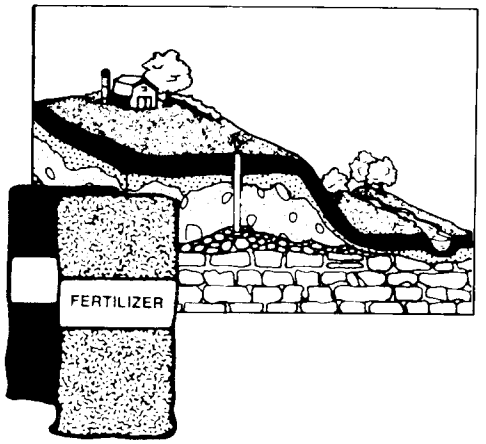

Soil Facts

Nutrient Content of Fertilizer and Organic Materials

Inorganic Nutrient Sources

Proper soil and crop management are required when using fertilizer materials to avoid contaminating surface water or groundwater. Plant nutrient requirements can be met by applying inorganic or organic fertilizers. Inorganic materials may be used separately or blended to form multinutrient fertilizers; some organic sources are also blended and sold under various commercial labels. The quantity of nutrients sold in commercially available inorganic and organic fertilizer materials are guaranteed by the manufacturers and are listed on each bag of fertilizer material sold in North Carolina.

This publication serves as a reference for most commercial-grade fertilizer materials. Elemental quantities listed in Tables 1 and 2 are within the range available in the state. For exact nutrient content, refer to the label on the fertilizer material that you purchase. Organic materials that are not sold as "fertilizers" are not regulated by law in North Carolina. This means there is no guaranteed quantity of nutrients in most organic materials. A discussion of organic sources of nutrients precedes the organic fertilizer material reference in tables 3 and 4.

Table 1. Nutrient Content and Calcium Carbonate ($CaCO_3$) Equivalence of Commercial Fertilizers

	Percentage by Weight						
Material	**N**	**P_2O_5**	**K_2O**	**Ca**	**Mg**	**S**	**$CaCO_3$ Equiv.* (lb/100 lb)**
NITROGEN MATERIALS							
Ammonium nitrate							
NH_4NO_3	34	0	0	0	0	0	–59
Ammonium nitrate limestone							
$NH_4NO_3+(CaCO_3+MgCO_3)$	20	0	0	7	4	0.4	4
Ammonium nitrate sulfate							
$NH_4NO_3+(NH_4)_2SO_4$	26	0	0	0	0	15	–85
Ammonium sulfate							
$(NH_4)_2SO_4$	21	0	0	0.3	0	24	–110
Ammonium thiosulfate							
$(NH_4)_2S_2O_3$	12	0	0	0	0	26	—
Anhydrous ammonia							
NH_3	82	0	0	0	0	0	–148
Aqua ammonia							
NH_4OH	16 to 25	0	0	0	0	0	–36 to –54
Calcium cyanamide							
$CaCN_2$	21	0	0	38	0.1	0.3	63
Calcium nitrate							
$Ca(NO_3)_2 \cdot 4H_2O$	15	0	0	19	1.5	—	20

