Appendix C, Table 6 to Rule 901:10-2-14: Method of Calculating N Availability of Manures

This table can be used to estimate the availability of ammonia and organic nitrogen in the soil. Only about one-third of the organic nitrogen in animal manure is available to crops during the year it is applied, and the remaining two-thirds, residual organic nitrogen, becomes part of the soil organic matter. It is mineralized or becomes available at the rate of approximately five per cent a year. Because ammonia is subject to high volatilization, incorporation factors of time of year and days until incorporation affect the availability of nitrogen.

The first column is the per cent of available ammonia from animal manure. The second column is the per cent of available organic nitrogen from animal manure. The third column is the time of year in which application can be made. The fourth column is the number of days till incorporation.

For example: Using the first row of data, if manure is applied in November, fifty per cent of the available nitrogen comes from ammonia and thirty-three percent of the available nitrogen from residual organic nitrogen in manure if incorporated in less than five days.

Using the second row of data, if manure is applied in November, twenty-five per cent of the available nitrogen comes from ammonia and thirty-three per cent of the available nitrogen from residual nitrogen in manure if incorporation is more than five days after application.

Method of Calculating N Availability of Manures [a]			
Available Nitrogen %		**~~Time~~ Timing of Application**	**Days until Incorporated [b]**
NH_4	**Organic**	**Date**	**Days**
50	33	Nov-Feb	≤5
25	33	Nov-Feb	>5
50	33	Mar-Apr 15	≤3
25	33	Mar-Apr 15	>3
75	33	Apr 16-Jun	≤1
25	33	Apr 16-Jun	>1
75[c]	15	Jul-Aug[d]	≤1
25	15	Jul-Aug[d]	>1
25	33	Sep-Oct[d]	≤1
15	33	Sep-Oct[d]	>1

a. The calculations are for all animal manures. It is assumed that 50% of the organic N in poultry manure is converted to NH_4 rapidly and is therefore included in the NH_4 column for calculating available N.

b. Incorporation is the mixing of manure and surface soil.

c. The 75% available nitrogen (NH_4) is based on the nitrogen being used in the year it is applied. If the nitrogen is carried over to the following year, then 25% available nitrogen (NH_4) shall be used.

d. OAC 901:10-2-14(D)(3)(b) - If the nitrogen leaching risk assessment procedure completed in accordance with paragraph (D)(3)(a) of this rule demonstrates that the land application area has a high nitrogen leaching potential and no growing crop or no cover crop ~~planted~~ is planted within seven days following land application of manure, then application of manure shall be limited to fifty pounds of applied nitrogen per acre calculated at the time of application from July 1st to September 30th. The 50 lbs/acre applied nitrogen limitation for manure applied from July 1st to September 30th is based on the total NH_4 content plus 33% of the Organic Nitrogen content.

~~b. Incorporation is the mixing of manure and surface soil.~~

Sources: (1) Ohio Livestock Manure Management Guide (Ohio State University, Bulletin 604, 2006)

(2) USDA-NRCS, Ohio Conservation Practice Standard 590, Nutrient Management (December 2020)

~~Source: Ohio Livestock Manure And Wastewater Management Guide Bulletin 604. M. A. Veenhuizen, D.J. Eckert, K.Elder,~~

~~J.W. Johnson, W.F. Lyon, K.M. Mancl and G. Schnitkey (1992). Columbus, OH: Ohio State University.~~