TAXONOMY OF RHIZOBIA ISOLATED FROM THE ROOT NODULES OF LEGUMINOUS TREES IN THE SUDAN

NICK, G.[1], JARVIS, B.D.W.[2], TIGHE, S.W.[3], NIEMI, M.[4], DE LAJUDIE, P.[5] AND LINDSTROM, K.[1]

(1) Department of Applied Chemistry and Microbiology, POB 27, Fin-00014 University of Helsinki, Finland, (2) Department of Microbiology and Genetics, Massey University, Palmerston North, New Zealand, (3) Analytical Services Inc., POB 626, Essex Junction, VT 05453, USA, (4) National Boards of Waters and the Environment, POB 250, FIN-00101 Helsinki, Finland, (5) Laboratoire de Microbiologie des Sols, ORSTOM BP 1386, Dakar, Senegal, West Africa

Molecular methods and fatty acid analysis were used to further characterize rhizobia isolated from the root nodules of *Acacia senegal* and *Prosopis chilensis*. In this work the relationships between the tree rhizobia, rhizobia isolated from different plants and reference strains representing recognized rhizobial species were analyzed by total cellular fatty acid analysis, DNA-DNA dot-blot hybridizations, restriction fragment length polymorphism analysis of amplified 16 S rDNA obtained by PCR, and by REP and ERIC PCR fingerprints. Also the methods used in this study showed that the Sudanese tree rhizobia are diverse, even though the majority of the strains seemed to belong to two main clusters. The strains of these main clusters belong to the same phylogenetic branch as *Sinorhizobium meliloti* and *S. fredii* and might represent two new species. Some of the strains seem to belong to the recently described two new species *S. teranga* and *S. saheli*. One strain may be a *S. meliloti* B type and two strains belong to the Senegalese group U. Part of the strains resemble agrobacteria (fig.1). The taxonomic position of some of the strains still remains unclear.

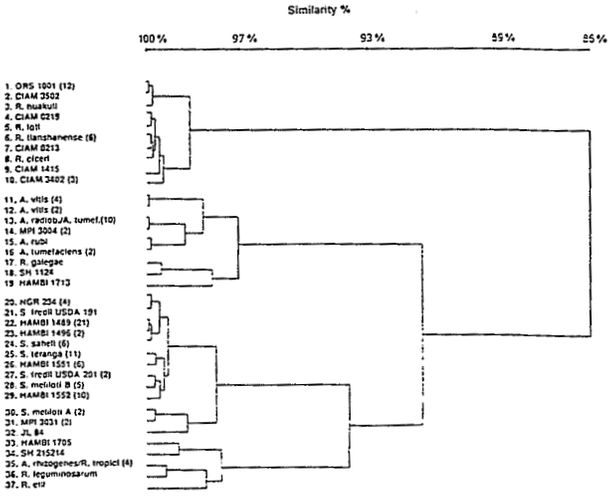

Fig.1. UPGMA dendrogram based on genetic distances derived from PCR-RFLP analysis of the amplified 16 S rDNA. The number of strains which gave the same profiles is indicated in parentheses.

Current Plant Science and Biotechnology in Agriculture

VOLUME 27

Aims and Scope
The book series is intended for readers ranging from advanced students to senior research scientists and corporate directors interested in acquiring in-depth, state-of-the-art knowledge about research findings and techniques related to all aspects of agricultural biotechnology. Although the previous volumes in the series dealt with plant science and biotechnology, the aim is now to also include volumes dealing with animals science, food science and microbiology. While the subject matter will relate more particularly to agricultural applications, timely topics in basic science and biotechnology will also be explored. Some volumes will report progress in rapidly advancing disciplines through proceedings of symposia and workshops while others will detail fundamental information of an enduring nature that will be referenced repeatedly.

The titles published in this series are listed at the end of this volume.

Nitrogen Fixation: Fundamentals and Applications

Proceedings of the 10th International Congress on Nitrogen Fixation, St. Petersburg, Russia, May 28–June 3, 1995

edited by

IGOR A. TIKHONOVICH and NIKOLAI A. PROVOROV
All-Russia Research Institute for Agricultural Microbiology, St. Petersburg-Pushkin, Russia

VASSILY I. ROMANOV
A.N. Bach Institute of Biochemistry, Moscow, Russia

and

WILLIAM E. NEWTON
Department of Biochemistry and Anaerobic Microbiology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, U.S.A.

KLUWER ACADEMIC PUBLISHERS
DORDRECHT / BOSTON / LONDON