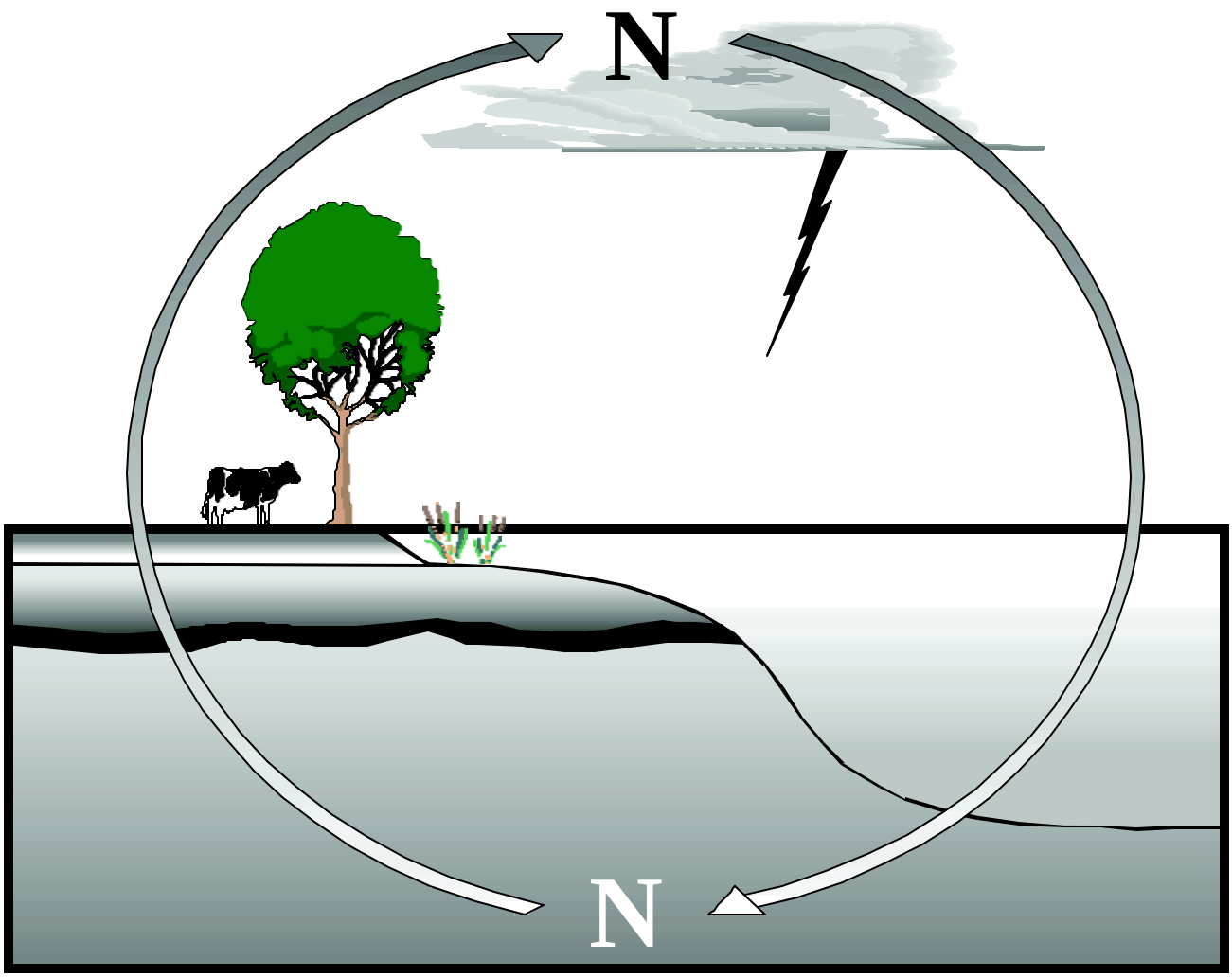
SOIL, WATER AND LAND USE:

II. Understanding Nitrogen Interactions



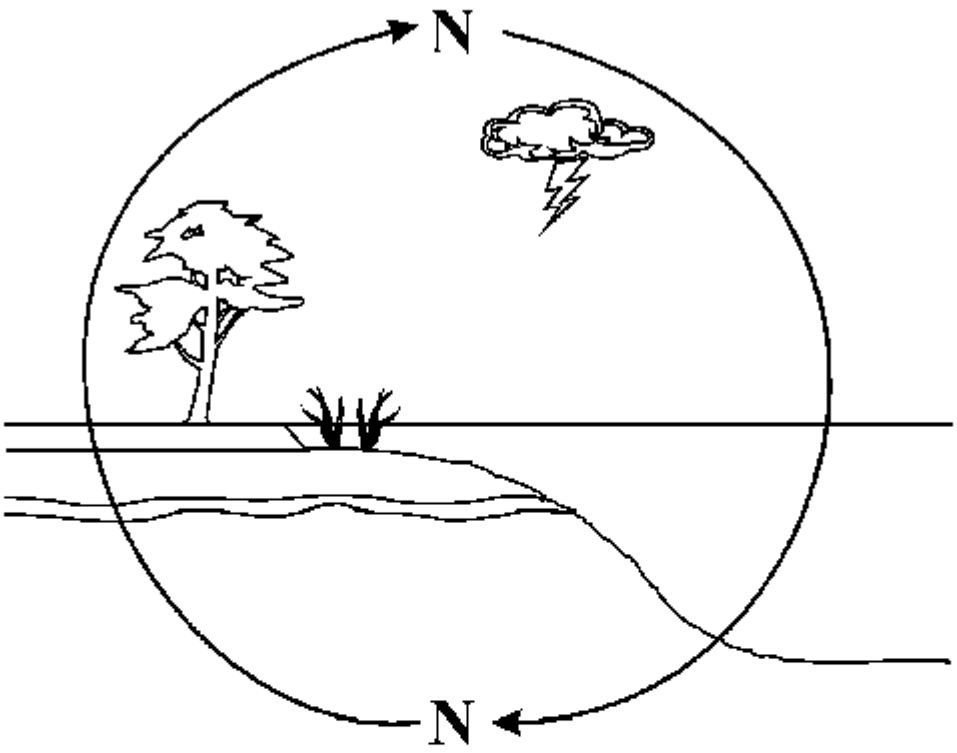
A Soil and Water Education Project Kit
For Ages 15-18

