

# Adam H. Sparks

## professional profile

- Wide ranging career demonstrating consistent success both in a non-profit international NGO and academia.
- Experience in conceptualising projects through successful grant applications, project management and attaining desired results.
- Extensive background of experiences in working with diverse partners.
- Broad experience in effective communication ranging from peer-reviewed journal articles to extension presentations and popular press.

## contact

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## web

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## skills

GIS  
modelling  
R programming

## experience

2016–Present	<b>University of Southern Queensland</b> Toowoomba, Queensland, AUS	Associate Professor
2012–2015	<b>International Rice Research Institute</b> Los Baños, Laguna, PHL	Scientist I
2011–2012	<b>International Rice Research Institute</b> Los Baños, Laguna, PHL	Post-Doctoral Fellow
2009–2010	<b>Kansas State University</b> Manhattan, Kansas, USA	Post-Doctoral Research Associate
2002–2004	<b>University of Nebraska-Lincoln</b> Lincoln, Nebraska, USA	Research Technologist
2000–2003	<b>University of Nebraska-Lincoln</b> Clay Center, Nebraska, USA	Research Technician
1999–2000	<b>Purdue University</b> West Lafayette, Indiana, USA	Assistant Director
1997–1999	<b>Purdue University</b> West Lafayette, Indiana, USA	Research Technician

## education

2009	<b>Ph.D. Plant Pathology</b> Epidemiology and Ecology of Plant Pathogens <b>Dissertation:</b> <i>Disease risk mapping with metamodels for coarse resolution predictors: global potato late blight risk now and under future climate conditions</i>	Kansas State University, USA
2007	<b>Post Graduate Certificate</b> Geography Geographic Information Science	Kansas State University, USA
2000	<b>B.Sc. Agronomy</b> Soil and Crop Management	Purdue University, USA

## publications

### peer reviewed

#### Concepts, approaches, and avenues for modelling crop health and crop losses

Serge Savary, Andrew D Nelson, Annika Djurle, Paul D Esker, Adam Sparks, Lilian Amorim, Armando Bergamin Filho, Tito Caffi, Nancy Castilla, Karen Garrett  
*European Journal of Agronomy* (2018). *Elsevier*

#### Crop health and its global impacts on the components of food security

S. Savary, S. Bregaglio, L. Willocquet, D. Gustafson, D. Mason D'Croz, A. Sparks, N. Castilla, A. Djurle, C. Allinne, M. Sharma, V. Rossi, L. Amorim, A. Bergamin, J. Yuen, P. Esker, N. McRoberts, J. Avelino, E. Duveiller, J. Koo, K. Garrett  
*Food Security* 9.2 (Apr. 2017) pp. 311–327. *Springer Nature*. DOI: 10.1007/s12571-017-0659-1

#### getCRUCLdata: Use and Explore CRU CL v. 2.0 Climatology Elements in R

A. H. Sparks  
*The Journal of Open Source Software* 2.12 (Apr. 2017). *The Open Journal*. DOI: 10.21105/joss.00230

#### GSODR: Global Summary Daily Weather Data in R

A. H. Sparks, T. Hengl, A. Nelson  
*The Journal of Open Source Software* 2.10 (Feb. 2017). *The Open Journal*. DOI: 10.21105/joss.00177

#### bomrang: Fetch Australian Government Bureau of Meteorology Weather Data

A. H. Sparks, M. Padgham, H. Parsonage, K. Pembleton  
*The Journal of Open Source Software* 2.17 (Sept. 2017). *The Open Journal*. DOI: 10.21105/joss.00411

#### Spatial modelling of rice yield losses in Tanzania due to bacterial leaf blight and leaf blast in a changing climate

C. Duku, A. H. Sparks, S. J. Zwart  
*Climatic Change* 135.3-4 (Jan. 2016) pp. 569–583. *Springer Nature*. DOI: 10.1007/s10584-015-1580-2

#### Decision tools for bacterial blight resistance gene deployment in rice-based agricultural ecosystems

G. S. Dossa, A. Sparks, C. Vera Cruz, R. Oliva  
*Frontiers in Plant Science* 6.305 (May 2015). *Frontiers Media SA*. DOI: 10.3389/fpls.2015.00305

