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Snipes Creek

Summary of 2016 Surface Water Monitoring Program Results

Washington State Department of Agriculture
Natural Resources Assessment Section

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Introduction

The Washington State Department of Agriculture (WSDA) has monitored pesticide concentrations in surface water throughout the state since 2003. WSDA staff take surface water samples during the typical pesticide use season (March - September). In 2016, WSDA monitored 12 sites across Washington, 1 of which was in Benton County. State and federal agencies use this data to evaluate water quality and make exposure assessments for pesticides registered for use in Washington State.

Study Area

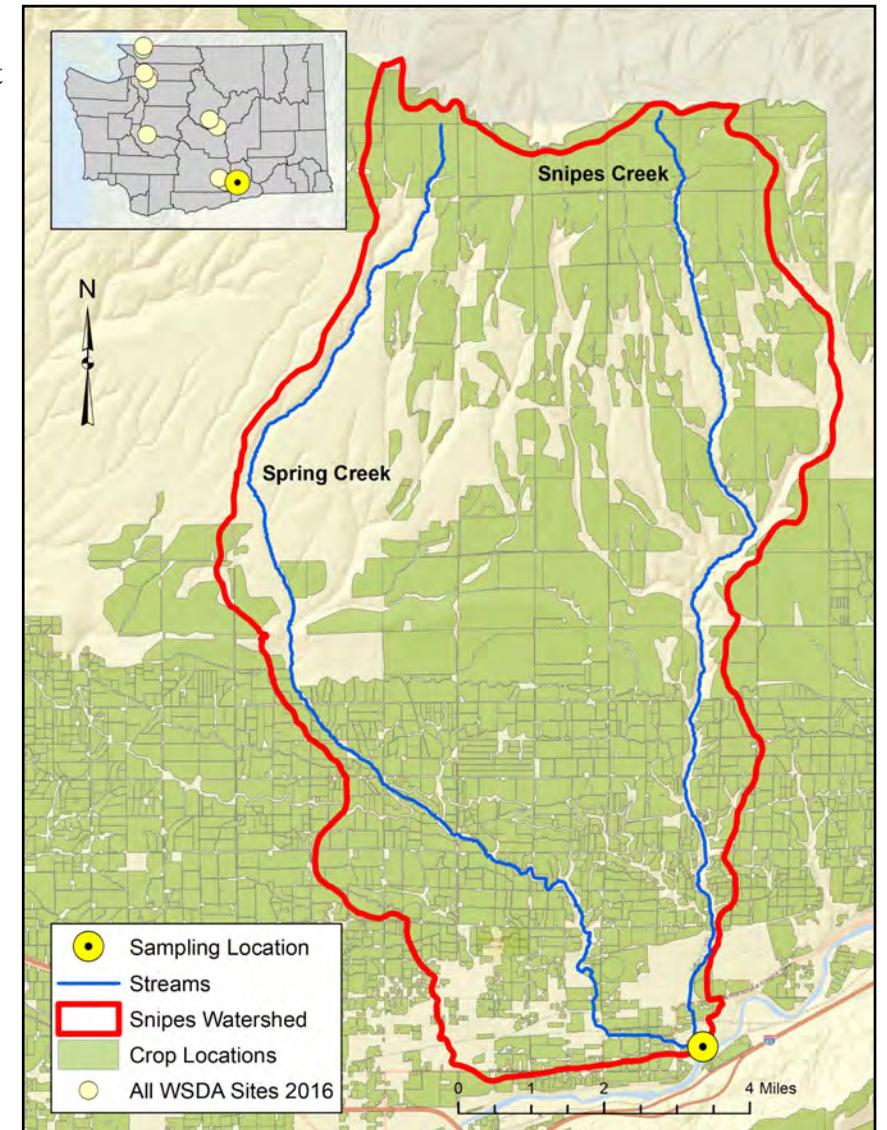
This is the first year that WSDA has tested water from Snipes Creek. The watershed drains approximately 50,300 total acres and about 62% (31,200 acres) of the watershed is farmland. The main crops are wheat, wine grapes, hops, and apples. The Snipes Creek site is just below the confluence of Spring Creek and Snipes Creek. Spring Creek was monitored from 2003 through 2015.

The lower reaches of Snipes Creek and Spring Creek provide habitat for Chinook, coho, and steelhead salmon*. A fish passage blockage restricts the salmon from migrating beyond Spring Creek's crossing with Hess Road. At times during the irrigation season, water is released from the Sunnyside Canal into Spring Creek.