Table 1 *(continued)*

Material	Percentage by Weight N	P_2O_5	K_2O	Ca	Mg	S	$CaCO_3$ Equiv.* (lb/100 lb)
NITROGEN MATERIALS *(continued)*							
Calcium nitrate/urea							
$Ca(NO_3)_2+4CO(NH_2)_2$	34	0	0	10	0	0	–36†
Crotonylidene diurea (CDU)	32	0	0	0	0	0	—
Dicyandiamide (DCD)							
$C_2H_4N_4$	65	—	—	—	—	—	—
Isobutylidene diurea (IBDU)	31	0	0	0	0	0	—
Nitrogen solutions							
32% UAN (35% urea+45% A.N.)	32	0	0	0	0	0	–55
30% UAN (33% urea+42% A.N.)	30	0	0	0	0	0	–52
28% UAN (30% urea+40% A.N.)	28	0	0	0	0	0	–49
21% AN (60% A.N.+40% water)	21	0	0	0	0	0	–37
19% AN (54% A.N.+46% water)	19	0	0	0	0	0	–33
Osmocote							
(Available in various formulations)	14	14	14	—	—	—	—
Oxamide							
$C_2H_4N_2O_2$	31	—	—	—	—	—	—
Potassium nitrate							
KNO_3	13	0	44	0.6	0.4	0.2	26
Sodium nitrate							
$NaNO_3$	16	0	0.2	0.1	—	—	29
Triazone							
$C_3H_7N_3O$	46	—	—	—	—	—	—
UAN-Ammonium sulfate solutions							
(N=25-28%)	25 to 28	0	0	0	0	2 to 3	0
Urea							
$CO(NH_2)_2$	46	0	0	0	0	0	–84
Urea (sulfur coated)							
$CO(NH_2)_2$+S	36 to 38	0	0	0	0	13 to 16	–118
Ureaformaldehyde	38	0	0	0	0	0	–68
Urea sulfate							
$CO(NH_2)_2 \cdot H_2SO_4$	17	—	—	—	—	20	—
PHOSPHORUS MATERIALS							
Ammoniated superphosphate	3 to 6	18 to 20	0	17	0	12	–7
Diammonium phosphate (DAP)							
$(NH_4)_2H_PO_4$	18	46	0	0	0	0	–70
Monoammonium phosphate (MAP)							
$NH_4H_2PO_4$	11	48	0.2	1	0.3	2.2	–65
Ammonium phosphate nitrate							
$NH_4H_2PO_4 \cdot NH_4NO_3$	27	15	0	0	0	0	–62
Ammonium phosphate sulfate							
$4NH_4H_2PO_4+(NH_4)_2SO_4$	13 to 16	20 to 39	0.2	0.3	0.1	15	–76 to –113
Ammonium polyphosphate (APP)							
$(NH_4)_3HP_2O_7$	10	34	0	0	0	0	—

Table 1 *(continued)*

Material	Percentage by Weight						
	N	P_2O_5	K_2O	Ca	Mg	S	$CaCO_3$ Equiv.* (lb/100 lb)
PHOSPHOUS MATERIALS *(continued)*							
Basic slag							
$5CaO \cdot P_2O_5 \cdot SiO_2$	0	2 to 17	0	3 to 33	3	—	70
Concentrated superphosphate							
$Ca(H_2PO_4)_2 \cdot H_2O$	0	42 to 50	0.4	14	0.3	1.4	0
Ordinary superphosphate							
$Ca(H_2PO_4)_2 \cdot H_20 + CaSO_4$	0	18 to 20	0.2	20	0.2	12	0
Nitric phosphate	14 to 22	10 to 22	0	8 to 10	0.1	0.3	–15 to –25
Phosphate rock	0	2 to 35	0	—	—	0	10
North Carolina rock	0	31	0	35	0	0	—
Wet-process phosphoric acid							
H_3PO_4	0	30	0	0	0	0	–63
Concentrated wet-process acid	0	40 to 45	0	0	0	0	–84 to –113
Superphosphoric acid	0	72	0	0	0	0	–109
Urea ammonium phosphate (UAP)							
$CO(NH_2)_2 \cdot NH_4H_2PO_4$	25	35	0	0	0	0	—
POTASSIUM MATERIALS							
Potassium carbonate							
K_2CO_3 solid	0	0	48	0	0	0	70
K_2CO_3 liquid	0	0	34	0	0	0	50
Potassium chloride							
(Muriate of potash) KCl	0	0	60 to 62	0.1	0.1	0	0
Potassium magnesium sulfate							
(Sulfate of potash magnesia)							
$K_2SO_4 \cdot 2MgSO_4/MgSO_4 \cdot K_2SO_4 \cdot 6H_2O$	0	0	22	0	11	23	0
Potassium metaphosphate							
KPO_3	0	59	39	0	0	0	—
Potassium nitrate							
(Nitrate of potash) KNO_3	13	0	44	0.6	0.4	0.2	26
Potassium sulfate							
K_2SO_4	0	0	50	0.7	1	18	0
CALCIUM MATERIALS							
Calcium chloride							
$CaCl_2$	0	0	0	36	0	0	0
Burned lime, calcium oxide							
CaO	0	0	0	70	0	0	178
Calcitic limestone							
$CaCO_3$	0	0	0.3	32	3	0.1	90 to 100
Dolomitic limestone							
$CaCO_3 + MgCO_3$	0	0	0	21 to 30	6 to 12	0.3	95 to 108
Selma chalk	0	0	0	32	0	0	80