UNIVERSITY OF FLORIDA
IFAS EXTENSION

Our Natural World

SOIL, WATER AND LAND USE

Understanding Nitrogen Interaction



A Soil and Water Education Project Kit

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SOIL, WATER AND LAND USE:

II. Understanding Nitrogen Interactions

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Soil, Water and Land Use: II. *Understanding Nitrogen Interactions* was written by Angela Schipper, Louis Schipper and Art Hornsby of the Soil and Water Science Department, University of Florida.

Figures and other graphics were produced by Alison Edgell.

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For information on ordering a copy of *Soil, Water and Land Use: II. Understanding Nitrogen Interactions* contact:

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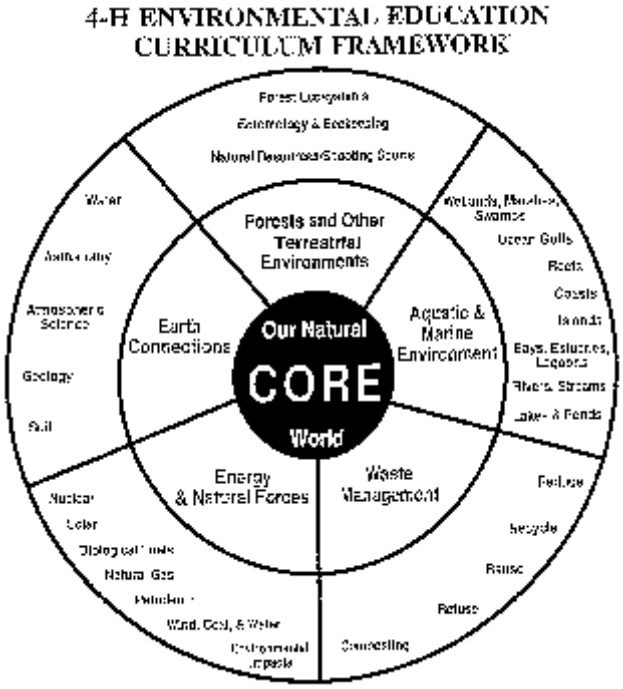
PREFACE

Nitrogen is an essential element that all living things require for life and growth. However, nitrogen can also be a source of concern. Forms of nitrogen have been linked to potentially harmful effects on human and animal health, and the environment. The goal of *Soil, Water and Land Use: II. Understanding Nitrogen Interactions* is to increase the understanding of nitrogen, its importance to life and its implications for water quality. Once students realize the interrelationship between individual actions and environmental effects, these same students can make more responsible and informed decisions about our natural resources.

The learning activities in this project use simple, inexpensive materials. The activities lend themselves to group work and participant-led discussions and conclusions to support the given background material. These activities follow the belief that learning should be a combination of discovery, discussion and learning from those who are more knowledgeable.

Although designed for high-school students, this curriculum package could be used in lower grades. Background knowledge varies with the age and experience of the students involved. Therefore, teachers are encouraged to choose activities most appropriate to classroom needs and time limitations.



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LESSON PROFILES

Lesson 1: Nitrogen- An Essential Element

Lesson 1 emphasizes the importance of nitrogen to human, animal and plant life. The background information explains the chemical and biological transformations of the nitrogen cycle. Activities focus upon soil microbes, nitrification, denitrification and nitrogen fixation.

Lesson 2: Environmental and Health Concerns

This lesson covers the effects of nitrate on human and animal health along with some environmental consequences of excess nitrogen in aquatic ecosystems. Activities provide a visual understanding of surface water degradation and chemical concentration (parts-per-million). Students can learn how to test water for nitrate.

Lesson 3: Nitrogen Considerations in Natural Systems

Students learn how soil properties and the makeup of aquifers affect movement of nitrate in the environment. Activities demonstrate the effect of soil texture on water infiltration, show how point- and non-point pollution sources enter into ground and surface water, and illustrate how confining layers can protect aquifers from contamination.

Lesson 4: Nitrogen Management

Students learn about a number of factors that should be considered for nitrogen management in agricultural and urban settings. Activities focus on understanding practical fertilizer matters including overirrigation, fertilizer-product labels and the nitrogen content of commercial fertilizers.

Lesson 5: Alternative Nitrogen Sources

This lesson introduces students to alternatives to commercial fertilizers through reuse of organic waste products. The background information explains the composting process and the nitrogen content of various composted materials. Students learn the composting process by developing their own compost pile.