

# Adam H. Sparks

ASSOCIATE PROFESSOR

University of Southern Queensland, Centre for Crop Health, West St., Toowoomba, Queensland 4350 AUS

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*I have demonstrated consistent success both in non-profit international NGO and academic settings and have an extensive background of experiences in working with diverse partners.*

## Education and Qualifications

### Kansas State University

Manhattan, KS, USA

PH.D. OF PLANT PATHOLOGY IN EPIDEMIOLOGY AND ECOLOGY OF PLANT PATHOGENS

Dec. 2009

- Dissertation Title: "Disease risk mapping with metamodels for coarse resolution predictors: global potato late blight risk now and under future climate conditions."
- Committee members: Drs. Karen A. Garrett (adviser), James P. Stack, Erick DeWolf and J. M. Shawn Hutchinson.

### Kansas State University

Manhattan, KS, USA

GRADUATE CERTIFICATE IN GEOGRAPHIC INFORMATION SCIENCES

Dec. 2007

### Purdue University

West Lafayette, IN, USA

B.S. OF AGRONOMY IN SOIL AND CROP MANAGEMENT

May 2000

## Professional Appointments

### University of Southern Queensland

Toowoomba, Queensland, AUS

ASSOCIATE PROFESSOR OF FIELD CROPS PATHOLOGY

2016 – Current

- Lead research group in developing plant disease models to support the Australian grains and cotton industries
- Lead research that contributes to the development of broadacre crop fungicide decision support system tools, e.g. PowderyMildewMBM
- Act as project manager for research projects spanning across research organisations
- Develop R packages that provide access to Australian and global weather or climate data and to assist in plant pathology research
- Work with the UN's FAO in a capacity building role to help build agrometeorology and pest and disease capabilities in Cambodia

### International Rice Research Institute (IRRI)

Los Baños, Laguna, PHL

SCIENTIST I PLANT DISEASE MANAGEMENT SPECIALIST

2012 – 2015

- Led research group in conducting research to reduce yield losses in tropical rice due to pests and diseases
- Used models to help evaluate impact and test rice crop management methodologies
- Acted as project manager for research projects spanning across research organisations and countries
- Co-directed the development of a country-wide rice monitoring system, the Philippine Rice Information System (PRISM), which uses geospatial, cloud-hosted and mobile device technologies to gather digital information
- Modelled the effects of climate change on rice diseases

### International Rice Research Institute (IRRI)

Los Baños, Laguna, PHL

POST-DOCTORAL FELLOW

2011 – 2012

- Linked plant disease models with geographic information systems to map model outputs for decision making
- Conducted in-field experiments to develop pest and disease management programs

### Kansas State University

Manhattan, Kansas, USA

POST-DOCTORAL RESEARCH ASSOCIATE

2010 – 2010

- Used bootstrapping methods to refit logistic regression model coefficients for wheat Fusarium head blight models using new and expanded data sets
- Studied the use of ensemble models to predict wheat Fusarium head blight

## Publications

### SELECTED PUBLICATIONS

de Sousa, K., **Sparks, A.**, Ashmall, W., van Etten, J., & Solberg, S. Ø. (2020). Chirps: API client for the CHIRPS precipitation data in R. *The Journal of Open Source Software*, 5(51), 2419. <https://doi.org/10.21105/joss.02419>

