

# Managing Nitrogen from Biosolids

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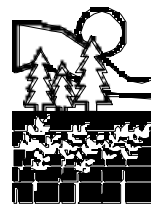
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## Foreword

Both the art and the science of biosolids management have evolved rapidly in the last few years. As the business of biosolids management has evolved, so has the recognition that nitrogen management in biosolids and other organic byproducts is a complex proposition.

In 1993, the Washington State Department of Ecology (Ecology) published the first draft of *Biosolids Management Guidelines* (WDOE 93-80). These guidelines provided a much needed approach for determining biosolids application rates. After release of the draft, it was recognized that even more comprehensive information and guidance on biosolids nitrogen management would be useful. A strong and cooperative working relationship between Ecology, the Northwest Biosolids Management Association, and universities in the Pacific Northwest presented an ideal opportunity for compiling existing information on nitrogen in biosolids and combining it with the most current scientific knowledge on the behavior of nitrogen in the environment.

This manual, *Managing Nitrogen from Biosolids*, is the outcome of this collaboration. It is written for professionals and other persons interested in developing a comprehensive understanding of biosolids nitrogen management and learning an exacting approach to determining biosolids application rates. It does not purport to have broad applicability for management of nitrogen in residuals other than biosolids. It is hoped, however, that those managing nitrogen in other materials can find some support for their efforts in this manual. Nor is this manual considered a final and definitive work. It will be updated and improved as our knowledge of nitrogen management grows. For those with a less critical need to manage biosolids nitrogen, Ecology's *Biosolids Management Guidelines* is recommended for those in Washington state; publications approved by appropriate regulatory agencies and academic institutions are recommended for those in other states and in British Columbia.

*Managing Nitrogen from Biosolids* is the product of a cooperative effort between the states of Washington, Oregon, and Idaho, and the province of British Columbia, Canada. The Washington State Department of Ecology appreciates the cooperation and contributions of Dr. Charles Henry, University of Washington, College of Forest Resources; Dr. Craig Cogger, Washington State University Cooperative Extension Service; Dr. Dan Sullivan, Oregon State University; Dr. Bob Rynk, University of Idaho; Michael Van Ham, University of British Columbia; and Roberta King, King County, Washington. The support and involvement of the Northwest Biosolids Management Association are also acknowledged and appreciated.

## Contents

### Foreword

<b>Chapter 1:</b>	<b>Introduction</b> . . . . .	1.1
<b>Chapter 2:</b>	<b>The Nitrogen Cycle</b> . . . . .	2.1
	The importance of nitrogen as a plant nutrient . . . . .	2.1
	Biosolids as a means to provide nitrogen and other nutrients to soils and plants . . . . .	2.2
	Mechanics of the nitrogen cycle . . . . .	2.2
	Nitrogen mineralization and immobilization . . . . .	2.4
	Ammonia volatilization . . . . .	2.6
	Plant uptake . . . . .	2.7
	Nitrification . . . . .	2.7
	Denitrification . . . . .	2.8
<b>Chapter 3:</b>	<b>Overview of the Nitrogen Balance Approach and Guidelines for Reducing Risks of Nitrate Leaching</b> . . . . .	3.1
	Steps in the Nitrogen Balance Approach . . . . .	3.1
	Guidelines for reducing risks of nitrate leaching . . . . .	3.3
<b>Chapter 4:</b>	<b>Using the Nitrogen Balance Approach for Estimating Net Plant-Available Nitrogen from Biosolids</b> . . . . .	4.1
	Components of the plant-available nitrogen calculation . . . . .	4.1
	Mineralization rate of organic N in biosolids . . . . .	4.1
	Volatilization of Ammonia . . . . .	4.4
	Denitrification . . . . .	4.6
	Example plant-available nitrogen calculation . . . . .	4.7
	References . . . . .	4.8
<b>Chapter 5:</b>	<b>Using the Nitrogen Balance Approach for Agricultural Systems</b>	
	D. SULLIVAN . . . . .	5.1
	Acceptable agronomic rate ranges . . . . .	5.1
	Estimating plant-soil (crop) nitrogen requirement ( $N_{req}$ ) . . . . .	5.2
	Estimating Nitrogen from Other Sources ( $N_{credits}$ ) . . . . .	5.5
	Example net crop nitrogen requirement calculation . . . . .	5.9
	Uncertainties in estimating net crop nitrogen requirements in agricultural systems . . . . .	5.9
	References . . . . .	5.13
<b>Chapter 6:</b>	<b>Using the Nitrogen Balance Approach for Forest Systems</b>	
	C. HENRY . . . . .	6.1
	Application of biosolids to forest sites . . . . .	6.1
	Estimating plant nitrogen requirement ( $N_{req}$ ) . . . . .	6.1
	Estimating nitrogen from other sources ( $N_{credits}$ ) . . . . .	6.4
	Example net nitrogen requirement calculations . . . . .	6.5
	Uncertainties in estimating net nitrogen requirements in forest systems . . . . .	6.6
	References . . . . .	6.8