#### Farmers' Preference for Rice Traits: Insights from Farm Surveys in Central Luzon, Philippines, 1966-2012

A. G. Laborte, N. C. Paguirigan, P. F. Moya, A. Nelson, A. H. Sparks, G. B. Gregorio  
*PLOS ONE* 10.8 (Aug. 2015) e0136562. *Public Library of Science (PLOS)*. DOI: 10.1371/journal.pone.0136562

#### Philippine Rice Information System (PRISM): innovating the rice field data capture and monitoring using smartphone

J. M. Maloon, E. J. P. Quilang, M. R. O. Mabalay, J. L. Dios, A. C. Arocena Jr. J. R. F. Mirandilla, P. A. Mabalot, M. I. Barroga, R. T. Dollontas, G. C. Peralta, G. Mesa, B. T. Salazar, G. D. Balleras, N. B. Detoito, G. Arida, D. K. M. Donayre, E. C. Martin, G. F. Estoy, A. Nelson, A. Sparks, J. V. Raviz, A. G. Laborte, T. O. Setiyono, A. A. Maunahan, A. B. Rala, J. E. Villa, N. P. Castilla, Z. M. Bhatti, D. D. Maco, R. S. Bayot, M. Barbierri  
*Philippine Journal of Crop Science* (2015)

#### Climate change may have limited effect on global risk of potato late blight

A. H. Sparks, G. A. Forbes, R. J. Hijmans, K. A. Garrett  
*Global Change Biology* 20.12 (May 2014) pp. 3621–3631. *Wiley-Blackwell*. DOI: 10.1111/gcb.12587

#### A review on crop losses, epidemiology and disease management of rice brown spot to identify research priorities and knowledge gaps

M. K. Barnwal, A. Kotasthane, N. Magculia, P. K. Mukherjee, S. Savary, A. K. Sharma, H. B. Singh, U. S. Singh, A. H. Sparks, M. Variar, N. Zaidi  
*European Journal of Plant Pathology* 136.3 (Mar. 2013) pp. 443–457. *Springer Nature*. DOI: 10.1007/s10658-013-0195-6

### Taking transgenic rice drought screening to the field

A. C. M. Gaudin, A. H. A. H. Sparks, I. H. Slamet-Loedin

*Journal of Experimental Botany* 64.1 (Dec. 2012) pp. 109–117. Oxford University Press (OUP). doi: 10.1093/jxb/ers313

### An economic assessment of the impact of mango pulp weevil on the agricultural sector of Palawan, Philippines

J. D. Mckinley, A. H. Sparks, V. O. Pede, B. Duff

*The Philippine Agricultural Scientist* 95.3 (2012) pp. 286–292

### Complexity in climate-change impacts: an analytical framework for effects mediated by plant disease

K. A. Garrett, G. A. Forbes, S. Savary, P. Skelsey, A. H. Sparks, C. Valdivia, A. H. C. Bruggen, L. Willocquet, A. Djurle, E. Duveiller, H. Eckersten, S. Pande, C. Vera Cruz, J. Yuen

*Plant Pathology* 60.1 (Jan. 2011) pp. 15–30. Wiley-Blackwell. doi: 10.1111/j.1365-3059.2010.02409.x

### International Agricultural Research Tackling the Effects of Global and Climate Changes on Plant Diseases in the Developing World

S. Savary, A. Nelson, A. H. Sparks, L. Willocquet, E. Duveiller, G. Mahuku, G. Forbes, K. A. Garrett, D. Hodson, J. Padgham, S. Pande, M. Sharma, J. Yuen, A. Djurle

*Plant Disease* 95.10 (Oct. 2011) pp. 1204–1216. Scientific Societies. doi: 10.1094/pdis-04-11-0316

### A metamodeling framework for extending the application domain of process-based ecological models

A. H. Sparks, G. A. Forbes, R. J. Hijmans, K. A. Garrett

*Ecosphere* 2.8 (Aug. 2011) art90. Wiley-Blackwell. doi: 10.1890/es11-00128.1

### Beyond Yield: Plant Disease in the Context of Ecosystem Services

M. R. Cheatham, M. N. Rouse, P. D. Esker, S. Ignacio, W. Pradel, R. Raymundo, A. H. Sparks, G. A. Forbes, T. R. Gordon, K. A. Garrett

*Phytopathology* 99.11 (Nov. 2009) pp. 1228–1236. Scientific Societies. doi: 10.1094/phyto-99-11-1228

