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# CABI Science Report

**2021**

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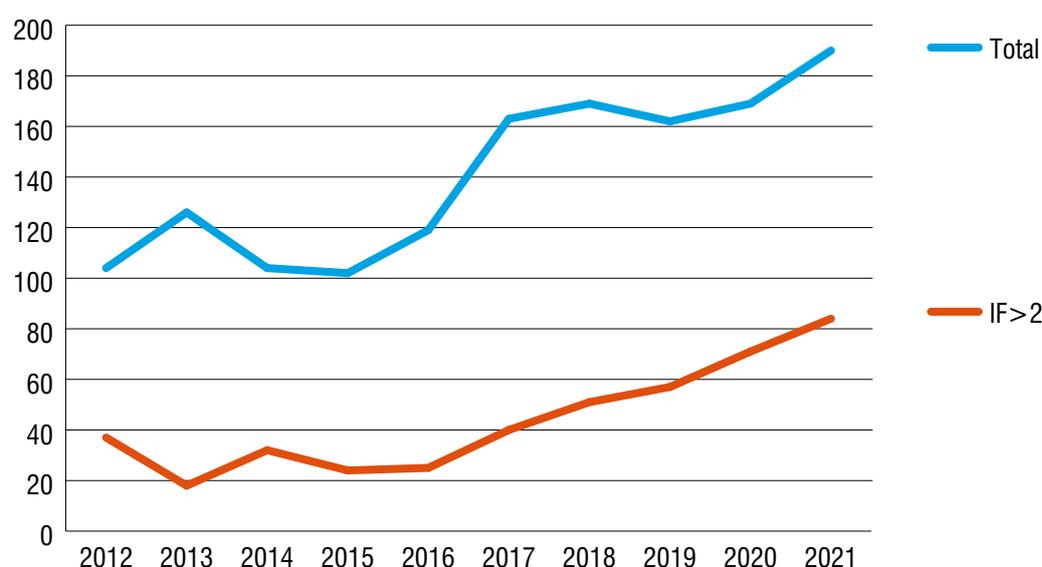
# 1. Implementing the CABI Science Strategy

In this section we present highlights from a number of areas anticipated in the CABI Science Strategy, much of it supported by the CABI Development Fund (CDF). This included an external review of CABI's science commissioned in 2020, which reported in April 2021. The review team comprised Prof. Christian Borgemeister (chair), Prof. Wanjiku Chiuri, Dr C. André Lévesque, Dr Willem J. Ravensberg, Dr Katherine Warner and Prof. Sileshi Gudeta Weldesemayat, with editorial assistance from Janet Stewart. The terms of reference included a retrospective analysis of CABI's science programme since the last review (2015), and analysis and recommendations for the future. With the benefit of this guidance, a new CABI Science Strategy 2021–2025 was prepared, which can be seen here: <https://www.cabi.org/wp-content/uploads/CABI-Science-Strategy-2022-25.pdf>.

## Maintain CABI's annual publication record

It is one of CABI's corporate key performance indicators to produce at least 100 scientific publications each year, of which at least 30 are in journals with an impact factor greater than 2.00 that year. The table below summarizes the listings that are shown later in this report (Section 2), while the graph shows the trend over the last 10 years; it can be seen that we significantly exceeded both targets in 2021.

Scientific publications in 2021	Open access	Not open access	Total
Total number of publications	131	59	190
Number of peer-reviewed publications	112	52	164
Number of peer-reviewed journal publications	104	32	136
Number of publications in journals with a 2020 impact factor >2	67	17	84
Papers with a social and economic science focus	35	4	39
Not peer-reviewed	19	7	26
Books, proceedings and manuals	1	1	2
Book chapters and proceedings papers	6	19	25



### Total annual number of publications by CABI staff since 2012, and the number appearing in journals with an impact factor greater than 2.00 (IF>2)

Since 2018, a second CABI corporate key performance indicator has been that at least 15 of our published papers should have a strong social and/or economic focus. In 2021, 39 publications were considered to meet this criterion.

## CABI's research published open access

In a further CABI corporate key performance indicator, CABI aimed to publish its research open access, specifically all of CABI's core research published in peer-reviewed journals with a CABI staff member lead or corresponding author should be open access. In 2021, 51 of 54 such papers (94%) were published open access (section 2.4.2), compared to 43 of 47 such papers (91%) in 2020. The costs were met from projects (when appropriate), CDF and centre budgets.

## Support for the preparation of research papers

CABI has used CDF funding to support staff time for the publication of selected papers, particularly those arising from completed projects, where resources are not otherwise available. The following papers published in 2021 received support in this way.

Avila, G.A., **Chen, J.**, **Li, W.**, Alavi, M., **Mi, Q.**, Sandanayaka, M., **Zhang, F.** and **Zhang, J.** (2021) Seasonal abundance and diversity of egg parasitoids of *Halyomorpha halys* in kiwifruit orchards in China. *Insects* 12(5), 428, 14 pp. <https://doi.org/10.3390/insects12050428>

**Silvestri, S.**, **Musebe, R.**, Baars, E., Ganatra, D. and **Romney, D.** (2021) Going digital in agriculture: how radio and SMS can scale-up smallholder participation in legume-based sustainable agricultural intensification practices and technologies in Tanzania. *International Journal of Agricultural Sustainability* 19(5–6), 583–594. <https://doi.org/10.1080/14735903.2020.1750796>

**Constantine, K.L.**, **Murphy, S.T.** and **Pratt, C.** (2021) The interaction between pests, mixed maize crop production and food security: a case study of smallholder perspectives in Mwea West, Kenya. *Cogent Food & Agriculture* 6(1), 1857099, 18 pp. <https://doi.org/10.1080/23311932.2020.1857099>

## CABI scientific publication recognition scheme 2021

A Scientific Publication Recognition scheme for CABI's scientists was designed, resourced from the CDF, and implemented since 2017. In 2021, five awards to recognise achievements in 2020 were made of £2000, each to be spent as the awardee decided in support of CABI's scientific programme.

- **Award 1:** The CABI staff member with the largest number of authored/co-authored papers in journals with IF>2 in 2020. Urs Schaffner – for 12 authored/co-authored papers
- **Award 2:** The CABI staff member who has published a paper as first author in the highest impact factor journal in 2020. Urs Schaffner – for the following paper:  
**Schaffner, U.**, Steinbach, S., Sun, Y., Skjøth, C.A., Weger, L.A. de, Lommen, S.T., **Augustinus, B.A.**, Bonini, M., Karrer, G., Šikoparija, B., Thibaudon, M. and Müller-Schärer, H. (2020) Biological weed control to relieve millions from *Ambrosia* allergies in Europe. *Nature Communications* 11, 1745, 7 pp. <https://doi.org/10.1038/s41467-020-15586-1> (impact factor 11.878)
- **Award 3:** The CABI staff member with the first-author paper published since 1 January 2016 with the largest number of citations on Google Scholar, as established on 31 December 2020. Roger Day – for the following paper with 176 citations:  
**Day, R.**, **Abrahams, P.**, **Bateman, M.**, **Beale, T.**, **Clotey, V.**, **Cock, M.**, **Colmenarez, Y.**, **Corniani, N.**, Early, R., **Godwin, J.**, **Gomez, J.**, **Gonzalez Moreno, P.**, **Murphy, S.T.**, **Oppong-Mensah, B.**, **Phiri, N.**, **Pratt, C.**, **Silvestri, S.** and **Witt, A.** (2017) Fall armyworm: impacts and implications for Africa. *Outlooks on Pest Management* 28(5), 196–201. [https://doi.org/10.1564/v28\\_oct\\_02](https://doi.org/10.1564/v28_oct_02)
- **Award 4:** The CABI staff member with the first author paper with a social or economic science focus in the journal with the highest impact factor in 2020. Justice Tambo – for the paper:  
**Tambo, J.A.**, **Kansiime, M.K.**, **Mugambi, I.**, **Rwomushana, I.**, **Kenis, M.**, **Day, R.K.** and **Lamontagne-Godwin, J.** (2020) Understanding smallholders' responses to fall armyworm (*Spodoptera frugiperda*) invasion: evidence from five African countries. *Science of the Total Environment* 740, 140015, 11 pp. <https://doi.org/10.1016/j.scitotenv.2020.140015> (impact factor 6.551)

- **Award 5:** The CABI staff early career scientist (no PhD or PhD held less than three years on 1 January 2021) who has published a paper as first author in the highest impact factor journal in 2020. Mi Qian-Qian – for the following paper:

**Mi, Q., Zhang, J.,** Gould, E., **Chen, J.,** Sun, Z. and **Zhang, F.** (2020) Biology, ecology, and management of *Erthesina fullo* (Hemiptera: Pentatomidae): a review. *Insects* 11(6), 346, 19 pp. <https://doi.org/10.3390/insects11060346> (impact factor 2.220)

## Carol Ellison Science Award

This new annual award was introduced in 2021, following a similar format to the Scientific Publications Recognition awards. Named after our late colleague, the Carol Ellison Science Award is given to a student doing her/his research with CABI, or an early career CABI researcher, with the objective of enriching their research experience with CABI.

The first Carol Ellison Award was awarded to Violet Ochieng, a Master of Science student in Agricultural Entomology at the University of Nairobi, Kenya. Her project focused on the use of drones for the chemical control of desert locust, *Schistocerca gregaria*. This was brought to prominence by the 2020 desert locust outbreak when Kenya went through its worst desert locust crisis in 70 years and existing control methods were not sufficient in some specific cases. Therefore, her MSc project aimed to test the use of drones to apply pesticides, to complement the existing methods for desert locust control. Drones have potential for use in precision application, making them a good platform to control locust infestations near homesteads and agricultural fields. The Carol Ellison Science Award enabled Violet to expand her experimental design to include Green Muscle™, the biopesticide developed for the management of locusts under CABI's leadership.

Under the supervision of Ivan Rwomushana (CABI), George Ongamo and Paul Ndegwa (University of Nairobi), the project had two objectives: to establish the optimum height for spraying desert locusts with Green Muscle using a drone fitted with ULV (ultra low volume); and to determine the effects of flight height and different spray modes (ULV and ordinary nozzles) on swath width of the drone. The research demonstrated that drones can be a complementary tool for the control of desert locusts under specific conditions, for which standard operating procedures were developed. Two peer review publications are planned based on this work.

