

# Available Nutrients and Value for Manure From Various Livestock Types

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## Factsheet

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(replaces OMAF Factsheet of the same name, Order No. 08-041)

The nutrients from manure have a nutrient and economic value. The tables that follow give an indication of the available nitrogen, phosphorus and potassium from various types of livestock manure. The information is based on the most current databank of nutrients and makes a few assumptions. All information in the tables is presented in an “as-is basis” — in other words, the nutrients as applied at the listed dry matter content.

The useable nitrogen is the amount of nitrogen available in the year of application, assuming the manure is spring applied and incorporated within 24 hr. A simplified, quick-estimate method for calculating nitrogen available for fall applications would be:

- **Metric:** Multiply half the percentage of total nitrogen by 10 to calculate kg/1,000 L (same as kg/m<sup>3</sup>) or kg/tonne. The actual value will vary (especially for liquid manure) with late summer application (lower availability) versus late fall application (higher availability).
- **Imperial:** Multiply half the percentage of total nitrogen by 100 for liquid manure or 20 for solid manure. The actual value will vary (especially for liquid manure) with late summer application (lower availability) versus late fall application (higher availability).

The amount of phosphorus and potash does not vary with season of application. In the year of application, 40% of the phosphorus in manure is available; another 40% is available in subsequent years.

The actual immediate nutrient value for crop production will be less than what is reflected in the tables if the nutrients being applied are not required for the production of the crop — for example, the nitrogen from manure applied to a legume crop, or the phosphorus and/or potassium applied to a field with a soil test higher than 60 mg/L (ppm) or 250 mg/L (ppm) for P and K, respectively.

Some nitrogen is available in subsequent years; the amount is higher for solid manure than for liquid manure. The value of that nitrogen for the 3 years is reflected in the column “Year 2–4 value,” which also reflects the remaining half of the total available phosphorus value.

The values in these tables were compiled by OMAF with aggregate sample data provided by A&L Labs, SRG (Agri-Food Labs), Stratford Agri-Analysis and the University of Guelph Analytical Lab. They summarize the information found in the current NMAN software.