Table 1 *(continued)*

Material	Percentage by Weight						
	N	P_2O_5	K_2O	Ca	Mg	S	$CaCO_3$ Equiv.* (lb/100 lb)
PHOSPHOUS MATERIALS *(continued)*							
Basic slag							
$5CaO \cdot P_2O_5 \cdot SiO_2$	0	2 to 17	0	3 to 33	3	—	70
Concentrated superphosphate							
$Ca(H_2PO_4)_2 \cdot H_2O$	0	42 to 50	0.4	14	0.3	1.4	0
Ordinary superphosphate							
$Ca(H_2PO_4)_2 \cdot H_20+CaSO_4$	0	18 to 20	0.2	20	0.2	12	0
Nitric phosphate	14 to 22	10 to 22	0	8 to 10	0.1	0.3	–15 to –25
Phosphate rock	0	2 to 35	0	—	—	0	10
North Carolina rock	0	31	0	35	0	0	—
Wet-process phosphoric acid							
H_3PO_4	0	30	0	0	0	0	–63
Concentrated wet-process acid	0	40 to 45	0	0	0	0	–84 to –113
Superphosphoric acid	0	72	0	0	0	0	–109
Urea ammonium phosphate (UAP)							
$CO(NH_2)_2 \cdot NH_4H_2PO_4$	25	35	0	0	0	0	—
POTASSIUM MATERIALS							
Potassium carbonate							
K_2CO_3 solid	0	0	48	0	0	0	70
K_2CO_3 liquid	0	0	34	0	0	0	50
Potassium chloride							
(Muriate of potash) KCl	0	0	60 to 62	0.1	0.1	0	0
Potassium magnesium sulfate							
(Sulfate of potash magnesia)							
$K_2SO_4 \cdot 2MgSO_4/MgSO_4 \cdot K_2SO_4 \cdot 6H_2O$	0	0	22	0	11	23	0
Potassium metaphosphate							
KPO_3	0	59	39	0	0	0	—
Potassium nitrate							
(Nitrate of potash) KNO_3	13	0	44	0.6	0.4	0.2	26
Potassium sulfate							
K_2SO_4	0	0	50	0.7	1	18	0
CALCIUM MATERIALS							
Calcium chloride							
$CaCl_2$	0	0	0	36	0	0	0
Burned lime, calcium oxide							
CaO	0	0	0	70	0	0	178
Calcitic limestone							
$CaCO_3$	0	0	0.3	32	3	0.1	90 to 100
Dolomitic limestone							
$CaCO_3+MgCO_3$	0	0	0	21 to 30	6 to 12	0.3	95 to 108
Selma chalk	0	0	0	32	0	0	80

