category

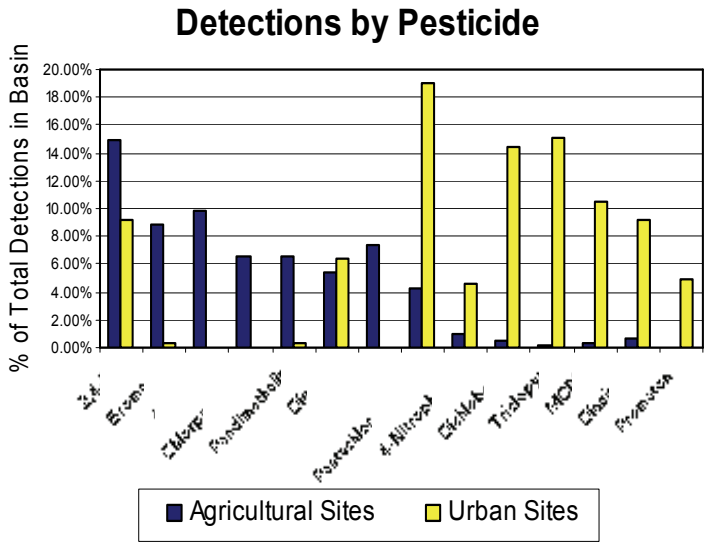

Figure 4 - Detections by chemical

Figure 4 lists the percentage of the most commonly detected chemicals in the agricultural and urban basins.

Overall, the herbicide 2,4-D was the most commonly detected pesticide in the agricultural watersheds.

Pentachlorophenol, a wood preservative, was the most commonly detected chemical in the urban watershed.
The majority of the SVOC detections in the urban watershed occurred during the three storm events.

Although pesticides were detected, the actual levels found were very low.

Future Direction

This monitoring study is designed to assess salmonid exposure to pesticides by compiling three years of data and subsequently looking for trends across years to assess water quality – a weight of evidence approach.

Monitoring is ongoing in the agricultural and urban basins. Future results will be summarized yearly, followed by a three year study cycle report that will evaluate the trends in pesticides detected, concentrations found and their significance for exposure to salmonids.

For More Information

Contact Jim Cowles, WSDA Endangered Species Program at (360) 902-2066 or *jcowles@agr.wa.gov*. The complete Surface Water Monitoring Program report is available on the WSDA Endangered Species Program web site at *agr.wa.gov/PestFert/EnvResources/docs/SWM/FinalReport.htm*.

Inquiries regarding the availability of this publication in alternative formats should be directed to the WSDA Receptionist at (360)902-1976 or Telecommunications Device for the Deaf at (360) 902-1996.