

SOLIDS WORKSHEET 1 - ESTIMATING NUTRIENTS GENERATED PER CONFINEMENT PERIOD

Step 1. Nutrients Generated (As Excreted)															
Animal Type (See Table 1.1)	Number of Animals	x	Percent Waste as Solid ^a	x	Average Weight (lbs.)	÷ 1000	x	Confinement Period ^b (days/year)	=	Animal Unit Days	Table 1.1 Values	N	P ₂ O ₅	K ₂ O	
1.) _____	_____	x	_____	x	_____	÷ 1000	x	_____	=	_____	N P ₂ O ₅	=	_____	_____	
										_____	x K ₂ O	=	+	_____	_____
2.) _____	_____	x	_____	x	_____	÷ 1000	x	_____	=	_____	N P ₂ O ₅	=	_____	_____	+
										_____	x K ₂ O	=	+	_____	_____
3.) _____	_____	x	_____	x	_____	÷ 1000	x	_____	=	_____	N P ₂ O ₅	=	_____	_____	+
										_____	x K ₂ O	=	=	_____	_____
Step 1 Total												=	_____	_____	_____
													(lbs)		
Step 2. Manure Generated (As Excreted)															
Animal Unit Days (from Step 1)	x	Manure/A.U. (See Table 1.1)	=	Volume of Manure											
1.) _____	x	_____	=	_____ cubic feet											
2.) _____	x	_____	=	_____ cubic feet											
3.) _____	x	_____	=	_____ cubic feet											
Step 2 Total												=	_____	_____	_____
													1 + 2 + 3		
Step 3. Total Tons															
Step 2 Vol. of Manure	÷	See Table 1.1 Bedding Value	=	Total Tons											
1.) _____	÷	_____	=	_____											
2.) _____	÷	_____	=	_____											
3.) _____	÷	_____	=	_____											
Step 3 Total												=	_____	_____	_____
													1 + 2 + 3		
Step 4. Weighted Nutrient Values Before Nutrient Losses															
Step 1	÷	Step 3 Total	=												
N _____	÷	_____	=												
P ₂ O ₅ _____	÷	_____	=												
K ₂ O _____	÷	_____	=												
Step 4 Total												=	_____	_____	_____
													(lbs/ton)		

^a The percent of the manure that is handled as a solid.

^b Confinement period should be adjusted for animals that are only in confinement for a portion of the day. For example, if animals spend 16 hours on pasture and 8 hours in confinement, then the confinement period would be 1/3 of a day or 122 days/year.

Table 1.1 Manure and Nutrients as Excreted Per 1,000 Pound Live Weight/Day

Animal Type	Volume of Manure Per Animal Unit (cu.ft.)	Dry Matter Manure (lbs.)	Wastewater (gal/day)	Total Nitrogen (lbs.)	Total P as P₂O₅ (lbs.)	Total K as K₂O (lbs.)	Bedding
Beef (all cattle and calves) ¹	1	8.5	0	0.34	0.21	0.25	33
Dairy Cows ¹	1.4	12	5	0.45	0.21	0.35	33
Dairy Heifers ⁵	0.9	8.5	5	0.27	0.11	0.14	33
Swine Lactating Sows w/litters ⁶	0.96	11	2	0.52	0.41	0.35	33
Swine Gestating Sows, Boars, Gilts ⁶	0.5	5.5	2	0.26	0.2	0.17	33
Swine Wean to Finish Pigs ⁶	1.15	7.3	2	0.52	0.41	0.35	33
Swine Grow to Finish Pigs ⁵	1.1	6.5	2	0.54	0.21	0.29	33
Poultry Caged Layer ⁵	0.93	15	0	1.1	0.76	0.47	74
Poultry Caged Layer Pullet ⁵	0.73	11.4	0	0.62	0.55	0.31	74
Poultry Litter Broiler ²	1.4	22	0	0.96	0.64	0.65	74
Poultry Litter/Slats Breeder Layer ⁵	0.93	16	0	0.84	0.69	0.36	74
Poultry Litter Breeder Pullet ⁵	0.73	11.4	0	0.62	0.55	0.31	74
Poultry Turkeys (toms) ³	0.57	8.8	0	0.53	0.37	0.3	74
Poultry Turkeys (hens) ⁴	0.77	12.5	0	0.72	0.46	0.37	74
Horses ⁵	0.82	7.6	0	0.25	0.11	0.14	32
Sheep and Lambs ⁵	0.63	10	0	0.45	0.16	0.36	33
Goats ⁵	0.65	13	0	0.45	0.25	0.37	33

¹ Adapted from 1999 ASAE Standards

² Adapted from NRCS Agricultural Waste Management Field Handbook, March 2008. Based on 2.6 lb. average weight and 48 days on feed

³ Adapted from NRCS Agricultural Waste Management Field Handbook, March 2008. Based on 17.0 lb. average weight and 133 days on feed

⁴ Adapted from NRCS Agricultural Waste Management Field Handbook, March 2008. Based on 7.6 lb. average weight and 105 days on feed

⁵ Adapted from NRCS Agricultural Waste Management Field Handbook, March 2008.

⁶ From Dr. Richard Coffey, Extension Swine Specialist and Director of the University of Kentucky Research and Education Center at Princeton