- Khaliq, I., Fanning, J., Melloy, P., Galloway, J., Moore, K., Burrell, D., & **Sparks, A.** (2020). The role of conidia in the dispersal of *Ascochyta rabiei*. *European Journal of Plant Pathology*. <https://doi.org/10.1007/s10658-020-02126-2>
- Purushotham, N., Jones, A., Poudel, B., Nasim, J., Adorada, D., **Sparks, A.**, ... Vaghefi, N. (2020). Draft genome resource for *Macrophomina phaseolina* associated with charcoal rot in sorghum. *Molecular Plant-Microbe Interactions*, 33(5), 724–726.
- Čučak, M., **Sparks, A.**, de Andrade R., M., Kildea, S., Lambkin, K., & Fealy, R. (2019). Evaluation of the 'Irish Rules': The potato late blight forecasting model and its operational use in the Republic of Ireland. *Agronomy*, 9(9), 515. <https://doi.org/10.3390/agronomy9090515>
- McCoy, A. G., Noel, Z., **Sparks, A.**, & Chilvers, M. (2019). hgis, an R package resource for pathotype analysis of *Phytophthora sojae* populations causing stem and root rot of soybean. *Molecular Plant-Microbe Interactions*, 32(12), 1574–1576.
- Pede, V. O., Barboza, G., **Sparks, A.**, & McKinley, J. (2019). The inequality-growth link revisited with spatial considerations: The case of provinces in the Philippines. *Journal of the Asia Pacific Economy*, 23(3), 411–427. <https://doi.org/10.1080/13547860.2018.1503765>
- Savary, S., Nelson, A. D., Djurle, A., Esker, P. D., **Sparks, A.**, Amorim, L., ... Willocquet, L. (2018). Concepts, approaches, and avenues for modelling crop health and crop losses. *European Journal of Agronomy*, 100, 4–18. <https://doi.org/10.1016/j.eja.2018.04.003>
- Sparks, A.** (2018). nasapower: A NASA POWER global meteorology, surface solar energy and climatology data client for R. *Journal of Open Source Software*, 3, 1035. <https://doi.org/10.21105/joss.01035>
- Savary, S., Bregaglio, S., Willocquet, L., Gustafson, D., D'Croz, D. M., **Sparks, A.**, ... Garrett, K. (2017). Crop health and its global impacts on the components of food security. *Food Security*, 9(2), 311–327. <https://doi.org/10.1007/s12571-017-0659-1>
- Sparks, A.** (2017). getCRUCLdata: Use and explore CRU CL v. 2.0 climatology elements in R. *The Journal of Open Source Software*, 2(12). <https://doi.org/10.21105/joss.00230>
- Sparks, A.**, Hengl, T., & Nelson, A. (2017). GSODR: Global summary daily weather data in R. *The Journal of Open Source Software*, 2(10). <https://doi.org/10.21105/joss.00177>
- Sparks, A.**, Padgham, M., Parsonage, H., & Pembleton, K. (2017). bomrang: Fetch Australian government Bureau of Meteorology weather data. *The Journal of Open Source Software*, 2(17). <https://doi.org/10.21105/joss.00411>
- Duku, C., **Sparks, A.**, & Zwart, S. J. (2016). Spatial modelling of rice yield losses in Tanzania due to bacterial leaf blight and leaf blast in a changing climate. *Climatic Change*, 135(3-4), 569–583. <https://doi.org/10.1007/s10584-015-1580-2>
- Dossa, G. S., **Sparks, A.**, Vera Cruz, C., & Oliva, R. (2015). Decision tools for bacterial blight resistance gene deployment in rice-based agricultural ecosystems. *Frontiers in Plant Science*, 6(305). <https://doi.org/10.3389/fpls.2015.00305>
- Laborte, A. G., Paguirigan, N. C., Moya, P. F., Nelson, A., **Sparks, A.**, & Gregorio, G. B. (2015). Farmers' preference for rice traits: Insights from farm surveys in central Luzon, Philippines, 1966-2012. *PLOS ONE*, 10(8), e0136562. <https://doi.org/10.1371/journal.pone.0136562>
- Maloon, J. M., Quilang, E. J. P., Mabalay, M. R. O., Dios, J. L. de, Jr., A. C. A., Mirandilla, J. R. R., ... Barbierri, M. (2015). Philippine Rice Information System (PRISM): Innovating the rice field data capture and monitoring using smartphone. *Philippine Journal of Crop Science*.
- Sparks, A.**, Forbes, G. A., Hijmans, R. J., & Garrett, K. A. (2014). Climate change may have limited effect on global risk of potato late blight. *Global Change Biology*, 20(12), 3621–3631. <https://doi.org/10.1111/gcb.12587>
- Barnwal, M. K., Kotasthane, A., Magculia, N., Mukherjee, P. K., Savary, S., Sharma, A. K., ... Zaidi, N. (2013). A review on crop losses, epidemiology and disease management of rice brown spot to identify research priorities and knowledge gaps. *European Journal of Plant Pathology*, 136(3), 443–457. <https://doi.org/10.1007/s10658-013-0195-6>

- Gaudin, A. C. M., **Sparks, A.**, & Slamet-Loedin, I. H. (2012). Taking transgenic rice drought screening to the field. *Journal of Experimental Botany*, 64(1), 109–117. <https://doi.org/10.1093/jxb/ers313>
- Mckinley, J. D., **Sparks, A.**, Pedde, V. O., & Duff, B. (2012). An economic assessment of the impact of mango pulp weevil on the agricultural sector of Palawan, Philippines. *The Philippine Agricultural Scientist*, 95(3), 286–292.
- Garrett, K. A., Forbes, G. A., Savary, S., Skelsey, P., **Sparks, A.**, Valdivia, C., ... Yuen, J. (2011). Complexity in climate-change impacts: An analytical framework for effects mediated by plant disease. *Plant Pathology*, 60(1), 15–30. <https://doi.org/10.1111/j.1365-3059.2010.02409.x>
- Savary, S., Nelson, A., **Sparks, A.**, Willocquet, L., Duveiller, E., Mahuku, G., ... Djurle, A. (2011). International agricultural research tackling the effects of global and climate changes on plant diseases in the developing world. *Plant Disease*, 95(10), 1204–1216. <https://doi.org/10.1094/pdis-04-11-0316> doi: 10.1094/PDIS-04-11-0316
- Sparks, A.**, Forbes, G. A., Hijmans, R. J., & Garrett, K. A. (2011). A metamodeling framework for extending the application domain of process-based ecological models. *Ecosphere*, 2(8), art90. <https://doi.org/10.1890/es11-00128.1>
- Cheatham, M. R., Rouse, M. N., Esker, P. D., Ignacio, S., Pradel, W., Raymundo, R., ... Garrett, K. A. (2009). Beyond yield: Plant disease in the context of ecosystem services. *Phytopathology*, 99(11), 1228–1236. <https://doi.org/10.1094/phyto-99-11-1228>
- Esker, P. D., **Sparks, A.**, Campbell, L., Guo, Z., Rouse, M., Silwal, S. D., ... Garrett, K. A. (2008). Ecology and epidemiology in R: Disease forecasting. *The Plant Health Instructor*. <https://doi.org/10.1094/phi-a-2008-0129-01>
- Sparks, A.**, Esker, P. D., Antony, G., Campbell, L., Frank, E. E., Huebel, L., ... Garrett, K. A. (2008). Ecology and epidemiology in R: Spatial analysis. *The Plant Health Instructor*. <https://doi.org/10.1094/phi-a-2008-0129-03>
- Sparks, A.**, Esker, P. D., Bates, M., Dall'Acqua, W., Guo, Z., Segovia, V., ... Garrett, K. A. (2008). Ecology and epidemiology in R: Disease progress over time. *The Plant Health Instructor*. <https://doi.org/10.1094/phi-a-2008-0129-02>
- Esker, P. D., **Sparks, A.**, Antony, G., Bates, M., Dall'Acqua, W., Frank, E. E., ... Garrett, K. A. (2007). Ecology and epidemiology in R: Modeling dispersal gradients. *The Plant Health Instructor*. <https://doi.org/10.1094/PHI-A-2007-1226-03>
- Garrett, K. A., Esker, P. D., & **Sparks, A.** (2007). An introduction to the R programming environment. *The Plant Health Instructor*. <https://doi.org/10.1094/phi-a-2007-1226-02>
- Garrett, K. A., Esker, P. D., **Sparks, A.**, & Scharmann, L. C. (2007). Writing teaching documents as a class project. *The Plant Health Instructor*. <https://doi.org/10.1094/phi-t-2007-1226-01>

