

## Elevated Nitrate N and Phosphorus in Soils that Receive Dairy Manure in Washington State

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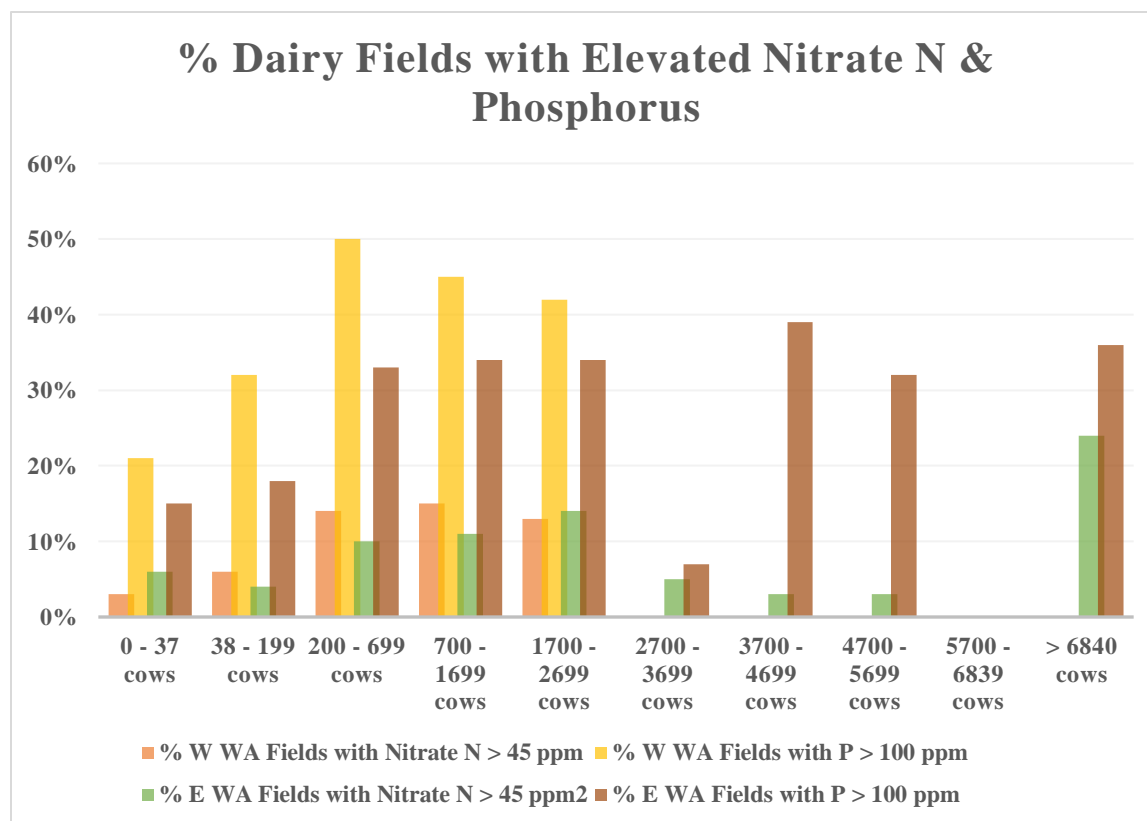
As a result of a public records request the Friends of Toppenish Creek have received and analyzed a thousand documents from inspections of WA dairies by the WA State Dept. of Agriculture's Dairy Nutrient Management Program (WSDA DNMP) from January 2020 to February 2023. Here is an overview of our findings regarding nutrients in dairy controlled cropland.

