The Utilization of Nitrogen from the Decomposition of Organic Matter in Cultures of *Scenedesmus dimorphus*

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With 4 figures and 1 table in the text

Abstract

The rates of mineralization of nitrogen from glutamic acid, proteose peptone, and several species of aquatic plants were sufficient to produce good growth of *S. dimorphus* in cultures. The amount of growth of *S. dimorphus* in cultures where dead aquatic plants were the only source of nitrogen increased in proportion to the percentage of nitrogen in the decaying plants. Muds were a poor source of nitrogen for *S. dimorphus*.

Introduction

It is commonly recognized that inorganic nitrogen released during microbial decomposition of organic matter is important for the growth of plants in both aquatic and terrestrial ecosystems (Alexander 1961, Gil-mour & Allen 1965, Martin & Goff 1972). Reference to any elementary soil fertility or soil microbiology text reveals that much information is available regarding the mineralization of nitrogen from organic matter in terrestrial ecosystems, especially those systems which are used in agriculture. However, less is known about the rate at which nitrogen is mineralized from various types of organic matter in aquatic ecosystems and the importance of this nitrogen to the growth of aquatic plants. Since the availability of inorganic nitrogen is an important factor regulating aquatic productivity and nitrogen is often associated with eutrophication, information on the regeneration of inorganic nitrogen from decaying organic matter is valuable in both theoretical and practical considerations of aquatic resources.

The present study was initiated to evaluate mudds, aquatic plant residues, and organic compounds as sources of nitrogen for *Scenedesmus dimorphus* Kutz in laboratory cultures.

Materials and Methods

Mud and Plant Samples: Mud samples were obtained with an Ekman dredge from 11 ponds in the vicinity of Auburn, Alabama. Muds were air-dried and gently pulverized with a mortar and pestle to pass a sieve with 0.85 mm openings.