

Proceedings of the Iowa Academy of Science

Volume 42 | Annual Issue

Article 21

1935

The Numbers of Nitrosomonas in Some Variously Treated Iowa Soils

R. H. Walker
Iowa State College

A. A. Klingebiel
Iowa State College

L. M. Greiner
Iowa State College

Copyright ©1935 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

Recommended Citation

Walker, R. H.; Klingebiel, A. A.; and Greiner, L. M. (1935) "The Numbers of Nitrosomonas in Some Variously Treated Iowa Soils," *Proceedings of the Iowa Academy of Science*, 42(1), 89-89.

Available at: <https://scholarworks.uni.edu/pias/vol42/iss1/21>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

THE NUMBERS OF NITROSOMONAS IN SOME VARIOUSLY TREATED IOWA SOILS

R. H. WALKER, A. A. KLINGEBIEL AND L. M. GREINER

A study was made of the numbers of Nitrosomonas, bacteria capable of oxidizing ammonia to nitrite, in variously treated soils of the Agronomy Farm at Iowa State College, and of certain other soils of the state. The dilution method, as modified by Wilson for the study of these organisms was employed for making the determinations.

The results of this study indicate that the numbers of Nitrosomonas in soils varies considerably. The number present in soils is undoubtedly affected by such factors as the fertilization, cropping, and cultivation, the organic matter content, the hydrogen-ion concentration, the moisture content of the soil and the season of the year. The pH and buffer capacity of the soil are probably major factors in determining the numbers of Nitrosomonas in soils otherwise suited to their growth.

DEPARTMENT OF SOILS
IOWA STATE COLLEGE,
AMES, IOWA.

A GROWTH FACTOR FOR RHIZOBIA

D. W. THORNE AND R. H. WALKER

A study of the nutritional requirements of the root-nodule bacteria has demonstrated the necessity of an accessory factor for their growth. Two species of Rhizobium were studied. They were not able to maintain growth when continuously cultivated in a synthetic medium containing only C. P. chemicals, including mineral salts, a nitrogen source of KNO_3 , and sucrose. Upon replacing the C. P. sucrose with commercial cane sugar the organisms were able to grow. Presumably cane sugar contains a factor necessary for the growth of rhizobia. A concentrated preparation of the growth substance was prepared by extracting cane sugar with absolute alcohol. Yeast extract contains sufficient of the factor to initiate maximum growth of the organisms. The stimulative factor is destroyed by alcoholic extraction. These