

Table of contents

Preface	13
1. Role of decision support systems in potato production	17
<i>A.J. Haverkort and D.K.L. Mackerron</i>	
Types of decisions	17
Use of DSS to increase sustainability in potato chains	19
DSS in supply chain management	22
Future developments in decision support	23
References	26
2. Potato-zoning: a decision support system on expanding the potato industry through agro-ecological zoning using the LINTUL simulation approach	28
<i>A.J. Haverkort, A. Verhagen, C. Grashoff and P.W.J. Uithol</i>	
Introduction	29
Approach	33
Zoning explorations	36
Conclusions and perspectives for future development	41
References	43
3. Crop-reflection-based DSS for supplemental nitrogen dressings in potato production	46
<i>R. Booijt and D. Uenk</i>	
Introduction	47
The system	48
Conclusion	52
References	53
4. Development of a decision support system for nitrogen management on potatoes	58
<i>C. Chambenoit, F. Laurent, J.M. Machet and H. Boizard</i>	
Introduction	55
Evaluation of a potato crop's nitrogen requirement	56
Evaluation of soil nitrogen supply for potato crops	60
Validation of the results	63
Decision support systems developed in France for potato growers	64
Conclusions	66
Acknowledgements	67
References	67

Table of contents

5. Management of N-fertilization of the potato crop using total N-advice software and in-season chlorophyll-meter measurements	68
<i>J.P. Goffart and M. Olivier</i>	
Introduction	69
Quantitative basis of the balance-sheet method as developed in the Azobil software	71
Detailed descriptions	73
Description of the decision support system in practice	75
Experiences with the strategy developed	80
Prospects	81
References	82
6. Implementation and testing of the Potato Calculator, a decision support system for nitrogen and irrigation management	88
<i>P.D. Jamieson, P.J. Stone, R.F. Zyskowski, S. Sinton and R.J. Martin</i>	
Introduction	85
The model	86
Experimental validation	89
Results and discussion	91
Afterword	97
Acknowledgements	97
References	98
7. Automated on-farm assessment of tuber size distribution	100
<i>Bruce Marshall and Mark W. Young</i>	
Background	101
System development	102
Evaluation	106
Summary and future development	115
Acknowledgements	116
References	116
8. MAPP, the Management Advisory Package for Potatoes: decision support means giving informed options not making decisions	118
<i>D.K.L. MacKerron, B. Marshall and J.W. McNicol</i>	
Introduction and background	119
Description	120
Design phase	123
Primary inputs	124
Possible motives for using MAPP	126
Interaction with users	138
Conclusions	140
References	140

9. Projecting PCN population changes and potato yields in infested soils	142
<i>Martin J. Elliott, David L. Trudgill, James W. McNicol and Mark S. Phillips</i>	
Introduction	143
Development of the models	145
The Decision Support System (DSS)	146
Example	148
Future developments	150
User base	150
Benefits of this program	151
References	151
10. A geo-referenced Decision Support System for nematodes in potatoes	154
<i>T.H. Been and C.H. Schomaker</i>	
Introduction	155
Outline	157
Focus model	160
Geo information and monitoring	164
Experience	165
Prospects	167
References	167
11. PLANT-Plus: Turn-key solution for disease forecasting and irrigation management	168
<i>P. Raatjes, J. Hadders, D. Martin and H. Hinds</i>	
Introduction	169
Disease forecasting models & principles	170
Principles for irrigation scheduling	176
Quality of weather forecasts	176
Experiences and results	177
Commercial evaluation of <i>P. infestans</i> model	179
Field trials and commercial evaluations of the <i>A. solani</i> model	181
Field trials and commercial evaluations of the irrigation management model	182
Future developments and constraints	183
References	183
12. MLHD, a decision support system for rational use of herbicides: developments in potatoes	186
<i>C. Kempenaar and R. van den Boogaard</i>	
Introduction	187
The MLHD concept	188
The MLHD model	189
The PS1 sensing technique	190
On farm research	191

Table of contents

Potato haulm killing and MLHD	192
MLHD online	193
Prospects	195
References	196
13. IDEOTYPING-POTATO a modelling approach to genotype performance	198
<i>A.J. Haverkort and C. Grashoff</i>	
Introduction	199
The science behind the DSS	201
Description of the target area	202
Ideotyping runs	204
Results of model runs	206
Future developments	210
Acknowledgements	211
References	211
14. Necessity and sufficiency or the balance between accuracy and practicality	213
<i>D.K.L. MacKerron</i>	
Introduction	213
The problem of accuracy, and uncertainty. (Modellers aim for precision and forget errors)	214
What is necessary and what is sufficient?	
Cases drawn from some of the DSS described in this book	217
Other particular examples of features of DSS	221
Conclusions	222
References	223
Authors	225
Index	229