## PREPRINTS

- Khaliq, I., Fanning, J., Melloy, P., Galloway, J., Moore, K., Burrell, D., & **Sparks, A.** (2020). The role of conidia in the dispersal of *Ascochyta rabiei*. *bioRxiv*. <https://doi.org/10.1101/2020.05.12.091827>

## BOOK CHAPTERS

- Kannan, E., Paliwal, A., & **Sparks, A.** (2017). Spatial and temporal patterns of rice production and productivity. In S. Mohanty, P. G. Chengappa, M. Hedge, J. K. Ladha, S. Baruah, E. Kannan, & A. V. Manjunatha (Eds.), *The future rice strategy for india* (First, pp. 39–68). <https://doi.org/10.1016/B978-0-12-805374-4.00003-8>
- Garrett, K. A., Nita, M., DeWolf, E. D., Esker, P. D., Gomez-Montano, L., & **Sparks, A.** (2016). Plant pathogens as indicators of climate change. In T. M. Letcher (Ed.), *Climate change: Observed impacts on earth* (Second, pp. 325–328). Elsevier.
- Garrett, K. A., Esker, P. D., & **Sparks, A.** (2014). An introduction to key distributions and models in epidemiology using r. In K. Stevenson & M. Jeger (Eds.), *Exercises in plant disease epidemiology* (2nd ed.). APS Press, Minneapolis, MN.

Garrett, K. A., Forbes, G. A., Gómez, L., Gonzáles, M. A., Gray, M., Skelsey, P., & **Sparks, A.** (2013). Cambio climático, enfermedades de las plantas e insectos plaga. In E. Jimenez (Ed.), *Cambio climático y adaptación en el altiplano boliviano* (Primera edición).

## REPORTS

Raitzer, D. A., **Sparks, A.**, Huelgas, Z., Maligalig, R., Balangue, Z., Launio, C., ... Ahmed, H. U. (2015). *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*. [A report submitted to the Standing Panel on Impact Assessment (SPIA), CGIAR Independent Science and Partnership Council (ISPC). 128 pp.]. Retrieved from Standing Panel on Impact Assessment (SPIA), CGIAR Independent Science; Partnership Council (ISPC) website: <http://impact.cgiar.org/rice-improvement-still-making-difference>

Geisler, L. J., & **Sparks, A.** (2004a). *Evaluation of seed treatment for controlling seedling diseases and compatibility with rhizobium inoculants, 2003*. (Fungicide and Nematicide Tests No. 59:ST025). The American Phytopathological Society, St. Paul, MN.

Geisler, L. J., & **Sparks, A.** (2004b). *Evaluation of seed treatment fungicides for controlling soybean seedling diseases, 2003* (Fungicide and Nematicide Tests No. 59:ST025). The American Phytopathological Society, St. Paul, MN.

## Grants

### **Towards effective genetic and sustainable management of Ascochyta blight of chickpea - Ascochyta blight pathogen biology, population dynamics and epidemiology**

AUS

GRAINS RESEARCH AND DEVELOPMENT CORPORATION (GRDC)

2020 – 2024

- Led epidemiological and modelling research activities to support Australian grain growers.
- Funding amount: \$2,552,960 AU
- Project Lead: Ford, R

### **Country technical consultant**

KHM

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION (FAO): CONSULTANCY

2019 – 2020

- Provided technical expertise and advice to country partners for building an agrometeorology bulletin in three provinces.
- Funding amount: \$80,000 AU

### **Ph.D. student scholarship**

Toowoomba, Queensland, AUS

COTTON RESEARCH AND DEVELOPMENT CORPORATION (CRDC): SUPPRESSIVE SOILS PROJECT

2019 – 2021

- Funding amount: \$4,657,032 AU
- Project Lead: Smith, L

### **A model for predicting chickpea ascochyta blight risk, Parent Project: DAW1810**

AUS

GRAINS RESEARCH AND DEVELOPMENT CORPORATION (GRDC): POST-DOCTORAL FELLOWSHIP PROJECT USQ1903-003RTX

2019 – 2021

- Supervised post-doctoral research fellow in the development of spatial disease risk model development for chickpea ascochyta blight.
- Funding amount: \$510,800 AU

### **Disease epidemiology and management tools for Australian grain growers**

AUS

RESEARCH AND DEVELOPMENT CORPORATION (GRDC) RESEARCH PROJECT DAW1810 SUBCONTRACT TO USQ FROM THE

2018 – 2021

GOVERNMENT OF WESTERN AUSTRALIA

- Led epidemiological and modelling research activities to support Australian grain growers.
- Supervised post-doctoral research fellow in the development of spatial disease risk model development for black spot in field pea.
- Funding amount: \$650,429 AU

