

Dairy manure calculator for nutrient input for crop production.									
Manure Nutrient Analysis Report Lab		Customer Name		Analysis Date	Sample #	Material	Storage System	Dry Matter Level in Manure	Multiple Year Application Nutrient Availability Increase
TESTING LAB		CUSTOMER		2/10/11	15125	Dairy Manure	Solid	19.90%	For 2 years: N, P, K & S BY 10% & for more than 2 years by 15% and more than 3 years by 20%.
		REPORTED FROM ANALYSIS							
REPORTED NUTRIENT LEVEL	Units reported in (% , lb/ton, ppm)	1 for As Is 2 for Dry Matter	Lb/Ton	%	ppm	Lb/Ton Per Crop	EST. % NUTRIENT AVAILABLE FIRST YEAR OF ADDITION.	NUT. AVAIL/TON PER SEASON Dry Matter Considered	AMOUNT AVAILABLE BASED ON Multiple Year Usage
Ammonium Nitrogen	%	1		0.060%		1.200	80.00% Available/year	0.960	0.960
NO <sub>3</sub> -N Nitrogen	%	1		0.001%		0.020	50.00% Available/year	0.010	0.010
Total Nitrogen	lb/ton	1	8.200			8.200	60.00% Available/year	4.920	4.920
Phosphorus P <sub>2</sub> O <sub>5</sub>	lb/ton	1	3.460			3.460	40.00% Available/year	1.384	1.384
Potassium K <sub>2</sub> O	lb/ton	1	2.480			2.480	90.00% Available/year	2.232	2.232
Sulfur	lb/ton	1	1.390			1.390	60.00% Available/year	0.834	0.834
Calcium	%	2		1.480%		29.600	40.00% Available/year	2.356	2.356
Magnesium	%	2		0.260%		5.200	40.00% Available/year	0.414	0.414
Iron	ppm	2			510	1.020	40.00% Available/year	0.081	0.081
Zinc	ppm	2			276	0.552	30.00% Available/year	0.033	0.033
Copper	ppm	2			65	0.130	50.00% Available/year	0.013	0.013
Manganese	ppm	2			133	0.266	50.00% Available/year	0.026	0.026
Sodium	%	2		0.18%		3.600	70.00% Available/year	0.501	0.501
Manure Dry Matter %		19.90%	Moisture	80.10%	Years Used	1.0	NO WARRANTIES OR GUARANTEES ARE MADE OR IMPLIED AS TO THE NUTRIENT VALUE OR RELEASE POTENTIAL BY THIS PROGRAM.		
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Additional Notes for usage of this manure analysis vs. crop production to prevent N and P leaching.						Manure from Dairy sources have nutrient release rates dependent upon time and method of incorporation/usage. Analysis of manure samples will determine the amount of nutrients available for a particular crop. Manure application made yearly will also affect the nutrient release/availability for the year. Only a portion of the nutrients are available for the year of application. Typically 50% of the organically bound N and 70 - 80% of other nutrients become available to a crop during the year of application. The remaining organically bound nitrogen can be released in subsequent years and should be accounted for in a fertility or comprehensive nutrient management plan. Manures can also have a relatively high salt index because of soluble salts (minerals) in the manure. These salts can cause injury to crops if excessive rates are applied. Surface applied vs. incorporated manure will also impact release rates and efficiency of use rates for ammonia because of volatilization of ammonia into the atmosphere. This model uses coefficients to estimate nutrient availability and to account for different manure types and methods of land application. These availability coefficients are multiplied by the total nutrient concentration for each element as reported in the manure analysis. Much of this data is provided in reference material on Soil Facts about Dairy Manure as a Fertilizer Source from NCSU - Biological and Engineering Department.			
Minor elements are reported in % based on Dry matter of the manure/slurry. Ammonia, Nitrate & pH is reported as is. Other nutrients are reported on a lb/ton used basis. All conversions have been made on this worksheet. As new samples arrive the information should be logged into this database for evaluation with fertility models for crop production vs. usage rates.									
Manure can be incorporated into the top 4-6 inches of soil to achieve maximum benefits and to prevent a surface layer of salts that could damage the corn seedlings and reduce yield. Pockets of salts, especially since the manure has ~ 0.6% sodium, could be a problem without incorporation. Incorporated manure will result in better usage of nutrients by the plants.									
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NUTRIENT COEFFICIENTS AND TYPICAL PERCENTAGES FOR DAIRY MANURE SOURCES				
Manure Type	Total Nitrogen N	Ammonium NH <sub>4</sub> -N	Phosphorus P <sub>2</sub> O <sub>5</sub>	Potassium K <sub>2</sub> O
Lot-scraped manure (lb/ton)	10	3	6	9
range	3 - 20	2 - 15	0.6 - 13	2 - 20
Liquid manure slurry (lb/1,000 gal)	22	9	14	21
range	8 - 50	4 - 13	0.2 - 38	0.7 - 50
Anaerobic lagoon sludge (lb/1,000 gal)	15	6	22	8
range	3 - 42	1 - 12	2 - 64	2 - 20
Anaerobic lagoon liquid (lb/acre-inch)	137	88	77	195
range	17 - 268	22 - 130	10 - 233	13 - 571

Source: Biological and Agricultural Engineering Department, North Carolina State University, 1980 - 1990. No manure solids removed before lagoon input.