Table 1 *(continued)*

Material	Percentage by Weight N	P_2O_5	K_2O	Ca	Mg	S	$CaCO_3$ Equiv.* (lb/100 lb)
CALCIUM MATERIALS *(continued)*							
Gypsum $CaSO_4 \cdot 2H_2O$	0	0	0.5	22	0.4	17	0
Hydrated lime (Slaked lime) $Ca(OH)_2$	0	0	0	50	0	0	13
MAGNESIUM MATERIALS							
Dolomitic limestone $CaCO_3+MgCO_3$	0	0	0	21 to 30	6 to 11	0.3	95 to 108
Magnesium ammonium phosphate $MgNH_4PO_4 \cdot 6H_2O$	8	40	0	0	15	0	—
Magnesium oxide (Magnesia) MgO	0	0	0	0	45	0	250
Magnesium sulfate (Epsom Salt) $MgSO_4 \cdot 7H_2O$	0	0	0	2	10	14	0
Magnesium sulfate (Kieserite) $MgSO_4 \cdot H_2O$	0	0	0	0	17	23	0
Potassium magnesium sulfate (Sulfate of potash magnesia) $K_2SO_4 \cdot 2MgSO_4$	0	0	22	0	11	23	0
SULFUR MATERIALS							
Ammonium sulfate $(NH_4)_2SO_4$	21	0	0	0.3	0	24	–110
Ammonium thiosulfate (60%sol) $(NH_4)_2S_2O_3$	12	0	0	0	0	26	—
Elemental sulfur (S):							
Wettable S	0	0	0	0	0	90 to 100	–312
Flowable S	0	0	0	0	0	52 to 70	–218
Flowers of S	0	0	0	0	0	90 to 100	–312
Gypsum $CaSO_4 \cdot 2H_2O$	0	0	0.5	22	0.4	17	0
Magnesium sulfate (Epsom Salt) $MgSO_4 \cdot 7H_20$	0	0	0	2	10	14	0
Potassium magnesium sulfate $K_2SO_4 \cdot 2MgSO_4$	0	0	22	0	11	23	0
Potassium sulfate K_2SO_4	0	0	50	0.7	1	18	0
Sulfuric acid H_2SO_4	0	0	0	0	0	20 to 33	–62 to –102
Sulfates of Cu, Fe Mn and Zn	(see micronutrient section)						

*Approximate $CaCO_3$ equivalent in pounds per 100 pounds of material. Negative value indicates a net acidifying effect on soil; positive value indicates a net basic reaction in soil.

†Do not blend with superphosphate.

Table 2. Nutrient Concentration of Micronutrients

Material	Concentration
COPPER (Cu) MATERIALS	**Percent Cu**
Copper chelates	
Cu EDTA	13
Cu HEDTA	9
Cupric ammonium phosphate	
$Cu(NH_4)PO_4 \cdot H_2O$	32
Copper sulfate	
$CuSO_4 \cdot H_2O$ (monohydrate)	35
$CuSO_4 \cdot 5H_2O$ (pentahydrate)	25
$CuSO_4 \cdot 3Cu(OH)_2$	13 to 53
Ammonia base liquid $CuSO_4$	8
Copper frits	40 to 50
Copper polyflavonoid	6
Malachite	
$CuCO_3 \cdot Cu(OH)_2$	57
Azurite	
$2CuCO_3 \cdot Cu(OH)_2$	55
Cuprous Oxide	
Cu_2O	89
Cupric Oxide	
CuO	75
Chalcopyrite	
$CuFeS_2$	35
Chalcosite	
Cu_2S	80
Cupric acetate	
$Cu(C_2H_3O_2)_2 \cdot H_2O$	32

Material	Concentration
BORON (B) MATERIALS	**Percent B**
Borax	
(Sodium tetraborate decahydrate)	
$Na_2B_4O_7 \cdot 10H_2O$	11
Boric acid	
(H_3BO_3)	17
Boron frit/sodium borosilicate	17
Calcium borate	
(Colemanite) $Ca_2B_6O_{11} \cdot 5H_2O$	10
Fertilizer borate (sodium tetraborate)	
Borate Granular ($Na_2B_4O_7 \cdot 5H_2O$)	14.3
Borate 48	14.9
Solubor	
$Na_2B_8O_{13} \cdot 4H_2O$	20.5
Magnesium borate (boracite)	
$2Mg_3B_8O_{15} \cdot MgCl_2$	21

Material	Concentration
IRON (Fe) MATERIALS	**Percent Fe**
Basic slag	10 to 13
Ferric sulfate	
$Fe_2(SO_4)_3 \cdot 9H_2O$	20
Ferrous sulfate	
$FeSO_4 \cdot 7H_2O$	20
Ferrous ammonium sulfate	
$(NH_4)_2SO_4 \cdot FeSO_4 \cdot 6H_2O$	14
Ferrous ammonium phosphate	
$Fe(NH_4)PO_4 \cdot H_2O$	29
Ferrous oxalate	
$FeC_2O_4 \cdot 2H_2O$	30
Ferrous carbonate	
$FeCO_3 \cdot H_2O$	42
Iron chelates	
Fe DTPA	10
Fe EDTA	9 to 12
Fe EDDHA	6
Fe HEDTA	5 to 9
Iron lignosulfonate	5 to 11
Iron polyflavonoid	6 to 10
Iron frits	40
Iron methoxyphenylpropane	
FeMPP	5
Ferrous oxide	
FeO	77
Ferric oxide	
Fe_2O_3	69
Iron ammonium polyphosphate	
$Fe(NH_4)HP_2O_7$	22