### **Northern rice Australia - Developing rice growing packages for tropical climates**

Queensland, AUS

RURAL INDUSTRIES RESEARCH AND DEVELOPMENT CORPORATION (RIRDC): PROJECT PRJ-010814

2018 – 2021

- Led research into and developed control methods for common diseases of tropical rice.
- Co-PIs: Ash, G. and Pembleton, K.
- Funding amount: \$2 million AU

### **One-Year extension to existing project**

AUS

GRAINS RESEARCH AND DEVELOPMENT CORPORATION (GRDC): RESEARCH PROJECT DAQ00186

2017

- Led inter-organisational team in integrated disease management research and disease monitoring activities
- Funding amount: \$1.2 million AU

### **Laboratory improvements**

Toowoomba, Queensland, AUS

UNIVERSITY OF SOUTHERN QUEENSLAND: RESEARCH INFRASTRUCTURE PROGRAM 2017

2017

- Co-PIs: Adorada, D. and Young, A.
- Funding amount: \$25,000 AU

### Phase III, Sub-project 1 - Crop health management

South and Southeast Asia

SYNGENTA: SYNGENTA – IIRI SCIENTIFIC KNOWLEDGE AND EXCHANGE PROGRAM (SKEP)

2016 – 2019

- Led international and inter-organisational team in integrated disease management research and disease monitoring activities
- Co-PI: Kee-Fui K. (Syngenta)
- Funding amount: \$484,274 US

### Epidemiology and environmental characterisation of false smut

PHL

BAYER: IDENTIFYING RESISTANT RICE GERMPLASM TO FALSE SMUT USING COMBINED SCREENING APPROACHES AND

2015 – 2017

UNDERSTANDING THE MECHANISMS UNDERLYING RICE RESISTANCE (BAYER)

- Led research into development of a predictive model for false smut in rice.
- Co-PIs: Zhou, B. and Vera Cruz, C. M.
- Funding amount: \$653,91 US

### Component B - Crop health monitoring

PHL

PHILIPPINE DEPARTMENT OF AGRICULTURE: PHILIPPINE RICE INFORMATION SYSTEM (PRISM)

2013 – 2015

- Led inter-organisational team in integrated disease management research and disease monitoring activities
- Led efforts to standardise data collection methods and ensure data integrity through the use of mobile devices and cloud-hosted databases.
- Co-PIs: Nelson, A. (IRRI), Arida, G.S. (PhilRice), Quilang, E. J. P. (PhilRice)
- Funding amount: \$2.8 million US

### Phase II, Sub-project 2 - Crop health management

South and Southeast Asia

SYNGENTA – IIRI SCIENTIFIC KNOWLEDGE AND EXCHANGE PROGRAM (SKEP)

2013 – 2015

- Led international and inter-organisational team in integrated disease management research and disease monitoring activities
- Co-PI: Kee-Fui K. (Syngenta)
- Funding amount: \$454,640 US

## Awards and Honours

### Fourth Most Downloaded MPMI Journal Article of 2019

Global

McCOY, A. G., NOEL, Z., SPARKS, A., CHILVERS M.

2020

- hags, an R Package Resource for Pathotype Analysis of Phytophthora sojae Populations Causing Stem and Root Rot of Soybean

### Theo Murphy (Australia) Initiative for support for ‘Re:produce – kick-off meeting of reproducible research network’

Brisbane, Queensland, AUS

PANCZAK, R., BAKER, P., GACENGA, F., KING, R., LI, L., LODGE, J., LIM, C., SCHNYDER, N. AND SPARKS, A.

2019

- Sponsored by The Australian Academy of Science

### Participant in workshop on “Food System Impacts of Pests & Pathogens in a Changing Climate”

Aspen, Colorado, USA

SPARKS, A.

2019

- Aspen Global Change Initiative

### “Best Independent Film” Award for creation of extension articles for extensionAUS website

Adelaide, South Australia, AUS

SPARKS, A. & ADORADA, D.

2018

- extensionAUS Field Disease Community of Practice

### First Place Award for Paddock to Plate Category, John Conner Hack

AUS

PEMBLETON, K., GRUNDY, G., SPARKS, A.

2016

- GovHack 2016

### Third Place Graduate Student Oral Presentation and Poster Competition

Minneapolis, Minnesota, USA

SPARKS, A.

2008

- 2008 APS North Central Division Meeting

## Invited Guest Lectures

**Sparks, A.** (2020). *Flashback 2014: Using R at IRRI*. Invited presentation delivered at “RUG-PH Seventh Anniversary” held via Zoom.

**Sparks, A.** (2019). *The Impact of Plant Pathology on the Global Economy*. Invited presentation delivered at the “IX Symposium on Updates in Phytopathology” held in Viçosa, Minas Gerais, BRA.

