

Contents

Foreword
Preface

CROP LOSS ASSESSMENT: BACKGROUND, RATIONALE, AND CONCEPTS

Crop loss assessment: a historical perspective and rationale 1

J.C. Zadoks

Crop loss and pest and pesticide management 11

D.G. Bottrell

Crop loss assessment: a review of representative approaches
and current technology 19

P.S. Teng

Current knowledge on crop losses in tropical rice 39

P.S. Teng, C.Q. Torres, F.L. Nuque, and S.B. Calvero

COMPONENT TECHNOLOGY FOR CROP LOSS ASSESSMENT

Quantifying insect populations and crop damage 55

P.T. Walker

Practical methods for quantifying diseases and pathogen populations 67

R.E. Gaunt

Weeds: generating populations, field sampling, and data analysis 75

K. Moody

Monitoring the physical environment for yield loss studies 87

S.M. Coakley

Remote sensing and image analysis for crop loss assessment 93

F.W. Nutter, Jr.

Sampling insects and diseases in rice 107

B.M. Shepard and E.R. Ferrer

Empirical models for predicting yield loss caused by stem borers 131

P.T. Walker

- Generating plant disease epidemics in yield loss experiments 139
F.W. Nutter, Jr.
- Determining pest-loss relationships and quantifying loss 151
P.T. Walker
- Using yield physiology to model pest losses 161
R.E. Gaunt
- Insect pest-loss relationships: characteristics and importance 171
P.T. Walker
- Empirical disease-yield loss models 185
R.E. Gaunt
- Yield losses due to weeds in rice in the Philippines 193
K. Moody
- Assessing multiple pest populations and their effects on crop yield 203
K.B. Johnson

APPLICATIONS OF PEST AND LOSS ASSESSMENT TECHNOLOGY TO PEST MANAGEMENT

- Systems analysis and modeling in pest management 215
K.L. Heong
- A multiple-pest economic threshold for rice (a case study in the Philippines) 229
F. Palis, P.L. Pingali, and J.A. Litsinger
- Methodology used in the IRRI integrated pest survey 243
*F.A. Elazegui, J. Soriano, J. Bandong, L. Estorninos,
I. Johnson, P.S. Teng, B.M. Shepard, J.A. Litsinger,
K. Moody, and H. Hibino*
- Information management systems in rice pest surveillance 273
K.L. Heong
- EPIPARE: research - development - application of an integrated pest
and disease management system for wheat 281
J.C. Zadoks
- Using pest surveillance data in Thailand 291
*P. Menakanit, A. Upanisakorn, L. Menakanit,
S. Sriarunothai, and U. Dechmani*
- Genetically sound strategies for disease management 297
K.M. Chin
- Using historical weather and pest data for pest zoning 303
S.M. Coakley
- Requirements for an economic interpretation of crop losses 313
H. Waibel
- Recommendations 321
- Participants 328