**Table 1a.** Liquid Manure — Available Nutrients and Value for Manure from Common Livestock Types — Metric

Type of Manure	DM Range	Available Nutrients (in year of application)				Value		Total Nutrient Content (as-is basis)					# Samples
		Aver DM	Usable N <sup>1</sup>	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Year 1 value <sup>2</sup>	Year 2–4 value	Total N	NH <sub>4</sub> -N	P	K		
		%	kg/m <sup>3</sup>		\$ / m <sup>3</sup>		%	ppm	%	%	%		
<b>Hog</b>	average	3.6	2.2	1.1	2.1	6.30	1.80	0.39	2,645	0.26	0.12	0.19	2,202
	10%–18%	12.1	4.2	3.0	3.6	12.90	4.80	0.80	4,631	0.46	0.33	0.33	73
	6%–10%	7.6	3.6	2.1	3.1	10.50	3.40	0.65	4,116	0.41	0.23	0.29	295
	4%–6%	4.9	3.0	1.5	2.6	8.30	2.40	0.53	3,444	0.34	0.16	0.24	357
	2%–4%	2.9	2.1	1.0	1.8	5.90	1.60	0.37	2,535	0.25	0.11	0.17	697
	0%–2%	1.2	1.3	0.4	1.3	3.50	0.60	0.22	1,634	0.16	0.04	0.12	780
	finisher	4.9	3.0	1.4	2.9	8.60	2.20	0.52	3,603	0.36	0.15	0.27	458
	weaners	2.3	1.6	0.8	1.6	4.70	1.30	0.28	1,850	0.19	0.09	0.15	77
	sow (SEW)	1.7	1.5	0.6	1.2	3.80	0.90	0.24	1,763	0.17	0.06	0.11	327
	dry sows	1.9	1.8	0.9	1.2	4.70	1.30	0.27	2,313	0.23	0.10	0.11	26
	farrow to finish	3.8	2.5	0.9	2.3	6.60	1.50	0.43	2,946	0.29	0.10	0.21	119
	sow to weaner	2.2	1.5	0.7	1.3	4.20	1.20	0.28	1,763	0.18	0.08	0.12	58
<b>Dairy</b>	average	8.6	1.7	0.8	2.7	5.80	1.60	0.39	1,601	0.16	0.09	0.25	2,449
	10%–18%	14.1	2.0	1.3	3.4	7.60	2.50	0.53	1,776	0.18	0.14	0.31	724
	8%–10%	8.9	1.9	0.8	2.9	6.40	1.60	0.42	1,935	0.19	0.09	0.27	478
	6%–8%	7.1	1.7	0.6	2.6	5.50	1.30	0.36	1,691	0.17	0.07	0.24	598
	2%–6%	4.4	1.2	0.4	2.1	4.00	0.80	0.25	1,197	0.12	0.04	0.19	532
	0%–2%	1.1	0.6	0.2	1.2	2.10	0.40	0.12	576	0.06	0.02	0.11	128
<b>Beef</b>	average	8.6	1.6	0.7	2.5	5.40	1.50	0.37	1,543	0.15	0.08	0.23	154
	10%–18%	14.4	2.0	1.2	3.6	7.60	2.40	0.51	1,772	0.18	0.13	0.33	60
	6%–10%	7.9	2.0	0.8	2.4	6.00	1.60	0.43	2,067	0.21	0.09	0.22	38
	2%–6%	3.9	1.1	0.5	1.6	3.60	0.90	0.24	1,174	0.12	0.05	0.15	38
	0%–2%	1.1	0.4	0.2	1.0	1.70	0.30	0.08	451	0.05	0.02	0.09	18
<b>Poultry</b>	average	10.0	4.9	2.6	3.2	13.00	4.00	0.81	5,567	0.56	0.28	0.30	172
	10%–18%	13.7	5.8	3.5	3.7	15.70	5.50	0.97	6,350	0.64	0.38	0.34	87
	6%–10%	8.3	4.9	2.5	3.1	12.70	3.90	0.80	5,608	0.56	0.27	0.29	46
	2%–6%	4.1	3.4	1.0	2.4	8.00	1.60	0.53	4,026	0.40	0.11	0.22	37
	pullets	15.3	5.9	3.7	3.7	16.10	5.90	1.04	6,187	0.62	0.40	0.34	11
	layers	9.9	4.9	2.5	3.1	12.70	3.90	0.81	5,587	0.56	0.27	0.29	81
<b>Mink</b>	average	3.6	2.5	1.0	1.0	5.50	1.70	0.45	2,605	0.26	0.10	0.09	22
<b>Runoff</b>	average	0.7	0.3	0.1	1.0	1.40	0.20	0.05	310	0.03	0.01	0.09	49
<b>Milk-fed veal</b>	average	1.5	0.5	0.2	1.9	2.70	0.30	0.08	553	0.06	0.02	0.18	3
<b>Biosolids</b>	aerobic	2.0	0.4	0.6	0	1.30	1.00	0.12	109	0.01	0.06	0	10
	anaerobic	4.4	1.2	1.3	0	3.30	2.20	0.28	776	0.08	0.14	0	39

<sup>1</sup> Useable N = amount of nitrogen available in the year of application assuming spring application incorporated within 24 hr. A simplified useable N for fall-applied manure = [(% total N x 0.5) x 100] for liquid manure.

<sup>2</sup> Value of manure is based on purchase price of an equivalent amount of mineral fertilizer (Oct 2013).

(N – P<sub>2</sub>O<sub>5</sub> – K<sub>2</sub>O = 1.30 – 1.35 – 0.95 \$/kg). The actual immediate value for crop production will be less if all the nutrients applied are not required for growing the crop.

The micronutrient and organic matter values are not reflected in these tables.