## CABI Scientific Outputs Portal (CSOP) further developed and updated

Details of all new scientific papers, articles and reports published by CABI scientists are available on the website [www.cabi.org/cso](http://www.cabi.org/cso). New publications were added during 2021, and by the end of the year, the CSOP held 6,585 records, an increase from 6,305 records at the end of 2020.

## Effective scientific reporting mechanisms

The Science Strategy recognizes the need for a record of work to monitor publications, reports, talks and posters presented, research students, major scientific contributions, etc. This annual science report provides the primary record of all these scientific outputs (sections 2 and 3). In addition, an internal publications pipeline spreadsheet is in use which enables the progress of all staff publications to be monitored from concept to publication.

## Public relations support for CABI's scientific papers published in 2021

The CABI Communications Team supports its scientists with a full range of public relations (PR), marketing and design functions including the drafting and issuing of press releases using the EurekAlert! and AlphaGalileo platforms and databases, the writing of news stories for [CABI News](#), the writing of blogs for the [CABI Blog](#), [Invasives Blog](#) and [Plantwise Blog](#), as well as writing thought leadership articles for placement in external media. Posts are made on CABI's News, Invasives and Plantwise Twitter, Facebook and LinkedIn accounts (linking to the news stories on CABI's website and/or the paper).

During 2021, the CABI Communications Team provided PR support for 23 papers. These were selected based on CABI's role, the impact of the journal and the perceived newsworthiness of the science published. For these 23 papers, a total of 481 items of media coverage were generated, with a combined estimated audience reach of over 45 million.

The three papers with the most media coverage achieved were:

- **Eschen, R., Beale, T., Bonnin, M., Constantine, K.L., Duah, S., Finch, E.A., Makale, F., Nunda, W., Ogunmodede, A., Pratt, C.F., Thompson, E., Williams, F., Witt, A. and Taylor, B.** (2021) Towards estimating the economic cost of invasive alien species to African crop and livestock production. *CABI Agriculture and Bioscience* 2, 18, 18 pp. <https://doi.org/10.1186/s43170-021-00038-7>.  
111 items of coverage and a reach of 19 million.
- **Buddie, A.G., Rwomushana, I., Offord, L.C.,** Kibet, S., **Makale, F., Djeddour, D., Cafa, G.,** Vincent, K.K., Muvea, A.M., **Chacha, D. and Day, R.K.** (2021) First report of the invasive snail *Pomacea canaliculata* in Kenya. *CABI Agriculture and Bioscience* 2, 11, 10 pp. <https://doi.org/10.1186/s43170-021-00032-z>.  
20 items of coverage and a reach of 5 million.
- Shiferaw, H., Alamirew, T., Dzikiti, S., Bewket, W., Zeleke, G. and **Schaffner, U.** (2021) Water use of *Prosopis juliflora* and its impacts on catchment water budget and rural livelihoods in Afar Region, Ethiopia. *Scientific Reports* 11, 2688, 14 pp. <https://doi.org/10.1038/s41598-021-81776-6>.  
10 items of media coverage and a reach of 3 million.

Selected highlights from the media coverage can be seen in this [Coverage Book](#).

## Research students (MSc, PhD etc.) and interns (summer students)

In 2021, we hosted 19 research students (section 4.3, 13 MSc and 7 PhD) and 17 interns, of whom nine were at the CABI centre in Switzerland (section 4.8).

## Strategically important scientific review/synthesis papers published

The CABI Science Strategy calls for CABI staff to be involved in the publication of strategically important scientific review/synthesis papers. Examples from 2021 in which CABI staff took a lead include:

**Dueñas, M.-A., Hemming, D.J., Roberts, A.** and Diaz-Soltero, H. (2021) The threat of invasive species to IUCN-listed critically endangered species: a systematic review. *Global Ecology and Conservation* 26, e01476, 7 pp. <https://doi.org/10.1016/j.gecco.2021.e01476>

**Eschen, R., Beale, T., Bonnin, M., Constantine, K.L., Duah, S., Finch, E.A., Makale, F., Nunda, W., Ogunmodede, A., Pratt, C.F., Thompson, E., Williams, F., Witt, A. and Taylor, B.** (2021) Towards estimating the economic cost of invasive alien species to African crop and livestock production. *CABI Agriculture and Bioscience* 2, 18, 18 pp. <https://doi.org/10.1186/s43170-021-00038-7>

**Ryan, M.J.,** Schloter, M., Berg, G., Kostic, T., Kinkel, L.L., Eversole, K., Macklin, J.A., Schelkle, B., Kazou, M., Sarand, I., Singh, B.K., Fischer, D., Maguin, E., Ferrocino, I., Lima, N., McClure, R.S., Charles, T.C., de Souza, R.S.C., Kiran, G.S., Krug, H.L., Taffner, J., Roume, H., Selvin, J., **Smith, D.,** Rybakova, D. and Sessitsch, A. (2021) Development of microbiome biobanks – challenges and opportunities. *Trends in Microbiology* 29(2), 89–92. <https://doi.org/10.1016/j.tim.2020.06.009>

**Seehausen, M.L.,** Afonso, C., Jactel, H. and **Kenis, M.** (2021) Classical biological control against insect pests in Europe, North Africa, and the Middle East: what influences its success? *NeoBiota* 65, 169–191. <https://doi.org/10.3897/neobiota.65.66276>

**Taylor, B.,** Tonnang, H.E.Z., **Beale, T., Holland, W., Oronje, M., Abdel-Rahman, E.M., Onyango, D., Finegold, C.,** Zhu, J., Pozzi, S. and **Murphy, S.T.** (2021) Leveraging data, models & farming innovation to prevent, prepare for & manage pest incursions: delivering a pest risk service for low-income countries. Center for Development Research (ZEF) in cooperation with the Scientific Group for the UN Food System Summit 2021, Bonn, Germany, 17 pp. <https://doi.org/10.48565/scfss2021-ty56>

## The BIOCAT database

CABI's BIOCAT database is a record of the use of insect biological control agents for the control of insect pests. Work continued to update the database. One paper and three book chapters in 2021 included data or statistics compiled from BIOCAT:

Day, M.D., **Cock, M.J.W.**, Conant, P., Cooke, B., Furlong, M.J., Paynter, Q., Ramadan, M.M. and Wright, M.G. (2021) 14 Biological control successes and failures: Oceania region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 334–367.

McClay, A., **Cock, M.J.W.**, Duan, J.J., Liu, M., Rodríguez-del-Bosque, L.A. and Svircev, A.M. (2021) 18 Biological control successes and failures: North American region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, 467–510.

Rondoni, G., Borges, I., Collatz, J., Conti, E., Costamagna, A.C., Dumont, F., Evans, E.W., Grez, A.A., Howe, A.G., Lucas, E., Maisonhaute, J.-E., Soares, A.O., Zaviezo, T. and **Cock, M.J.W.** (2021) Exotic ladybirds for biological control of herbivorous insects – a review. *Entomologia Experimentalis et Applicata* 169, 6–27. <https://doi.org/10.1111/eea.12963>

**Witt, A.B.R.**, **Cock, M.J.W.**, Day, M.D., Zachariades, C., Strathie, L.W., Conlong, D.E., Hill, M.P. and Roy, S. (2021) 15 Biological control successes and failures: African region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 368–402.

## 2. Scientific outputs

### 2.1. Honours, honorary roles

Location	Name	Honour / role	Date(s)
Brazil	Colmenarez, Yelitza	Member of the Steering Committee of the International Organisation for Biological Control – Neotropical Regional Section	From 2010
China	Zhang, Feng	Adjunct Professor, Chinese Academy of Agricultural Sciences – Institute of Plant Protection	From 2013
China	Zhang, Feng	Adjunct Professor, Hexi University, Gansu, China	From 2021
China	Zhang, Feng	Member, Asia-Pacific Regional FAW Management Steering committee	From 2020
China	Zhang, Feng	Member, ASEAN Task Force on Fall Armyworm	From 2021
China	Li, Hong-Mei	Adjunct Professor, Chinese Academy of Agricultural Sciences – Institute of Plant Protection	From 2019
China	Li, Hong-Mei	Master student supervisor, Beijing University of Agriculture	From 2019
China	Zhang, Jin-Ping	Adjunct Professor, Jilin Agricultural University	From 2018
China	Zhang, Jin-Ping	Adjunct Professor, Yangtze University	From 2021
China	Zhang, Jin-Ping	Senior Agronomist, Beijing Human Resources and Social Security Bureau	From 2021
Global	Day, Roger	Member of the International Plant Protection Convention Working Group on Fall Armyworm Prevention, Preparedness and Response	From 2021
Global	Day, Roger	Member of the International Plant Protection Convention Focus Group on Pest Outbreak Alert and Response Systems	From 2021
Hungary	Toepfer, Stefan	Adjunct Professor and member of plant science PhD school, Plant Protection Institute, Hungarian University of Agriculture and Life Sciences MATE (formerly Szent Istvan University), Godollo, Hungary	From 2012
Hungary	Toepfer, Stefan	Visiting Professorship, Chinese Academy of Agricultural Sciences – Institute of Plant Protection	From 2015
India	Chaudhary, Malvika	National Advisory Committee, TNAU, Coimbatore India	From 2020
India	Pandit, Vinod	IPPC working group to develop guidelines for implementation of ISPM 15	From 2020
Malaysia	Annamalai, Sivapragasam	Member, Advisory Panel for Coconut R&D projects in MARDI	Ongoing
Malaysia	Annamalai, Sivapragasam	Member of Panel of Reviewers “The Planter” Journal of the Incorporated Society of Planters, Malaysia	Ongoing
Malaysia	Annamalai, Sivapragasam	Member, Editorial Board, Vietnam Academy of Agricultural Sciences	Ongoing
Malaysia	Annamalai, Sivapragasam	Member of Editorial Board, Journal of Asia Pacific Entomology, Korea	Ongoing
Malaysia	Annamalai, Sivapragasam	Member, International Advisory Board, Journal of Tropical Agriculture and Food Science (JTAFS), MARDI	Ongoing
Switzerland	Babendreier, Dirk	Visiting Professorship, Chinese Academy of Agricultural Sciences – Institute of Plant Protection	From 2018
Switzerland	Eschen, René	Member of the International Forest Quarantine Research Group	From 2010
Switzerland	Eschen, René	Coordinator, Working Group 7.03.12 – Alien invasive species and international trade, International Union of Forest Research Organizations	From 2014