**Sparks, A.** (2019). *Delivering and Supporting Open Science Practices Through Open Plant Pathology*. Invited presentation delivered at the October 2019 Queensland Chapter APPS Seminar Series, held in Toowoomba,

- Sparks, A.** (2019). *Climate Change May Have Limited Effect on Global Risk of Potato Late Blight*. Invited presentation delivered at the workshop on “Food System Impacts of Pests & Pathogens in a Changing Climate” hosted by Aspen Initiative held in Aspen, Colorado, USA.
- Sparks, A.** (2019). *Pre and In-Season Tools to Inform Broadacre Grains Growers* Invited presentation delivered at Southern Cross University in Lismore, New South Wales, AUS.
- Sparks, A.** (2019). *From Models to Maps and IDM In-Between*. Invited presentation delivered at the Australian National University in Canberra, Australian Capital Territory, AUS.
- Sparks, A.** (2019). *What’s so Open About Plant Pathology?* Invited presentation delivered at the “Openness and Reproducibility in Science” symposium, hosted by Australian National University, held in Canberra, Australian Capital Territory, AUS.
- Sparks, A.** (2018). *University of Southern Queensland, Centre for Crop Health, Summer Crop Pathology*. Invited presentation delivered during visit to TEGASC Oak Park Campus in Carlow, IRL.
- Sparks, A., A.D. Nelson, K.A. Garrett, C. Gilligan and K. Pembleton.** (2018). *Upscaling models, downscaling data or the right model for the right scale of application?* Invited presentation delivered at the “2018 International Congress of Plant Pathology” held in Boston, Massachusetts, USA.
- Sparks, A.** (2016). *Using modelling and mapping for digital insights into diseases in the rice field*. Invited presentation delivered at the “2016 Korean Society of Plant Pathology Fall Meeting and International Conference” at Seoul National University, Pyeongchang, Gangwon-do, KOR.
- Sparks, A., N. P. Castilla and G. S. Arida.** (2014). *Taking sustainable crop protection from the field to the cloud*. Invited presentation delivered at the “4th International Rice Congress (IRC2014)” in Bangkok, THA.
- Sparks, A.** (2014). *Impact of climate change on rice diseases*. Invited presentation delivered at the “Workshop on the impact of climate change on crop pests and diseases, and adaptation strategies for the Greater Mekong Sub – Region (GMS)” at Hotel Continental Saigon, Ho Chi Minh City, VNM.
- Sparks, A.** (2014). *Epidemiology and Disease Management of rice brown spot: Research priorities and knowledge gaps*. Invited presentation delivered at the “66th Annual Indian Phytopathological Society Meeting” at Indira Gandhi Krishi Vishwavidyalaya University, Raipur, IND.
- Sparks, A.** (2013). *Biosecurity risks in Southeast Asia impacting on human food supplies*. Invited presentation delivered at the “Pacific Environmental Security Forum” hosted by the Australian Department of Defence (ADoD) and U. S. Pacific Command (USPACOM) in Sydney, New South Wales, AUS.
- Sparks, A.** (2010). *Global potato late blight risk in response to climate change, possible futures for a historic disease*. Invited presentation presented at “Emerging infectious diseases in response to climate change” hosted by New York Academy of Sciences in New York, New York, USA.

## Papers and Posters Presented

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- Adorada, D. L., Adorada, E. E., Gonzales, P., & **Sparks, A.** (2019). Pathogenicity and aggressiveness of *macrophomina phaseolina* isolates to sorghum in Australia’s northern grains region. *Proceedings of the 2019 Australian Summer Grains Conference*.
- Sparks, A., Diggle, A., Galloway, J., Kelly, L., Melloy, P., & Weir, D.** (2019). A new tool to support mungbean growers and advisers in the fight against powdery mildew. *Proceedings of the 2019 Australian Summer Grains Conference*.
- Vaghefi, N., Adorada, D. L., Adorada, E. E., Kelly, L., Young, A., & **Sparks, A.** (2019). Characterising the genotypic diversity of *Curtobacterium flaccumfaciens* pv. *Flaccumfaciens*, the cause of tan spot on mungbean. *Proceedings of the 2019 Australian Summer Grains Conference*.
- Adorada, D. L., Gonzales, P., McKay, A., Vaghefi, N., & **Sparks, A.** (2018). A broad look at charcoal rot in the Northern Region broadacre crops through soil sampling and in-crop surveys. *Proceedings of the 10<sup>th</sup> australasian soilborne diseases symposium*. Presented at the National Wine Centre.