**Table 1b.** Liquid Manure — Available Nutrients and Value for Manure from Common Livestock Types — Imperial

Type of Manure	DM Range	Available Nutrients (in year of application)				Value		Total Nutrient Content (as-is basis)					# Samples
		Aver. DM	Usable N <sup>1</sup>	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Year 1 value <sup>2</sup>	Year 2-4 value	Total N	NH <sub>4</sub> -N	P	K		
		%	lb/1,000 gal			\$/1,000 gal		%	ppm	%	%	%	
<b>Hog</b>	average	3.6	22.4	10.7	20.6	28.80	7.80	0.39	2,645	0.26	0.12	0.19	2,202
	10%–18%	12.1	41.5	30.7	35.2	58.80	22.20	0.80	4,631	0.46	0.33	0.33	73
	6%–10%	7.6	35.7	21.1	31.5	47.80	15.30	0.65	4,116	0.41	0.23	0.29	295
	4%–6%	4.9	29.5	15.1	26.2	38.20	11.10	0.53	3,444	0.34	0.16	0.24	357
	2%–4%	2.9	21.4	9.9	18.8	27.00	7.20	0.37	2,535	0.25	0.11	0.17	697
	0%–2%	1.2	13.4	3.5	12.4	15.50	2.70	0.22	1,634	0.16	0.04	0.12	780
	finisher	4.9	30.2	13.8	29.2	39.10	10.00	0.52	3,603	0.36	0.15	0.27	458
	weaners	2.3	15.8	8.3	16.2	21.50	6.00	0.28	1,850	0.19	0.09	0.15	77
	sow (SEW)	1.7	14.5	5.5	11.9	17.20	4.00	0.24	1,763	0.17	0.06	0.11	327
	dry sows	1.9	18.1	9.2	11.9	21.60	6.00	0.27	2,313	0.23	0.10	0.11	26
	farrow to finish	3.8	24.8	9.2	22.7	30.30	7.00	0.43	2,946	0.29	0.10	0.21	119
	sow to weaner	2.2	15.3	7.4	13.0	19.30	5.60	0.28	1,763	0.18	0.08	0.12	58
<b>Dairy</b>	average	8.6	16.6	8.3	27.1	26.70	7.40	0.39	1,601	0.16	0.09	0.25	2,449
	10%–18%	14.1	20.4	12.9	33.6	34.60	11.50	0.53	1,776	0.18	0.14	0.31	724
	8%–10%	8.9	19.1	8.3	29.0	29.00	7.40	0.42	1,935	0.19	0.09	0.27	478
	6%–8%	7.1	16.5	6.4	26.0	25.00	5.90	0.36	1,691	0.17	0.07	0.24	598
	2%–6%	4.4	11.6	3.7	20.6	18.10	3.60	0.25	1,197	0.12	0.04	0.19	532
	0%–2%	1.1	5.6	1.8	11.9	9.60	1.70	0.12	576	0.06	0.02	0.11	128
	average	8.6	15.9	7.4	24.8	24.70	6.70	0.37	1,543	0.15	0.08	0.23	154
<b>Beef</b>	10%–18%	14.4	20.0	11.9	35.7	34.60	10.70	0.51	1,772	0.18	0.13	0.33	60
	6%–10%	7.9	20.0	8.3	23.8	27.30	7.30	0.43	2,067	0.21	0.09	0.22	38
	2%–6%	3.9	11.3	4.6	16.2	16.60	4.10	0.24	1,174	0.12	0.05	0.15	38
	0%–2%	1.1	4.1	1.8	9.7	7.70	1.50	0.08	451	0.05	0.02	0.09	18
	average	10.0	49.4	25.8	32.4	59.30	18.30	0.81	5,567	0.56	0.28	0.30	172
<b>Poultry</b>	10%–18%	13.7	57.7	35.0	36.7	71.80	24.80	0.97	6,350	0.64	0.38	0.34	87
	6%–10%	8.3	49.2	24.8	31.3	58.10	17.60	0.80	5,608	0.56	0.27	0.29	46
	2%–6%	4.1	34.0	10.1	23.8	36.80	7.50	0.53	4,026	0.40	0.11	0.22	37
	pullets	15.3	59.0	36.8	36.7	73.60	26.70	1.04	6,187	0.62	0.40	0.34	11
	layers	9.9	49.4	24.8	31.3	58.20	17.70	0.81	5,587	0.56	0.27	0.29	81
	average	3.6	25.2	9.5	9.7	25.10	7.70	0.45	2,605	0.26	0.10	0.09	22
<b>Mink</b>	average	0.7	2.7	0.9	9.7	6.30	0.70	0.05	310	0.03	0.01	0.09	49
<b>Runoff</b>	average	1.5	4.7	1.8	19.4	12.30	1.30	0.08	553	0.06	0.02	0.18	3
<b>Milk-fed veal</b>	average	2.0	4.1	5.5	0	5.80	4.50	0.12	109	0.01	0.06	0	10
<b>Biosolids</b>	aerobic	4.4	11.9	12.9	0	15.00	9.90	0.28	776	0.08	0.14	0	39
	anaerobic												

<sup>1</sup> Useable N = amount of nitrogen available in the year of application assuming spring application incorporated within 24 hr. A simplified useable N for fall-applied manure = [(% total N x 0.5) x 100] for liquid manure.

