

# 2015 WINERY WASTEWATER SURVEY

Conducted by *Winerywise™*

With help from the Washington Wine Industry Foundation

Following is a summary of data collected from 111 wineries who responded to the survey.

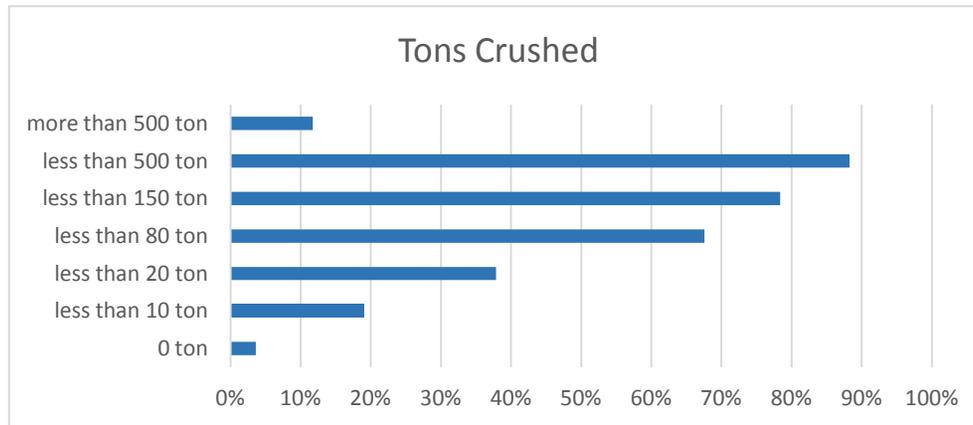
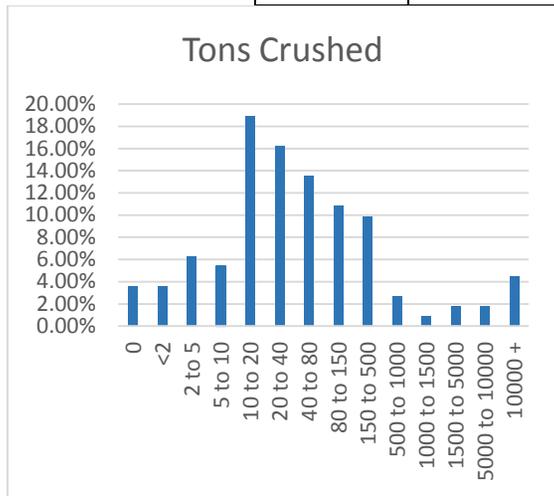
## PERCENT OF RESPONSES BY COUNTY (8.1% responded USA)

- 17.1% King
- 14.4% Benton
- 12.6% Chelan
- 9.9% Walla Walla
- 6.3% Yakima
- 5.4% Clark
- 3.6% Snohomish, Klickitat, Grant
- 2.7% Whatcom
- 1.8 % Kitsap, Spokane
- 0.9% Clallam, Douglas, Thurston, Skamania, Skagit, Mason, Okanogan, Franklin



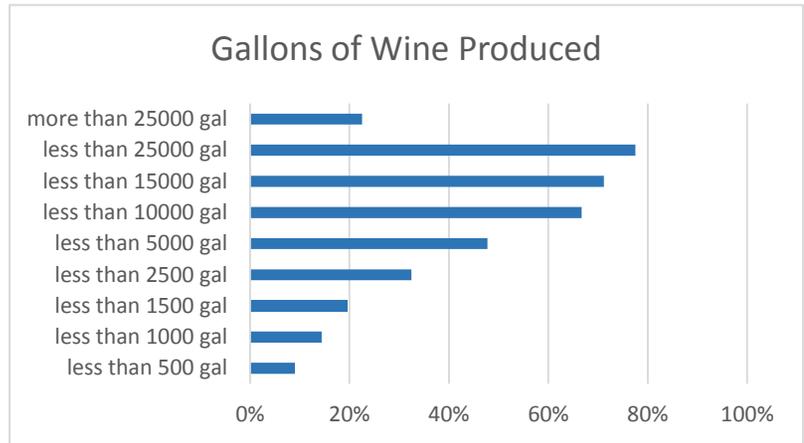
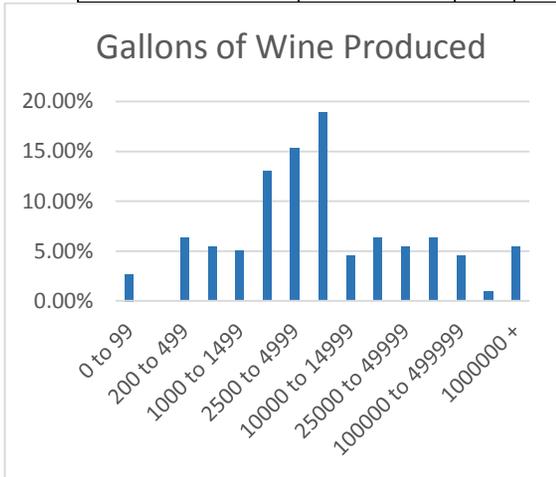
**TONS OF GRAPES CRUSHED**

