

# 2020 Agro-Expo Demonstration Plot

## Biosolids vs. Commercial Fertilizers



<p><b>Crop:</b> Corn  <b>Variety:</b> Pioneer P9998  <b>Planting Date:</b> May 3, 2020  <b>Planting Population:</b> 34,000  <b>Yield Goal:</b> 200 bu/acre  <b>Harvest Date:</b> November 4, 2020</p>			
<b>Fertilizer Side</b>		<b>Biosolids Side</b>	
<b>Soil Test Results</b>		<b>Soil Test Results</b>	
<b>NW Plot</b>	<b>SW Plot</b>	<b>NE Plot</b>	<b>SE Plot</b>
Bray P1: 12 ppm Potassium: 57 ppm Calcium: 700 ppm Magnesium: 120 ppm Zinc: 2.5ppm Manganese: 62 ppm pH: 7.1 CEC: 4.6 meq/100g	Bray P1:11 ppm Potassium: 65 ppm Calcium: 900 ppm Magnesium: 135 ppm Zinc: 3.0 ppm Manganese: 66 ppm pH: 7.5 CEC: 5.8 meq/100g	Bray P1: 11 ppm Potassium: 64 ppm Calcium: 800 ppm Magnesium: 130 ppm Zinc: 2.5 ppm Manganese: 59 ppm pH: 7.1 CEC: 5.2 meq/100g	Bray P1: 10 ppm Potassium: 60 ppm Calcium: 900 ppm Magnesium: 125 ppm Zinc: 2.5 ppm Manganese: 59 ppm pH: 7.4 CEC: 5.7 meq/100g
<p style="text-align: center;"><b>Fertilizer</b></p> <p>May 3, 2020: Fertilizer Applied            46-0-0: 358 #/Acre            18-46-0: 195 #/Acre            0-0-62: 484 #/Acre            90%S: 71 #/Acre            20%Zn/14%S: 21.5 #/Acre            PAN<sup>2</sup> applied: 200 #/acre  <b>Fertilizer Cost: \$230.00/Acre</b></p>		<p style="text-align: center;"><b>Biosolids<sup>1</sup></b></p> <p>April 24, 2020: Biosolids Applied            5,800 gallons/Acre            PAN<sup>2</sup>: 197 #/Acre            Phosphorus (P<sub>2</sub>O<sub>5</sub>): 220 #/Acre            Potassium (K<sub>2</sub>O): 300 #/Acre            Sulphur (S): 67 #/Acre            Zinc (Zn) 4.35 #/Acre  <b>Biosolids Cost: \$58.00/Acre</b></p>	
<b>Yields (Bushels/Acre)</b>			
<b>NW Plot</b>	<b>SW Plot<sup>3</sup></b>	<b>NE Plot</b>	<b>SE Plot<sup>3</sup></b>
<b>4</b>	<b>240</b>	<b>236</b>	<b>207</b>
<b>Harvest Populations (Plants/Acre)</b>			
<b>4</b>	<b>31,000</b>	<b>35,000</b>	<b>32,000</b>
<p><sup>1</sup> Source: LysteGro, LYTEK® Facility, Fairfield, California  <sup>2</sup> PAN = Plant Available Nitrogen  <sup>3</sup> Cover Crops planted June 15, 2020: Clover, Tillage Radish, and Rye.  <sup>4</sup> No Yield or plant data due to crop chemical damage.</p>			

# Agro Expo Biosolids Site – 2020

## Soil Test Information

Date	pH	Bray P1	K	Ca	Mg	S	Fe	Cu	Mn	B	Zn	CEC	O.M.
		----- ppm -----										Meq/100g	%
<b>North East Plot (Biosolids)</b>													
4/6/20	7.1	11	64	800	130	2	25	.7	59	.3	2.5	5.2	1.7
<b>South East Plot (Biosolids)</b>													
4/6/20	7.4	10	60	900	125	2	26	.6	59	.3	2.5	5.7	1.5
<b>North West Plot (Fertilizer)</b>													
4/6/20	7.1	12	57	700	120	4	26	.7	62	.3	2.5	4.6	1.6
<b>South West Plot (Fertilizer)</b>													
4/6/20	7.5	11	65	900	135	2	28	.7	66	.5	3.0	5.8	1.8

## 2020 Crop – Corn (var. Pioneer P9998)

Plots were chisel plowed in the fall of 2019. Biosolids were applied on April 24, 2020 and were supplied by Lystek® from the Fairfield, California Facility. The corn was planted on May 3, 2020. Fertilizer was applied on May 3, 2020. A Pre-emergence application of Dual II Magnum® at 1.33 pt/ac was applied over all plots, and a Post-emergence application of Roundup Ready WeatherMax® at 1 qt/ac was applied over all plots. A seed mixture of clover, rye, and tillage radish was spread on both south plots for a cover crop. Both of the plots were irrigated in 2020 on the following schedule:

June 23: 1"; June 30: 1"; July 7: 0.5"; July 16: 0.5"; July 27: 1"; August 8: 1"; August 17: 1"; and August 24: 1".

## Biosolids and Fertilizers Applied

Based on the 2020 soil test results, recommended P<sub>2</sub>O<sub>5</sub> (phosphate) levels were about 120 pounds/acre for all plots and K<sub>2</sub>O (potash) levels were 220 pounds K<sub>2</sub>O/acre for all plots. Lystek® biosolids were applied at a rate of 5,800 gallons per acre on April 24, 2020. At this rate 200 pounds PAN, 220 pounds P<sub>2</sub>O<sub>5</sub>, 300 pounds K<sub>2</sub>O, 67 pounds Sulphur, and 4.35 pounds Zinc per acre were applied to the east plots. 195 pounds of 18-46-0, 358 pounds 46-0-0, 484 pounds 0-0-62, 71 pounds 90%S, and 21.5 pounds 20%Zn/14%S per acre were applied to the west plots on May 3, 2020. These fertilizer applications equated to 200 pounds PAN, 90 pounds P<sub>2</sub>O<sub>5</sub>, 300 pounds K<sub>2</sub>O, 67 pounds Sulphur, and 4.3 pounds Zinc per acre.

The Lystek® process is new to Michigan. This process creates Exceptional Quality biosolids product with additional nutrients added such as Potassium to create a balanced product. The anticipated cost of this product is \$10.00 per 1,000 gallons that includes application.