<sup>2</sup> Value of manure is based on purchase price of an equivalent amount of mineral fertilizer (Oct 2013).

(N – P<sub>2</sub>O<sub>5</sub> – K<sub>2</sub>O = 0.60 – 0.61 – 0.43 \$/lb). The actual immediate value for crop production will be less if all the nutrients applied are not required for growing the crop.

The micronutrient and organic matter values are not reflected in these tables.

**Table 2a. Solid Manure — Available Nutrients and Value for Manure from Common Livestock Types — Metric**

Type of Manure	DM Range	Available Nutrients (in year of application)				Value		Total Nutrient Content (as-is basis)					# Samples
		Aver DM	Usable N <sup>1</sup>	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Year 1 value <sup>2</sup>	Year 2-4 value	Total N	NH <sub>4</sub> -N	P	K		
		%	kg/tonne			\$/tonne		%	ppm	%	%	%	
<b>Hog</b>	average	30.8	3.8	4.5	6.2	16.90	7.50	0.93	2,913	0.29	0.49	0.57	80
	18%–30%	23.8	3.9	4.6	5.8	16.80	7.50	0.92	3,154	0.32	0.50	0.54	55
	30%–100%	42.5	3.6	4.4	6.7	17.00	7.50	0.93	2,511	0.25	0.48	0.62	25
<b>Dairy</b>	average	25.9	2.0	1.8	6.6	11.30	3.70	0.72	1,505	0.15	0.20	0.61	364
	30% +	41.0	1.9	1.9	7.1	11.80	4.20	0.82	1,075	0.11	0.21	0.66	86
	18%–30%	21.2	2.0	1.8	6.5	11.30	3.70	0.69	1,617	0.16	0.20	0.60	278
<b>Beef</b>	average	31.4	2.5	3.0	7.1	14.10	5.70	0.92	1,778	0.18	0.33	0.66	781
	40%–60%	45.6	3.5	5.0	9.4	20.20	9.10	1.34	2,545	0.25	0.54	0.87	157
	30%–40%	34.5	2.8	3.4	8.0	15.80	6.40	1.03	2,022	0.20	0.37	0.74	203
	18%–30%	24.1	1.9	2.0	5.9	10.80	4.00	0.70	1,358	0.14	0.22	0.55	416
<b>Sheep</b>	average	32.2	3.0	3.1	8.2	15.90	5.50	0.87	2,784	0.28	0.34	0.76	73
<b>Dairy goats</b>	average	35.7	3.3	2.6	11.1	18.30	5.20	1.04	2,818	0.28	0.28	1.03	45
<b>Composted cattle</b>		38.3	2.8	2.6	11.9	18.50	5.30	0.86	543	0.05	0.28	1.10	29
<b>Compost: all types</b>		46.4	3.7	3.1	9.0	17.50	6.40	1.09	877	0.09	0.34	0.83	63
<b>Grain-fed veal</b>	average	30.5	2.0	1.8	5.5	10.20	3.80	0.79	1,428	0.14	0.19	0.51	16
<b>Horses</b>	average	37.4	1.2	1.4	4.6	7.80	2.80	0.50	749	0.07	0.15	0.43	41
	>50%	63.0	0.8	1.9	9.6	12.80	4.20	0.80	591	0.06	0.21	0.89	4
	<50%	34.6	1.2	1.4	4.1	7.30	2.70	0.47	769	0.08	0.15	0.38	37
<b>Poultry</b>	average	60.6	10.6	12.1	15.7	45.00	21.10	2.71	5,501	0.60	1.32	1.45	1,675
	80% +	89.2	14.8	15.3	22.1	60.90	29.10	4.26	4,458	0.45	1.66	2.05	259
	70%–80%	74.5	11.5	12.4	17.1	47.90	22.50	3.09	4,882	0.49	1.35	1.58	381
	60%–70%	65.1	10.3	11.9	16.9	45.50	20.80	2.66	5,123	0.60	1.29	1.56	334
	50%–60%	54.9	9.1	14.3	14.9	45.30	23.20	2.26	5,149	0.58	1.55	1.38	235
	40%–50%	44.7	9.1	13.2	15.1	44.00	21.10	2.10	6,257	0.63	1.43	1.40	126
	30%–40%	34.5	8.3	9.3	10.5	33.30	15.10	1.79	6,532	0.65	1.01	0.97	151
	18%–30%	24.4	8.5	6.9	7.5	27.40	11.20	1.64	7,957	0.80	0.75	0.69	189
	layers	37.3	9.8	9.2	10.6	35.30	15.20	2.07	8,063	0.81	1.00	0.98	224
	pullets	42.6	12.7	12.7	15.0	47.90	22.60	3.19	6,999	0.70	1.38	1.39	78
	broilers	66.1	12.3	13.0	19.3	51.90	23.00	3.12	6,551	0.66	1.41	1.79	193
	broiler breeder growers	62.8	7.0	13.1	13.9	39.90	21.20	1.88	2,929	0.29	1.42	1.29	26
broiler breeder layers	65.1	8.1	14.5	16.9	46.10	23.80	2.21	3,175	0.32	1.58	1.56	74	
<b>Turkeys</b>	average	50.4	11.3	12.2	15.3	45.70	20.20	2.53	8,334	0.83	1.33	1.42	104
	heavy toms	52.3	11.8	12.7	17.2	48.80	21.00	2.62	8,675	0.87	1.38	1.59	33
	heavy hens >8 kg	64.2	13.5	14.9	22.0	58.60	26.50	3.52	6,500	0.65	1.62	2.04	6
	poults	70.5	12.9	8.3	13.2	40.50	17.00	3.31	6,585	0.67	0.90	1.22	2
	breeders	54.8	10.3	12.0	14.6	43.50	19.10	2.16	8,567	0.86	1.30	1.35	12
	broilers	61.8	12.8	11.1	15.3	46.20	21.10	3.35	6,000	0.60	1.21	1.42	6
<b>Biosolids</b>	dewatered	32.1	12.8	12.1	1.19	34.10	23.90	3.76	3,443	0.34	1.31	0.11	89