### Ecology and Epidemiology in R: Disease Forecasting

P. D. Esker, A. H. Sparks, L. Campbell, Z. Guo, M. Rouse, S. D. Silwal, S. Tolos, B. Van Allen, K. A. Garrett

*The Plant Health Instructor* (2008). Scientific Societies. doi: 10.1094/phi-a-2008-0129-01

### Ecology and Epidemiology in R: Spatial Analysis

A. H. Sparks, P. D. Esker, G. Antony, L. Campbell, E. E. Frank, L. Huebel, M. N. Rouse, B. Van Allen, K. A. Garrett

*The Plant Health Instructor* (2008). Scientific Societies. doi: 10.1094/phi-a-2008-0129-03

### Ecology and Epidemiology in R: Disease Progress over Time

A. H. Sparks, P. D. Esker, M. Bates, W. Dall'Acqua, Z. Guo, V. Segovia, S. D. Silwal, S. Tolos, K. A. Garrett

*The Plant Health Instructor* (2008). Scientific Societies. doi: 10.1094/phi-a-2008-0129-02

### Ecology and epidemiology in R: modeling dispersal gradients

P. D. Esker, A. H. Sparks, G. Antony, M. Bates, W. Dall'Acqua, E. E. Frank, L. Huebel, V. Segovia, K. A. Garrett

*The Plant Health Instructor* (2007). doi: 10.1094/PHI-A-2007-1226-03

### An Introduction to the R Programming Environment

K. A. Garrett, P. D. Esker, A. H. Sparks

*The Plant Health Instructor* (2007). Scientific Societies. doi: 10.1094/phi-a-2007-1226-02

### Writing Teaching Documents as a Class Project

K. A. Garrett, P. D. Esker, A. H. Sparks, L. C. Scharmann

*The Plant Health Instructor* (2007). Scientific Societies. doi: 10.1094/phi-t-2007-1226-01

## conferences/proceedings

Fungi and bacteria associated with the Peanut Kernel Shrivel (PKS) disease in the Bundaberg region

Proceedings of the Australasian Plant Pathology Society 2017 Meeting (2017)

Mungbean and Sorghum Disease Update

L. Kelly, J. White, M. Sharman, H. Brier, L. Williams, R. Grams, D. Weir, A. McKay, A. H. Sparks  
GRDC Updates (Jondaryan) (July 19, 2017). *Jondaryan, Queensland, Australia*

Do Alternate Wetting and Drying Irrigation Technologies and Nitrogen Rates Affect Rice Sheath Blight?

A. H. Sparks, N. P. Castilla, B. O. Sander

Proceedings of the Australasian Plant Pathology Society 2017 Meeting (2017)

Evaluation of correlation methods for co-occurrence network construction of rice crop health survey data

S. Jaisong, N. P. Castilla, C. T. Magculia, S. Savary, I. B. Pangga, A. H. Sparks

Proceedings of the Australasian Plant Pathology Society 2015 Meeting (2015)

Mapping Rice Diseases for Targeted Deployment of Resistant Varieties in India

A. H. Sparks, M. Noel

Proceedings of the Australasian Plant Pathology Society 2015 Meeting (2015)

Modeling the impact of disease resistance on rice yields in the Philippines and Indonesia

A. H. Sparks, J. Anaurio, C. Duku, M. Noel, D. Raitzer

Proceedings of the Australasian Plant Pathology Society 2013 Meeting (2013)

Spatial modelling of rice yield losses due to bacterial leaf blight and leaf blast in a changing climate

A. H. Sparks, C. Duku, M. Noel, S. J. Zwart

*Acta Phytopathologica Sinica vol. 43.Suppment (2013)*

Predisposition factors affecting brown spot disease development in rice

N. J. Magculia, A. H. Sparks

*Phytopathology vol. 102:S4.74.7 (2012)*

Putting information to use: Decisions at different scales

S. Savary, A. H. Sparks, A. Nelson, N. McRoberts, P. D. Esker

*Phytopathology vol. 102:S4.162 (2012)*

Preventing what ails rice with a strategic, statistical, prescriptive model system

A. H. Sparks, S. Savary, A. Nelson

*Phytopathology vol. 102:S4.113.7 (2012)*

Income inequality and economic growth in the Philippines

G. B. Ballesefin, V. O. Pede, A. H. Sparks

The Conference Secretariat, 2011 PAEDA Biennial Convention (2011)

An economic assessment of the impact of mango pulp weevil on the agricultural sector of Palawan, Philippines

J. McKinley, V. O. Pede, A. H. Sparks, B. Duff

The Conference Secretariat, 2011 PAEDA Biennial Convention (2011)