Material	Concentration
MANGANESE (Mn) MATERIAL	**Percent Mn**
Basic slag	1 to 3
Manganous oxide	
MnO	41 to 68
Manganese methoxyphenylpropane	
MnMPP	10 to 12
Manganese frits	10 to 25
Manganese chloride	
$MnCl_2$	17
Manganese carbonate	
$MnCO_3$	31
Manganese oxide	
MnO_2	62 to 70
Manganese sulfate	
$MnSO_4 \cdot 3H_2O$	24

Table 2 *(continued)*

Material	Concentration
MANGANESE (Mn) MATERIAL	**Percent Mn**
Manganese chelate	
Mn EDTA	12
Manganese ammonium phosphate	
$Mn(NH_4)PO_4 \cdot 6H_2O$	28
Manganese polyflavonoid	8
MOLYBDENUM (Mo) MATERIAL	**Percent Mo**
Ammonium molybdate	
$(NH_4)_6Mo_7O_{24} \cdot 4H_2O$	up to 54
Sodium molybdate	
$Na_2MoO_4 \cdot 2H_2O$	38 to 46
Molybdenum frit	30
Molybdenum trioxide	
MoO_3	60
Molybdenum sulfide	
MoS_2	60

Material	Concentration
ZINC (Zn) MATERIAL	**Percent Zn**
Zinc carbonate	
$ZnCO_3$	52
Zinc frits (silicates)	Varies
Zinc phosphates	
$Zn_3(PO_4)_2$	51
Zinc chelate	
Na_2Zn EDTA	9 to 14
NaZn NTA	13
NaZn HEDTA	9
Zinc ammonium phosphate	
$Zn(NH_4)PO_4H_2O$	34
Zinc sulfate	
$ZnSO_4 \cdot H_2O$	22 to 36
Zinc sulfide (sphalerite)	61
Zinc oxide	
ZnO	78 to 80
Zinc lignosulfonate	5 to 12
Zinc polyflavonoid	7 to 10

Common Conversions

$P_2O_5 \times 0.43 = P$	$K_2O \times 0.83 = K$
$P \times 2.29 = P_2O_5$	$K \times 1.20 = K_2O$

Nutrients for Organic Materials

Nutrients listed for organic materials in the following tables are averages and may not accurately reflect the quantity in a specific source. Using these values can result in either overfertilization or underfertilization in many cases. To determine the quantity of nutrients in a specific organic source, send a sample to a qualified laboratory. The North Carolina Department of Agriculture, Agronomic Division, performs analyses for a reasonable fee. Contact the Plant and Waste Laboratory, P.O. Box 27647, Blue Ridge Road Center, Raleigh, NC 27611.

Remember that most of the nutrients reported are not readily available for plant growth. Nutrients in organic matter must be released by soil microorganisms through a decaying process called mineralization. This biological process is affected by variations in moisture, temperature, and the microbial species and populations present in the soil. Therefore, organic materials are far less predictable in nutrient content, nutrient release, and nutrient-use efficiency than commercial grade fertilizers. Because of this unpredictability, organic materials are frequently overapplied, which may lead to contamination of surface water or groundwater by excess nutrients such as nitrate. Organic materials can serve as effective and environmentally sound fertilizer materials only if their nutrient contents are known and their mineralization rates are estimated closely. The report received on samples sent to the NCDA Agronomic Division lists the nutrient contents and estimated rates of mineralization.