Location	Name	Honour / role	Date(s)
Switzerland	Eschen, René	Member of the International Union of Forest Research Organizations Task Force Forests and Biological Invasions	From 2015
Switzerland	Haye, Tim	Member of Swiss Committee for Biosafety	From 2015
Switzerland	Haye, Tim	Member of the PhD Council in Agri-Food Sciences, Technologies and Bio-Technologies (STEBa), University of Modena und Reggio Emilia, Italy	From 2019
Switzerland	Hinz, Hariet	Affiliated Professor, Department of Plant, Soil and Entomological Sciences, University of Idaho, USA	From 2002
Switzerland	Hinz, Hariet	Member of the IOBC Global Commission on Access and Benefit Sharing	From 2021
Switzerland	Kenis, Marc	Member of the Scientific Committee of the Swiss Biological Records Center	From 2012
Switzerland	Kuhlmann, Ulrich	Adjunct Professor, Department of Entomology, University of Manitoba, Canada	From 2000
Switzerland	Kuhlmann, Ulrich	Convenor, International Working Group of Ostrinia and other maize pests – a global working group of the International Organization of Biological Control	From 2005
Switzerland	Kuhlmann, Ulrich	Member, International Advisory Board of IPP-CAAS, China	From 2018
Switzerland	Kuhlmann, Ulrich	Visiting Professorship, Chinese Academy of Agricultural Sciences – Institute of Plant Protection.	From 2013
Switzerland	Schaffner, Urs	Affiliated Professor, Department of Plant, Soil and Entomological Sciences, University of Idaho, USA	From 2008
Switzerland	Seehausen, Lukas	Deputy Coordinator of the IUFRO Working Party 7.03.13 – Biological control of forest insects and pathogens	From 2020
Switzerland	Seehausen, Lukas	Deputy coordinator, Working Group 7.03.13 – Biological control of forest insects and pathogens, International Union of Forest Research Organizations	From 2020
Switzerland	Weyl, Philip	Affiliated Professor, Department of Plant, Soil and Entomological Sciences, University of Idaho, USA	From 2020
Switzerland	Weyl, Philip	Member of the biological control committee for the North American Invasive Species Management Association	From 2020
Switzerland	Weyl, Philip	Member of the IOBC Global Commission on Access and Benefit Sharing	From 2021
Trinidad and Tobago	Ramnanan, Naitram	Member of the Regional Project Steering Committee: Strengthening Coastal and Marine Climate Resilience through Upland and Coastal Ecosystem Based Adaptation and Country Engagement	From 2021
UK	Buddie, Alan	Member Cup-fungi, Truffles and their Allies SSC Specialist Group (International Union for Conservation of Nature)	Ongoing
UK	Cock, Matthew	Honorary Life Member of the International Organisation for Biological Control	From 2015
UK	Cock, Matthew	Member Invasive Species Specialist Group (International Union for Conservation of Nature)	Ongoing
UK	Djeddour, Djami	Honorary Lecturer in the School of Biological Sciences, Royal Holloway, University of London	2019–2022
UK	Edgington, Steve	Visiting Research Fellow, Reading University	2016–2022
UK	Edgington, Steve	Convenor for the Association of Applied Biologists, Nematology division	2015–2022
UK	Kurose, Daisuke	Part-time Lecturer in School of Agriculture, Kyushu University, Japan	2021–2022
UK	Murphy, Sean	Honorary Lecturer in the School of Biological Sciences, Royal Holloway, University of London	2019–2022

Location	Name	Honour / role	Date(s)
UK	Musker, Ruthie	Lacuna Fund Technical Advisory Panel	2021
UK	Neave, Suzanne	STDF Working Group	From 2021
UK	Ryan, Matthew	Working Group UK Plant Microbiome Initiative (with Rothamsted Research)	From 2017
UK	Ryan, Matthew	Board of Directors. International Alliance for Phytobiomes Research	From 2019
UK	Ryan, Matthew	Member of KTN Microbiome Steering Advisory Group & Lead, Microbiome Biobanking	From 2019
UK	Shaw, Richard	Member Invasive Species Specialist Group (International Union for Conservation of Nature)	From 2014
UK	Shaw, Richard	Member of the European Commission Expert Working Group on Invasive Alien Species	From 2014
UK	Shaw, Richard	Science Advisory Board Member for the UK Animal and Plant Health Agency	From 2019
UK	Smith, David	Fellow of the Royal Society for Biology	From 2011
UK	Taylor, Phil	Board member of the British Society for Plant Pathology	From 2017
UK	Taylor, Phil	Board member of World Agriculture (journal)	From 2018

## 2.2. Support to international scientific meetings

CABI staff have played significant roles in the organization of several scientific meetings in 2021:

Meeting	Staff member	Role
2nd International Congress of Biological Control (ICBC2). Virtual event, Davos, Switzerland, 26–30 April 2021	Ulrich Kuhlmann Yelitza Colmenarez Malvika Chaudhary	Local organizer, panel organizer Scientific committee, session moderator Session organizer and moderator
3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya	Lorna Migiro, MaryLucy Oronje and Washington Otieno	Technical committee / moderators
Empowering women and youth to better contribute to transforming food systems in Malawi. Virtual independent dialogue, UN Food Systems Summit (UNFSSS), 26 February 2021	Mariam Kadzamira	Session co-organizer and facilitator
Exchanging scientific knowledge on biocontrol agents for the management of devastating fall armyworm. Webinar, BARI, Bangladesh and NBAIR, Bengaluru, 22–24 February 2021	Malvika Chaudhary and Manju Thakur	Organizers and facilitators
FAO-TCP-Regional Guidelines and Concept Note preparations for Coordinative surveillance and early warning for sustainable management of transboundary plant pests in Asia. September–October 2021	Malvika Chaudhary and Manju Thakur	Organizers and facilitators for six webinars and six virtual consultations
FAW Diagnostics, Ecology and its Management in the Philippines. Virtual sessions, PhilRice, Philippines, 2–4 June 2021	Muhammad Faheem	Co-organizer
FFTC-VAAS-CABI's International Webinar on Fostering Sustainable Management of Banana Diseases in Asia. 22 July 2021	Sathis Sri Thanarajoo, Sivapragasam Annamalai	Co-organizer
Global Perspectives in Crop Protection for Food Security (GPCP 2021). TNAU Coimbatore, India, 8–10 December 2021	Malvika Chaudhary, Sunil Kumar	Co-chairs
International Symposium on Tropical Fruits (ISTF 2021). International Tropical Fruits Network (TFNet), 28–30 September 2021	Sivapragasam Annamalai	Co-organizer/Session chair: Pests and Diseases
Managing Fall Armyworm (FAW) in Corn Production in Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) Sub-Region. Webinar, 20 January 2021	Sivapragasam Annamalai	Co-organizer
National Seminar on Organic Farming (SKOr). Webinar, 22–23 February 2021	Sathis Sri Thanarajoo	Co-organizer
Regional consultation meeting on Fall Armyworm – the status, challenges and experiences among the SAARC Member States. Virtual meeting, 27–28 January 2021	Malvika Chaudhary	Co-organizer
Regional Workshop on Validation of Guidelines for FAW. Bengaluru, India, 11 September 2021	Malvika Chaudhary	Organizer
St Helena Invertebrate Conservation Strategy workshop. Mixed format, 3–4 November 2021	Norbert Maczey	Facilitator
Virtual workshop on research on biological control of FAW in Africa using parasitoids, predators and nematodes, 16–17 March 2021	Marc Kenis	Organizer
Webinar series under FAO Project	Malvika Chaudhary	Organizer

## 2.3. Journal contributions

CABI staff acted on the editorial boards of the following journals in 2021:

- *Asian Journal of Agricultural Extension, Economics & Sociology* (H. Rware)
- *BioControl* (D. Babendreier)
- *Biology Methods and Protocols* (M. Reeve)
- *Brazilian Journal of Forestry and Environment* (N. Corniani)
- *CAB Reviews* (M.J.W. Cock)
- *CABI Agriculture & Bioscience* (M. Kansime, M. Ryan, F. Zhang)
- *CBSUA Research and Innovation Multidisciplinary Journal* (S.S. Thanarajoo)
- *Chilean Journal of Agricultural Research* (S. Edgington)
- *Frontiers in Insect Science* (T. Haye)
- *International Journal of Pest Management* (M. Kansime)
- *Journal of Applied Entomology* (S. Toepfer)
- *Journal of Asia Pacific Entomology* (A. Sivapragasam)
- *Journal of Insects as Food and Feed* (M. Kenis)
- *Journal of Pest Science* (T. Haye)
- *Journal of Tropical Agriculture and Food Science* (J. Flood, A. Sivapragasam)
- *Journal of Vietnam Agricultural Science and Technology* (A. Sivapragasam)
- *Neobiota* (R.H. Shaw)
- *New Disease Reports* (R. Reeder, P. Taylor, A. Buddie)
- *Redia* (T. Haye)
- *The Planter* (A. Sivapragasam)

CABI staff were also involved in reviewing more than 100 papers for journals as follows:

*Acta Agriculturae Scandinavica*  
*Acta Entomologica Sinica*  
*African Entomology*  
*Aquaculture*  
*Biocontrol*  
*Biocontrol Science & Technology*  
*BiolInvasions Records*  
*Biological Control*  
*Biological Invasions*  
*Biology Methods and Protocols*  
*Bulletin of Entomological Research*  
*CABI Agriculture and Bioscience*  
*Chemical and Biological Technologies in Agriculture*  
*Crop Protection*  
*Current Research in Green and Sustainable Chemistry*  
*Czech Academy of Agricultural Sciences*  
*Ecological Economics*  
*Ecology and Evolution*

*Economic Entomology*  
*Entomological Society of Southern Africa*  
*Environmental Entomology*  
*Field Crops Research*  
*Food and Energy Security*  
*Food Chain journal*  
*Food Security*  
*Geoscience and Remote Sensing Letters*  
*Heliyon*  
*Insecta Mundi*  
*Insects*  
*International Journal of Pest Management*  
*International Journal of Social Economics*  
*Journal of African Development*  
*Journal of Agricultural Education and Extension*  
*Journal of Applied Ecology*  
*Journal of Development Studies*  
*Journal of Entomology and Nematology*  
*Journal of Environmental Management*  
*Journal of International Development*  
*Journal of Pest Science*  
*Journal of Rural Studies*  
*Journal on Insects as Food and Feed*  
*Nature Communications*  
*Nature Ecology and Evolution*  
*Neobiota*  
*Oecologia*  
*Pest Management Science*  
*Plants*  
*PlosONE*  
*Proceedings of the Entomological Society of Washington*  
*Science of the Total Environment*  
*Scientific Reports*  
*Summa Phytopathologica*  
*Sustainability*  
*The Planter*  
*Tropicultura*  
*Vegetos*  
*Weed Biology and Management*  
*World Development*

## 2.4. Publications

CABI authors are shown in **bold**, the corresponding author(s) where designated are underlined, papers in journals with a 2020 impact factor greater than 2.0 are **highlighted in gold**, and an open access symbol  is placed at the end of all open access publications.