<b>Chapter 7: Using the Nitrogen Balance Approach for Rangelands</b>	
R. RYNK .....	7.1
Application of biosolids to rangelands .....	7.1
Determining biosolids application rates .....	7.3
Recommended management practices .....	7.4
References .....	7.5
<b>Chapter 8: Overview of the Balanced Soil Amendment Approach for Mixtures of Biosolids and Carbon-Rich Residuals</b>	
C. HENRY .....	8.1
Results of studies on carbon-to-nitrogen ratios .....	8.1
Choosing an initial organic matter content and C:N ratio .....	8.5
Calculating application rates using the Balanced Soil Amendment Approach .....	8.7
Summary .....	8.9
References .....	8.9
<b>Chapter 9: Analysis of Nitrogen in Soils and Biosolids</b>	
K. DORSEY .....	9.1
Preparing a sampling plan .....	9.2
Collecting samples .....	9.2
Preparing and analyzing samples .....	9.3
Reporting .....	9.5
References .....	9.6
<b>Appendices</b>	
A. Glossary	
B. Abbreviations & Symbols	
C. Matrix Tables of Local Research Results	
Pacific Northwest biosolids Research Results: Mineralization	
Pacific Northwest biosolids Research Results: Volatilization	
Pacific Northwest biosolids Research Results: Denitrification	
D. Nitrogen Mineralization Study	
E. Ammonia Volatilization Study	
F. Verifying Biosolids N Availability with Crop Uptake Research	
G. Pacific Northwest Agricultural Biosolids Management References	

## List of Figures

### Chapter 1

- Figure 1.1. The Nitrogen Balance Approach and the Balanced Soil Amendment Approach for determining biosolids application rates . . . . . 1.2

### Chapter 2

- Figure 2.1 Comparison of the chemical composition of a typical soil to a typical biosolids . . . . . 2.2
- Figure 2.2 The nitrogen cycle: inputs to soil, nitrogen transformations, and losses from soil . . . . . 2.3
- Figure 2.3 Nitrogen inputs to soil: atmospheric deposition, nitrogen fixing plants, and fertilization . . . . . 2.4
- Figure 2.4 The processes of nitrogen mineralization and immobilization from biosolids . . . . . 2.6
- Figure 2.5 The process of ammonia volatilization from biosolids . . . . . 2.7
- Figure 2.6 The change in percentage of ammonia versus ammonium in solution as the pH and temperature change . . . . . 2.7
- Figure 2.7 The process of nitrification, which may lead to leaching . . . . . 2.8
- Figure 2.8 The process of denitrification. . . . . 2.8

### Chapter 3

- Figure 3.1 Conceptual presentation of the plant-soil nitrogen requirement . . . . . 3.1
- Figure 3.2 Conceptual presentation of net plant-available N . . . . . 3.2
- Figure 3.3 Conceptual presentation of biosolids application rate calculation. . . . . 3.3

### Chapter 5

- Figures 5.1 Nitrogen application rates required to reach 95 percent of maximum yield (a) or 100 percent of maximum yield (b). Nitrogen response plotted as a quadratic function. Dryland soft white winter wheat, Ellensburg, WA, 1992 . . . . . 5.2
- Figures 5.2 Example of nitrogen deficiency, agronomic rate, and excess N ranges as demonstrated by grain N uptake and soil nitrate-N (a) and grain yield and grain N concentration (b). Dryland soft white winter wheat, Ellensburg, WA, 1992 . . . . . 5.2
- Figure 5.3 Plant-available nitrogen supplied by biosolids and other available nitrogen sources compared with nitrogen uptake by a silage corn crop. The difference between total nitrogen supply and crop nitrogen uptake represents a nitrogen use efficiency of 60 percent . . . . . 5.12

