

CONTENTS

Summary	2
1. Introduction	4
2. Chemistry of boron	4
3. Boron in soils	5
4. Roles of boron in plant physiology	7
5. Boron requirements of plants	8
5.1 Boron requirement for cell wall structure	8
5.2 Boron deficiency	8
5.3 Boron toxicity	12
5.4 Diagnosing the boron status of crops	15
6. Boron uptake from soils and transport within the plant	15
6.1 General aspects of boron transport across plant membranes	15
6.2 Protein channels for boric acid	16
6.3 Borate efflux transporters	19
6.4 Boron movement in the xylem and phloem	20
7. Mitigating boron deficiencies and toxicities	21
7.1 Agronomic strategies	21
7.2 Genetic strategies	23
7.2.1 Genetic determinants of boron efficiency	23
7.2.2 Mitigating boron toxicity genetically	24
8. Conclusion	25
9. Acknowledgements and Dedication	26
10. References	26
Related Proceedings of the Society	39

'Solubor', 'Granubor' and 'Fertibor' are registered trademarks of US Borax Inc.
'Etibor' is a registered trademark of Mugavero Teresa SAS.

Keywords: boron, cell wall, fertiliser, nutrition, soil properties, transport protein.