### 2.4.1. Books, proceedings and manuals (2)

Parra, J.R.P., Delalibera G., L., Bertin, A., **Colmenarez, Y.** and Coelho, A. Jr (2021) Small-scale rearing of *Anagasta kuehniella* for *Trichogramma* production, second edition (updated and translated from Portuguese). CAB International, Wallingford, UK, x + 32 pp. <https://www.cabi.org/cabebooks/FullTextPDF/2021/20210064835.pdf> 

van Lenteren, J.C., Bueno, V.H.P., Luna, M.G. and **Colmenarez, Y.C.** (eds) (2021) *Control Biológico en América Latina y el Caribe: Su Rica Historia y Futuro Brillante*. Acribia, Zaragoza, Spain, 574 pp.

### 2.4.2. Peer-reviewed papers (136)

Adom, M., Fening, K.O., Billah, M.K., Wilson, D.D., **Hevi, W.**, **Clotney, V.A.**, Ansah-Amprofi, F. and Bruce, A.Y. (2021) Pest status, bio-ecology and management of the false codling moth, *Thaumatotibia leucotreta* (Meyrick) (Lepidoptera: Tortricidae) and its implication for international trade. *Bulletin of Entomological Research* 111(1), 17–30. <https://doi.org/10.1017/S0007485320000358>

**Agboyi, L.K.**, Layodé, B.F.R., Fening, K.O., Beseh, P., **Clotney, V.A.**, **Day, R.**, **Kenis, M.** and **Babendreier, D.** (2021) Assessing the potential of inoculative field releases of *Telenomus remus* to control *Spodoptera frugiperda* in Ghana. *Insects* 12(8), 665, 15 pp. <https://doi.org/10.3390/insects12080665> 

**Ali, K.**, Sagheer, M., ul Hasan, M., Rashid, A. and Shahid, M. (2021) Bioactivity of medicinal plant extracts as toxicants and enzyme inhibitors against insect pests of stored commodities. *Journal of Crop Protection* 10(1), 95–109. <http://jcp.modares.ac.ir/article-3-43356-en.html> 

Allen, T., **Kenis, M.** and Norgrove, L. (2021) *Eiphosoma laphygmae*, a classical solution for the biocontrol of the fall armyworm, *Spodoptera frugiperda*? *Journal of Plant Diseases and Protection* 128, 1141–1156. <https://doi.org/10.1007/s41348-021-00480-9> 

Amevoin, K., **Agboyi, L.K.**, Gomina, M., Kounoutchi, K., Bassimbako, K.H., Djatoite, M., Dawonou, A.V. and Tagba, A. (2021) Fruit fly surveillance in Togo (West Africa): state of diversity and prevalence of species. *International Journal of Tropical Insect Science* 41, 3105–3119. <https://doi.org/10.1007/s42690-021-00504-9> 

Avila, G.A., **Chen, J.**, **Li, W.**, Alavi, M., **Mi, Q.**, Sandanayaka, M., **Zhang, F.** and **Zhang, J.** (2021) Seasonal abundance and diversity of egg parasitoids of *Halyomorpha halys* in kiwifruit orchards in China. *Insects* 12(5), 428, 14 pp. <https://doi.org/10.3390/insects12050428> 

Bardgett, R.D., Bullock, J.M., Lavorel, S., Manning, P., **Schaffner, U.**, Ostle, N., Chomel, M., Durigan, G., Fry, E.L., Johnson, D., Lavelle, J.M., Le Provost, G., Luo, S., Png, K., Sankaran, M., Hou, X., Zhou, H., Ma, L., Ren, W., Li, X., Ding, Y., Li, Y. and Shi, H. (2021) Combatting global grassland degradation. *Nature Reviews Earth & Environment* 2, 720–735. <https://doi.org/10.1038/s43017-021-00207-2>

**Bateman, M.**, **Day, R.K.**, **Rwomushana, I.**, Subramanian, S., Wilson, K., **Babendreier, D.**, **Luke, B.** and **Edgington, S.** (2021) Updated assessment of potential biopesticide options for managing fall armyworm (*Spodoptera frugiperda*) in Africa. *Journal of Applied Entomology* 145(5), 384–393. <https://doi.org/10.1111/jen.12856> 

Bermond, G., **Li, H.**, Guillemaud, T. and **Toepfer, S.** (2021) Genetic and phenotypic effects of hybridization in independently introduced populations of the invasive maize pest *Diabrotica virgifera virgifera* in Europe. *Journal of Entomological and Acarological Research* 53(1), 9559, 12 pp. <https://doi.org/10.4081/jear.2021.9559> 

**Bhutto, N.N.**, **Shar, Z.U.**, **Kalroo, M.A.**, **Rind, A.B.** and **Solangi, U.A.** (2021) Management of sucking insect pests of cotton crop through yellow sticky traps under field conditions. *International Journal of Farming and Allied Sciences* 10(2), 36–39. 

Boansi, D., Owusu, V., **Tambo, J.A.**, Donkor, E. and Asante, B.O. (2021) Rainfall shocks and household welfare: evidence from northern Ghana. *Agricultural Systems* 194, 103267, 11 pp. <https://doi.org/10.1016/j.agsy.2021.103267>

**Buddie, A.G., Rwomushana, I., Offord, L.C.**, Kibet, S., **Makale, F., Djeddour, D., Cafu, G.**, Vincent, K.K., Muvea, A.M., **Chacha, D.** and **Day, R.K.** (2021) First report of the invasive snail *Pomacea canaliculata* in Kenya. *CABI Agriculture and Bioscience* 2, 11, 10 pp. <https://doi.org/10.1186/s43170-021-00032-z>

Castillo, M.L., **Schaffner, U.**, van Wilgen, B.W. and Le Roux, J.J. (2021) The contribution of phenotypic traits, their plasticity, and rapid evolution to invasion success: insights from an extraordinary natural experiment. *Ecography* 44(7), 1035–1050. <https://doi.org/10.1111/ecog.05541>

Castillo, M.L., **Schaffner, U.**, van Wilgen, B.W., Montañó, N.M., Bustamante, R.O., Cosacov, A., Mathese, M.J. and Le Roux, J.J. (2021) Genetic insights into the globally invasive and taxonomically problematic tree genus *Prosopis*. *AoB PLANTS* 13(1), plaa069, 13 pp. <https://doi.org/10.1093/aobpla/plaa069>

Cock, C., Mason, P.G., **Haye, T.** and Cappuccino, N. (2021) Determining the host range of *Diadromus collaris* (Gravenhorst) (Hymenoptera: Ichneumonidae), a candidate biological control agent for diamondback moth *Plutella xylostella* Linnaeus (Lepidoptera: Plutellidae) in Canada. *Biological Control* 161, 104705, 9 pp. <https://doi.org/10.1016/j.biocontrol.2021.104705>

**Cock, M.J.W.** (2021) A new species and taxonomic changes relating to the Notodontidae (Lepidoptera) of Trinidad, West Indies. *Zootaxa* 5020(2), 307–327. <https://doi.org/10.11646/zootaxa.5020.2.4>

**Cock, M.J.W.** (2021) The prominent moths (Lepidoptera, Notodontidae) of Trinidad and Tobago. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club* 2021, 1–102, Appendix 1–50. <https://ttfnc.org/livingworld/index.php/lwj/article/view/758>

**Cock, M.J.W.** (2021) New records of butterflies and moths (Lepidoptera) from Tobago, West Indies. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club* 2021, 103–109. <https://ttfnc.org/livingworld/index.php/lwj/article/view/757>

**Cock, M.J.W.** and Laguerre, M. (2021) Taxonomic changes in the Neotropical Arctiinae, Arctiini (Lepidoptera, Erebididae) relating to the fauna of Trinidad and Tobago. *Zootaxa* 5071(2), 252–270. <https://doi.org/10.11646/zootaxa.5071.2.5>

**Cock, M.J.W.** and Rougerie, R. (2021) *Gamelia bennetti* sp. nov., a new Saturniidae species from Trinidad and Tobago (Lepidoptera: Bombycoidea). *Zootaxa* 4942(3), 339–350. <https://doi.org/10.11646/zootaxa.4942.3.2>

Coetzee, J.A., Bownes, A., Martin, G.D., Miller, B.E., Smith, R., **Weyl, P.S.R.** and Hill, M.P. (2021) A review of the biocontrol programmes against aquatic weeds in South Africa. *African Entomology* 29(3), 935–964. <https://doi.org/10.4001/003.029.0935>

Colmán, A.A., **Evans, H.C.**, Salcedo-Sarmiento, S.S., Braun, U., Belachew-Bekele, K. and Barreto, R.W. (2021) A fungus-eat-fungus world: *Digitopodium*, with particular reference to mycoparasites of the coffee leaf rust, *Hemileia vastatrix*. *IMA Fungus* 12, 1, 11 pp. <https://doi.org/10.1186/s43008-020-00052-w>

**Constantine, K.L., Murphy, S.T.** and **Pratt, C.** (2021) The interaction between pests, mixed maize crop production and food security: a case study of smallholder perspectives in Mwea West, Kenya. *Cogent Food & Agriculture* 6(1), 1857099, 18 pp. <https://doi.org/10.1080/23311932.2020.1857099>

**Cvrković, T.**, Jović, J., Jakovljević, M., Krstić, O., Marinković, S., Mitrović, M. and **Toševski, I.** (2021) The “code red” for Balkan vineyards: occurrence of *Orientalis ishidae* (Matsumura, 1902) (Hemiptera: Cicadellidae) in Serbia. *BioInvasions Records* 10(3), 544–554. <https://doi.org/10.3391/bir.2021.10.3.04>

