

Contents

Opening Address	1
José Carlos de Almeida Azevedo	
"Cerrado": A Region of High Agricultural Potential that Requires Nitrogen	5
Ady Raul da Silva	
Potential for Nitrogen Fixation in Tropical Legumes and Grasses	13
Johanna Döbereiner	
Free-Living Bacteria	25
Roger Knowles	
Nitrogen Fixation by Soil Algae of Temperate and Tropical Soils	41
W. D. P. Stewart, M. J. Sampaio, A. O. Isichei, and R. Sylvester-Bradley	
Contribution of the Legume- <i>Rhizobium</i> Symbiosis to the Ecosystem and Food Production	65
Avilio A. Franco	
Plant Influence in Symbiotic Nitrogen Fixation	75
Joachim F. W. von Bülow	
Plant Photosynthesis	95
C. C. Black, R. H. Brown, and R. C. Moore	
Interactions of Plant Photosynthesis with Dinitrogen Fixation and Nitrate Assimilation	111
Carlos A. Neyra	

Some Aspects of the <i>Alnus</i> -Type Root Nodule Symbiosis	121
C. Miguel, A. Cañizo, A. Costa, and C. Rodriguez-Barrueco	
Legumes and Acid Soils	135
C. S. Andrew	
Micronutrient Requirements of Legume- <i>Rhizobium</i> Symbiosis in the Tropics	161
Avilio A. Franco	
Ecology of Legume- <i>Rhizobium</i> Symbiosis	173
Eli Sidney Lopes	
Nitrogenase Systems	191
R. H. Burris, T. Ljones, and D. W. Emerich	
Relationship between Hydrogen Metabolism and Nitrogen Fixation in Legumes	209
Harold J. Evans, Tomás Ruiz-Argüeso, and Sterling A. Russell	
Ammonia Assimilation in N_2 -Fixing Systems	223
D. Barry Scott	
Genetics and Regulation of Nitrogen Fixation	237
Winston J. Brill	
Leghaemoglobin, Oxygen Supply and Nitrogen Fixation: Studies with Soybean Nodules	247
F. J. Bergersen	
Nitrogen Fixation by <i>Rhizobium</i> spp. in Laboratory Culture Media	263
F. J. Bergersen and A. H. Gibson	
Limiting Factors in Grass Nitrogen Fixation	275
J. Balandreau, P. Ducerf, Ibtissam Hamad-Fares, Pierrette Weinhard, G. Rinaudo, C. Millier, and Y. Dommergues	
Physiology and Biochemistry of <i>Spirillum lipoferum</i>	303
R. H. Burris, Stephen L. Albrecht, and Yaacov Okon	

CONTENTS

xiii

Taxonomy of the Root-Associated Nitrogen Fixing Bacterium <i>Spirillum</i> <i>lipoferum</i>	317
Noel R. Krieg and Jeffrey J. Tarrand	
Abstracts of Original Papers	335
Abstracts of Posters	355
Symposium Participants	377
Index	389