- Adorada, D. L., Thompson, S. M., Grams, R. A., Adorada, E. E., **Sparks, A.**, Wright, G., ... Ash, G. J. (2017). Fungi and bacteria associated with the Peanut Kernel Shivel (PKS) disease in the Bundaberg region. *Proceedings of the australasian plant pathology society 2017 meeting*.
- Cucak, M., **Sparks, A.**, Fealy, R., Griffin, D., Lambkin, K., & Kildea, S. (2017). Lowering thresholds of qualitative plant risk prediction algorithms: Sensitivity versus specificity of Irish Rules for potato late blight development. *Euroblight Workshop*.
- Kelly, L., White, J., Sharman, M., Brier, H., Williams, L., Grams, R., ... **Sparks, A.** (2017). Mungbean and sorghum disease update. *GRDC Updates (Jondaryan)*. Presented at the Jondaryan Woolshed. GRDC.
- Sparks, A.**, Castilla, N. P., & Sander, B. O. (2017). Do alternate wetting and drying irrigation technologies and nitrogen rates affect rice sheath blight? *Proceedings of the Australasian Plant Pathology Society 2017 meeting*.
- Jaisong, S., Castilla, N. P., Magculia, C. T., Savary, S., Pangga, I. B., & **Sparks, A.** (2015). Evaluation of correlation methods for co-occurrence network construction of rice crop health survey data. *Proceedings of the Australasian Plant Pathology Society 2015 Meeting*.
- Sparks, A.**, & Noel, M. (2015). Mapping rice diseases for targeted deployment of resistant varieties in India. *Proceedings of the australasian plant pathology society 2015 meeting*.
- Sparks, A.**, Anaurio, J., Duku, C., Noel, M., & Raitzer, D. (2013). Modeling the impact of disease resistance on rice yields in the Philippines and Indonesia. *Proceedings of the Australasian Plant Pathology Society 2013 meeting*. Technical report. CGIAR - SPIA.
- Sparks, A.**, Duku, C., Noel, M., & Zwart, S. J. (2013). Spatial modelling of rice yield losses due to bacterial leaf blight and leaf blast in a changing climate. *Acta Phytopathologica Sinica*, 43.
- Magculia, N. J., & **Sparks, A.** (2012). Predisposition factors affecting brown spot disease development in rice. *Phytopathology*, 102:S4.74.
- Savary, S., **Sparks, A.**, Nelson, A., McRoberts, N., & Esker, P. D. (2012). Putting information to use: Decisions at different scales. *Phytopathology*, 102:S4.162.
- Sparks, A.**, Savary, S., & Nelson, A. (2012). Preventing what ails rice with a strategic, statistical, prescriptive model system. *Phytopathology*, 102:S4.113.
- Ballesefin, G. B., Pede, V. O., & **Sparks, A.** (2011). Income inequality and economic growth in the Philippines. *The conference secretariat, 2011 PAEDA biennial convention*.
- McKinley, J., Pede, V. O., **Sparks, A.**, & Duff, B. (2011). An economic assessment of the impact of mango pulp weevil on the agricultural sector of Palawan, Philippines. *The conference secretariat, 2011 PAEDA biennial convention*.
- Sparks, A.**, Shah, D., DeWolf, E., Madden, L., Paul, P., & Willyerd, K. (2011). Refined empirical models for predicting Fusarium head blight epidemics in the United States. *Phytopathology*, 101:S223.
- Willoquet, L., Nelson, A., **Sparks, A.**, Laborte, A., & Savary, S. (2011). Crop losses in highly populated areas: A global perspective. *Phytopathology*, 101:S223.
- Sparks, A.**, Forbes, G., Hijmans, R., & Garrett, K. (2010). Metamodels for scaling potato late blight risk analysis in climate change scenarios. *Phytopathology*, 100:S121.
- Garrett, K., Forbes, G., Pande, S., Savary, S., **Sparks, A.**, Valdivia, C., ... Willocquet, L. (2009). Anticipating and responding to biological complexity in the effects of climate change on agriculture. *IOP conference series: Earth and environmental science*, 6. <https://doi.org/10.1088/1755-1307/6/7/372007>
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- Sparks, A.**, Raymundo, R., Simon, R., Forbes, G., & Garrett, K. A. (2008). Regional predictions of potato late blight risk in a GIS incorporating disease resistance profiles, climate change, and risk neighborhoods. *Phytopathology*, 98:S149.

## Campus or Departmental Talks

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- Sparks, A.** (2019). *Improving management options, epidemiology knowledge and tools to manage crop diseases*. for Curtin University Centre for Crop Disease Management visit to University of Southern Queensland Centre for Crop Health in Toowoomba, Queensland, AUS.
- Sparks, A.** (2019). *Completing the Picture. Integrating Plant Disease Into Ag Systems Modelling* for University of Southern Queensland Agriculture Systems Precinct grand opening held in Toowoomba, Queensland, AUS.
- Sparks, A.** (2016). *How to Combine Models and Maps When All Models Are Wrong and Maps Lie* for University of Southern Queensland Centre for Crop Health Seminar Series at University of Southern Queensland, Toowoomba, Queensland, AUS.
- Sparks, A.** (2016). *USQ CCH Modelling*. at University of Southern Queensland in Toowoomba, Queensland, AUS
- Sparks, A.** (2015). *I've a feeling we're not in Kansas anymore*. Introductory seminar for University of Southern Queensland in Toowoomba, Queensland, AUS.
- Sparks, A.** (2015). *Working across scales: Integrating satellite mapping and field studies for policy, crop management and forecasting*. for Bill Gates visit to IRRI at IRRI in Los Baños, Laguna, PHL.
- Sparks, A.** (2014). *Looking forward, a workplan for integrated disease management at IRRI*. Work Vision Seminar at IRRI in Los Baños, Laguna, PHL.
- Sparks, A.** (2013). *Don't get caught with your plants down. Consult a plant pathologist*. Invited presentation for IRRI Thursday Seminar Series in Los Baños, Laguna, PHL.
- Sparks, A.** (2013). *Current status of rice pathogens over geographic regions*. Presented for Taiwan Delegation visiting IRRI in Los Baños, Laguna, PHL.
- Sparks, A.** (2011). *Crop Modelling at IRRI*. at IRRI in Los Baños, Laguna, PHL.
- Sparks, A.** (2011). *Mapping the future*. IRRI Plant Breeding Genetics and Biotechnology division Seminar Series in Los Baños, Laguna, PHL.