Tons Crushed	Responses	Tons Crushed	Responses	Tons Crushed	Responses
0	3.60%	20 to 40	16.22%	1000 to 1500	0.90%
<2	3.60%	40 to 80	13.51%	1500 to 5000	1.80%
2 to 5	6.31%	80 to 150	10.81%	5000 to 10000	1.80%
5 to 10	5.41%	150 to 500	9.91%	10000 +	4.50%
10 to 20	18.92%	500 to 1000	2.70%		



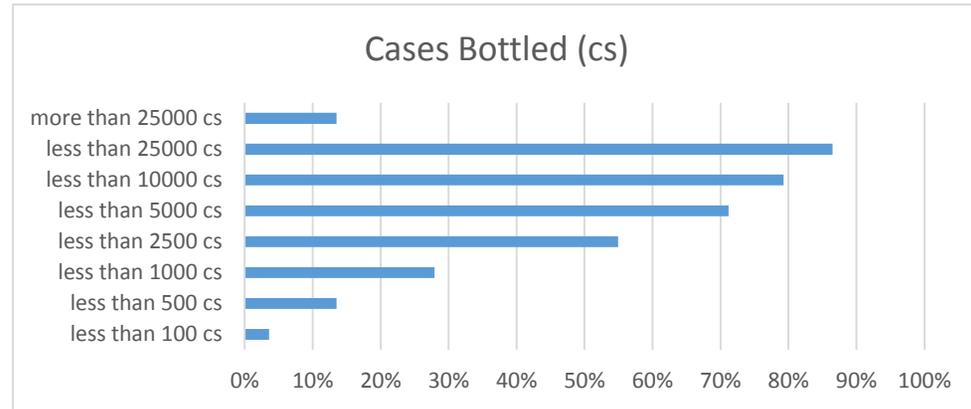
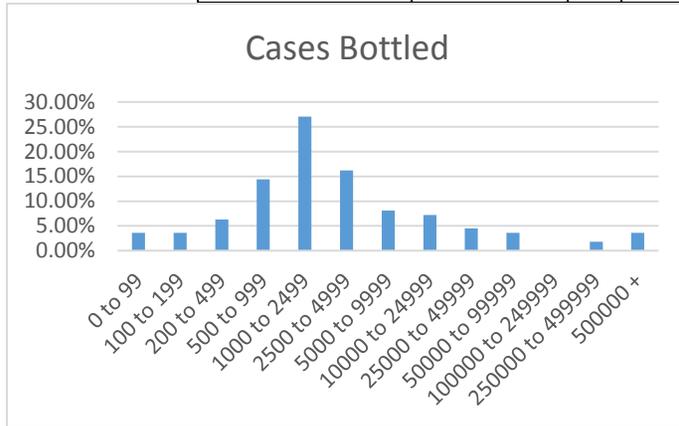
**GALLONS OF WINE PRODUCED**

<b>Gallons Produced</b>	<b>Responses</b>		<b>Gallons Produced</b>	<b>Responses</b>		<b>Gallons Produced</b>	<b>Responses</b>
0 to 99	2.70%		1500 to 2499	13.01%		25000 to 49999	5.41%
100 to 199	0.00%		2500 to 4999	15.32%		50000 to 99999	6.31%
200 to 499	6.31%		5000 to 9999	18.90%		100000 to 499999	4.50%
500 to 999	5.41%		10000 to 14999	4.50%		500000 to 999999	0.90%
1000 to 1499	5.01%		15000 to 24999	6.31%		1000000 +	5.41%



**CASES OF WINE BOTTLED (TYPICALLY 12 BOTTLES OF WINE PER CASE)**

Cases Bottled	Responses	Cases Bottled	Responses	Cases Bottled	Responses
0 to 99	3.60%	2,500 to 4,999	16.22%	100,000 to 249,999	0.00%
100 to 199	3.60%	5,000 to 9,999	8.11%	250,000 to 499,999	1.80%
200 to 499	6.31%	10,000 to 24,999	7.21%	500,000 +	3.60%
500 to 999	14.42%	25,000 to 49,999	4.50%		
1,000 to 2,499	27.03%	50,000 to 99,999	3.60%		



**WASTEWATER STREAMS**

Stream Design	Responses
Black, Gray, Process, together	25.00%
Gray & Process together, Black separate	25.96%
Black & Gray together, Process separate	26.92%
Black, Gray, Process, all separate	16.35%
Other	5.77%