Refined empirical models for predicting Fusarium head blight epidemics in the United States

A. Sparks, D. Shah, E. DeWolf, L. Madden, P. Paul, K. Willyerd

*Phytopathology vol. 101:S223 (2011)*

Crop losses in highly populated areas: A global perspective

L. Willocquet, A. Nelson, A. Sparks, A. Laborte, S. Savary

*Phytopathology vol. 101:S223 (2011)*

Metamodels for scaling potato late blight risk analysis in climate change scenarios

A. H. Sparks, G. Forbes, R. Hijmans, K. Garrett

Phytopathology vol. 100:S121 (2010)

**Anticipating and responding to biological complexity in the effects of climate change on agriculture**

K. Garrett, G. Forbes, S. Pande, S. Savary, A. Sparks, C. Valdivia, C. Vera Cruz, L. Willocquet  
IOP Conference Series: Earth and Environmental Science vol. 6:37 (2009)

**Adapting disease forecasting models to coarser scales: Global potato late blight prediction**

A. H. Sparks, G. Forbes, K. A. Garrett  
Phytopathology vol. 99:S122 (2009)

**Adapting global disease forecasting models for readily available weather data sets in GIS**

A. H. Sparks, K. A. Garrett, G. A. Forbes  
Proceedings of the 10th International Epidemiology Workshop (2009). Geneva, NY, USA

**Regional predictions of potato late blight risk in a GIS incorporating disease resistance profiles, climate change, and risk neighborhoods**

A. H. Sparks, R. Raymundo, R. Simon, G. Forbes, K. A. Garrett  
Phytopathology vol. 98:S149 (2008)

## **book chapters**

**Chap. Spatial and Temporal Patterns of Rice Production**

E. Kannan, A. Paliwal, A. Sparks  
Mohanty, S., P. G. Chengappa, M. Hedge, J.K. Ladha, S. Baruah, E. Kannan, and A. V. Manjunatha, Elsevier,  
"The Future Rice Strategy for India", 2017

**Chap. Plant pathogens as indicators for climate change**

K. A. Garrett, M. Nita, E. D. DeWolf, P. D. Esker, L. Gomez-Montano, A. H. Sparks  
Letcher, T. M., Elsevier, "Plant Pathogens as Indicators of Climate Change", 2016

**Chap. An introduction to key distributions and models for epidemiology using R**

K. A. Garrett, P. D. Esker, A. H. Sparks  
Stevenson, K. and M. Jeger, APS Press, Minneapolis, MN, "Exercises in Plant Disease Epidemiology", 2014

**Chap. Cambio climático, enfermedades de las plantas e insectos plaga**

K. A. Garrett, G. A. Forbes, L. Gómez, M. A. Gonzáles, M. Gray, P. Skelsey, A. H. Sparks  
Jiménez, E., Plural editores, "Cambio climático y adaptación en el Altiplano boliviano", 2013

## **reports**

**Is rice improvement still making a difference? Assessing the economic, poverty and food security impacts of rice varieties released from 1989 to 2009 in Bangladesh, Indonesia and the Philippines.**

D. A. Raitzer, A. H. Sparks, Z. Huelgas, R. Maligalig, Z. Balangue, C. Launio, A. Daradjat, H. U. Ahmed  
A report submitted to the Standing Panel on Impact Assessment (SPIA), CGIAR Independent Science and Partnership Council (ISPC). 128 pp.