## Extension and Community Outreach

- Eyre, J., **Sparks, A.**, Miles, M., & Rodriguez, D. (2020). Consider soil water storage before sowing a grain sorghum crop. *GRDC Ground Cover*. Retrieved from <https://groundcover.grdc.com.au/story/6591350/is-late-sowing-of-sorghum-a-viable-option-in-the-northern-region/>
- Sparks, A.**, Melloy, P., Diggle, A., & Galloway, J. (2020). Make better fungicide application decisions for mungbean powdery mildew with the new PowderyMildewMBM app. *GRDC Update Papers*. Retrieved from <https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2020/07/make-better-fungicide-application-decisions-for-mungbean-powdery-mildew-with-the-new-powderymildewmbm-app>
- Sparks, A.**, Melloy, P., Diggle, A., & Galloway, J. (2020). Make better fungicide application decisions for mungbean powdery mildew with the new PowderyMildewMBM app. *GRDC Update Papers*. Retrieved from <https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2020/07/make-better-fungicide-application-decisions-for-mungbean-powdery-mildew-with-the-new-powderymildewmbm-app>
- Adorada, D., & **Sparks, A.** (2019a). Low levels of disease persist during the drier summer season in parts of the northern region. *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/low-disease-drier-summer-northern/>
- Adorada, D., & **Sparks, A.** (2019b). Moisture saves sorghum from disease in parts of the northern region. *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/sorghum-disease-survey/>
- Adorada, D., Vaghefi, N., & **Sparks, A.** (2019). Re-visiting management options for charcoal rot in sorghum. *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/re-visiting-management-options-charcoal-rot-sorghum/>
- Sparks, A.** (2019). Where and when does charcoal rot in sorghum occur? *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/charcoal-rot-sorghum/>



- Sparks, A.**, & Purushotham, N. (2019). Last season's summer grain diseases & sorghum charcoal rot. *GRDC Communities Podcast*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/summer-crop-diseases-podcast/>
- Adorada, D., Kelly, L., Vaghefi, N., & **Sparks, A.** (2018). Summer paddock survey finds fungal and bacterial diseases decreased but not eliminated. *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/summer-paddock-survey/>
- McKay, A., Simpfendorfer, S., Gupta, V., Bithell, S., Moore, K., Daniel, R., ... Holloway, G. (2018). PREDICTA B update and new tests for 2018. *GRDC Update Papers*. Retrieved from <https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2018/03/predictab-update-and-new-tests-for-2018>
- Adorada, D., Sigel, L., Kelly, L., & **Sparks, A.** (2017). Diagnosing plant diseases: What do we ask and why do we ask for it? *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/diagnosing-plant-diseases-ask-ask/>
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- Sparks, A.**, & Kelly, L. (2017). Mungbean powdery mildew management with fungicide. *GRDC Communities*. Retrieved from <https://communities.grdc.com.au/field-crop-diseases/mungbean-powdery-mildew-fungicide/>
- Choi, I. R., **Sparks, A.**, Castilla, N. P., & Vera Cruz, C. M. (2014). Rice stripe virus disease. *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/decision-tools/rice-doctor/rice-doctor-fact-sheets/item/rice-stripe>
- Choi, I. R., **Sparks, A.**, & Vera Cruz, C. M. (2014). Red stripe. *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/narrow-brown-spot>
- Sparks, A.**, Castilla, N. P., & Savary, S. (2014). Narrow brown spot. *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/narrow-brown-spot>
- Sparks, A.**, Castilla, N. P., & Vera Cruz, C. M. (2014a). Bakanae. *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/bakanae>
- Sparks, A.**, Castilla, N. P., & Vera Cruz, C. M. (2014b). Blast (leaf and collar). *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/blast-leaf-collar>
- Sparks, A.**, Castilla, N. P., & Vera Cruz, C. M. (2014c). Blast (node and neck). *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/blast-node-neck>
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- Sparks, A.**, Castilla, N. P., & Vera Cruz, C. M. (2014e). Leaf scald. *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/leaf-scald>
- Sparks, A.**, Castilla, N. P., & Vera Cruz, C. M. (2014f). Sheath rot. *IRRI Rice Knowledge Bank*. Retrieved from <http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/sheath-rot>

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- Sparks, A.**, & Kennelly, M. (2008b). Blackleg of potato. *Kansas State University*. Retrieved from <https://krex.k-state.edu/dspace/handle/2097/21719>
- Sparks, A.** (2002a). Fusarium root rot. *Nebraska Crop Watch*. Retrieved from <https://cropwatch.unl.edu/plantdisease/corn/fusarium-root-rot>
- Sparks, A.** (2002b). Fusarium stalk rot. *Nebraska Crop Watch*. Retrieved from <https://cropwatch.unl.edu/plantdisease/corn/fusarium-stalk-rot>