**STORMWATER**

Storm water Stream	Responses
Storm water separate from other wastewater streams	57.69%
Storm water combined with other wastewater stream	36.54%
Ability to divert storm water from outdoor crush area when not crushing	22.12%

**Of those who meter their process wastewater discharge:**

**a) Maximum Daily Process Wastewater Discharge**

- 25.81%      Less than 100 gal per day
- 35.48%      Less than 200 gal per day
- 51.61%      Less than 500 gal per day
- 35.49%      More than 500 gal per day
- (12.90% replied unknown)

**b) Gallons Process Wastewater Discharged Annually**

- 31.25%      Less than 3,000 gal annually
- 45.31%      Less than 5,000 gal annually
- 50.00%      Less than 10,000 gal annually
- 56.25%      Less than 50,000 gal annually
- 18.75%      More than 50,000 gal annually
- (25.00% replied unknown)

**NUMBER OF DAYS OF CRUSH ACTIVITY ANNUALLY**

Days of Crush Annually	Responses
Less than 5 days	16.30%

Less than 10 days	38.04%
Less than 20 days	54.34%
Less than 30 days	57.61%
Less than 60 days	92.00%
More than 60 days	2.17%

**PRACTICES PERFORMED THAT GENERATE WASTEWATER**

<b>Responses</b>	<b>Practice</b>
94.57%	Tank Rinse/Sanitation
91.30%	Press Rinse/Sanitation
90.22%	Bin Rinse/Sanitation, Crusher De-stemmer Rinse/Sanitation
88.04%	Barrel Rinse/Sanitation, General Sanitation (floors, pads, etc.)
72.83%	Bottling Line Sterilization
71.74%	Hopper Rinse/Sanitation, Transfer Line Rinse/Sanitation
54.35%	Pad Filter Rinse/Sanitation
53.26%	Barrel Storage/Maintenance
44.57%	Chase product in transfer lines
31.52%	Conveyor Rinse/Sanitation
22.83%	Cross-Flow Filter Rinse/Sanitation
17.39%	Tanker Rinse/Sanitation
16.30%	Lees Filter Rinse/Sanitation
14.13%	Systems (boiler, cooling tower, heat exchange, misters etc.)
	& Lab (if does not go to Blackwater stream), Landscape
13.04%	DE Filter Rinse/Sanitation, Leaks
7.61%	Centrifuge Rinse/Sanitation
4.35%	Electro Dialysis Operation

**WASTEWATER COLLECTION AND DISPOSAL METHODS EMPLOYED**

<b>Responses</b>	<b>Methods</b>
41.30%	Gutter system that captures all process wastewater and drains to a common outlet
21.74%	Discharge to delegated POTW without pretreatment
6.52%	Discharge to delegated POTW with pretreatment
5.43%	Discharge to undelegated POTW without pretreatment
3.26%	Discharge to undelegated POTW with pretreatment
7.61%	Hold and Haul
1.09%	Digester
2.17%	Evaporative Lagoon with discharge to POTW
4.35%	Evaporative Lagoon double lined with leak detection
5.43%	Evaporative Lagoon single lined
8.7%	Evaporative Lagoon unlined
19.57%	Hold and Irrigation/Land application
2.17%	Hold and Dust abatement
19.57%	Engineered Septic/Drain Field (designed to handle winery wastewater)
16.30%	Septic/Drain Field (for residential; not specifically designed to handle winery wastewater)

### **WASTEWATER TREATMENT PERFORMED**

<b>Responses</b>	<b>Treatment</b>
41.30%	Settling Tank for Solids
30.43%	Screening
18.48%	No treatment
14.13%	pH adjustment
9.78%	Aeration in a Tank or Lagoon

### **PROPERTY FOOTPRINT ALLOWS SPACE FOR THESE OPTIONS**

<b>Responses</b>	<b>Options</b>
38.04%	Process wastewater collection tank
29.35%	Evaporation Lagoon
41.30%	Irrigation Land Application
21.74%	Tank Treatment and Subsurface Discharge
32.61%	None of These

### **WATER CONSERVATION, REUSE, RECYCLE PRACTICES EMPLOYED (COMMENTS DIRECTLY FROM COMPLETED SURVEYS)**

We reuse caustic. Just don't cycle tanks that often.

Most rinse water and sanitation water I create is dumped to an open grassy area to percolate naturally. Majority of musts/solids are composted.

Reduction in landscaping shrubbery. Spring closed nozzles on all hoses. Chasing product through select lines with "Pig". Higher temp boilers for sanitation to reduce water volume.

Tank to tank rinse to conserve H2O. Green waste disposed at green recycle.