Dhakal, M., Nguyen, K.B., **Hunt, D.J.**, Ehlers, R.-U., Spiridonov, S.E. and Subbotin, S.A. (2021) Molecular identification, phylogeny and phylogeography of the entomopathogenic nematodes of the genus *Heterorhabditis* Poinar, 1976: a multigene approach. *Nematology*, 23(4), 451–466. <https://doi.org/10.1163/15685411-bja10052>

Diagne, C., Turbelin, A.J., Moodley, D., Novoa, A., Leroy, B., Angulo, E., Adamjy, T., Dia, C.A.K.M., Taheri, A., **Tambo, J.**, Dobigny, G. and Courchamp, F. (2021) The economic costs of biological invasions in Africa: a growing but neglected threat? *NeoBiota* 67, 11–51. <https://doi.org/10.3897/neobiota.67.59132>

Diotti, L., Caldara, R. and **Toševski, I.** (2021) Description of two new species of *Rhamphus* related to *R. oxyacanthae* (Curculionidae, Curculioninae, Rhamphini) from Italy based on a morphological study supported by molecular data. *Zootaxa* 4995(1), 111–128. <https://doi.org/10.11646/zootaxa.4995.1.6>

**Dueñas, M.-A., Hemming, D.J., Roberts, A.** and Diaz-Soltero, H. (2021) The threat of invasive species to IUCN-listed critically endangered species: a systematic review. *Global Ecology and Conservation* 26, e01476, 7 pp. <https://doi.org/10.1016/j.gecco.2021.e01476>

**Durocher-Granger, L.,** Mfunne, T., Musesha, M., **Lowry, A., Reynolds, K., Buddie, A., Cafà, G., Offord, L.,** Chipabika, G., Dicke, M. and **Kenis, M.** (2021) Factors influencing the occurrence of fall armyworm parasitoids in Zambia. *Journal of Pest Science* 94, 1133–1146. <https://doi.org/10.1007/s10340-020-01320-9>

Entrican, G., Charlier, J., Dalton, L., Messori, M., Sharma, S., **Taylor, R.** and Morrow, A. (2021) Construction of generic roadmaps for the strategic coordination of global research into infectious diseases of animals and zoonoses. *Transboundary and Emerging Diseases* 68(3), 1513–1520. <https://doi.org/10.1111/tbed.13821>

**Eschen, R., Beale, T., Bonnin, M., Constantine, K.L., Duah, S., Finch, E.A., Makale, F., Nunda, W., Ogunmodede, A., Pratt, C.F., Thompson, E., Williams, F., Witt, A.** and **Taylor, B.** (2021) Towards estimating the economic cost of invasive alien species to African crop and livestock production. *CABI Agriculture and Bioscience* 2, 18, 18 pp. <https://doi.org/10.1186/s43170-021-00038-7>. [Correction: <https://doi.org/10.1186/s43170-021-00052-9>].

**Eschen, R.,** Bekele, K., Mbaabu, P.R., Kilawe, C.J. and Eckert, S. (2021) *Prosopis juliflora* management and grassland restoration in Baringo County, Kenya: opportunities for soil carbon sequestration and local livelihoods. *Journal of Applied Ecology* 58(6), 1302–1313. <https://doi.org/10.1111/1365-2664.13854>

**Eschen, R.,** Mbaabu, P.R., Ramamonjisoa, B.S. and Robledo-Abad, C. (2021) Factors enhancing the level of utilisation of research knowledge on ecosystems. *PLoS ONE* 16(7), e0254752, 16 pp. <https://doi.org/10.1371/journal.pone.0254752>

Fiaboe, K.R., Agboka, K., **Agboyi, L.K.,** Koffi, D., Ofoe, R., Kpadonou, G.E., Agnamba, A.O., Assogba, K., Adjevi, M.K.A., Zanou, K.T. and Fening, O.K. (2021) First report and distribution of the South American tomato pinworm, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) in Togo. *Phytoparasitica* 49, 167–177. <https://doi.org/10.1007/s12600-020-00841-4>

Figueredo, L., Villa-Murillo, A., **Colmenarez, Y.** and **Vásquez, C.** (2021) A hybrid artificial intelligence model for *Aeneolamia varia* (Hemiptera: Cercopidae) populations in sugarcane crops. *Journal of Insect Science* 21(2), 11, 6 pp. <https://doi.org/10.1093/jisesa/ieab017>

**Finch, E.A., Beale, T.,** Chellappan, M., Goergen, G., Gadratagi, B.G., Khan, M.A.M., **Rehman, A., Rwomushana, I.,** Sarma, A.K., Wyckhuys, K.A.G. and Kriticos, D.J. (2021) The potential global distribution of the papaya mealybug, *Paracoccus marginatus*, a polyphagous pest. *Pest Management Science* 77(3), 1361–1370. <https://doi.org/10.1002/ps.6151>

**Fazlullah, Farooq, M., Honey, S.F., Zada, N., Rashid, K., Aslam, N.** and **Rehman, A.** (2021) Potential of artificial larval diets for mass rearing of oriental fruit fly, *Bactrocera dorsalis* (Diptera: Tephritidae). *International Journal of Farming and Allied Sciences* 10(3), 51–57.

García-Nevárez, G., **Hidalgo-Jaminson, E.** and **Velásquez-Valle, R.** (2021) Producción de blastosporas de *Simplicillium lanosoniveum* en medios de cultivo líquidos. [Production of blastospores of *Simplicillium lanosoniveum* in liquid culture media]. *Scientia Fungorum* 52, e1392, 4 pp. [In Spanish with English abstract]. <https://doi.org/10.33885/sf.2021.52.1392>

Garipey, T.D., Musolin, D.L., Konjevi, A., Karpun, N.N., Zakharchenko, V.Y., Zhuravleva, E.N., Tavella, L., Bruin, A. and **Haye, T.** (2021) Diversity and distribution of cytochrome oxidase I (COI) haplotypes of the brown marmorated stink bug, *Halyomorpha halys* Stål (Hemiptera, Pentatomidae), along the eastern front of its invasive range in Eurasia. *NeoBiota* 68, 53–77. <https://doi.org/10.3897/neobiota.68.68915>

Gaskin, J.F., Andreas, J., Grewell, B.J., **Haefliger, P.** and Harms, N.E. (2021) Diversity and origins of *Butomus umbellatus* (flowering rush) invasion in North America. *Aquatic Botany* 173, 103400, 8 pp. <https://doi.org/10.1016/j.aquabot.2021.103400>

Geng, Y., Dong, Y., Huang, W., Zhao, L., **Tu, X.** and **Li, H.** (2021) 天津市大港水库东亚飞蝗生境遥感动态监测 [Dynamic remote sensing monitoring of oriental migratory locust habitats in Dagang reservoir, Tianjin]. *植物保护学报* [*Journal of Plant Protection*] 48(1), 122–128. <https://doi.org/10.13802/j.cnki.zwbhxb.815> [In Chinese with English abstract].

Gentili, R., Ambrosini, R., **Augustinus, B.A.**, Caronni, S., Cardarelli, E., Montagnani, C., Müller-Schärer, H., **Schaffner, U.** and Citterio, S. (2021) High phenotypic plasticity in a prominent plant invader along altitudinal and temperature gradients. *Plants* 10(10), 2144, 20 pp. <https://doi.org/10.3390/plants10102144>

Gentili, R., **Schaffner, U.**, Martinoli, A. and Citterio, S. (2021) Invasive alien species and biodiversity: impacts and management. *Biodiversity* 22(1–2), 1–3. <https://doi.org/10.1080/14888386.2021.1929484>

Gupta, V., Sharma, A., Rai, P.K., Gupta, S.K., Singh, B., Sharma, S.K., Singh, S.K., Hussain, R., Razdan, V.K., Kumar, D., Paswal, S., **Pandit, V.** and Sharma, R. (2021) Corm rot of saffron: epidemiology and management. *Agronomy* 11(2), 339, 19 pp. <https://doi.org/10.3390/agronomy11020339>

Guterres, D.C., Ndacnou, M.K., Saavedra-Tobar, L.M., Salcedo-Sarmiento, S., Colmán, A.A., **Evans, H.C.** and Barreto, R.W. (2021) *Cryptococcus depauperatus*, a close relative of the human-pathogen *C. neoformans*, associated with coffee leaf rust (*Hemileia vastatrix*) in Cameroon. *Brazilian Journal of Microbiology* 52, 2205–2214. <https://doi.org/10.1007/s42770-021-00592-2>

Hassan, M.A., Bodlah, I., Hussain, R., Karam, A., **Fazlullah** and Ahmad, A. (2021) First record of the hoverfly genus *Spilomyia* Meigen (Diptera: Syrphidae) for Pakistan. *Journal of Threatened Taxa* 13(8), 19165–19167. <https://doi.org/10.11609/jott.5665.13.8.19165-19167>

**Haye, T.**, Dancau, T., Bennett, A.M.R. and Mason, P.G. (2021) The impact of parasitoids on diamondback moth in Europe: a life table approach. *The Canadian Entomologist* 153(6), 741–756. <https://doi.org/10.4039/tce.2021.43>

**Haye, T.**, **Zhang, J.**, **Risse, M.** and **Gariepy, T.** (2021) A temporal trophic shift from primary parasitism to facultative hyperparasitism during interspecific competition between two coevolved scelionid egg parasitoids. *Ecology and Evolution* 11(24), 18708–18718. <https://onlinelibrary.wiley.com/doi/epdf/10.1002/ece3.8483>

**Kansiime, M.K.**, **Bundi, M.**, Nicodemus, J., Ochieng, J., Marandu, D., Njau, S.S., Kessy, R.F., **Williams, F.**, **Karanja, D.**, **Tambo, J.A.** and **Romney, D.** (2021) Assessing sustainability factors of farmer seed production: a case of the Good Seed Initiative project in Tanzania. *Agriculture & Food Security* 10, 15, 10 pp. <https://doi.org/10.1186/s40066-021-00289-7>

**Kansiime, M.K.**, Girling, R.D., **Mugambi, I.**, **Mulema, J.**, **Oduor, G.**, **Chacha, D.**, Ouvrard, D., Kinuthia, W. and **Garratt, M.P.D.** (2021) Rural livelihood diversity and its influence on the ecological intensification potential of smallholder farms in Kenya. *Food and Energy Security* 10(1), e254, 13 pp. <https://doi.org/10.1002/fes3.254>

**Kansiime, M.K.**, **Tambo, J.A.**, **Mugambi, I.**, **Bundi, M.**, Kara, A. and Owuor, C. (2021) COVID-19 implications on household income and food security in Kenya and Uganda: findings from a rapid assessment. *World Development* 137, 105199, 10 pp. <https://doi.org/10.1016/j.worlddev.2020.105199>

