

LinGro Biosolids Cake

A Product of

The Lincoln Wastewater System

LinGro Biosolids Cake is a semisolid product resulting from the treatment of wastewater solids in anaerobic digesters at the Theresa Street Wastewater Facility. It is ideal for application as a fertilizer to cropland, especially excavated soils from terracing, because of its humus content and macro and micronutrients.

Environmentally sound application of LinGro Biosolids Cake to agricultural land includes usage restrictions, regulatory permitting and monitoring procedures.

Cooperating farmers using LinGro Biosolids Cake are responsible for applying it at agronomic rates provided to them, based on N needs of the next crop. Soil will be analyzed to determine residual N levels in the soil prior to application of the biosolids.

The City of Lincoln Wastewater System and Cooperative Extension-Lancaster County coordinate this land application program. Every effort is made to exceed the regulatory requirements for processing, testing, transporting and land applying biosolids for beneficial use.

For more information please feel free to contact the following people:

402-441-7180 Cooperative Extension-Lancaster County

(Barb Ogg, Dave Smith)

402-441-7043 Theresa Street Wastewater Facility

Recycling Coordinator (Gene Hanlon)



Theresa Street — LinGro Biosolids Cake Data Averages for 2008 ⁽¹⁾

Parameters	Results	Units	EPA Limits mg/Kg	Lbs per Dry Ton	lbs per cu. yd. (Wet) ⁽³⁾
pH	8.14				
Total Kjeldahl Nitrogen	5.24	% DW ⁽²⁾		104.8	14.296
Organic Nitrogen	4.30	%DW		86.0	11.723
Ammonia	0.94	%DW		18.8	2.560
Nitrate	0.0002	%DW		0.004	0.001
Total Solids	16.18	%		323.6	272.6
Total Phosphorus	0.51	%DW		10.2	1.394
Potassium	0.056	%DW		1.12	0.153
Aluminum	9,799	mg/Kg		19,599	2,299
Arsenic	18.25	mg/Kg	41	0.036	0.004
Cadmium	4.06	mg/Kg	39	0.008	0.001
Chromium	33.82	mg/Kg	1,200	0.068	0.008
Copper	607.85	mg/Kg	1,500	1.216	0.143
Iron	40,983	mg/Kg		81,966	9,615
Lead	38.83	mg/Kg	300	0.078	0.009
Mercury	0.01	mg/Kg	17	0.000	0.000
Molybdeum	13.10	mg/Kg		0.026	0.003
Nickel	40.05	mg/Kg	420	0.080	0.009
Selenium	0.06	mg/Kg	36	0.000	0.000
Zinc	636.91	mg/Kg	2,800	1.274	0.149

(1) Analyzed once per week

(2) DW = Dry Weight

(3) Biosolids Density = 1,450 lbs./cu. yd.

Biosolids Spreader Equipment



Background Metals of 20 Lancaster County Fields and Four Fields after Three Applications of Biosolids

Regulated Metal*	Metals for 20 Lancaster County fields before biosolids (ppm dry weight)		After three biosolids applications (ppm dry weight)				Average percent of site life remaining for Fields 1-4 (EPA 503 Regulations)
	Range	Avg	Field #1	Field #2	Field #3	Field #4	
Arsenic	n.d. - 11.2	**	n.d.	n.d.	n.d.	n.d.	98.7
Cadmium	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	97.9
Chromium	10.3 - 20.7	17.4	20.4	22.0	19.8	19.6	Not established
Copper	7.3 - 20.5	16.0	28.9	30.9	28.6	23.8	97.9
Lead	7.3 - 20.4	15.8	19.1	20.1	17.4	18.5	98.1
Mercury	n.d.	n.d.	0.09	0.12	0.09	0.07	99.9
Molybdenum	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	Not established
Nickel	9.3 - 27.8	18.4	32.2	27.7	23.6	30.8	99.0
Selenium	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	99.9
Zinc	24.5 - 65.9	53.4	75.2	75.8	68.8	70.6	98.7

n.d. - non-detectable levels of metal in sample

*Of these 10 regulated metals, three are micronutrients, which means small amounts are necessary for plant growth and deficiencies can occur if they are not found in sufficient levels. Plant micronutrients include copper, molybdenum and zinc.

** One sample (1 out of 20) of non-biosolids fields showed detectable levels of arsenic (11.2 ppm), which could have been from a previous application of an arsenic-based pesticide. These pesticides are now banned. Arsenic in the other 19 fields was at non-detectable levels.

Field 1 - 240905 SE 1; Field 2 - 041107 SE 2; Field 3 - 041107 SE 4; Field 4 - 061207 NC 4

