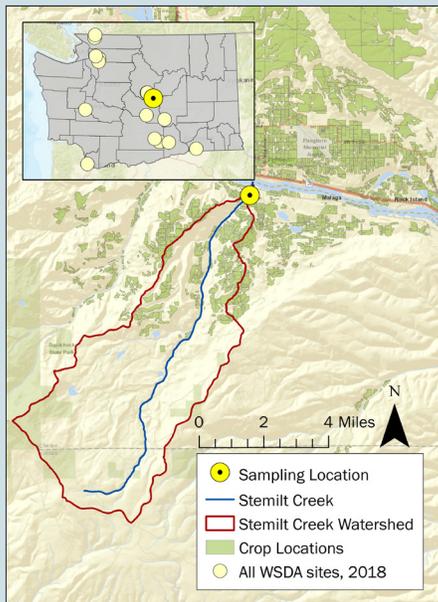


Stemilt Creek

Summary of 2018 Surface Water Monitoring Program Results | November 2019



The Washington State Department of Agriculture (WSDA) routinely monitors surface water throughout the state for the presence of pesticides. The monitoring is done between March and September, the typical season for pesticide use, and includes checking general water quality conditions and streamflow. State and federal agencies use this data to evaluate water quality and make exposure assessments for pesticides registered for use in Washington State. In 2018, WSDA monitored 16 sites in Washington, three of them in Chelan County.



Washington
State Department of
Agriculture

Natural Resources Assessment Section

Watershed and site information

Sampling history: 2013 - present

Watershed area: 21,200 acres (~33 square miles)

Area in agricultural use: 1,900 acres (~9% of total watershed acreage)

Main crops: Cherries, apples, pears, and fallow fields

Fish habitat: Spring Chinook salmon and summer steelhead
(SalmonScape: apps.wdfw.wa.gov/salmonscape/)

Sampling dates: 10 sampling visits, March 13 – May 15

Water testing:

- WSDA tested for 90 current and legacy chemicals (35 insecticides, 35 herbicides, 9 fungicides, 7 pesticide degradates, 1 antimicrobial, 1 insect repellent, and 2 synergists).
- Samples were analyzed at Manchester Environmental Lab, Port Orchard, Washington.
- WSDA compares detected pesticide concentrations to WSDA assessment criteria, which are half of state and federal water quality criteria. Each pesticide has its own assessment criteria, based on its toxicity to aquatic animals, insects, and plants.
- WSDA identifies Pesticides of Concern (POCs) as current-use pesticides that have been found somewhere in the state above WSDA's assessment criteria in recent years.

Notes:

- Stemilt Creek drains directly into the Columbia River.
- -It has been documented by the Washington State Department of Fish and Wildlife that the inlet of Stemilt Creek contains rearing salmon.

Results and Conclusions

- There were 67 total pesticide detections in Stemilt Creek from 5 different use categories: 5 types of herbicides, 1 fungicide, 3 insecticides, 3 degradates, and 1 insect repellent. This substantial increase from 2017 is largely due to new equipment at the lab and does not necessarily reflect an increase in pesticide use.
- Of the total pesticide detections, 13 were above WSDA's assessment criteria.
- The POCs detected were chlorpyrifos, diazinon, and malathion; which also have been detected in previous years at concentrations known to negatively affect aquatic life.
- When multiple pesticides are detected simultaneously, the environmental effects can combine; multiple pesticides were detected every week Stemilt Creek was tested. Between 4 and 10 pesticides were detected at each sampling visit.

Recommendations

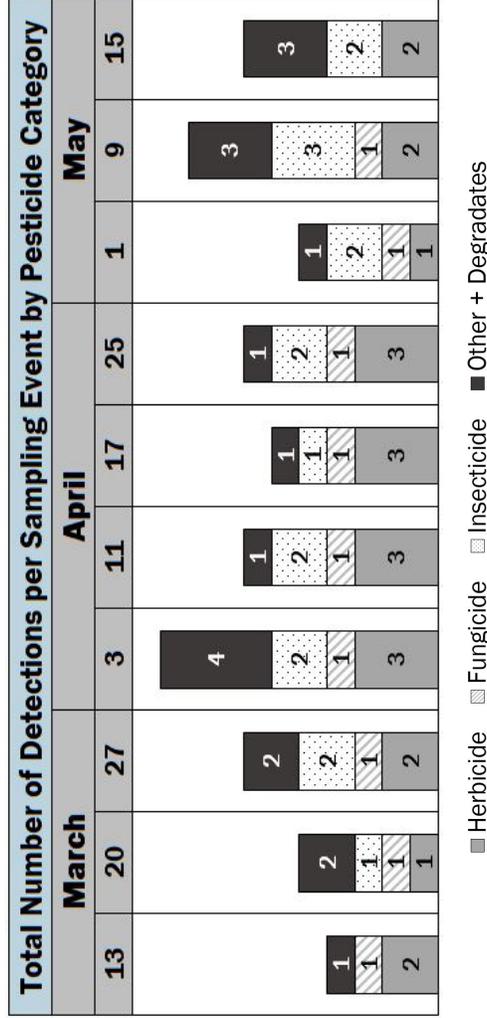
- **Make use of natural protections**
 - Use buffers, filter strips, sediment basins, ground cover, and setbacks.
- **Be informed**
 - Read and follow pesticide label directions, and be familiar with active ingredients.
 - Plan applications using the weather forecast to reduce the chances of drift or runoff.
 - Review WSDA's POCs and choose less-toxic pesticides when possible.
 - Become familiar with the active ingredients in your product names.
- **Care for your equipment and products**
 - Calibrate, maintain, and inspect application equipment regularly.
 - Properly dispose of all unneeded pesticides. Visit agr.wa.gov/wastepesticide to learn about waste pesticide collection events.

The calendar below shows the concentration in µg/L and date sampled of each WSDA POC. This calendar does not include all the pesticides WSDA found during the growing season. Detected concentrations that exceed WSDA's assessment criteria have a higher potential to cause harm to aquatic ecosystems. The “-” signifies a sample or measurement that was not collected or could not be analyzed.

Washington State's Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations												
Month	March			April			May					
Day of the Month	Use*	13	20	27	3	11	17	25	1	9	15	
Chlorpyrifos	I		0.045	0.052	0.049	0.027	0.011	0.011	0.006	0.004	0.003	
Diazinon	I					0.005		0.005	0.007	0.003	0.002	
Malathion	I			0.026	0.010					0.003		
Total suspended solids (mg/L)		5.0	3.0	7.0	4.0	9.0	7.0	7.0	22.0	103.0	41.0	
Streamflow (cubic ft/sec)		5.36	4.89	6.98	7.18	13.17	7.81	6.19	17.71	47.09	-	
Precipitation (total in/week)		0.05	0.14	0.34	0	0.61	0.49	0	0.15	0.14	0.11	

■ Exceeds Assessment Criteria
 ■ Below Assessment Criteria
 (* I: Insecticide)

The graph below shows the total number of detections per sampling visit in each pesticide category. The category 'other' includes degradates and an insect repellent. Note that the number of detections between categories cannot be directly compared due to the different number of chemicals in each category and variability in analysis methods used.



In the triangle to the right, pesticides in the top section have one or more detections above WSDA assessment criteria. The total number of detections for each pesticide is in parentheses after the name, with more frequently detected pesticides listed first in each section.

Please see agr.wa.gov/AgScience for more information.