Kaya, C., Generalovic, T.N., Ståhls, G., Hauser, M., Samayoa, A.C., Nunes-Silva, C.G., Roxburgh, H., Wohlfahrt, J., Ewusie, E.A., **Kenis, M.**, Hanboonsong, Y., Orozco, J., Carrejo, N., Nakamura, S., Gasco, L., Rojo, S., Tanga, C.M., Meier, R., Rhode, C., Picard, C.J., Jiggins, C.D., Leiber, F., Tomberlin, J.K., Hasselmann, M., Blanckenhorn, W.U., Kapun, M. and **Sandrock, C.** (2021) Global population genetic structure and demographic trajectories of the black soldier fly, *Hermetia illucens*. *BMC Biology* 19, 94, 22 pp. <https://doi.org/10.1186/s12915-021-01029-w>

- Kim, K.G. and **Toepfer, S.** (2021) Evaluation of a first-event sampling model for monitoring cabbage pests. *Journal of Entomological and Acarological Research* 53(1), 9448, 9 pp. <https://doi.org/10.4081/jeur.2021.9448> 
- Kolachi, M.M., Nahiyoan, A.A., Sehto, G.N.** and **Zaman, B.** (2021) Effect of different doses of compost on growth and yield of cotton. *Pakistan Journal of Scientific and Industrial Research Series B: Biological Sciences* 64B(3), 283–287. 
- Kolachi, M.M.,** Wagan, K.H., Jiskani, A.M., **Sehto, G.N.,** Jiskani, M.M. and Ghanghro, M. (2021) *In-vivo* control of *Fusarium moniliforme* causing root rot of *Jatropha* through chemical and aqueous plant extracts. *Plant Archives* 21(1), 243–248. <https://doi.org/10.51470/PLANTARCHIVES.2021.v21.no1.034> 
- Li, B., **Li, H.,** Tian, Y., Abro, N.A., Nong, X., Zhang, Z. and **Wang, G.** (2021) Molecular identification and immunity functional characterization of *Lmserpin1* in *Locusta migratoria manilensis*. *Insects* 12(2), 178, 16 pp. <https://doi.org/10.3390/insects12020178> 
- Li, H., Liu, L.,** Li, T., **Cheng, Y., Zhang, A., Wan, M.** and **Zhang, F.** (2021) 灰翅夜蛾属重大害虫及其生物防治研究进展 [Research progress on major insect pests of the genus *Spodoptera* Guenée and their biological control]. *中国植保导刊*[*China Plant Protection*] 41(5), 23–33, 11 pp. [In Chinese with English abstract].
- Li, H., Zhang, Y.,** Wang, G., **Lowry, A.,** Huang, W., Dong, Y., Shang, S. and **Luke, B.** (2021) The effects of vegetation type on *Oedaleus decorus asiaticus* (Orthoptera: Acrididae) oviposition and hatching success. *Environmental Entomology* 50(4), 790–794. <https://doi.org/10.1093/ee/nvab029> 
- Li, W., Chen, J., Mi, Q.,** Zhuo, F., **Zhong, Y.,** Dou, S., **Zhang, F.,** Shi, S. and **Zhang, J.** (2021) 日本平腹小蜂对点蜂缘蝽的控害潜能研究 [Study on the biocontrol potential of *Anastatus japonicus* Ashmead (Hymenoptera: Eupelmidae) against *Riptortus pedestris* (Fabricius) (Hemiptera: Alydidae)]. *中国植保导刊* [*China Plant Protection*] 41(7), 26–31, 6 pp. [In Chinese with English abstract].
- Li, W.,** Gao, Y., Hu, Y., **Chen, J., Zhang, J.** and **Shi, S.** (2021) Field cage assessment of feeding damage by *Riptortus pedestris* on soybean in China. *Insects* 12(3), 255, 12 pp. <https://doi.org/10.3390/insects12030255> 
- Li, Y., **Zhang, F.,** Yang, F., Xiao, C., **Zhang, X.** and **Chen, G.** (2021) 日本细毛环腹瘦蜂生物学特性研究 [Study on biological characteristics of *Leptopilina japonica*]. *环境昆虫学报*[*Journal of Environmental Entomology*] 43(1), 191–198. <https://doi.org/10.3969/j.issn.1674-0858.2021.01.19> [In Chinese with English abstract]. 
- Lin, Q., Chen, H., **Babendreier, D., Zhang, J., Zhang, F.,** Dai, X., Sun, Z., Shi, Z., Dong, X., Wu, G., Yu, Y., Zheng, L. and **Zhai, Y.** (2021) Improved control of *Frankliniella occidentalis* on greenhouse pepper through the integration of *Orius sauteri* and neonicotinoid insecticides. *Journal of Pest Science* 94, 101–109. <https://doi.org/10.1007/s10340-020-01198-7>
- Lin, Q., Chen, H., Dai, X., Yin, S., Shi, C., Yin, Z., **Zhang, J., Zhang, F.,** Zheng, L. and **Zhai, Y.** (2021) *Myzus persicae* management through combined use of beneficial insects and thiacloprid in pepper seedlings. *Insects* 12(9), 791, 13 pp. <https://doi.org/10.3390/insects12090791> 
- Linders, T.E.W., Schaffner, U.,** Alamirew, T., Allan, E., Choge, S.K., **Eschen, R.,** Shiferaw, H. and Manning, P. (2021) Stakeholder priorities determine the impact of an alien tree invasion on ecosystem multifunctionality. *People & Nature* 3(3), 658–672. <https://doi.org/10.1002/pan3.10197> 
- Litto, M.,** Bouchemousse, S., **Schaffner, U.** and Müller-Schärer, H. (2021) Population differentiation in response to temperature in *Ophraella communa*: implication for the biological control of *Ambrosia artemisiifolia*. *Biological Control* 164, 104777, 14 pp. <https://doi.org/10.1016/j.biocontrol.2021.104777> 
- Liu, Y., Cui, Z., Shi, M., **Kenis, M.,** Dong, W., **Zhang, F., Zhang, J.,** Chun, X. and **Chen, L.** (2021) Antennal and behavioral responses of *Drosophila suzukii* to volatiles from a non-crop host, *Osyris wightiana*. *Insects* 12(2), 166, 10 pp. <https://doi.org/10.3390/insects12020166> 
- Machado, R.A.R.,** Bhat, A.H., Abolafia, J., Muller, A., Bruno, P., Fallet, P., Arce, C.C.M., Turlings, T.J.C., Bernal, J.S., Kajuga, J., Waweru, B. and **Toepfer, S.** (2021) Multi-locus phylogenetic analyses uncover species boundaries and reveal the occurrence of two new entomopathogenic nematode species, *Heterorhabditis ruandica* n. sp. and *Heterorhabditis zacatecana* n. sp. *Journal of Nematology* 53, e2021-89, 42 pp. <https://doi.org/10.21307/jofnem-2021-089> 

Maino, J.L., Schouten, R., Overton, K., **Day, R.**, Ekesi, S., Bett, B., Barton, M., Gregg, P.C., Umina, P.A. and Reynolds, O.L. (2021) Regional and seasonal activity predictions for fall armyworm in Australia. *Current Research in Insect Science* 1, 100010, 11 pp. <https://doi.org/10.1016/j.cris.2021.100010> 

Marini, F., Profeta, E., Vidović, B., Petanović, R., de Lillo, E., **Weyl, P.**, **Hinz, H.L.**, Moffat, C.E., Bon, M.-C., Cvrković, T., Kashefi, J., Sforza, R.F.H. and Cristofaro, M. (2021) Field assessment of the host range of *Aculus mosoniensis* (Acari: Eriophyidae), a biological control agent of the tree of heaven (*Ailanthus altissima*). *Insects* 12(7), 637, 16 pp. <https://doi.org/10.3390/insects12070637> 

Marini, F., **Weyl, P.**, Vidovi, B., Petanovi, R., Littlefield, J., Simoni, S., de Lillo, E., Cristofaro, M. and Smith, L. (2021) Eriophyid mites in classical biological control of weeds: progress and challenges. *Insects* 12(6), 513, 25 pp. <https://doi.org/10.3390/insects12060513> 

Mc Kay, F., **Djeddour, D.**, Sosa, A., Cabrera Walsh, G., Anderson, F.E. and Sánchez-Restrepo, A. (2021) Suitability for classical biological control of *Hedychium coronarium* in Argentina. *BioControl* 66, 585–599. <https://doi.org/10.1007/s10526-021-10100-y>

**Mi, Q.**, **Zhang, J.**, **Haye, T.**, Zhang, B., Zhao, C., Lei, Y., Li, D. and **Zhang, F.** (2021) Fitness and interspecific competition of *Trissolcus japonicus* and *Anastatus japonicus*, egg parasitoids of *Halyomorpha halys*. *Biological Control* 152, 104461, 8 pp. <https://doi.org/10.1016/j.biocontrol.2020.104461> 

Misawa, T. and **Kurose, D.** (2021) First report of parsley basal petiole rot caused by *Alternaria petroselini* and comparison with parsley leaf blight pathogen in terms of morphology, phylogeny and pathogenicity. *Journal of General Plant Pathology* 87, 196–199. <https://doi.org/10.1007/s10327-021-00998-8>

Misawa, T., Iwadate, Y. and **Kurose, D.** (2021) Phylogenetic analysis of the pathogen causing eggplant brown leaf spot. *Journal of General Plant Pathology* 87, 123–126. <https://doi.org/10.1007/s10327-021-00982-2>

Mondédji, A.D., Silvie, P., Nyamador, W.S., Martin, P., **Agboyi, L.K.**, Amévoïn, K., Ketoh, G.K. and Glitho, I.A. (2021) Cabbage production in West Africa and IPM with a focus on plant-based extracts and a complementary worldwide vision. *Plants* 10(3), 529, 36 pp. <https://doi.org/10.3390/plants10030529> 

**Mugambi, I.**, **Karanja, L.**, Macharia, I., Kaguongo, W., Ngundo, G., Amata, R., **Makale, F.**, Wanjiku, J., **Chacha, D.**, Nyongesa, M., Kimenju, J.W., **Ochilo, W.** and **Mulema, J.** (2021) What influences uptake of alternative pest management practices by potato farmers? Evidence from six counties in Kenya. *Journal of Development and Agricultural Economics* 13(3), 205–214. <https://doi.org/10.5897/JDAE2021.1278> 

