Contents

Part I  System Characterization

1  Bridging the Soil Map of Rwanda with the ‘Farmer’s Mental Soil Map’ for an Effective Integrated and Participatory Watershed Management Research Model ........................................ 3
   P.N. Rushemuka, J.P. Bizimana, J.J.M. Mbonigaba, and L. Bock

2  Intensification of Crop–Livestock Farming Systems in East Africa: A Comparison of Selected Sites in the Highlands of Ethiopia and Kenya ......................................................... 19
   M. Kindu, A.J. Duncan, D. Valbuena, B. Gérard, L. Dagnachew,
   B. Mesfin, and J. Gedion

3  Rapid Assessment of Potato Productivity in Kigezi and Elgon Highlands in Uganda ......................................................... 29
   G. Okoboi, I. Kashaija, R. Kakuhenzire, B. Lemaga, and D. Tibanyendera

4  Farmers’ Knowledge and Perception of Climbing Beans-Based Cropping Systems in Rwanda ......................................................... 39
   V. Ruganzu, J.S. Mutware, B. Uwumukiza, N.L. Nabahungu,
   I. Nkurunziza, and A.R. Cyamweshi

5  Securing Crop Phosphorus Availability in the Humid Tropics: Alternative Sources and Improved Management Options – A Review ......................................................... 51
   Alhaji S. Jeng
Part II  System Components

6  A Decade of Agricultural Research in Rwanda: Achievements and the Way Forward .......................... 69
   D. Gahakwa, T. Asimwe, N.L. Nabahungu, M. Mutimura, T. Isibo,
   A. Mutaganda, and C. Ngaboyisonga

7  Do Commercial Biological and Chemical Products Increase Crop Yields and Economic Returns Under Smallholder Farmer Conditions? ......................................... 81
   J.M. Jefwa, P. Pypers, M. Jemo, M. Thuita, E. Mutegi, M.A. Laditi,
   A. Faye, A. Kavoo, W. Munyahali, L. Herrmann, M. Atieno,
   J.R. Okalebo, A. Yusuf, A. Ibrahim, K.W. Ndung’u-Magiroi,
   A. Asrat, D. Muletta, C. Ncho, M. Kamaa, and D. Lesueur

8  Enhanced Utilization of Biotechnology Research and Development Innovations in Eastern and Central Africa for Agro-ecological Intensification ................................................... 97
   Clet Wandui Masiga, Charles Mugoya, Rasha Ali, Abdalla Mohamed,
   Sarah Osama, Abigail Ngugi, Dan Kiambi, Santie de Villiers,
   Kahi Ngugi, Theogene Niyibigira, Abraha Tesfamichel,
   Jesse Machuka, Richard Oduor, Steven Runo, Rasha Adam,
   Jonathan Matheka, Leta Bedada, Miccah Seth, Eric Kuria,
   Jean Ndriigwe, Philip Ndolo, Zachary Muthamia, Bouwe Nasona,
   Michel Ntimpirangeza, Engida Tsegaye, Nyamongo Desterio,
   Kwame Ogero, Gitonga Mburugu, Settumba Mukasa,
   Dong-Jin Kim, Morag Ferguson, Emmarold Mnene,
   Erostus Nsubuga, Theodormir Rishirumuhirwa, Donald Byamugisha,
   Isaac Wamatsembe, Inosters Nzuki, Geoffrey Mkamilo,
   Bernadetha Kimata, and Seyfu Ketema

9  Investing in Land and Water Management Practices in the Ethiopian Highlands: Short- or Long-Term Benefits? ........... 105
   Yihenew G. Selassie and Tilahun Amede

10 Yield Responses of Cowpea (Vigna unguiculata) Varieties to Phosphorus Fertilizer Application Across a Soil Fertility Gradient in Western Kenyan Highlands ............................. 115
   S.N. Odundo, O.J. Ojiem, J.R. Okalebo, C.O. Othieno, J.G. Lauren,
   and B.A. Medvecky