<sup>1</sup> Useable N = amount of nitrogen available in the year of application assuming spring application incorporated within 24 hr. A simplified useable N for fall-applied manure = [(% total N x 0.5) x 10] for solid manure (metric).

<sup>2</sup> Value of manure is based on purchase price of an equivalent amount of mineral fertilizer (Oct 2013). (N – P<sub>2</sub>O<sub>5</sub> – K<sub>2</sub>O = 1.30 – 1.35 – 0.95 \$/kg). The actual immediate value for crop production will be less if all the nutrients applied are not required for growing the crop. The micronutrient and organic matter values are not reflected in these tables.

**Table 2b.** Solid Manure — Available Nutrients and Value for Manure from Common Livestock Types — Imperial

Type of Manure	DM Range	Available Nutrients (in year of application)				Value		Total Nutrient Content (as-is basis)					# Samples
		Aver DM	Usable N <sup>1</sup>	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Year 1 value <sup>2</sup>	Year 2-4 value	Total N	NH <sub>4</sub> -N	P	K		
		%	lb/ton			\$/ton		%	ppm	%	%	%	
<b>Hog</b>	average	30.8	7.6	9.0	12.3	15.30	6.80	0.93	2,913	0.29	0.49	0.57	80
	18%–30%	23.8	7.8	9.2	11.7	15.30	6.80	0.92	3,154	0.32	0.50	0.54	55
	30%–100%	42.5	6.9	8.8	13.4	15.30	6.80	0.93	2,511	0.25	0.48	0.62	25
<b>Dairy</b>	average	25.9	4.0	3.7	13.2	10.30	3.40	0.72	1,505	0.15	0.20	0.61	364
	30% +	41.0	3.8	3.9	14.3	10.80	3.80	0.82	1,075	0.11	0.21	0.66	86
	18%–30%	21.2	4.0	3.7	13.0	10.20	3.30	0.69	1,617	0.16	0.20	0.60	278
<b>Beef</b>	average	31.4	4.9	6.1	14.3	12.80	5.20	0.92	1,778	0.18	0.33	0.66	781
	40%–60%	45.6	7.1	9.9	18.8	18.40	8.30	1.34	2,545	0.25	0.54	0.87	157
	30%–40%	34.5	5.5	6.8	16.0	14.30	5.80	1.03	2,022	0.20	0.37	0.74	203
	18%–30%	24.1	3.7	4.0	11.9	9.80	3.60	0.70	1,358	0.14	0.22	0.55	416
<b>Sheep</b>	average	32.2	6.0	6.3	16.4	14.50	5.00	0.87	2,784	0.28	0.34	0.76	73
<b>Dairy goats</b>	average	35.7	6.5	5.2	22.2	16.60	4.70	1.04	2,818	0.28	0.28	1.03	45
<b>Composted cattle</b>		38.3	5.6	5.2	23.8	16.80	4.80	0.86	543	0.05	0.28	1.10	29
<b>Compost: all types</b>		46.4	7.3	6.3	17.9	15.90	5.90	1.09	877	0.09	0.34	0.83	63
<b>Grain-fed veal</b>	average	30.5	4.1	3.5	11.0	9.30	3.50	0.79	1,428	0.14	0.19	0.51	16
<b>Horses</b>	average	37.4	2.4	2.8	9.3	7.10	2.60	0.50	749	0.07	0.15	0.43	41