Table 3. Nutrient Content of Organic Materials

	Percentage by Weight						
Material	**N**	**P_2O_5**	**K_2O**	**Ca**	**Mg**	**S**	**Cl**
Apple pomace	0.2	—	0.2	—	—	—	—
Blood (dried)	12 to 15	3	—	0.3	—	—	0.6
Bone meal (raw)	3.5	22	—	22	0.6	0.2	0.2
Bone meal (steamed)	2.0	28	0.2	23	0.3	0.1	—
Brewers grains (wet)	0.9	0.5	—	—	—	—	—
Common crab waste	2.0	3.6	0.2	—	—	—	—
Compost (garden)	Varies with components and amendments						
Cotton waste from factory	1.3	0.4	0.4	—	—	—	—
Cottonseed hull ash	0	—	27	—	—	—	—
Cottonseed meal	6 to 7	2.5	1.5	0.4	0.9	0.2	—
Cotton motes	2	0.5	3	4	0.7	0.6	—
Cowpea forage	0.4	0.1	0.4				
Dog manure	2.0	10.0	0.3	—	—	—	—
Eggs	2.2	0.4	0.2	—	—	—	—
Egg shells (burned)	—	0.4	0.3	—	—	—	—
Egg shells	1.2	0.4	0.2	—	—	—	—
Feathers	15.3	—	—	—	—	—	—
Fermentation sludges	3.5	0.5	0.1	7.3	0.1	—	—
Fish scrap (acidulated)	5.7	3.0	—	6.1	0.3	0.2	0.5
Fish scrap (dried)	9.5	6.0	—	6.1	0.3	0.2	1.5
Fly ash:							
coal	0.3	—	0.1	0.48	—	—	—
wood	0.1	0.6	10.0	9.8	0.66	—	—
Frittercake:							
enzyme production	—	2.2	0.5	—	—	—	—
citric acid production	—	2.0	0.3	—	5.2	—	—

Table 3 *(continued)*

Material	Percentage by Weight						
	N	P_2O_5	K_2O	Ca	Mg	S	Cl
Garbage tankage	2.5	1.5	1.0	3.2	0.3	0.4	1.3
Greensand	—	1 to 2	5.0	—	—	—	—
Grape skins (ash)	—	3.6	31.0	—	—	—	—
Hair	12 to 16	—	—	—	—	—	—
Hay:							
Legume	3.0	1.0	2.4	1.2	0.2	0.3	—
Grass	1.5	0.5	1.9	0.8	0.2	0.2	—
Leather (acidulated)	—	7 to 8	—	—	—	—	—
Leather (ground)	10 to 12	—	—	—	—	—	—
Leather scrap (ash)	—	2	0.4	—	—	—	—
Milk	0.5	0.3	0.2	—	—	—	—
Oak leaves	0.8	0.4	0.2	—	—	—	—
Peanut hull meal	1.2	0.5	0.8	—	—	—	—
Peanut meal	7.2	1.5	1.2	0.4	0.3	0.6	0.1
Peat/muck	2.7	—	—	0.7	0.3	1.0	0.1
Pine needles	0.5	0.1	—	—	—	—	—
Poultry processing:							
DAF sludge	8.0	1.8	0.3	—	—	—	—
Potato tubers	0.4	0.2	0.5	—	—	—	—
Potato, leaves & stalks	—	0.6	0.2	0.4	—	—	—
Potato skins, raw ash	—	—	5.2	27.5	—	—	—
Sawdust	0.2	—	0.2	—	—	—	—
Sea marsh hay	1.1	0.2	0.8	—	—	—	—
Seaweed (dried)	0.7	0.8	5.0	—	—	—	—
Sewage sludge (municipal)	2.6	3.7	0.2	1.3	0.2	—	—
Shrimp heads	7.8	4.2	—	—	—	—	—
Shrimp waste	2.9	10	—	—	—	—	—
Siftings from oyster shell mound	0.4	10.4	0.1	—	—	—	—
Soot from chimney flues	—	0.5 to 11	—	1.0	0.4	—	—
Soybean meal	7.0	1.2	1.5	0.4	0.3	0.2	—
Spanish moss	0.6	0.1	0.6	—	—	—	—
Spent brewery yeast	—	7.0	0.4	0.3	0.04	0.03	—
String bean strings & stems (ash)	—	5.0	18.0	—	—	—	—
Sweet potato skins boiled (ash)	—	3.29	13.9	—	—	—	—
Sweetpotatoes	0.2	0.1	0.5	—	—	—	—