11 Innovations to Overcome Staking Challenges to Growing Climbing Beans by Smallholders in Rwanda .......................... 129
   A. Musoni, J. Kayumba, L. Butare, F. Mukumuhirwa,
   E. Murwanashyaka, D. Mukankubana, J.D. Kelly,
   J. Ininda, and D. Gahakwa
Crop–Livestock Interaction for Improved Productivity: Effect of Selected Varieties of Field Pea (*Pisum sativum* L.) on Grain and Straw Parameters. ........................................... 137
G.G. Yetimwork, E.G. Awet, and M. Solomon

From Standards to Practices: The Intensive and Improved Rice Systems (SRI and SRA) in the Madagascar Highlands. ............ 149
Georges Serpantie and Modeste Rakotondramanana

Identification of Elite, High Yielding and Stable Maize Cultivars for Rwandan Mid-altitude Environments. ................. 165

Determination of Appropriate Rate and Mode of Lime Application on Acid Soils of Western Kenya: Targeting Small Scale Farmers. ......................................................... 177

Assessment of Fertilizer Use Efficiency of Maize in the Weathered Soils of Walungu District, DR Congo. .............. 187
M.E. Bagula, P. Pypers, N.G. Mushagalusa, and J.B. Muhigwa

Improvement of Sweet potato (*Ipomoea batatas* (L.) Lam) Production with Fertilizer and Organic Inputs in Rwanda. .... 201
M. Janssens, V. Rutunga, J. Mukamugenga, S. Mukantagengwa, and R. Marijnissen

Evaluation of Sweetpotato Varieties for the Potential of Dual-Purpose in Different Agroecological Zones of Kenya. .... 217
B.A. Lukuyu, J. Kinyua, S. Agili, C.K. Gachui, and J. Low

Part III Drivers and Determinants for Adoption

Livelihoods Heterogeneity and Water Management in Malawi: Policy Implications for Irrigation Development. ............. 235
Tawina Jane Kopa-Kamanga, Darley Jose Kjosavik, and Penjani Stanley Kamanga

Access to Subsidized Certified Improved Rice Seed and Poverty Reduction: Evidence from Rice Farming Households in Nigeria. .................................................. 251
B.A. Awotide, T.T. Awoyemi, and A. Diagne

Factors Influencing the Adoption of Improved Rice Varieties in Rwanda: An Application of the Conditional Logit Model (CLM). ................................................................. 267
J.S. Mutware and K. Burger
Assessing the Influence of Farmers’ Field Schools and Market Links on Investments in Soil Fertility Management Under Potato Production in Uganda

R. Muzira, B. Vanlauwe, T. Basamba, S.M. Rwakaikara, and C. Wanjiku

Bean Utilization and Commercialization in Great Lakes Region of Central Africa: The Case of Smallholder Farmers in Burundi

J. Ochieng, M.C. Niyuhire, C. Ruraduma, E. Birachi, and E. Ouma

Improving the Availability of Quality Planting Materials Through Community-Based Seed and Seedling Systems: The Case of Rural Resource Centres in Cameroon

B. Takoutsing, A. Degrande, Z. Tchoundjeu, E. Asaah, and A. Tsobeng

Returns to Production of Common Bean, Soybean, and Groundnut in Rwanda

J.R. Mugabo, J. Chianu, E. Tollens, and B. Vanlauwe

Institutions and the Adoption of Technologies: Bench Terraces in Rwanda

Alfred R. Bizoza

Beyond the Pilot Sites: Can Knowledge-Intensive Technologies Diffuse Spontaneously?

Evelyne Kiptot

Agricultural Innovations That Increase Productivity and Generates Incomes: Lessons on Identification and Testing Processes in Rwandan Agricultural Innovation Platforms


ISFM Adaptation Trials: Farmer-to Farmer Facilitation, Farmer-Led Data Collection, Technology Learning and Uptake


Index
Challenges and Opportunities for Agricultural Intensification of the Humid Highland Systems of Sub-Saharan Africa
Vanlauwe, B.; VanAsten, P.; Blomme, G. (Eds.)
2014, XII, 404 p. 50 illus., Hardcover
ISBN: 978-3-319-07661-4