### Western Washington

Facility Size Categories	# of Facilities per Category	# Facilities with soil data	% Fields with Nitrate N > 45 ppm	% Fields with P > 100 ppm
0 to 37	20	13	3%	21%
38 to 199	66	57	6%	32%
200 to 699	68	58	14%	50%
700 to 1699	27	26	15%	45%
1700 to 2699	1	1	13%	42%
2700 to 3699	1	0		
Unknown	36	5	3%	46%
All Western WA	220	160 (72%)	11%	40%

### Eastern Washington

Facility Size Category	# Facilities per Category	# Facilities with soil data	% Fields with Nitrate N > 45 ppm	% Fields with P > 100 ppm
0 to 37	13	7	6%	15%
38 to 199	10	9	4%	18%
200 to 699	18	14	10%	33%
700 to 1699	29	24	11%	34%
1700 to 2699	15	12	14%	34%
2700 to 3699	8	4	5%	7%
3700 to 4699	3	3	3%	39%
4700 to 5699	4	3	3%	32%
5700 to 6839				
> 6840	4	2	24%	36%
All Eastern WA	114	78 (68%)	10%	29%



### High Risk Fields

The WSDA DNMP inspections classify fields with > 45 ppm Nitrate-N or > 100 ppm phosphorus as high risk fields and advise farmers to take adaptive actions to reduce those levels. If a field has Nitrate-N levels > 45 ppm for three out of five years, the DNMP typically issues a Notice of Correction. Although there are many fields with high Nitrate-N and phosphorus levels, we did not find any cases in which the DNMP reported the need for a National Pollution Discharge Elimination System (NPDES) general permit or a State Only permit.

### Methodology

The WSDA Dairy Nutrient Management Program inspects all licensed Washington dairies at least every 22 months, except for dairies located on Indian reservations. The inspection reports usually include the results of soil testing for each field controlled by each dairy. Some of the inspection reports did not contain this information. A few of the large dairies asked to have this information withheld from the reports. About 37 dairies closed between January 2020 and February 2023 and the inspections for these dairies did not contain soil sampling data. Some dairies, such as the largest dairy in Western Washington, did not have fields for applying manure as fertilizer and exported all their manure. Beef feedlots were not included in this analysis.

**Nitrate-N:** Dairies are supposed to sample every application field every year for Nitrate-N. For each dairy for every year since 2015 FOTC recorded the number of fields with > 45 ppm Nitrate-N and divided by the total number of sampled fields.

We put the data into a large table and then sorted it into smaller tables according to dairy size. The percentages in the tables above are the averages of percentages for all available fields for all dairies in each size category.

**Phosphorus:** Dairies are supposed to test soils for phosphorus every three years. FOTC sorted dairies by size. For each dairy we counted the number of fields with P > 100 ppm in the most recent sampling and divided by the total number of fields for that dairy to obtain a percentage. The percentages in the tables above are the averages of the percentages for each facility size category.

### **NPDES Permits**

Five of the 220 licensed dairies in Western Washington have NPDES permits. Nine of the 114 licensed dairies in Eastern Washington have NPDES permits. All five of the licensed beef feedlots in Eastern Washington have NPDES permits. Given 1. the large percentages of fields with high risk nitrates and phosphorus, plus 2. at least 42 complaints against WA dairies for manure spills and overapplication since January 2020, plus 3. the large number of dairies situated in flood plains, FOTC is surprised that more dairies are not required to obtain NPDES or State only permits.

### **Phosphorous**

Phosphorous is less soluble than nitrate and more likely to attach to soil. Phosphorous poses a danger to waters of the state primarily through runoff that leads to eutrophication of rivers and streams.

On page 54 of Ecology's 2016 *Fact Sheet for the Concentrated Animal Feeding Operation National Pollutant Discharge Elimination System and State Waste Discharge General Permit*, the agency states: "This permit cycle, nitrogen is the focus of the field nutrient budgets and MPPP as it is currently the primary nutrient of concern (e.g. high nitrates in groundwater in Yakima and Whatcom Counties). It is highly likely that if Ecology were to require phosphorus based nutrient budgets that many land application fields would no longer be available to use for manures due to the current phosphorus levels from many years of receiving manure."

Seven years later phosphorus soil levels remain high. It is likely that phosphorus levels will not decline without enforcement.

Thanks for reading.

*Friends of Toppenish Creek*