	>50%	63.0	1.6	3.9	19.1	11.60	3.90	0.80	591	0.06	0.21	0.89	4
	<50%	34.6	2.3	2.7	8.2	6.60	2.40	0.47	769	0.08	0.15	0.38	37
<b>Poultry</b>	average	60.6	21.3	24.3	31.4	41.10	19.20	2.71	5,501	0.60	1.32	1.45	1,675
	80% +	89.2	29.7	30.5	44.4	55.50	26.40	4.26	4,458	0.45	1.66	2.05	259
	70%–80%	74.5	23.0	24.8	34.2	43.60	20.40	3.09	4,882	0.49	1.35	1.58	381
	60%–70%	65.1	20.6	23.7	33.8	41.40	18.80	2.66	5,123	0.60	1.29	1.56	334
	50%–60%	54.9	18.3	28.5	29.9	41.20	20.90	2.26	5,149	0.58	1.55	1.38	235
	40%–50%	44.7	18.2	26.3	30.2	39.90	19.10	2.10	6,257	0.63	1.43	1.40	126
	30%–40%	34.5	16.6	18.7	21.0	30.40	13.70	1.79	6,532	0.65	1.01	0.97	151
	18%–30%	24.4	17.0	13.8	14.9	25.00	10.10	1.64	7,957	0.80	0.75	0.69	189
	layers	37.3	19.7	18.4	21.2	32.20	13.80	2.07	8,063	0.81	1.00	0.98	224
	pullets	42.6	25.4	25.4	30.0	43.60	20.60	3.19	6,999	0.70	1.38	1.39	78
	broilers	66.1	24.6	26.0	38.7	47.30	20.90	3.12	6,551	0.66	1.41	1.79	193
	broiler breeder growers	62.8	13.9	26.2	27.9	36.30	19.20	1.88	2,929	0.29	1.42	1.29	26
	broiler breeder layers	65.1	16.1	29.1	33.7	41.90	21.60	2.21	3,175	0.32	1.58	1.56	74
<b>Turkeys</b>	average	50.4	22.7	24.5	30.7	41.80	18.40	2.53	8,334	0.83	1.33	1.42	104
	heavy toms	52.3	23.5	25.3	34.3	44.30	19.00	2.62	8,675	0.87	1.38	1.59	33
	heavy hens >8 kg	64.2	27.0	29.9	44.1	53.40	24.10	3.52	6,500	0.65	1.62	2.04	6
	poults	70.5	25.8	16.5	26.2	36.80	15.50	3.31	6,585	0.67	0.90	1.22	2
	breeders	54.8	20.6	23.9	29.1	39.50	17.20	2.16	8,567	0.86	1.30	1.35	12
	broilers	61.8	25.5	22.2	30.7	42.00	19.20	3.35	6,000	0.60	1.21	1.42	6
<b>Biosolids</b>	dewatered	32.1	25.7	24.1	2.4	31.20	21.70	3.76	3,443	0.34	1.31	0.11	89

<sup>1</sup> Useable N = amount of nitrogen available in the year of application assuming spring application incorporated within 24 hr. A simplified useable N for fall-applied manure = [(% total N x 0.5) x 20] for solid manure (imperial).

<sup>2</sup> Value of manure is based on purchase price of an equivalent amount of mineral fertilizer (Oct 2013). (N – P<sub>2</sub>O<sub>5</sub> – K<sub>2</sub>O = 0.60 – 0.61 – 0.43 \$/lb). The actual immediate value for crop production will be less if all the nutrients applied are not required for growing the crop. The micronutrient and organic matter values are not reflected in these tables.

