

**Biosolids Plant Available Nitrogen (PAN) & Agronomic Application Rate  
Calculation Worksheet**

NOTE: Gray Cells Require User Input

**1** Calculate Biosolids Organic Nitrogen (%TKN - (%NH<sub>3,4</sub>-N))  
 Note: if in mg/Kg (ppm) convert to % (pph) before entry (mg/Kg/10,000 =%)

%TKN	3.60
- %NH <sub>4</sub> -N	2.10
= %Org-N	1.50

**2** Biosolids %NH<sub>3,4</sub>-N Remaining after Volatilization [(%NH<sub>3,4</sub>(fv/100))]

Days to Incorporate	Estimated NH <sub>3</sub> Retained (fv) %				Injected
	Surface-applied			Compost or Air Dried	
	Liquid Biosolids	Dewatered Biosolids	Alkaline Stabilized		
0 to 2	50 - 80	55 - 85	10	100	100
3 to 6	30 - 65	45 - 75	10	100	100
over 6+	10 - 35	20 - 45	10	100	100

%NH <sub>4</sub> -N	2.10
x (fv)	50
= %avail NH <sub>4</sub> -N	1.05

**3** Biosolids %Org-N Mineralized in first year [(%Org N x (fm/100))]

1st Year Estimated Mineralization Rate (fm)		
Processing	Moisture Content	Est. of first year Mineralization
Anaerobic digestion	liquid	20-40
Aerobic digestion	liquid	30-45
Aerobic/anaerobic digestion	liquid	15-30
storage in lagoon > 6 months	liquid	15-30
Anaerobic digestion & dewatering	semi-solid	25-32
Drying bed	solid	15-30
Heat-dried	solid	20-40
Compost	solid	0-20
CSU Average		27

%Org-N	1.50
x (fm)	30
= %avail Org-N	0.45

**4** TOTAL % Available N from Biosolids  
 = %NO<sub>3</sub>-N + %avail NH<sub>4</sub>-N + %avail Org-N

%NO <sub>3</sub> -N	0.02
+ %avail NH <sub>4</sub> -N	1.05
+ %avail Org-N	0.45
= %avail N	1.52

**5** Plant Available Nitrogen (PAN) per Dry Ton of Biosolids  
 = [(% Available N)/(100)](2000 lbs per ton)  
 = (% Available N)(20)

%avail N	1.52
x 20	20.00
= lbs PAN/dt	30.40

**6** Soil - available N

# N available in Soil 0.00

# N available from previous biosolids applications 0.00

Fertilizer recommendation 75.00

Crop N requirement (lbs.N/ acre)

N requirement from biosolids 75.00

**7**

dt/ac 2.47

**8** Biosolids Agronomic Application Rate, dry tons/acre

**9** Biosolids Agronomic Application Rate  
 wet tons/ac = [(dt/ac)/(%TS)]100  
 gallons/ac = [(dt/ac)(2000)/(8.34)(%TS)]100

Biosolids % Total Solids  
 27.00

wet tons/ac	9.1
gallons/ac	2,191