

CONTENTS

PREFACE	v
ACKNOWLEDGEMENTS	viii
FOREWORD	xiii
LIST OF CONTRIBUTORS	xv
1. DECISION SUPPORT FOR GRAZING LANDS: AN OVERVIEW	1
<i>Jerry W. Stuth and Mark Stafford Smith</i>	
What are decision support systems?	2
Why are DSS important in grazed ecosystems?	4
When are DSS appropriate?	9
How are DSS developed?	15
Success with DSS	20
Trends and needs in DSS	24
Conclusion: the future for DSS	30
References	34
2. BIOPHYSICAL SIMULATION MODELS AS A FOUNDATION OF DECISION SUPPORT SYSTEMS	37
<i>D.H. Carlson, T.L. Thurow and C.A. Jones</i>	
Biophysical simulation models as research tools	38
Biophysical simulation models as management tools	40
Issues in biophysical model selection and integration	40
Issues in biophysical model construction	43
Summary	65
References	65

3. DECISION SUPPORT SYSTEMS AND EXPERT SYSTEMS FOR RANGE SCIENCE	69
<i>A. Dale Whittaker</i>	
Agricultural systems	70
Soft systems methodology	71
Hard systems methodology	73
Artificial intelligence methods	76
Summary	79
References	81
4. SOFT SYSTEMS: A NON-COMPUTER VIEW OF DECISION SUPPORT	83
<i>R.L. Ison</i>	
Systems traditions	83
Culture and values	93
Towards environments for decision support	115
References	118
5. INTEGRATING ECONOMICS INTO DECISION SUPPORT SYSTEMS FOR MANAGING GRAZING LAND ECOSYSTEMS	123
<i>J. Richard Conner</i>	
Delineating the context	124
The common denominator	128
Developing DSS for grazing land ecosystem management	129
Summary	138
References	139
6. CONSIDERATIONS FOR INTEGRATING SPATIAL INFORMATION IN DECISION SUPPORT SYSTEMS	141
<i>Douglas K. Loh and J. Michael Power</i>	
Data acquisition	142
Database management and data utilization	146
The future of DSS integration	153
References	158
7. TECHNICAL CONSIDERATIONS IN DEVELOPING A DECISION SUPPORT SYSTEM	161
<i>R.R. Schlieker and B.G. Lyons</i>	
Software life cycle	162
Methods to achieve quality DSS	175
Quality versus productivity	177
Future issues	181

Conclusion	184
References	185
8. THE ROLE OF INFORMATION AND INFORMATION NETWORKS IN DECISION SUPPORT: THE AUSTRALIAN EXPERIENCE	187
<i>D.H. White and E.P. Shelley</i>	
Sources of information for rural decision making	187
Information about decision support systems	190
The evolution of networked systems	192
How to locate DSS	193
The future	194
References	194
9. TRAINING DECISION MAKERS TO UTILIZE INFORMATION TECHNOLOGIES EFFECTIVELY	197
<i>James M. McGrann</i>	
The developer's opportunity	198
Appropriate delivery approaches	198
The training environment	202
Meeting future training needs	206
References	207
10. MEETING THE NEEDS OF DECISION SUPPORT SYSTEM USERS	209
<i>J.A. Ludwig, J.F. Clewett and B.D. Foran</i>	
ShrubKill	210
BeefMan series of DSS	210
RangePack DSS	212
Discussion	214
Conclusions	218
References	218
11. INTRODUCING A DECISION SUPPORT SYSTEM TO AGRICULTURALLY DEVELOPING COUNTRIES: AN EXAMPLE FROM NORTH CHINA	221
<i>W.T. Hamilton and D.P. Sheehy</i>	
Rationale for introducing a DSS	222
Function of the DSS	222
Preliminary considerations	223
Introducing a resource planning system DSS in North China	227
The support infrastructure	228
Selection of resource DSS demonstration sites	232

Building a conceptual infrastructure for the DSS	233
The training process: an example from North China	235
Preparations to facilitate introduction	236
Training considerations	242
Building a positive atmosphere for introducing DSS	246
Conclusion	247
Alternative approaches to DSS introduction	248
References	253
 APPENDIX	 255
 DSS CONFERENCE ORDER FORM	 293
 INDEX	 295