



Contents

| Contributors | vii |
|--|-----|
| Acknowledgements | x |
| Note on Terminology and Abbreviations | xi |
| Introduction: an Interdisciplinary Approach for Agriculture, Hydrology and Water Quality P.M. Haygarth and S.C. Jarvis | 1 |
| Section 1. Agriculture: Potential Sources of Water Pollution | 3 |
| Introduction: Agriculture as a Potential Source of Water Pollution A.N. Sharpley | 4 |
| 1. Nitrogen D. Hatch, K. Goulding and D. Murphy | 7 |
| 2. Phosphorus P. Leinweber, B.L. Turner and R. Meissner | 29 |
| 3. Manures D.R. Chadwick and S. Chen | 57 |
| 4. Pesticides and Persistent Organic Pollutants B. Gevao and K.C. Jones | 83 |
| Heavy Metals W. de Vries, P.F.A.M. Römkens, T. van Leeuwen and J.J.B. Bronswijk | 107 |
| 6. Human Enteric Pathogens D.L. Jones, G. Campbell and C.W. Kaspar | 133 |
| 7. Sediment T.R. Harrod and F.D. Theurer | 155 |
| 8. Nutrient Balances D.R. Reegle, J.E. Lanvon and I.T. Sims | 171 |

vi Contents

| Sec | tion 2. Hydrology: the Carrier and Transport of Water Pollution | 193 |
|-----|---|-------------|
| | Introduction: Modelling Hydrological and Nutrient Transport Processes K. Beven | 194 |
| 9, | Hydrological Source Management of Pollutants at the Soil Profile Scale R.W. McDowell, A.N. Sharpley, P.J.A. Kleinman and W.J. Gburek | 197 |
| 10. | Hydrological Mobilization of Pollutants at the Field/Slope Scale D. Nash, D. Halliwell and J. Cox | 225 |
| 11. | Modelling Hydrological Mobilization of Nutrient Pollutants at the Catchment Scale Y.J.P. Van Herpe, P.A. Troch, P.F. Quinn and S. Anthony | 243 |
| 12. | Pollutant-Sediment Interactions: Sorption, Reactivity and Transport of Phosphorus D.S. Baldwin, A.M. Mitchell and J.M. Olley | 265 |
| 13. | Quantifying Sediment and Nutrient Pathways within Danish Agricultural Catchments B. Kronvang, R. Grant, A.R. Laubel and M.L. Pedersen | 281 |
| 14. | Development of Geographical Information Systems for Assessing Hydrological Aspects of Diffuse Nutrient and Sediment Transfer from Agriculture A.I. Fraser | 303 |
| 15. | Wetlands as Regulators of Pollutant Transport M.S.A. Blackwell, D.V. Hogan and E. Maltby | 321 |
| Sec | tion 3. Water Quality: Impacts and Case Studies from Around the World | 3 41 |
| | Introduction: Impacts of Agriculture on Water Quality Around the World G. Harris | 342 |
| 16. | Solutions to Nutrient Management Problems in the Chesapeake Bay Watershed, USA J.T. Sims and F.J. Coale | 345 |
| 17. | Nutrient and Pesticide Transfer from Agricultural Soils to Water in New Zealand K.C. Cameron, H.J. Di and L.M. Condron | 373 |
| 18. | Land, Water and People: Complex Interactions in the Murrumbidgee River Catchment, New South Wales, Australia S. Pengelly and G. Fishburn | 395 |
| 19. | Managing the Effects of Agriculture on Water Quality in Northern Ireland R.H. Foy and W.C.K. O'Connor | 417 |
| 20. | Conflicts and Problems with Water Quality in the Upper Catchment of the Manyame River, Zimbabwe K.E. Motsi, E. Mangwayana and K.E. Giller | 441 |
| 21. | Dryland Salinization: a Challenge for Land and Water Management in the Australian Landscape J. Williams, G.R. Walker and T.J. Hatton | 457 |
| 22. | Quantifying Nutrient Limiting Conditions in Temperate River Systems A.C. Edwards and P.A. Chambers | 477 |
| Ind | ex | 495 |