



Idaho State Department of Agriculture Surface Water Program Pesticide Fact Sheet

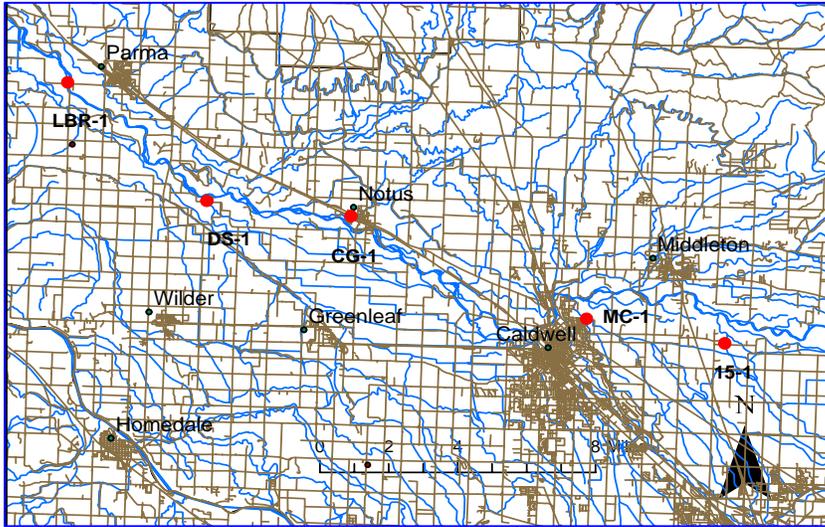


Evaluation of Pesticide Residues in Tributaries to the Lower Boise River, 2010

ISDA Surface Water Fact Sheet #2

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In 2010 the Idaho State Department of Agriculture (ISDA) conducted pesticide monitoring in southwestern Idaho at five sampling stations including, one location on the Lower Boise River near Parma and on four tributaries that discharge to the Lower Boise River (Figure 1). The four tributaries were Dixie Slough, Conway Gulch, Mason Creek, and Fifteenmile Creek; all were previously sampled in 2009. Monitoring for this project was conducted on a bi-weekly schedule starting April 20, 2010 and continuing through September 21, 2010.

Results

The main stem of the Boise River along with the four tributaries had a total of 376 detections of 32 pesticide compounds during the 2010 study (Figure 2). That is an increase of 92 detections over the 2009 study. There were 13 insecticide and 19 herbicide compounds identified.

Figure 1. Lower Boise River Pesticide Sampling locations.

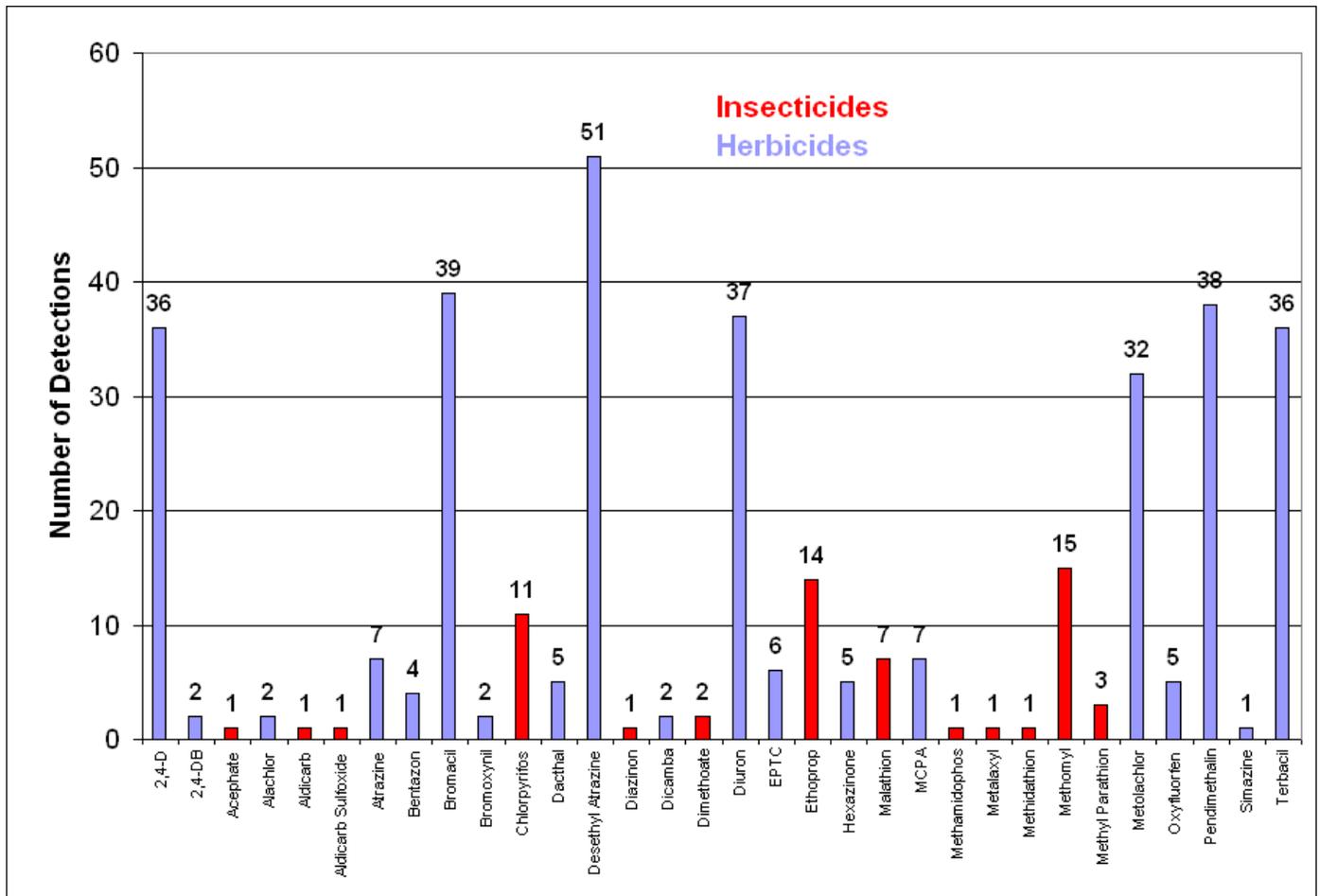


Figure 2. Pesticide detections with the number of detections per pesticide for both herbicides and insecticides.