### Chapter 8

- Figure 8.1 Types and general fractions of carbon compounds found in plant residues and soils . . . . . 8.2
- Figure 8.2 Conceptualized rate of decomposition of different organic compounds . . . . . 8.3
- Figure 8.3 Comparison in accumulative mass of nitrate leaching between two biosolids/paper mill fine mixtures with 12:1 and 52:1 carbon-to-nitrogen ratios . . . . . 8.4
- Figure 8.4 Percentage loss of organic matter in mixtures and percentage loss of total nitrogen from biosolids/paper mill fine mixtures as a function of initial carbon-to-nitrogen ratios of the mixtures . . . . . 8.4
- Figure 8.5 Delay in the appearance of nitrate leaching from tubes as a function of initial carbon-to-nitrogen ratios of biosolids/paper mill fine mixtures. . . . . 8.5
- Figure 8.6 The conceptual Balanced Soil Amendment Approach . . . . . 8.5

Figure 8.7 Ideal release curve for nitrogen as a function of carbon-to-nitrogen ratio . . . . . 8.6

## Chapter 9

Figure 9.1 Simplified flowchart for analysis of nitrogen in biosolids and soils. . . . . 9.4

## List of Tables

### Chapter 2

Table 2.1 Transformations and chemical reactions in the nitrogen cycle . . . . . 2.5

### Chapter 3

Table 3.1 Factors affecting the relative risk of nitrate leaching . . . . . 3.4

### Chapter 4

Table 4.1 Estimates of N mineralization rate ranges for biosolids treatment methods (percent of initial organic N) . . . . . 4.3

Table 4.2 Results of field studies of N mineralization rates in Northwest biosolids (percent of initial organic N) . . . . . 4.3

Table 4.3 Estimates of N mineralization rates for years following application of biosolids (percent of the remaining organic N) . . . . . 4.4

Table 4.4 Ammonia volatilization rates from Northwest biosolids applied in western Washington (maritime climate) . . . . . 4.5

Table 4.5 Suggested design values for ammonia loss after biosolids application to agricultural and forest lands . . . . . 4.6

Table 4.6 Suggested design values for denitrification rates after biosolids application to agricultural and forest lands . . . . . 4.7

Table 4.7 Example calculation of plant-available N from biosolids . . . . . 4.8

### Chapter 5

Table 5.1 Estimated Nitrogen uptake per unit of above-ground harvested biomass for crops used for biosolids application . . . . . 5.5

Table 5.2 Worksheet for estimating net crop N requirement for grass silage and winter wheat crops . . . . . 5.10

Table 5.3 Plant-available nitrogen throughout the growing season (May-September) for a silage corn crop planted May 15 with biosolids applied on April 15 at a rate of 400 lb/ac total nitrogen . . . . . 5.11

### Chapter 6

Table 6.1 Suggested design values for nitrogen uptake for forest trees and understory of fully established and vigorously growing forest ecosystems in Washington . . . . . 6.3

Table 6.2 Suggested design values for nitrogen immobilization in soils from biosolids applied to forest systems . . . . . 6.4

Table 6.3 Example estimate of biosolids N to be mineralized in 1996 based on estimated mineralization rates for 3 years prior to 1996 . . . . . 6.5

Table 6.4 Example estimate of residual soil nitrate . . . . . 6.5

Table 6.5 Example of calculation of first-year biosolids application rates for Douglas-fir stands of three different ages . . . . . 6.7

Table 6.6 Nitrogen requirements and application rates for biosolids application to hybrid poplar and young Douglas-fir plantations . . . . . 6.8

### Chapter 8

Table 8.1 C:N ratios of different kinds of mature compost and their corresponding raw materials . . . . . 8.3

Table 8.2 Recommended initial carbon-to-nitrogen ratios for mixtures of biosolids and carbon-rich residuals for use as soil amendments . . . . . 8.7

Table 8.3 Application rates for biosolids/C-rich residual mixtures with initial C:N ratios of 30:1 and 40:1 and a 10 percent initial organic matter content compared with application rates for biosolids only . . . . . 8.9