## Research Experience

### University of Nebraska – Lincoln

RESEARCH TECHNOLOGIST

Lincoln, Nebraska, USA

2002 – 2004

### University of Nebraska – Lincoln

RESEARCH TECHNICIAN

Clay Center, Nebraska, USA

2000 – 2003

### Purdue University

ASSISTANT DIRECTOR

West Lafayette, Indiana, USA

1999 – 2000

### Purdue University

RESEARCH TECHNICIAN

West Lafayette, Indiana, USA

1997 – 1999

## Teaching Experience

### CLASSROOM

#### Kansas State University

TEACHING ASSISTANT

- Epidemiology and Ecology of Plant Pathogens

Manhattan, Kansas, USA

2006

#### Kansas State University

TEACHING ASSISTANT

- Introduction to Plant Pathology Laboratory Section

Manhattan, Kansas, USA

2008

### WORKSHOPS

#### QCIF (Queensland Cyber Infrastructure Foundation)

SOFTWARE CARPENTRIES R FOR REPRODUCIBLE SCIENTIFIC ANALYSIS

- Lead Instructor

Zoom

Aug. 2020

#### QCIF (Queensland Cyber Infrastructure Foundation)

SOFTWARE CARPENTRIES R FOR REPRODUCIBLE SCIENTIFIC ANALYSIS

- Lead Instructor

Zoom

Jun. 2020

## FAO and Cambodia GDA

DATA CARPENTRIES DATA ORGANIZATION IN SPREADSHEETS FOR ECOLOGISTS

- Organiser and Lead Instructor

Phnom Penh, KHM

Dec. 2019

## Australasian Plant Pathology Society

R MARKDOWN FOR SCIENTISTS

- Organiser and Lead Instructor

Melbourne, Victoria, AUS

Nov. 2019

## Southern Cross University

R FOR SCIENTIFIC ANALYSIS

- Lead Instructor

Lismore, New South Wales, AUS

Jul. 2019

## University of Southern Queensland

SOFTWARE CARPENTRIES PYTHON WORKSHOP

- Helper

Springfield, Queensland, AUS

Oct. 2019

## University of Southern Queensland

SOFTWARE CARPENTRIES R FOR REPRODUCIBLE SCIENTIFIC ANALYSIS

- Co-organiser and Instructor

Toowoomba, Queensland, AUS

Jun. 2019

## University of Southern Queensland

SOFTWARE CARPENTRIES PYTHON WORKSHOP

- Helper

Springfield, Queensland, AUS

Oct. 2018

## University of Southern Queensland

SOFTWARE CARPENTRIES R FOR REPRODUCIBLE SCIENTIFIC ANALYSIS

- Co-organiser and Instructor

Toowoomba, Queensland, AUS

Jun. 2018

## University of Southern Queensland

SOFTWARE CARPENTRIES R FOR REPRODUCIBLE SCIENTIFIC ANALYSIS

- Helper

Toowoomba, Queensland, AUS

Jun. 2017

## Bureau of Rice Research and Development, Rice Department, Bangkok

WORKSHOP ON INTEGRATED RICE DISEASE MANAGEMENT AND TRAINING ON STATISTICAL ANALYSIS

- Co-organiser and Instructor

Chiang Mai, THL

Jun. 2012

## Service

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### Tropical Plant Pathology

REPRODUCIBILITY EDITOR

Global

2020 – Present

### University of Southern Queensland Hacky Hour

R PROGRAMMING HELPER

Toowoomba, Queensland, AUS

2019 – Present

### MDPI Remote Sensing

GUEST EDITOR FOR SPECIAL ISSUE ON REMOTE SENSING AND CROP HEALTH

Global

2019 – Present

### R4ds (<https://rfordatascience.slack.com>)

MENTOR

Global

2019 – Present

### Open Plant Pathology (<https://openplantpathology.org>)

CO-FOUNDER AND CO-DIRECTOR

Global

2018 – Present

### University of Southern Queensland Athena SWAN (Scientific Women's Academic Network) SAGE (Science in Australia Gender Equality) Submission Committee

MEMBER

Toowoomba, Queensland, AUS

2018 – Present

### International Congress of Plant Pathology (ICPP) Crop Loss Committee

MEMBER

Global

2018 – Present

## Tropical Plant Pathology

EPIDEMIOLOGY SECTION EDITOR

Global

2017 – Present

## University of Southern Queensland Centre for Crop Health Advisory Committee

MEMBER

Toowoomba, Queensland, AUS

2016 – Present

## Australia National Plant Biosecurity Diagnostic Network

MEMBER

AUS

2016 – Present

## GRDC Communities of Practice: Field Crop Diseases

MEMBER

AUS

2018 – 2019

## extensionAUS: Field Crops Diseases Community of Practice

MEMBER

AUS

2016 – 2018

## International Congress of Plant Pathology (ICPP) Epidemiology Committee

MEMBER

Global

2013 – Present

## IRRI Crop and Environmental Sciences Division Seminar Series

COORDINATOR

Los Baños, Laguna, PHL

2013 – 2015

## IRRI One Corporate System (OCS) Advisory Committee

MEMBER

Los Baños, Laguna, PHL

2013 – 2015

## IRRI National Employee Recognition Program Committee

MEMBER

Los Baños, Laguna, PHL

2013 – 2015

## K-State Plant Pathology Graduate Student Club

PRESIDENT

Manhattan, Kansas, USA

2006 – 2007

## K-State Plant Pathology Webpage Advisory Committee

MEMBER

Manhattan, Kansas, USA

2005 – 2007

## Related Professional Skills

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### PROGRAMMING ABILITIES

- Programming: R (author and maintain packages on CRAN)
- Operating System: macOS, Unix/Linux (install and maintain Linux)
- Others: Git, Docker, Travis CI, LaTeX, Markdown and RMarkdown

### SOFTWARE

- Statistical Software: R
- Office Software Packages: Microsoft Office/365, LibreOffice and Google Suites
- GIS Software: R, QGIS, ArcGIS

## Certifications

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### Carpentries

CERTIFIED INSTRUCTOR

Global

2019 - Present

### PRINCE2 Foundation, HiLogic Pty Ltd.

CANDIDATE NUMBER: P2R/009385

Global

2014 – Present

# Memberships

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<b>USQ Ally Network</b> MEMBER	Toowoomba, Queensland, AUS 2019 – Present
<b>Australia New Zealand Open Research Network (ANZORN)</b> MEMBER	AUS and NZL 2019 – Present
<b>rOpenSci</b> MEMBER	Global 2017 – Present
<b>Australasian Plant Pathology Society</b> MEMBER	AUS and NZL 2013 – Present
<b>Philippines R Users Group (RUG-PH)</b> FOUNDING MEMBER	Manila, PHL 2013 – Present
<b>International Society for Plant Pathology</b> MEMBER	Global 2011 – Present
<b>American Phytopathological Society (APS)</b> MEMBER	USA 2004 – Present