* Washington State Department of Fish and Wildlife SalmonScape (<http://apps.wdfw.wa.gov/salmonscape/>)

Sampling Details

- Samples were collected for 20 weeks, from March 21 through September 12. Sampling was suspended during August because there have not been any exceedences of pesticide assessment criteria at Spring Creek in August in previous years.
- Water samples were tested for 152 chemicals: current and legacy insecticides, herbicides, fungicides, rodenticides, wood preservatives, and pesticide degradates.
- Sample analysis was conducted at Manchester Environmental Laboratory in Port Orchard, Washington.
- Streamflow and total suspended solids were measured at every sampling event.
- Air and water temperature (measured every 30 minutes) were monitored for the entire sampling season.



The table below shows the sample dates and their corresponding detected pesticide concentrations. The detections have been color coded according to assessment criteria, if any, that were surpassed. Assessment criteria for this program are derived by applying a 0.5 safety factor to state and federal water quality criteria. This safety factor is applied to ensure that assessment criteria are protective of aquatic life. Potential water quality issues can be identified early on by using the pesticide data. Watersheds in which detections above assessment criteria occur are a priority for continued monitoring and educational outreach. Please see <http://agr.wa.gov/PestFert/natresources/SWM> for more information.

Assessment Criteria	Month	Mar		Apr				May					Jun			Jul				Sep	
	Day of the Month	21	28	4	11	18	26	2	9	17	24	31	13	20	27	5	11	18	27	6	12
May affect fish survival at sensitive life stages	2,4-D					0.033	0.040		0.055	0.046	0.139	0.041	0.097	0.085	0.059	0.087	0.119	0.043	0.033	0.078	0.072
	2,6-Dichlorobenzamide																		0.022		
	Boscalid	0.062	0.050			0.099	0.075			0.067				0.015	0.050	0.038	0.044	0.044	0.036		
Additional level of protection for endangered species	Carbaryl						0.011	0.060													
	Chlorantraniliprole	0.005	0.003				0.003	0.006		0.009			0.009		0.005	0.007	0.008				
May affect invertebrate survival	Chlorpyrifos	0.269	0.098	0.060	0.033	0.031															
	Diazinon																		0.031		
	Dicamba								0.030		0.060		0.027					0.039			
Nearing a pesticide state water quality standard	Dichlobenil	0.020																0.016			
	Diuron	0.028	0.023		0.088	0.032					0.011										
May affect fish growth or reproduction with prolonged exposure	Ethoprop						0.044														
	Isoxaben	0.004		0.004																	
	MCPA					0.026					0.038										
May affect invertebrate growth or reproduction with prolonged exposure	Malathion												0.228								
	Methoxy fenozide						0.012														
May affect aquatic plant growth	Pyraclostrobin					0.019															
	Thiamethoxam																	0.021			
	Triclopyr acid								0.029		0.056										
Below all identified criteria	Precipitation	0.09	0.02	0.01	0.04	0.29	0.00	0.00	0.15	0.16	0.10	0.01	0.11	0.18	0.00	0.00	--	0.00	0.00	0.10	0.16
	Streamflow	48.88	62.59	69.78	30.45	35.42	43.83	154.0	47.34	13.55	74.37	31.21	105.0	39.18	23.78	22.22	34.68	23.83	7.74	--	59.72
Not detected (below detection limit)	Total Suspended Solids	37	27	23	13	21	17	36	37	8	74	19	37	22	17	22	10	12	--	20	11
	Units for pesticide detections are in (µg/L), precipitation measurements in (week total inches), streamflow measurements in (cfs), and total suspended solids in (mg/L). The "--" signifies a sample or measurement was not collected.																				

Results Summary

- There were 66 pesticide detections in Snipes Creek. Of these, 6 detections were above assessment criteria.
- WSDA identifies some pesticides as Pesticides of Concern because they have been found somewhere in the state above WSDA’s assessment criteria. Chlorpyrifos, diazinon, diuron, and malathion are all Pesticides of Concern that were detected in Snipes Creek. Only chlorpyrifos and malathion were higher than WSDA’s assessment criteria at this site.
- Common products containing chlorpyrifos (an insecticide) are Lorsban and Pilot, and common products containing malathion (also an insecticide) include Drexel Malathion, Fyfanon, and Malathion 57 EC.
- Chlorpyrifos was only detected during the first 5 weeks of monitoring, in the early spring.
- The only malathion detection observed coincides with the highest streamflow observed.
- When multiple pesticides are detected simultaneously the environmental effects can combine; multiple pesticides were detected at 17 of the 20 sampling events in Snipes Creek. Between 1 and 6 pesticides were detected at the same time.

Recommendations

- Read and follow label directions to protect water quality.
- Choose less-toxic pesticides whenever possible.
- Calibrate, maintain, and inspect application equipment often.
- Check the weather before application to reduce drift or runoff.
- Use best management practices: buffers, filter strips, sediment basins, ground cover, and setbacks.
- Properly dispose of all unneeded pesticides. Apply here to participate in a WSDA waste pesticide collection event: www.agr.wa.gov/wastepesticide