**Evaluation of seed treatment for controlling seedling diseases and compatibility with Rhizobium inoculants, 2003.**

L. J. Geisler, A. H. Sparks  
Fungicide and Nematicide Tests 59:ST025

**Evaluation of seed treatment fungicides for controlling soybean seedling diseases, 2003**

L. J. Geisler, A. H. Sparks  
Fungicide and Nematicide Tests 59:ST025

## invited talks

2016	<b>Using modelling and mapping for digital insights into diseases in the rice field</b> 2016 Korean Society of Plant Pathology Fall Meeting and International Conference Seoul National University Pyeongchang, Gangwon-do, Korea
2014	<b>Taking sustainable crop protection from the field to the cloud</b> 4th International Rice Congress (IRC2014) Bangkok, Thailand
2014	<b>Impact of climate change on rice diseases</b> Workshop on the impact of climate change on crop pests and diseases, and adaptation strategies for the Greater Mekong Sub - Region (GMS) Hotel Continental Saigon, Ho Chi Minh City, Vietnam
2014	<b>Epidemiology and Disease Management of rice brown spot: Research priorities and knowledge gaps</b> 66th Annual Indian Phytopathological Society Meeting Indira Gandhi Krishi Vishwavidyalaya University, Raipur, India
2013	<b>Biosecurity risks in Southeast Asia impacting on human food supplies</b> Pacific Environmental Security Forum Australian Department of Defence (ADoD) and U. S. Pacific Command (US-PACOM) Sydney, New South Wales, Australia
2010	<b>Global potato late blight risk in response to climate change, possible futures for a historic disease</b> Emerging infectious diseases in response to climate change. New York Academy of Sciences, New York, New York, USA

## doctoral dissertation mentorship

Current	<b>Mladen Cucak</b> (Collaborator) <span style="float: right;">Maynooth University/TEAGASC, IRL</span> Can we still use 'Irish Rules' to forecast development of potato late blight epidemics in Ireland?
Current	<b>Iklhas Al Hadeethi</b> (Associate Supervisor) <span style="float: right;">University of Southern Queensland, AUS</span> Modelling the effects of the interaction of carbon dioxide and temperature on concentration of crops' protein using diverse statistical methods
Current	<b>Mela Aryal</b> (Associate Supervisor) <span style="float: right;">University of Southern Queensland, AUS</span> Modelling plant functional group responses to rising carbon dioxide concentration
2016	<b>Sith Jaisong</b> (Principal Supervisor) <span style="float: right;">University of the Philippines, Los Baños, PHL</span> Network analysis of rice crop health survey data for characterization of yield reducing factors of tropical rice ecosystems in south and southeast Asia

## master's thesis mentorship

2017	<b>Patrick Kiplimo Toroitich</b> (Collaborator)	Strathmore University, KEN
	A model for early detection of potato late blight disease: A case study in Nakuru County	
2016	<b>Jerico Bigornia</b> (Principal Supervisor)	University of the Philippines, Los Baños, PHL
	Environmental performance of water saving technologies for irrigated low-land rice production	

## extramural support

2017	<b>USQ Research Infrastructure Program 2017</b>	AUD 25000
	PIs: D. Adorada, A. Sparks, A. Young	
2016-2019	<b>EPIC</b> (Developing Ecologically-based Participatory IPM package for rice in Cambodia)	USD 2.2 million
	PIs: B. Hadi (IRRI), A. Sparks, V. Kumar (IRRI), A. Stuart (IRRI), R. Oliva (IRRI), I.R. Choi (IRRI)	
2016-2019	<b>Syngenta-IRRI Scientific Knowledge and Exchange Program</b>	USD 484,274
	Phase III, Sub-Project 1 - Crop Health Management PIs: A. Sparks (IRRI) and K. K. Fui (Syngenta)	
2015-2017	<b>Identifying resistant rice germplasm to false smut using combined screening approaches and understanding the mechanisms underlying rice resistance</b>	USD 653,914
	Epidemiology and environmental characterisation of false smut, PIs: B. Zhou (IRRI), C. M. Vera Cruz (IRRI) and A. Sparks (IRRI)	
2013-2017	<b>PRISM</b> (Philippine Rice Information System)	USD 2.8 million
	Component B - Crop Health Monitoring, PIs: A. Nelson (IRRI), A. Sparks (IRRI), G. S. Arida (PhilRice), E. J. P. Quilang (PhilRice)	
2013-2015	<b>Syngenta-IRRI Scientific Knowledge and Exchange Program</b>	USD 454,640
	Phase II, Sub-Project 2 - Crop Health Management PI: A. Sparks (IRRI) and K. K. Fui (Syngenta)	

## awards

2016	<b>GovHack 2016 First Place Award for Paddock to Plate Category, John Conner Hack</b>
	As part of the Toowoomba Trio with K Pembleton and G Grundy

## professional certifications

PRINCE2 Foundation (2014) candidate number: P2R/009385 HiLogic Pty Ltd.

## professional affiliations

Australasian Plant Pathology Society (APPS)

American Phytopathological Society (APS)

International Society for Plant Pathology (ISPP)

## **professional service**

Section Editor Tropical Plant Pathology

Member Australia National Plant Biosecurity Diagnostic Network

Member ExtensionAUS Field Crop Diseases Community of Practice

Member International Congress of Plant Pathology (ICPP) 2018 Epidemiology Committee