**Mulema, J.**, **Mugambi, I.**, **Kansiime, M.**, **Chan, H.T.**, Chimalizeni, M., Pham, T.X. and **Oduor, G.** (2021) Barriers and opportunities for the youth engagement in agribusiness: empirical evidence from Zambia and Vietnam. *Development in Practice* 31(5), 690–706. <https://doi.org/10.1080/09614524.2021.1911949> 

Munthali, N., van Paassen, A., Leeuwis, C., Lie, R., van Lammeren, R., Aguilar-Gallegos, N. and **Oppong-Mensah, B.** (2021) Social media platforms, open communication and problem solving in the back-office of Ghanaian extension: a substantive, structural and relational analysis. *Agricultural Systems* 190, 103123, 17 pp. <https://doi.org/10.1016/j.agsy.2021.103123> 

Muriithi, B., Gathogo, N., **Rwomushana, I.**, Diiro, G., Mohamed Faris, S., Khamis, F., Tanga, C. and Ekesi, S. (2021) Farmers' knowledge and perceptions on fruit flies and willingness to pay for a fruit fly integrated pest management strategy in Gamo Gofa zone, Ethiopia. *International Journal of Agricultural Sustainability* 19(2), 199–212. <https://doi.org/10.1080/14735903.2021.1898178>

Myint, Y.Y., Bai, S., Zhang, T., **Babendreier, D.**, He, K. and **Wang, Z.** (2021) Molecular and morphological identification of *Trichogramma* (Hymenoptera: Trichogrammatidae) species from Asian corn borer (Lepidoptera: Crambidae) in Myanmar. *Journal of Economic Entomology* 114(1), 40–49. <https://doi.org/10.1093/jee/toaa253> 

**Nadeem, F.**, **Farooq, M.**, Mustafa, B. and **Nawaz, A.** (2021) Influence of soil residual boron on rice performance and soil properties under conventional and conservation rice–wheat cropping systems. *Crop and Pasture Science* 72(5), 335–347. <https://doi.org/10.1071/CP20339>

**Nahiyoan, A.A.**, Kazi, N. and Fayyaz, S. (2021) Description of *Amphibelondira sindhicus* n. sp. with observation on *Belondira paraclava* Jairajpuri, 1964 of the family Belondiridae from Sindh, Pakistan. *Pakistan Journal of Zoology* 52(6), 2321–2325. <https://doi.org/10.17582/journal.pjz/20181030171007>

Nayyar, N., Gracy, R.G., Ashika, T.R., Mohan, G., Swathi, R.S., Mohan, M., **Chaudhary, M.**, Bakthavatsalam, N. and **Venkatesan, T.** (2021) Population structure and genetic diversity of invasive fall armyworm after 2 years of introduction in India. *Scientific Reports* 11, 7760, 12 pp. <https://doi.org/10.1038/s41598-021-87414-5>

Ogunfunmilayo, A.O., Kazeem, S.A., Idoko, J.E., Adebayo, R.A., Fayemi, E.Y., Adedibu, O.B., Oloyede-Kamiyo, Q.O., Nwogwugwu, J.O., Akinbode, O.A., Salihu, S., **Offord, L.C.**, **Buddie, A.G.** and Ofuya, T.I. (2021) Occurrence of natural enemies of fall armyworm, *Spodoptera frugiperda* (Lepidoptera: Noctuidae) in Nigeria. *PLoS ONE* 16(7), e0254328, 13 pp. <https://doi.org/10.1371/journal.pone.0254328>

**Overton, K.**, Maino, J.L., **Day, R.**, Umina, P.A., Bett, B., Carnovale, D., Ekesi, S., Meagher, R. and Reynolds, O.L. (2021) Global crop impacts, yield losses and action thresholds for fall armyworm (*Spodoptera frugiperda*): a review. *Crop Protection* 145, 105641, 15 pp. <https://doi.org/10.1016/j.cropro.2021.105641>

Panta, S., **Weyl, P.**, Eigenbrode, S.D., Harmon, B.L. and Schwarzländer, M. (2021) Specialized soil types affect host acceptability and performance of weed biocontrol candidates: implications for host specificity assessments. *BioControl* 66, 601–611. <https://doi.org/10.1007/s10526-021-10101-x>

Paudel, S., Kandel, P., Bhatta, D., **Pandit, V.**, Felton, G.W. and Rajotte, E.G. (2021) Insect herbivore populations and plant damage increase at higher elevations. *Insects* 12(12), 1129, 11 pp. <https://doi.org/10.3390/insects12121129>

Peck, L.D., Nowell, R.W., **Flood, J.**, **Ryan, M.R.** and Barraclough, T.G. (2021) Historical genomics reveals the evolutionary mechanisms behind multiple outbreaks of the host-specific coffee wilt pathogen *Fusarium xylarioides*. *BMC Genomics* 22, 404, 24 pp. <https://doi.org/10.1186/s12864-021-07700-4>

**Pollard, K.M.**, **Varia, S.**, **Seier, M.K.** and **Ellison, C.A.** (2021) Battling the biotypes of balsam: the biological control of *Impatiens glandulifera* using the rust fungus *Puccinia komarovii* var. *glanduliferae* in GB. *Fungal Biology* 125(8), 637–645. <https://doi.org/10.1016/j.funbio.2021.03.005>

Reaser, J.K., **Tabor, G.M.**, Becker, D.J., Muruthi, P., **Witt, A.**, Woodley, S.J., Ruiz-Aravena, M., Patz, J.A., Hickey, V., Hudson, P.J., Locke, H. and Plowright, R.K. (2021) Land use-induced spillover: priority actions for protected and conserved area managers. *Parks* 27(special issue March 2021), 161–178. <https://doi.org/10.2305/iucn.ch.2021.parks-27-sijkren>

Reaser, J.K., **Witt, A.**, **Tabor, G.M.**, Hudson, P.J. and Plowright, R.K. (2021) Ecological countermeasures for preventing zoonotic disease outbreaks: when ecological restoration is a human health imperative. *Restoration Ecology* 29(4), e13357, 8 pp. <https://doi.org/10.1111/rec.13357>

**Reeve, M.A.** and **Haye, T.** (2021) Discrimination between eggs from stink bugs species in Europe using MALDI-TOF MS. *Insects* 12(7), 587, 9 pp. <https://doi.org/10.3390/insects12070587>

Ristaino, J.B., Anderson, P.K., Bebber, D.P., Brauman, K.A., Cunniffe, N.J., Fedoroff, N.V., **Finegold, C.**, Garrett, K.A., Gilligan, C.A., Jones, C.M., Martin, M.D., MacDonald, G.K., **Neenan, P.**, Records, A., Schmale, D.C., Tateosian, L. and Wei, Q. (2021) The persistent threat of emerging plant disease pandemics to global food security. *Proceedings of the National Academy of Sciences of the United States of America* 118(23), e2022239118, 9 pp. <https://doi.org/10.1073/pnas.2022239118>

Rodríguez, M.d.C.H., **Evans, H.C.**, de Abreu, L.M., de Macedo, D.M., Ndacnou, M.K., Bekele, K.B. and Barreto, R.W. (2021) New species and records of *Trichoderma* isolated as mycoparasites and endophytes from cultivated and wild coffee in Africa. *Scientific Reports* 11, 5671, 30 pp. <https://doi.org/10.1038/s41598-021-84111-1>

Rondoni, G., Borges, I., Collatz, J., Conti, E., Costamagna, A.C., Dumont, F., Evans, E.W., Grez, A.A., Howe, A.G., Lucas, E., Maisonhaute, J.-E., Soares, A.O., Zaviezo, T. and **Cock, M.J.W.** (2021) Exotic ladybirds for biological control of herbivorous insects – a review. *Entomologia Experimentalis et Applicata* 169, 6–27. <https://doi.org/10.1111/eea.12963>

**Rware, H., Kansime, M.K., Mugambi, I., Onyango, D., Tambo, J.A.,** Banda, C.M., Phiri, N.A., Chipabika, G., Matimelo, M., Chaaba, D.K., **Davis, T.** and **Godwin, J.** (2021) Is radio an effective method for delivering actionable information for responding to emerging pest threats? A case study of fall armyworm campaign in Zambia. *CABI Agriculture and Bioscience* 2, 32, 11 pp. <https://doi.org/10.1186/s43170-021-00053-8>

**Ryan, M.,** Schloter, M., Berg, G., Kinkel, L.L., Eversole, K., Macklin, J.A., Rybakova, D. and Sessitsch, A. (2021) Towards a unified data infrastructure to support European and global microbiome research: a call to action. *Environmental Microbiology* 23(1), 372–375. <https://doi.org/10.1111/1462-2920.15323>

**Ryan, M.J.,** Schloter, M., Berg, G., Kostic, T., Kinkel, L.L., Eversole, K., Macklin, J.A., Schelkle, B., Kazou, M., Sarand, I., Singh, B.K., Fischer, D., Maguin, E., Ferrocino, I., Lima, N., McClure, R.S., Charles, T.C., de Souza, R.S.C., Kiran, G.S., Krug, H.L., Taffner, J., Roume, H., Selvin, J., **Smith, D.,** Rybakova, D. and Sessitsch, A. (2021) Development of microbiome biobanks – challenges and opportunities. *Trends in Microbiology* 29(2), 89–92. <https://doi.org/10.1016/j.tim.2020.06.009>

Sánchez, M., **Colmenárez, Y.,** Manobanda, M. and **Vásquez, C.** (2021) Chaetotaxic variation in *Tetranychus urticae* Koch, 1836 and *Eotetranychus lewisi* (Mc Gregor, 1943) populations (Acari: Tetranychidae) from different crops and locations in Province of Tungurahua, Ecuador. *Revista Chilena de Entomología* 47(1), 19–33.