Minimum water usage. Waste water goes to an underground tank and then pumped out.

Use high efficiency pressure washer for cleaning.

Heated water pressure washer significantly reduces water needed in each process. Hose, pump, stemmer crusher, and press sanitation water is recycled throughout the processes.

Not much used here-mostly tasting room use.

Many.

Pressure Washer, Low Flow Nozzles.

Good sense but no recycling or reuse.

Irrigation.

Not enough water. Chronically short of well water, will change in April 2015 with KID river water delivery.

Reverse osmosis for water used in ED machine.

High pressure/low flow barrel washer.

Pressure steam wash for rinse/sanitation. All process water is ultimately discharges to landscape. Rinse, cleaning & sterilization liquids are recirculated and reused as much as possible.

Use same chemical for multiple rinse and clean cycles. Low volume sprayers.

Utilize steamer in winery sanitation practices for less water consumption.

Steam, ozone, high pressure barrel blaster. Lees settling,

Storm water to landscaped swales.

High Pressure Barrel Washers, Steam Cleaning, Low volume water use is employed throughout.

Most process waste water is quite clean containing only modest organic material and is then used for landscaping application.

None.

We use chemical sanitation in lieu of hot water sanitization to cut water usage.

None.

All wastewater is discharged to vineyard via gravity flow and evaporates readily in our climate. No wastewater leaves the vineyard or enters any public waters or groundwater.

Limited flow nozzles.

Prudent use of wash water, wash water used for irrigation.

None.

Minimal water usage for rinsing tanks, crusher, and press; collection and composting of almost all solids including yeast sediment.

Urban facility, waste water enters Seattle Municipal Treatment plant.

Use of a pressure washer (requires a lot less water) instead of water directly from the hose.

None.

Reuse sanitation water for multiple tanks.

None.

Pressure, hot water rinse.

Irrigation land application.

None.

We are ending operations we used ox clean and 180 degree sanitizing citric acid rinse.

Use as little water as possible. Use low flow equipment for washing / sanitizing.

Use of steam to clean.

Irrigation.

We are thrifty with water.

Settled solids hauled to disposal site water reused in irrigation.

Have nozzles on all water hoses for shut-off. Other treatments not practical or financially feasible on the miniscule scale of my winemaking.

Waste from some cleaning is used for plants and grass.

Steam, ozone, pressure washer, general awareness.

High pressure, low volume water spray devices. Gray water use on property landscaping, recycle pumice in organic farm.

We are a LIVE/Salmon Safe certified winery. Most water usage is measured. Sanitation water is measured per procedures. Hose spray nozzles are used. Low volume power washers are used whenever possible. Employee training occurs often, with regards to conserving water (brush it up first, then spray it off).

Shutoff valves on all hoses. Closed CIP tank cleaning. Reuse barrel maintenance solutions. Use settled water for irrigation.

Waste water is used (through a designed perforated drain pipe system) to slowly irrigate

Too many to list.

DRY WELLS FOR STORMWATER COLLECTED ON ROOFS.

Water conservation.

Leftover drinking water reused for watering plants.

Don't leave hoses running when not in use.

Devices are scrubbed by hand and just rinsed with water. We reuse our water for sanitation when possible.

High pressure low flow washing systems.

We have a minimalist approach to winemaking. We move our wine less than other wineries, reducing the need to clean target and source equipment. We also do not rack barrels anymore which saves quite a bit of water. No reuse or recycling practices are employed but we are eager to hear about practices for these we could adopt.

We try and use as little water as possible.

We pump cleaning solution from tank to tank or press to press multiple times before dumping and refreshing the gallons. We encourage the use of other tools to clean floors when possible - squeegee or broom.

Reuse tanks for racks in the same day to minimize tank cleanings.

Irrigation with waste water.

Irrigation with captured rinse water. Also, hydration of composting grape and other residue.

Reuse sanitation, wash water across multiple tanks.

None.

We simply try to keep water use minimized.

I do not use barrels. My flex tanks use very small amounts of water - 5 gallons for a 300 gallon tank.

Minimal water use at a small winery.

Pressure washer and low flow hose nozzles. Training of staff.

None used.

None.

We scrub then wash.

Carefully limit water use. Use environmentally friendly cleaning products, no caustics, and small scale winery.

None.

Drip irrigation.

Steam for sanitization.

Low flow pressure washer. Flow meter to measure water usage.

We track water usage monthly. All process water from winery is used as irrigation water.

None. However, our soap and sanitizers are biodegradable. Our sanitizer is food grade.

Low water use barrel rinse.

Clean tanks minimally, use same water for several tanks.

Employee awareness, nozzles on hoses, reuse of wash water.

High pressure low volume, education, wash and rinse water reuse, brooms and squeegees.