Table 3 *(continued)*

Material	Percentage by Weight						
	N	P_2O_5	K_2O	Ca	Mg	S	Cl
Tankage	7.0	1.5	3 to 10	—	—	—	—
Textile sludges	2.8	2.1	0.2	0.5	0.2	—	—
Wood ashes	0.0	2.0	6.0	20.0	1.0	—	—
Wood processing wastes	—	0.4	0.2	0.1	1.1	0.2	—
Tobacco leaves	4.0	0.5	6.0	—	—	—	—
Tobacco stalks	3.7	0.6	4.5	—	—	—	—
Tobacco stems	2.5	0.9	7.0	—	—	—	—
Tomatoes, fruit	0.2	0.1	0.4	—	—	—	—
Tomato leaves	0.4	0.1	0.4	—	—	—	—

Note: Approximate values are given. Have materials analyzed for nutrient content before using.

Table 4. Nutrient Content of Manures

Type	TKN	P_2O_5	K_2O	Ca	Mg	S
	lb/unit wet basis					
DAIRY						
Fresh (lb/ton)	10	5	8	4	2	1
Paved surface scraped (lb/ton)	10	6	9	5	2	2
Liquid manure (lb/1,000lb)[1]	23	14	21	10	5	3
Lagoon liquid (lb/acre-inch)[2]	137	77	195	69	35	25
Anaerobic lagoon sludge (lb/acre-inch)[2]	15	22	8	12	4	4
BEEF						
Fresh (lb/ton)	12	7	9	5	2	2
Paved surface scraped (lb/ton)	14	9	13	5	3	2
Unpaved feedlot (lb/ton)	26	16	20	14	6	5
Lagoon liquid (lb/acre-inch)[2]	83	77	129	24	19	—
Lagoon sludge (lb/1,000lb)[1]	38	51	15	36	5	—
BROILER						
Fresh (lb/ton)	26	17	11	10	4	2
House litter (lb/ton)	72	78	46	41	8	15
Stockpiled litter (lb/ton)	36	80	34	54	8	12
DUCK						
Fresh (lb/ton)	28	23	17	—	—	—
House litter (lb/ton)	19	17	14	22	3	3
Stockpiled litter (lb/ton)	24	42	22	27	4	6

Table 4 *(continued)*

Type	TKN	P_2O_5	K_2O	Ca	Mg	S
	lb/unit wet basis					
GOAT						
Fresh (lb/ton)	22	12	18	—	—	—
HORSE						
Fresh (lb/ton)	12	6	12	11	2	2
LAYERS						
Fresh (lb/ton)	26	22	11	41	4	4
Undercage paved (lb/ton)	28	31	20	43	6	7
Deep pit (lb/ton)	38	56	30	86	6	9
Liquid (lb/1,000lb)[1]	62	59	37	35	7	8
Lagoon liquid (lb/acre-inch)[2]	179	46	266	25	7	52
Lagoon sludge (lb/1,000lb)[1]	26	92	13	71	7	12
RABBIT						
Fresh (lb/ton)	24	23	13	19	4	2
SHEEP						
Fresh (lb/ton)	21	10	20	14	4	3
Unpaved (lb/ton)	14	11	19	24	7	6
SWINE						
Fresh (lb/ton)	12	9	9	8	2	2
Surface scraped (lb/ton)	13	12	9	12	2	2
Liquid manure (lb/1,000lb)[1]	31	22	17	9	3	5
Lagoon liquid (lb/acre-inch)[2]	136	53	133	25	8	10
Lagoon sludge (lb/1,000lb)[1]	22	49	7	16	4	8
TURKEY						
Fresh (lb/ton)	27	25	12	27	2	—
House litter (lb/ton)	52	64	37	35	6	9
Stockpiled litter (lb/ton)	36	72	33	42	7	10

Notes:

Approximate nutrient contents are given. Have materials analyzed for nutrient content before using.

North Carolina mean waste analysis 1981-1990 supplied by J.C. Barker, NCSU Department of Biological and Agricultural Engineering.

[1]Pounds per thousand pounds of manure liquid (slurry).

[2]Pounds per acre-inch. Estimated total lagoon liquid includes total liquid manure plus average annual lagoon surface rainfall surplus; does not account for seepage.

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