

## Methane emission from decomposing pomace and lees

When wine pomace or dewatered lees are covered in a landfill or compost pile, it will decompose using anaerobic fermentation. This will emit methane gas over the decomposition period.

### Methane potential of 2 specimens of grape marc

A French study found that this process, when used to capture methane for sale, will generate approximately **~45 kg** per tonne of decomposing derivatives: avg( 85+81 (83)ml) / gram of marc =45.982 mg methane / g = 45.982 kg per tonne.<sup>1</sup>

Grape marc	Color	Vintage	Methane potential
			ml CH <sub>4</sub> /g of marc
	White	2011	85
	Red	2012	81

### Tinhorn Creek methane from pomace and lees study

In a study performed using winery derivatives from Tinhorn Creek, Oliver, BC in 2012,<sup>2</sup> a series of Bio Methane Potential (BMP) tests were performed. The average test revealed that lees and pomace at different combinations were statistically similar in yields, an average of 0.13 ± 0.02 L CH<sub>4</sub>/g.

Based on the above, if we assume 130 ml per kilogram of pomace/lees Dry Weight converted to grams at 138g per ltr<sup>3</sup>, we get 72 mg per kg, or 72 kg per tonne. The Dry Weight of the tested material ~75% of total weight, making it 72 kg \* 75% = **~54 kg** per tonne of pomace and lees.

### Converting Methane emissions to Green House Gas (GHG) Carbon Credits

Many jurisdictions, including BC, allow companies to buy to GHG Carbon Credits from other entities to meet their GHG emission targets. Any certified process that can eliminate the methane emission into the atmosphere could generate Carbon Credits. One Carbon Credit is one tonne of CO<sub>2</sub>.

The *Methane to CO<sub>2</sub>* conversion rate is 1:28<sup>4</sup>. Therefore 45 kg of methane x 28 ≈ 1,250 kg of CO<sub>2</sub>, or **1.25 Carbon Credits per tonne** of wasted winemaking derivatives; 54 kg ≈ 1.5 Carbon Credits.

<sup>1</sup> [Marcs de raisins, liesde vin et bourbes : Quelle gestion des sous-produits vinicoles?](#) V. Lempereur, S. Penavayre, Institut Francais de la Vigne et du Vin, *Cahier Itinéraires* n°25 (novembre 2013)

<sup>2</sup> [Renewable Energy Extraction From Organic Winery Wastes Through Anaerobic Treatment](#), José Ciro Garcia Batres, Royal Roads University, 2012

<sup>3</sup> Aqua-calc.com – Methane volume to weight conversion at 20C.

<sup>4</sup> <https://climatechangeconnection.org/emissions/co2-equivalents/> Methane's 100-year GWP is about 28x CO<sub>2</sub>