



A Guide to the Nutrient Value of Organic Materials

Many home gardeners want to grow fruits and vegetables with organic sources of fertilizer. Considering the many benefits of the addition of organic materials, this subject warrants attention. Manure and composted plant materials add organic matter. This aids in moisture retention, helps reduce compaction and can buffer extremes in pH. It also helps maintain the structure and nutrient holding capacity of the soil.

However, the nutrient level of organic materials is lower, rate of release is slower, and levels of minerals may vary and are not balanced. The information below will help you interpret differences in nutrient content and relative availability of organic materials. Fruits and vegetables often have high nitrogen demands, and it can be difficult to provide sufficient nitrogen from an organic source throughout the growing season of the crop. In addition, availability of nitrogen late in the season can make perennial plants such as raspberries and apples susceptible to winter injury. It is a challenge to provide plants with a readily available organic nitrogen source early in the growing season, yet have it less available in late summer.

Much variability exists in the composition of similar organic materials. For example, manure with straw will have a different nitrogen composition than pure manure, and the rate of nitrogen release may be slower because of the higher amount of carbon in the straw. The table below (page 2) lists the approximate composition of various organic materials, and the nitrogen, potassium and phosphorus that can be provided from them.

Composition of Manure From Samples Reported in <i>Knott's Handbook for Vegetable Growers</i>				
Fresh Manure w/ bedding or litter	Moisture (%)	Nitrogen (% N)	Phosphorus (% P ₂ O ₅)	Potassium (% K ₂ O)
Cattle	86	11	4	10
Duck	61	22	29	10
Goose	67	22	11	10
Hen	73	22	22	10
Hog	87	11	6	9
Horse	80	13	5	13
Sheep	70	20	15	21
Turkey	74	26	14	10
Dried Commercial Products				
Cattle	10	42	42	61
Hen	13	31	31	40
Hog	10	45	45	20
Rabbit	16	26	26	32
Sheep	16	32	32	41
From: Lorenz, Oscar A. and Donald N. Maynard. 1980. <i>Knott's Handbook for Vegetable Growers</i> . 2 nd Edition. pg. 75-76.				

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Guide To The Mineral Nutrient Value Of Organic Materials				
Percent (%)				
Materials	Nitrogen (% N)	Phosphorus (% P₂O₅)	Potassium (% K₂O)	Relative Nutrient Availability
Bone Meal (raw)	2 to 6	15 to 27	0	Slow
Bone Meal (steamed)	0.7 to 4	10 to 34	0	Slow - Medium
Cocoa Shell Meal	2.5	1	2.5	Slow
Compost (not fortified)	1.5 to 3.5	0.5 to 1	1 to 2	Slow
Cotton Seed Meal (dry)	6	2.5	1.7	Slow - Medium
Dried Blood (dry)	12	1.5	0.57	Medium - Rapid
Fish Meal (dry)	10	4	0	Slow
Milorganite (dry)	5	2 to 5	2	Medium
Mushroom Compost	0.4 to .7	1	0.5 to 1.5	Slow
Peat and Muck	1.5 to 3	0.25 to 0.5	0.5 to 1	Very Slow
Sawdust	4	2	4	Very Slow
Sewage Sludge (digested)	1 to 3	0.5 to 4	0 to 0.5	Slow
Urea	42 to 45	0	0	Rapid
Wood Ashes*	0	1 - 2	3 - 7	Rapid
Manure (fresh)				
Cattle	0.25	0.15	0.25	Medium
Horse	0.3	0.15	0.5	Medium
Sheep	0.6	0.33	0.75	Medium
Swine	0.3	0.3	0.3	Medium
Poultry (50% water)	2	2	1	Medium - Rapid
* Wood ash may raise soil pH				