

2022 Agro-Expo Demonstration Plot

Biosolids vs. Commercial Fertilizer



Crop: Corn Variety: Pioneer P0075 Planting Date: May 9, 2022 Planting Population: 33,000 Yield Goal: 200 bu/acre Harvest Date: October 24, 2022			
Fertilizer Side		Biosolids Side	
Soil Test Results		Soil Test Results	
NW Plot	SW Plot	NE Plot	SE Plot
Bray P1: 13 ppm Potassium: 75 ppm Calcium: 750 ppm Magnesium: 135 ppm Zinc: 3.0 ppm Manganese: 57 ppm pH: 7.0 CEC: 5.1 meq/100g	Bray P1: 18 ppm Potassium: 90 ppm Calcium: 900 ppm Magnesium: 165 ppm Zinc: 8.2 ppm Manganese: 61 ppm pH: 7.4 CEC: 6.1 meq/100g	Bray P1: 15 ppm Potassium: 80 ppm Calcium: 750 ppm Magnesium: 135 ppm Zinc: 3.0 ppm Manganese: 55 ppm pH: 7.2 CEC: 5.1 meq/100g	Bray P1: 31 ppm Potassium: 102 ppm Calcium: 800 ppm Magnesium: 145 ppm Zinc: 4.1 ppm Manganese: 56 ppm pH: 7.4 CEC: 5.5 meq/100g
Fertilizer		Biosolids¹	
May 2, 2022: Fertilizer Applied 46-0-0: 389 #/Acre 11-52-0: 192 #/Acre 0-0-60: 333 #/Acre 36% Zn: 6.9 #/Acre <u>PAN² applied: 200 #/acre</u>		April 28, 2022: Biosolids Applied 5,000 Gallons/Acre <u>PAN²: 250 #/Acre</u> Phosphorus (P ₂ O ₅): 80 #/Acre Potassium (K ₂ O): 300 #/Acre Zinc (Zn) 2.1 #/Acre	
Yields (Bushels/Acre)			
West Plot		East Plot	
216		235	
¹ Source: Lystek, SHVUA WWTP, Brownstown Township, Michigan ² PAN = Plant Available Nitrogen			

Agro Expo Biosolids Site – 2022

Soil Test Information

Date	pH	Bray P1	K	Ca	Mg	S	Fe	Cu	Mn	B	Zn	CEC	O.M.
		----- ppm -----										Meq/100g	%
North East Plot (Biosolids)													
4/6/20	7.1	11	64	800	130	2	25	0.7	59	0.3	2.5	5.2	1.7
3/23/21	7.2	15	80	750	135	8	29	1.0	55	0.5	3.0	5.1	1.3
South East Plot (Biosolids)													
4/6/20	7.4	10	60	900	125	2	26	0.6	59	0.3	2.5	5.7	1.5
3/23/21	7.4	31	102	800	145	7	34	1.1	56	0.6	4.1	5.5	1.6
North West Plot (Fertilizer)													
4/6/20	7.1	12	57	700	120	4	26	0.7	62	0.3	2.5	4.6	1.6
3/23/21	7.0	13	75	750	135	8	30	0.9	57	0.6	3.0	5.1	1.2
South West Plot (Fertilizer)													
4/6/20	7.5	11	65	900	135	2	28	0.7	66	0.5	3.0	5.8	1.8
3/23/21	7.4	18	90	900	165	7	30	0.9	61	0.9	8.2	6.1	1.5

2022 Crop – Corn (var. Pioneer P0075)

All Plots were chisel plowed in the fall of 2021. Biosolids were applied on April 28, 2022 and were supplied by Lystek from SHVUA WWTP. The corn was planted on May 9, 2022. Fertilizer was applied on May 2, 2022. A Pre-emergence application of Dual II Magnum® at 1 pt/ac was applied over all plots On May 10, 2022, and a Post-emergence application of Roundup Ready PowerMax® at 1 qt/ac was applied over all plots on June 22, 2022. All of the plots were irrigated in 2022 on the following schedule:

June 21: 0.7"; June 24: 0.7"; July 2: 1"; July 14: 1"; July 20: 0.8"; July 28: 1".

Biosolids and Fertilizers Applied

Based on the 2021 soil test results, recommended P₂O₅ (phosphate) levels were about 100 pounds/acre for all plots and K₂O (potash) levels were 200 pounds K₂O/acre for all plots. Lystek biosolids were applied at a rate of 5,000 gallons per acre on April 28, 2022. At this rate 250 pounds PAN, 175 pounds P₂O₅, 300 pounds K₂O, and 3.85 pounds Zinc per acre were applied to the east plots. 192 pounds of 11-52-0, 389 pounds 46-0-0, 333 pounds 0-0-60, and 6.9 pounds 36%Zn per acre were applied to the west plots on May 2, 2022. These fertilizer applications equated to 200 pounds PAN, 100 pounds P₂O₅, 200 pounds K₂O, and 2.5 pounds Zinc per acre. Even though there appears to be more PAN applied on the East Plot (Biosolids) which may have contributed to the increase in yield, the cost of applying biosolids is significantly less than commercial fertilizers.



Michigan Biosolids Team

