State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Agricultural Site Worksheet (Application Rate Calculations)

Form 3400-054 (R 10/04)

Notice: Use this form to determine appropriate application rates as required under 204.07(8), Wis. Adm. Code.
Use the reverse side of this form to do additional calculations for crops grown on the site.

WPDES Permit Number	DNR Site Number	Field Number	Date of Sludge Analysis Used
WI-00 ___ ___ ___ ___ ___			

Loading Rate Calculated For

Season	Year

Recommended Sludge Application Rate Based on Nitrogen

Residual Nitrogen

1	2	3	4	5	6
Year of Application	% Organic Nitrogen of Sludge	Conversion factors based on mineralization rate	Product of Columns 2 & 3	Total Dry Tons of Sludge Applied Per Acre	Available Residual Nitrogen (lbs/acre)
1 Yr Ago		X 1.8 =		X	=
					+
2 Yrs Ago		X 0.8 =		X	=

7		8	9	13	14	15		16
Total Recommended Nitrogen For Crop (lbs/acre)	=	Other Sources of Nitrogen (lbs/acre)	Total Nitrogen Needed (lbs/acre)	Available Nitrogen in Sludge (lbs/dry ton)	Recommended Sludge App. Rate Based on Nitrogen (dry tons/acre)	% Solids	=	
From Soil Test Form	Sum of Column 6 Above			From Below		From Form 3400-49		
	–	–	=	÷	=	÷ __ __ . __	=	

Nitrogen in Sludge

10	11	12
Sludge Content (% Dry Weight)		
TKN	Ammonium Nitrogen	Organic Nitrogen
From Form 3400-49		
10a	– 11a	= 12a
	☐ if incorporated or injected X 20 ☐ if surface applied X 10	X 5
	11b	+ 12b = 13
	(lbs/dry ton)	(lbs/dry ton) Use in Column 13 above

Gallons / Acre

X 23981

To convert to Gallons / Acre Multiply by 23981

To convert to Cubic Yards / Acre Multiply by 118.7

X 118.7

Cubic Yards / Acre

Instructions

Use this form to determine appropriate application rates based on nitrogen crop needs on a site by site basis. This form need not be submitted to the department but is advisable to keep in records.

1. **Year of Application (no entry required)**

2. **% Organic nitrogen of biosolids** – Enter percent organic N from previous year and from 2 years ago if used. (TKN - NH4 = Org N)

3. **Conversion Factor** = 1.8 (assumes 12% mineralization rate for previous year) and 0.8 (assumes 6% mineralization rate for 2 years ago).

4. **Product of Columns 2 & 3** – Multiply column 2 by column 3 (for 1 year ago and for 2 years ago if appropriate).

5. **Total dry tons of biosolids applied per acre** – Enter the dry tons per acre that were applied on this site in the previous year and 2 years ago.

6. **Available Residual Nitrogen (lbs per acre)** – Multiply column 4 by column 5 for each 1 year ago and 2 years ago. Add the results and bring the sum to the space below.

7. **Total Recommended Nitrogen for Crop (lbs/acre)** – Enter the recommendation from the soil test result.

8. **Other Sources of Nitrogen** – Include any known nitrogen the farmer will add from manure, commercial fertilizer, credits from the soil test, etc.

9. **Total Nitrogen Needed (lbs/acre)** – Subtract column 6 from column 7 then subtract column 8 from the result.

10. **Total Kjeldahl Nitrogen (TKN)** – Enter the TKN result from your most recent analysis (% dry weight).

11a. **Ammonium Nitrogen (NH_4)** – Enter the Ammonium result from your most recent analysis (% dry weight)

Check appropriate box if Incorporate or Inject versus surface apply.

Multiply Column 11 by appropriate factor next to checked box (either 20 or 10) and place in box 11b below.

12. **Organic Nitrogen** – Subtract column 11a from column 10a. Multiply this result by 5 (assumes 25% mineralization rate for first year) and bring to box 12b below.

13. **Available Nitrogen in Biosolids (lbs/dry ton)** – Add bottom values in column 11b and 12b.

14. **Recommended biosolids application based on nitrogen (dry tons/acre)** – Divide column 9 by column 13.

15. **Percent Solids (% TS)** – Enter the percent solids result from the most recent analysis.

16. **Application Rate Determination** – Divide column 14 by column 15. Then determine application rate for liquid by multiplying by 23981. This provides recommended application rate in gallons per acre. Determine application rate for cake by multiplying by 118.7. This provides recommended application rate in cubic yards per acre.