Seven herbicides were detected more than 30 times each. The highest number of detections included the following herbicides which were general use pesticides (GUP): desethyl atrazine (51), bromacil (39), pendimethalin (38), diuron (37), 2,4-D (36), terbacil (36), and metolachlor (32). These herbicides were mostly low in concentration and below aquatic benchmarks. The other herbicides were detected less than 10 times each. These detections are of concern as these compounds are reaching the surface water systems on a routine basis providing potentially consistent exposure to the aquatic organisms.

There were 13 insecticides identified during the sampling events with a total of 59 detections (Table 1). Nine of the insecticides detected had concentrations that exceeded chronic or acute toxicity levels for aquatic invertebrates including chlorpyrifos, diazinon, ethoprop, malathion, methamidophos, metalaxyl, methidathion, methomyl, and methyl parathion. The four highest number of detections for insecticides were methomyl (15) which is a restricted use pesticide (RUP), ethoprop (14) (RUP), chlorpyrifos (11) which is an RUP and a general use pesticide (GUP), and malathion (7) (GUP). These insecticides are of concern for potential impacts to aquatic organisms. Mixtures of numerous herbicide and insecticide detections found during sampling events are also of concern.

Table 1. Lower Boise River pesticide sampling detections with number of detections and highest detections, 2010. Insecticides in Red.

2010 Detections for Lower Boise River Pesticide Monitoring Project			
Name of the Pesticide (# of Detections) (Maximum Concentration µg/L)			
2,4-D (36) (8.8)	2,4-DB (2) (1.3)	Alachlor (2) (0.12)	Acephate (1) (0.72)
Aldicarb (1) (0.12)	Aldicarb Sulfoxide (1) (0.11)	Atrazine (7) (0.28)	Bentazon (4) (0.49)
Bromacil (39) (0.18)	Bromoxynil (2) (0.58)	Chlorpyrifos ¹ (11) (0.094)	Dacthal (5) (0.2)
Desethyl Atrazine (51) (0.046)	Diazinon (1) (0.034)	Dicamba (1) (0.18)	Dimethoate (2) (0.18)
Diuron (37) (0.84)	EPTC (6) (0.24)	Ethoprop ² (14) (3.2)	Hexazinone (5) (0.2)
Malathion ¹ (7) (0.51)	MCPA (7) (0.48)	Methomyl ² (15) (2.3)	Metalaxyl (1) (0.052)
Methidathion (1) (4.5)	Methamidophos (1) (0.079)	Methyl Parathion (3) (0.092)	Metolachlor (3) (0.092)
Oxyfluorfen (5) (1.4)	Pendimethalin (38) (0.32)	Simazine (1) (0.025)	Terbacil (36) (0.4)

¹ Detections exceed acute and chronic invertebrate benchmarks ² Pesticide detections exceed the chronic invertebrate benchmarks

Conclusions and Recommendations

The results indicate concerns with numerous herbicide and insecticide detections, multiple detections at each sampling event, and numerous insecticides approaching or exceeding aquatic bench marks. The following management recommendations should be considered:

- **Read And Follow Label Directions** - Pesticide labels contain important information about applicator and environmental safety, including water quality protection. Always follow label directions. Consider the lowest rate and split applications if allowed.
- **Follow Chemigation Law/Rules and Label Directions** - When chemigating pesticides, applicators must be licensed and follow state law/rules and the label requirements. Special attention should be taken if flood or furrow chemigation is allowed on the label to prevent label violations and pesticide loss due to runoff.
- **Conduct maintenance of application equipment** - Spray calibration, and frequent checks of spray nozzles, hoses, gauges and tanks.
- **Implementation of management strategies** - Integrated Pesticide Management (IPM), field scouting, evaluation of pest control needs, selection of proper pesticide, irrigation water management (IWM), and irrigation scheduling.
- **Implement structural strategies** - Conservation buffers, vegetative filter strips, sediment basins, and pump back systems.
- **Delay pesticide applications** - If heavy rain is forecasted due to prevent runoff during the first several hours after application.
- **Avoid Overspray And Drift** - Check state law, and the pesticide label for application precautions or restrictions during windy conditions. Wind speed, temperature and humidity all affect pesticide spray drift. Drift can be reduced by lowering boom heights and using nozzles that produce large droplet sizes.
- **Know The Application Site** - Scout the area to evaluate the extent of the pest problem in order to select the appropriate control method. Identify environmentally sensitive areas and learn how the soil types and the layout of each application site affect the movement of water, both through and across soil.
- **Match Application Rates To Pest Problem** - Related to label application rates, carefully consider all aspects of the pest problem, such as the pest(s), level of infestation, location, and environmental considerations (i.e., soil type, organic matter).
- **Do Not Mix And Load Near Water** - Pesticides can reach ground water and surface water as a result of discharges or spills that occur during mixing and loading operations. Mixing and loading should be done as far as possible (at least 50 feet) and downhill from wells, lakes, streams, rivers and storm drains. Applicators should also consider the use of a liquid-tight mixing and loading pad. Be