

Session 6

Organic Matter Options

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Overview

Organic matter is an important part of maintaining a healthy, productive soil. It :

- feeds the micro organism populations, improving soil live diversity
- improves soil aggregation
- increases nutrient cycling and the ability to hold some nutrients
- improves water holding capacity
- reduces the risk for compaction
- increases soil resilience against wind and water erosion

With increasing demands on harvesting carbon for bio-energy, while at the same time sustaining soil productivity, what are the options for maintaining or even building organic matter levels in the soil?

This presentation will focus on how additions of carbon – ranging from crop residue to cover crops to manure, compost and other non-agricultural sourced materials will benefit the soil.

There are many sources of organic carbon that will help build soil organic matter. In addition to manure and cover crops, there are other sources of organic amendments available to cash crop farms. Some of these sources include biosolids pellets, municipal green-bin compost, N-Viro, digestate from anaerobic digestion systems as well as sewage biosolids, and pulp and paper biosolids. Each of these amendments will provide benefit to the soil, but each product has a slightly different composition. Which organic matter source or amendment has the best fit for your operation?



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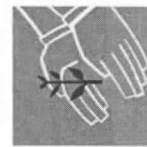


		Solid Dairy Manure	Biosolids Pellets (Windsor)	Biosolids Pellets (Toronto)	N-Viro (Sarnia)	Municipal Greenbin Compost AIM - Hamilton	Red Clover plowdown ³	Worm Castings	Digestate Solids (Niagara)
Dry Matter	%	35.9	94.8	95.1	77.0	47.8	26	44.8	37.5
pH			6.3	6.8	12.6	4.9	---	5.3	8.3
Bulk Density	lbs/ft ³	--	36.7	49.6	52.2	21.1	---	--	--
C:N Ratio		~50:1	9:1	7:1	21:1	14:1	13:1	18:1	19:1
lbs per ton									
Total N		4.6	87	92	11.4	31	12	21.4	17.8
NH ₄ -N		1.8	3.6	1.3	0.5	4.5	---	5 (NO ₃ -N)	3.3
Available N ¹		2	45	47	4	10	12	8	7
P ₂ O ₅		2.2	72 ²	91	15	11	3	2	13
K ₂ O		4	4	3	79	10	12	1	13
Calcium	Ca	44	32	68	322	33	7	34	20
Aluminium	Al	1	89 ²	29	28	1.2	---	2.4	0.6
Iron	Fe	3	21	80	15	2.7	---	6.4	2.1
Sulphur	S	1	17	21	59	2.5	---	6.1	3.4
Magnesium	Mg	6	8	12	14	4	3	3	4
Manganese	Mn	0.1	1.1	0.7	0.4	0.2	---	0.2	0.1
Copper	Cu	0.2	0.6	2.0	0.2	0.1	---	0.05	0.03
Zinc	Zn	0.1	1.0	1.9	0.4	0.1	---	0.03	0.11
Total Salts		---	6	5	32	8	---	2	1.4
Organic Matter		562	1320	1152	432	753	~480	708	592

¹ Available N is an estimate of available N in the year of application (fall or spring applied) – availability will vary with season of application, soil temperature and moisture conditions and C:N ratio.

² P205 availability could be reduced with high Aluminium levels when combined with low pH

³ taken from nutrient composition of common forages and converted to wet as-is basis



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