**Table 3a.** Manure — Available Nutrients and Value for Manure from Other Livestock Types — Metric

Type of Manure	Available Nutrients (in year of application)				Value		Total Nutrient Content (as-is basis)				# Samples	
	Aver DM	Usable N <sup>1</sup>	P <sub>2</sub> O <sub>5</sub> <sup>2</sup>	K <sub>2</sub> O	Year 1 Value <sup>3</sup>	Year 2-4 value	Total N	NH <sub>4</sub> -N		P		K
	%	kg/tonne			\$/tonne		%	ppm	%	%		%
<b>Bison</b>	21.1	0.8	0.6	0.8	2.60	1.70	0.40	320	0.03	0.07	0.07	7
<b>Elk</b>	30.5	1.5	1.8	2.6	6.90	4.00	0.73	620	0.06	0.20	0.24	13
<b>Red deer</b>	25.0	1.2	1.6	2.2	5.80	3.40	0.62	514	0.05	0.17	0.20	6
<b>White-tailed deer</b>	31.1	2.4	4.0	3.8	12.00	8.00	1.27	784	0.08	0.43	0.35	6
<b>Fallow deer</b>	29.4	1.7	3.2	3.8	10.20	6.10	0.87	680	0.07	0.35	0.35	6
<b>Llama</b>	34.9	1.5	3.2	2.7	8.80	5.90	0.75	558	0.06	0.35	0.25	16
<b>Alpaca</b>	27.1	1.5	3.7	2.5	9.30	6.20	0.66	867	0.09	0.40	0.23	11
<b>Wild boar</b>	29.8	2.1	3.0	3.8	10.40	5.60	0.72	623	0.06	0.33	0.35	6
<b>Chinchilla</b>	65.7	3.5	5.7	10.8	22.50	11.00	1.87	3,642	0.36	0.62	1.00	7
<b>Rabbit</b>	45.6	2.6	8.0	6.2	20.00	13.20	1.22	1,228	0.12	0.87	0.57	16
<b>Fox</b>	35.4	7.6	13.9	4.1	32.50	21.70	1.80	4,856	0.49	1.51	0.38	9
<b>Mink — average</b>	45.8	16.2	16.7	8.5	51.70	26.70	3.28	14,151	1.42	1.82	0.79	104
<b>Mink — kittens</b>	50.0	20.7	17.6	9.5	59.70	28.90	4.16	18,363	1.84	1.91	0.88	16
<b>Mink — adults</b>	44.2	21.8	22.4	11.8	69.80	35.60	4.36	19,337	1.93	2.43	1.09	61
<b>Mink — composted carcasses</b>	45.9	2.9	5.2	2.8	13.40	8.40	0.79	1,149	0.11	0.56	0.26	7
<b>Mink — females &amp; kits</b>	41.7	19.9	18.9	9.7	60.60	30.40	3.99	17,727	1.77	2.05	0.90	14
<b>Pheasants</b>	66.3	8.2	7.5	8.97	29.20	15.10	2.46	1,758	0.18	0.81	0.83	19
<b>Partridge</b>	71.9	14.1	11.7	12.3	45.80	23.60	4.01	4,705	0.47	1.27	1.14	8
<b>Quail</b>	59.6	16.4	10.0	11.6	45.80	23.60	4.96	3,384	0.34	1.08	1.07	8
<b>Squab (pigeon)</b>	57.7	11.9	8.7	12.3	38.80	17.80	3.25	4,826	0.48	0.94	1.14	13
<b>Duck</b>	39.7	4.2	3.5	4.9	14.80	6.20	0.97	2,807	0.28	0.38	0.45	13
<b>Ostrich</b>	40.8	2.3	5.0	3.6	13.10	8.10	0.68	633	0.06	0.54	0.33	7
<b>Emu</b>	25.9	4.2	2.7	3.5	12.30	5.30	1.01	2,516	0.25	0.29	0.32	9
<b>Rhea</b>	28.7	3.4	5.0	3.8	14.70	8.20	0.84	1,837	0.18	0.54	0.35	3

<sup>1</sup> Useable N = amount of nitrogen available in the year of application, assuming spring application incorporated within 24 hr. A simplified useable N for fall-applied manure = [(% total N x 0.5) x 10] for solid manure (metric).

<sup>2</sup> Represents half the total phosphorus that is immediately available. The other half is available within a year of application.

