

## APPENDIX C Livestock and Poultry Manure Characterization

**Table 21C-1. Swine manure characterization, as excreted.<sup>1</sup>**

Component	Units	Grower, 40-220 lbs	Replacement Gilt	Sow		Boar	Nursing/ Nursery Pig, 0-40 lbs
				Gestation	Lactation		
Weight	lb/d/1,000 #	63.40	32.80	27.20	60.00	20.50	106.00
Volume	ft <sup>3</sup> /d/1,000 #	1.00	0.53	0.44	0.96	0.33	1.70
Moisture	%	90.00	90.00	90.80	90.00	90.70	90.00
TS	% w.b.	10.00	10.00	9.20	10.00	9.30	10.00
	lb/d/1,000 #	6.34	3.28	2.50	6.00	1.90	10.60
VS	"	5.40	2.92	2.13	5.40	1.70	8.80
Nitrogen	"	0.42	0.24	0.19	0.47	0.15	0.6
P <sub>2</sub> O <sub>5</sub>	"	0.36	0.18	0.14	0.34	0.11	0.57
K <sub>2</sub> O	"	0.26	0.16	0.14	0.36	0.12	0.42

<sup>1</sup>Average daily production for weight range noted. Increase solids and nutrients by 4% for each 1% feed waste more than 5%.

**Table 21C-2. Dairy manure characterization, as excreted.<sup>1</sup>**

Component	Units	Cow		Heifer
		Lactating	Dry	
Weight	lb/d/1,000 #	80.00	82.00	85.00
Volume	ft <sup>3</sup> /d/1,000 #	1.30	1.30	1.30
Moisture	%	87.50	88.40	89.30
TS	% w.b.	12.50	11.60	10.70
	lb/d/1,000 #	10.00	9.50	9.14
VS	"	8.50	8.10	7.77
Nitrogen	"	0.45	0.36	0.31
P <sub>2</sub> O <sub>5</sub>	"	0.16	0.11	0.09
K <sub>2</sub> O	"	0.31	0.28	0.29

<sup>1</sup>Increase solids and nutrients by 4% for each 1% feed waste more than 5%.

**Table 21C-3. Veal manure characterization, as excreted.**

Component	Units	Veal Feeder
Weight	lb/d/1,000 #	60.00
Volume	ft <sup>3</sup> /d/1,000 #	0.96
Moisture	%	97.50
TS	% w.b.	2.50
	lb/d/1,000 #	1.50
Nitrogen	"	0.20
P <sub>2</sub> O <sub>5</sub>	"	0.07
K <sub>2</sub> O	"	0.3

**Table 21C-4. Poultry manure characterization, as excreted.<sup>1</sup>**

Component	Units	Layer	Pullet	Broiler	Turkey	Duck
Weight	lb/d/1,000 #	60.50	45.60	80.00	43.60	
Volume	ft <sup>3</sup> /d/1,000 #	0.93	0.73	1.26	0.69	
Moisture	%	75.00	75.00	75.00	75.00	
TS	% w.b.	25.00	25.00	25.00	25.00	
	lb/d/1,000 #	15.10	11.40	20.00	10.90	12.0
VS	"	10.80	9.70	15.00	9.70	7.0
Nitrogen	"	0.83	0.62	1.10	0.74	0.7
P <sub>2</sub> O <sub>5</sub>	"	0.70	0.54	0.77	0.64	0.68
K <sub>2</sub> O	"	0.41	0.31	0.55	0.34	0.6

<sup>1</sup>Increase solids and nutrients by 4% for each 1% feed waste more than 5%.

**Table 21C-5. Poultry manure characterization, litter.<sup>1</sup>**

Component	Units	Layer High-Rise <sup>1</sup>	Broiler	Turkey
Weight	lb/d/1,000 #	24.00	21.00	14.60
Volume	ft <sup>3</sup> /d/1,000 #		0.66	0.41
Moisture	%	50.00	24.00	34.00
TS	% w.b.	50.00	76.00	66.00
	lb/d/1,000 #	12.00	26.50	16.10
VS	"		21.40	
Nitrogen	"	0.425	0.68	0.88
P <sub>2</sub> O <sub>5</sub>	"	0.62	0.77	0.91
K <sub>2</sub> O	"	0.36	0.48	0.54

<sup>1</sup>No bedding or litter material added to waste.

**Table 21C-6. Beef manure characterization, as excreted.<sup>1</sup>**

Component	Units	Feeder, 750 to 1,100 lbs High-forage diet	Feeder, 750 to 1,100 lbs High-energy diet	450 to 750 lbs	Cow
Weight	lb/d/1,000 #	59.10	51.20	58.20	63.00
Volume	ft <sup>3</sup> /d/1,000 #	0.95	0.82	0.93	1.00
Moisture	%	88.40	88.40	87.00	88.40
TS	% w.b.	11.60	11.60	13.00	11.60
	lb/d/1,000 #	6.78	5.91	7.54	7.30
VS	"	6.04	5.44	6.41	6.20
Nitrogen	"	0.31	0.30	0.30	0.33
P <sub>2</sub> O <sub>5</sub>	"	0.25	0.21	0.23	0.27
K <sub>2</sub> O	"	0.29	0.25	0.24	0.31

<sup>1</sup>Average daily production for weight range noted. Increase solids and nutrients by 4% for each 1% feed waste more than 5%.

**Table 21C-7. Beef manure characterization, feedlot manure.**

Component	Units	Unsurfaced Lot <sup>1</sup>	Surfaced Lot <sup>2</sup>	
			High-forage diet	High-energy diet
Weight	lb/d/1,000 #	17.50	11.70	5.30
Moisture	%	45.00	53.30	52.10
TS	% w.b.	55.00	46.70	47.90
	lb/d/1,000 #	9.60	5.50	2.50
VS	"	4.80	3.85	1.75
N	"	0.21		
P <sub>2</sub> O <sub>5</sub>	"	0.32		
K <sub>2</sub> O	"	0.04		

<sup>1</sup>Dry climate (annual rainfall less than 15 inches); annual manure removal.

<sup>2</sup>Dry climate; semi-annual manure removal.

**Table 21C-8. Horse manure characterization, as excreted.<sup>1</sup>**

Component	Units	Horse
Weight	lb/d/1,000 #	50.00
Volume	ft <sup>3</sup> /d/1,000 #	0.80
Moisture	%	78.00
TS	% w.b.	22.00
	lb/d/1,000 #	11.00
VS	"	9.35
Nitrogen	"	0.28
P <sub>2</sub> O <sub>5</sub>	"	0.11
K <sub>2</sub> O	"	0.23

<sup>1</sup>Increase solids and nutrients by 4% for each 1% feed waste more than 5%.

**Table 21C-9. Lamb manure characterization, as excreted.<sup>1</sup>**

Component	Units	Lamb
Weight	lb/d/1,000 #	40.00
Volume	ft <sup>3</sup> /d/1,000 #	0.63
Moisture	%	75.00
TS	% w.b.	25.00
	lb/d/1,000 #	10.00
VS	"	8.30
Nitrogen	"	0.45
P <sub>2</sub> O <sub>5</sub>	"	0.16
K <sub>2</sub> O	"	0.36

<sup>1</sup>Increase solids and nutrients by 4% for each 1% feed waste more than 5%.

**Table 21C-10. Sludge accumulation ratios.**

Animal Type	SAR, ft <sup>3</sup> /lb TS Added	
Poultry	Layers	0.0295
	Pullets	0.0455
Swine	0.0485	
Dairy Cattle	0.0729	

Source: Barth 1985.