Nitrogen fixation : from molecules to crop productivity : proceedings of the 12th International Congress on Nitrogen Fixation, Foz do Iguaçu, Paraná, Brazil, September 12-27, 1999

Kluwer Academic Publishers - Biological Nitrogen Fixation for the 21st Century

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Biological Nitrogen Fixation for the 21st Century

We are now building on more than 100 years of research in this field and looking towards the 21st Century. NO 3 is only produced when water is flowing through soil.

Nitrogen Fixation: From Molecules to Crop Productivity

The International Nitrogen Fixation Congress series Started more than 20 years ago. This volume constitutes the proceedings of this Congress and represents a compilation of the presentations by scientists from 38 countries who came to discuss the progress made, to exchange views and to collaborate. The format of this Congress is designed to gather scientists from very diverse origins, backgrounds, interests and scientific approaches and is a forum where fundamental knowledge is discussed alongside applied research.

Biological Nitrogen Fixation for the 21st Century

This confluence of perspectives is, we believe, extremely beneficial in raising new ideas, questions and concepts. Since the first meeting in Pullman, Washington, USA, in 1974, this series of Congresses has been held three times in the United States, four times in Western Europe, in Australia, Mexico and Russia, and now for the first time in South America.

Biological Nitrogen Fixation for the 21st Century

The Brazilian experience with biological nitrogen fixation is a paradigm to be followed by all countries where nitrogen fertiliser is expensive or where present day environmental concerns demand a feasible, efficient and inexpensive alternative to chemical N-fertilizers. NH 4has a positive

charge and sticks to soil particles.

Nitrogen Fixation: From Molecules to Crop Productivity

N-fertilizers are expensive in Brazil and, in the absence of the biological process, this crop would require 4-5 M tonnes of N at an annual cost of almost 1 billion dollars. NH_4 is unavailable to organisms, so it remains unchanged in the soil. The discovery that microbes were providing fixed nitrogen to legumes and the isolation of the first nitrogen-fixing bacteria occured at the end the 19th Century, in Louis Pasteur's time.

The Nitrogen Cycle

Why do they behave so differently?.

Nitrogen Fixation: From Molecules to Crop Productivity

Crop rotation, soil reclamation, forestry, forage mixed cropping, intercropping with grasses and legumes, associative nitrogen fixation with non-legume crops, such as sugarcane, and other agricultural practices in Brazil are also dependent on biological nitrogen fixation.

Biological Nitrogen Fixation for the 21st Century

An important example is the soybean crop. Brazil was a most appropriate choice because Brazilian agriculture is especially dependent on biological nitrogenfixation. The 30 million metric tons of grain produced each year relies solely on symbiotic nitrogen fixation.

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