<sup>3</sup> Value of manure is based on purchase price of an equivalent amount of mineral fertilizer (Oct 2013).

(N - P<sub>2</sub>O<sub>5</sub> - K<sub>2</sub>O = 1.30 - 1.35 - 0.95 \$/kg). The actual immediate value for crop production will be less if all the nutrients applied are not required for growing the crop.

The micronutrient and organic matter values are not reflected in these tables.

**Table 3b.** Manure — Available Nutrients and Value for Manure from Other Livestock Types — Imperial

Type of Manure	Available Nutrients (in year of application)				Value		Total Nutrient Content (as-is basis)				# Samples	
	Aver DM	Usable N <sup>1</sup>	P <sub>2</sub> O <sub>5</sub> <sup>2</sup>	K <sub>2</sub> O	Year 1 Value <sup>3</sup>	Year 2-4 value	Total N	NH <sub>4</sub> -N		P		K
	%	lb/ton			\$/ton		%	ppm	%	%		%
<b>Bison</b>	21.1	1.6	1.3	1.5	2.40	1.50	0.40	320	0.03	0.07	0.07	7
<b>Elk</b>	30.5	2.9	3.7	5.2	6.20	3.60	0.73	620	0.06	0.20	0.24	13
<b>Red deer</b>	25.0	2.5	3.1	4.3	5.20	3.10	0.62	514	0.05	0.17	0.20	6
<b>White-tailed deer</b>	31.1	4.8	7.9	7.6	11.00	7.20	1.27	784	0.08	0.43	0.35	6
<b>Fallow deer</b>	29.4	3.4	6.4	7.6	9.20	5.50	0.87	680	0.07	0.35	0.35	6
<b>Llama</b>	34.9	3.0	6.4	5.4	8.00	5.30	0.75	558	0.06	0.35	0.25	16
<b>Alpaca</b>	27.1	3.0	7.4	5.0	8.50	5.70	0.66	867	0.09	0.40	0.23	11
<b>Wild boar</b>	29.8	4.2	6.1	7.6	9.50	5.10	0.72	623	0.06	0.33	0.35	6
<b>Chinchilla</b>	65.7	7.0	11.4	21.6	20.40	10.00	1.87	3,642	0.36	0.62	1.00	7
<b>Rabbit</b>	45.6	5.1	16.0	12.3	18.10	12.00	1.22	1,228	0.12	0.87	0.57	16
<b>Fox</b>	35.4	15.2	27.8	8.2	29.60	19.60	1.80	4,856	0.49	1.51	0.38	9
<b>Mink — average</b>	45.8	32.4	33.5	17.1	47.20	24.20	3.28	14,151	1.42	1.82	0.79	104
<b>Mink — kittens</b>	50.0	41.5	35.1	19.0	54.50	26.20	4.16	18,363	1.84	1.91	0.88	16
<b>Mink — adults</b>	44.2	43.6	44.7	23.5	63.50	32.20	4.36	19,337	1.93	2.43	1.09	61
<b>Mink — composted carcasses</b>	45.9	5.8	10.3	5.6	12.20	7.70	0.79	1,149	0.11	0.56	0.26	7
<b>Mink — females &amp; kits</b>	41.7	39.9	37.7	19.4	55.30	27.50	3.99	17,727	1.77	2.05	0.90	14
<b>Pheasants</b>	66.3	16.3	14.9	17.9	26.60	13.70	2.46	1,758	0.18	0.81	0.83	19
<b>Partridge</b>	71.9	28.3	23.4	24.6	41.80	21.50	4.01	4,705	0.47	1.27	1.14	8
<b>Quail</b>	59.6	32.8	19.8	23.1	41.70	21.50	4.96	3,384	0.34	1.08	1.07	8
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<b>Ostrich</b>	40.8	4.6	9.9	7.1	11.90	7.30	0.68	633	0.06	0.54	0.33	7
<b>Emu</b>	25.9	8.3	5.3	6.9	11.20	4.80	1.01	2,516	0.25	0.29	0.32	9
<b>Rhea</b>	28.7	6.7	9.9	7.6	13.30	7.40	0.84	1,837	0.18	0.54	0.35	3

<sup>1</sup> Useable N = amount of nitrogen available in the year of application, assuming spring application incorporated within 24 hr. A simplified useable N for fall-applied manure = [(% total N x 0.5) x 20] for solid manure (imperial).

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