



## DuPont Pioneer Wingham Carbon Footprint Reduction and Compensation Strategy - 2018

### Introduction

As a component in a larger company wide initiative, now called G.E.T. (Global Environmental Tracking) which covers over 150 locations across the world. We are recording all of our environmental data in a database called “Reliance” on a monthly basis. This data is reviewed by senior management on the 7<sup>th</sup> of every month.

Wingham has been working to target key aspects of our operations that are carbon intensive with the goal of reducing the overall carbon footprint of the facility. The key areas under investigation for this preliminary carbon footprint calculation are electricity usage, transportation fuel usage (both gasoline and diesel), propane, and natural gas usage. Emissions factors have been taken from Environmental Canada, referenced below. For the purpose of this foot print calculation carbon emissions will be quantified in terms of CO<sub>2</sub> emissions.

<b>Electricity Usage</b>			
	Hydro Usage (kWh)	Emission Factor (kg CO <sub>2</sub> /kWh)	Total Emissions (kg CO <sub>2</sub> )
2016	368497	0.041	15108
<b>2017</b>	<b>335427</b>	<b>0.041</b>	<b>13752</b>

\*The emissions factor utilized is based on Ontario produced electricity taken from National Resources Canada.

<b>Propane Usage</b>			
	Propane Usage (L)	Emissions Factor (kg/L)	Total Emissions (kg CO <sub>2</sub> )
2016	1699	1.51	1953
<b>2017</b>	<b>2091</b>	<b>1.51</b>	<b>2404</b>

<b>Gasoline Usage</b>			
	Gasoline Usage (L)	Emissions Factor (kg/L)	Total Emissions (kg CO <sub>2</sub> )
2016	27650	2.44	67466
<b>2017</b>	<b>25638</b>	<b>2.44</b>	<b>62556</b>

<b>Diesel Usage</b>			
	Diesel Usage (L)	Emissions Factor (kg/L)	Total Emissions (kg CO <sub>2</sub> )
2016 Coloured	23700	2.663	63113
2017 Coloured	26215	2.663	69731
2016 Clear	3700	2.663	9853
2017 Clear	2621	2.663	6979

<b>Natural Gas Usage</b>			
	Natural Gas Usage (M <sup>3</sup> )	Emissions Factor (kg/M <sup>3</sup> )	Total Emissions (kg CO <sub>2</sub> )
2016	33447	1.879	62846
2017	25457	1.879	47604

**2016 Total Co2 – 220 tonnes of Co2**  
**2017 Total Co2 -203 Tonnes of Co2**

**2017 - Reduction of 17 Tonnes of Co2**  
**7.7% Reduction in Co2**

**Production increased 17%**

### **Carbon Footprint Reduction Strategy**

#### **Fuel Usage**

Through a continuation of a Focused Improvement Project (Lean Manufacturing), we have continued to target our summer activities to reduce our relative fuel usage in 2018.

This is accomplished through:

- New driving and vehicle usage policies and procedures implemented for all full time staff as well as summer students
- Use of mini vans where needed rather than multiple trucks
- Less vehicles rented in summer months
- Shorter duration of vehicles being rented in summer months
- A focused effort on carpooling to fields
- Planting and Harvest activities in the same geographical area at the same times (to avoid back tracking)

- Leasing and renting only industry leading fuel efficiency technology (2016, 2017 Eco Diesels, Eco Boost Trucks, etc.)
- Limit the number of Km's driven through planning.
- Use of tractor trailer to haul tractors, combines and equipment rather than "road" them.
- Have at minimum 3 new staff achieve their AZ truck licenses to be able to carry equipment.

### **Natural Gas Usage**

Through multiple Focused improvement projects we have lowered our average seed drying times in 2017(one of the largest uses of natural gas) . We will continue to lower this usage through:

- Agitating or mixing seed on the dryers to reduce drying times.
- Continue to implement new ideas to reduce overall times on the dryers.
- Harvest later in the day to lower seed moistures coming from the field, eliminating the need to dry.

### **Propane Usage**

Utilize our electric forklift when possible. A warehouse organization project is taking place to eliminate unneeded movements and optimize seed placement to reduce forklift travel and movements.

### **Electricity Usage**

Through our Key Performance Metric of **Overall Equipment Effectiveness (OEE)** we track the key factors of why equipment is not operating at 100% effectiveness. Increasing this metric % means that we can run the same amount of product in less time. This eliminates electrical usage through efficiency. In the last 5 years we have achieve a nearly 60% improvement through tracking and improvements. We will continue to make improvements to increase efficiency and lower our electricity usage.

### **Carbon Compensation Strategy**

In 2018 to offset our Co2 usage we will:

Plant 40 large stock Hardwood trees on site	- 13320 kg
Canola Fields planted Carbon Sequestered 2017	- 53235 kgs
Total Compensation	66555 - kgs

2017 Total Co2 - 203 tonnes

2018 Reduction Target - -20 tonnes

2018 Compensation Target - -66 tonnes

Co2 Footprint 2018 - 117 tonnes

## **References**

Environment Canada. (2013). Fuel Combustion: Emissions Factors. Retrieved November 2, 2015 from <https://ec.gc.ca/ges-ghg/default.asp?lang=En&n=AC2B7641-1>.

Freedman, B., and Keith, T. (1995). *Planting Trees for Carbon Credits*. Tree Canada Foundation: Ottawa. pp 42.

National Resources Canada. (2013). CO<sub>2</sub> Emissions Factors. Retrieved November 2, 2015 from <http://www.nrcan.gc.ca/energy/efficiency/industry/technical-info/benchmarking/canadian-steel-industry/5193>.

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