Sankara, F., Sankara, F., Pousga, S., Coulibaly, K., Nacoulma, J.P., Somda, I. and **Kenis, M.** (2021) Amélioration de techniques de production, d'extraction et de séchage des larves de mouches domestiques (*Musca domestica* Linnaeus, 1758) utilisées dans l'alimentation des volailles au Burkina Faso. *Journal of Animal and Plant Sciences* 50(1), 998–9013. <https://www.m.elewa.org/Journals/j-anim-plant-sci-volume-50-issue-1-october-2021/>

**Seehausen, M.L.,** Afonso, C., Jactel, H. and **Kenis, M.** (2021) Classical biological control against insect pests in Europe, North Africa, and the Middle East: what influences its success? *NeoBiota* 65, 169–191. <https://doi.org/10.3897/neobiota.65.66276>

Shiferaw, H., Alamirew, T., Dzikiti, S., Bewket, W., Zeleke, G. and **Schaffner, U.** (2021) Water use of *Prosopis juliflora* and its impacts on catchment water budget and rural livelihoods in Afar Region, Ethiopia. *Scientific Reports* 11, 2688, 14 pp. <https://doi.org/10.1038/s41598-021-81776-6>

**Silvestri, S., Musebe, R.,** Baars, E., Ganatra, D. and **Romney, D.** (2021) Going digital in agriculture: how radio and SMS can scale-up smallholder participation in legume-based sustainable agricultural intensification practices and technologies in Tanzania. *International Journal of Agricultural Sustainability* 19(5–6), 583–594. <https://doi.org/10.1080/14735903.2020.1750796>

Steinke, J., van Etten, J., Müller, A., Ortiz-Crespo, B., van de Gevel, J., **Silvestri, S.** and Priebe, K. (2021) Tapping the full potential of the digital revolution for agricultural extension: an emerging innovation agenda. *International Journal of Agricultural Sustainability* 19(5–6), 549–565. <https://doi.org/10.1080/14735903.2020.1738754>

**Stutz, S.,** De Clerck-Floate, R., **Hinz, H.L.,** McClay, A., McConnachie, A.J. and **Schaffner, U.** (2021) Host range and impact of *Dichrorampha aeratana*, the first potential biological control agent for *Leucanthemum vulgare* in North America and Australia. *Insects* 12(5), 438, 22 pp. <https://doi.org/10.3390/insects12050438>

Szücs, M., Clark, E.I., **Schaffner, U.,** Littlefield, J.L., Hoover, C. and Hufbauer, R.A. (2021) The effects of intraspecific hybridization on the host specificity of a weed biocontrol agent. *Biological Control* 157, 104585, 8 pp. <https://doi.org/10.1016/j.biocontrol.2021.104585>

**Tambo, J.A.** and Kirui, O.K. (2021) Yield effects of conservation farming practices under fall armyworm stress: the case of Zambia. *Agriculture, Ecosystems and Environment* 321, 107618, 12 pp. <https://doi.org/10.1016/j.agee.2021.107618>

**Tambo, J.A., Kansime, M.K., Rwomushana, I., Mugambi, I., Nunda, W., Banda, C.M.,** Nyamutukwa, S., **Makale, F.** and **Day, R.** (2021) Impact of fall armyworm invasion on household income and food security in Zimbabwe. *Food and Energy Security* 10(2), 299–312. <https://doi.org/10.1002/fes3.281>

**Tambo, J.A.**, Matimelo, M., Ndhlovu, M., **Mbugua, F.** and **Phiri, N.** (2021) Gender-differentiated impacts of plant clinics on maize productivity and food security: evidence from Zambia. *World Development* 145, 105519, 15 pp. <https://doi.org/10.1016/j.worlddev.2021.105519>

**Tambo, J.A.**, **Romney, D.**, **Mugambi, I.**, **Mbugua, F.**, **Bundi, M.**, Uzayisenga, B., Matimelo, M. and Ndhlovu, M. (2021) Can plant clinics enhance judicious use of pesticides? Evidence from Rwanda and Zambia. *Food Policy* 101, 102071, 14 pp. <https://doi.org/10.1016/j.foodpol.2021.102073>

**Tambo, J.A.**, Uzayisenga, B., **Mugambi, I.** and **Bundi, M.** (2021) Do plant clinics improve household food security? Evidence from Rwanda. *Journal of Agricultural Economics* 72(1), 97–116. <https://doi.org/10.1111/1477-9552.12391>

Tan, Y.P., Dhileepan, K., Ntandu, J.E., **Kurose, D.** and Sivas, R.G. (2021) *Curvularia tanzanica* Y.P. Tan, Dhileepan, Ntandu, Kurose & R.G. Shivas, sp. nov. Fungal Planet Description Sheet 1238. *Persoonia – Molecular Phylogeny and Evolution of Fungi* 46, 438–439. <https://doi.org/10.3767/persoonia.2021.46.11>

**Tang, R.**, **Weyl, P.**, **Hinz, H.**, **Zhang, F.** and **Smith, D.** (2021) 《名古屋议定书》获取与惠益分享制度对传统生物防治研究的影响与对策 [The effects of the Nagoya Protocol on Access and Benefit Sharing towards classical biological control and proposed solutions]. *环境昆虫学报 [Journal of Environmental Entomology]* 43(5), 1154–1161. <https://doi.org/10.3969/j.issn.1674-0858.2021.05.9> [In Chinese with English abstract].

**Thiruchchelvan, N.**, Thirukkumaran, G., **Edgington, S.**, **Buddie, A.** and Mikunthan, G. (2021) Morphological characteristics and insect killing potential of a soil dwelling nematode, *Acrobeloides* cf. *longiuterus* from Sri Lanka. *Plant Protection* 5(1), 1–11. <https://doi.org/10.33804/pp.005.01.3512>

**Thomas, S.E.**, **Evans, H.C.**, **Cortat, G.**, **Koutsidou, C.**, Day, M.D. and **Ellison, C.A.** (2021) Assessment of the microcyclic rust *Puccinia lantanae* as a classical biological control agent of the pantropical weed *Lantana camara*. *Biological Control* 160, 104688, 21 pp. <https://doi.org/10.1016/j.biocontrol.2021.104688>

**Toepfer, S.**, Fallet, P., Kajuga, J., Bazagwira, D., Mukundwa, I.P., Szalai, M. and Turlings, T.C.J. (2021) Streamlining leaf damage rating scales for the fall armyworm on maize. *Journal of Pest Science* 94, 1075–1089. <https://doi.org/10.1007/s10340-021-01359-2>

**Toepfer, S.**, Toth, S. and Szalai, M. (2021) Can the botanical azadirachtin replace phased-out soil insecticides in suppressing the soil insect pest *Diabrotica virgifera virgifera*? *CABI Agriculture and Bioscience* 2, 28, 14 pp. <https://doi.org/10.1186/s43170-021-00044-9>

**Ullah, F.**, **Farooq, M.**, **Honey, S.F.** and **Zada, N.** (2021) Parasitism potential of *Dirhinus giffardii* (Silvestri) (Hymenoptera: Chalcididae) on pupae of the fruit fly species, *Zeugodacus cucurbitae* (Coquillett) and *Bactrocera dorsalis* (Hendel) (Diptera: Tephritidae), during variable exposure durations. *Egyptian Journal of Biological Pest Control* 31, 9, 7 pp. <https://doi.org/10.1186/s41938-020-00354-6>

**Ullah, S.**, Shakir, M., Iqbal, M.S., Iqbal, A., Ali, M., Shafique, M., **Rehman, A.** and **Godwin, J.** (2021) Identifying optimal waveband positions for discriminating *Parthenium hysterophorus* using hyperspectral data. *Ecological Informatics* 64, 101362, 7 pp. <https://doi.org/10.1016/j.ecoinf.2021.101362>

Urquhart, A.S., Douch, J.K., Heafield, T.A., **Buddie, A.G.** and **Idnurm, A.** (2021) Diversity of *Backusella* (Mucoromycotina) in south-eastern Australia revealed through polyphasic taxonomy. *Persoonia – Molecular Phylogeny and Evolution of Fungi* 46, 1–25. <https://doi.org/10.3767/persoonia.2021.46.01>

van den Burg, M.P., Daltry, J.C., Angin, B., Bowman, E., Brisbane, J.L.K., Collins, K., Haakonsson, J.E., Hill, A., Horrocks, J.A., Mukidha, F., Providence, F., Questel, K., **Ramnanan, N.**, Steele, S., Bosquet, I.M.W. and **Knapp, C.R.** (2021) Biosecurity for humanitarian aid. *Science* 372(6542), 581–582. <https://doi.org/10.1126/science.abj0449>

**Varshney, R.**, Poornesha, B., Raghavendra, A., Lalitha, Y., Apoorva, V., Ramanujam, B., Rangeshwaran, R., Subaharan, K., Shylesha, A.N., Bakthavatsalam, N., **Chaudhary, M.** and **Pandit, V.** (2021) Biocontrol-based management of fall armyworm, *Spodoptera frugiperda* (J E Smith) (Lepidoptera: Noctuidae) on Indian maize. *Journal of Plant Diseases and Protection* 128, 87–95. <https://doi.org/10.1007/s41348-020-00357-3>

Viciriu, I.-M., Thaon, M., Moriya, S., Warot, S., **Zhang, J.**, Aebi, A., Ris, N., Fusu, L. and Borowiec, N. (2021) Contribution of integrative taxonomy to tracking interspecific hybridisations between the biological control agent *Torymus sinensis* and its related taxa. *Systematic Entomology* 46(4), 839–855. <https://doi.org/10.1111/syen.12493>

Wang, X., Wang, X.-Y., **Kenis, M.**, Cao, L.-M., Duan, J.J., Gould, J.R. and Hoelmer, K.A. (2021) Exploring the potential for novel associations of generalist parasitoids for biological control of invasive woodboring beetles. *BioControl* 66, 97–112. <https://doi.org/10.1007/s10526-020-10039-6>

Wermelinger, B., Rigling, A., Mathis, D.S., **Kenis, M.** and Gossner, M.M. (2021) Climate change effects on trophic interactions of bark beetles in Inner Alpine Scots pine forests. *Forests* 12(2), 136, 16 pp. <https://doi.org/10.3390/f12020136>

**Weyl, P., Ali, K., González-Moreno, P.,** ul Haq, E., **Khan, K., Khan, S.A., Khan, M.H., Stewart, J., Godwin, J., Rehman, A.** and Sultan, A. (2021) The biological control of *Parthenium hysterophorus* L. in Pakistan: status quo and future prospects. *Management of Biological Invasions* 12(3), 509–526. <https://doi.org/10.3391/mbi.2021.12.3.02>

**Weyl, P.S.R., Rehman, A.** and **Ali, K.** (2021) The host range of the stem-boring weevil, *Listronotus setosipennis* (Coleoptera: Curculionidae) proposed for the biological control of *Parthenium hysterophorus* (Asteraceae) in Pakistan. *Insects* 12(5), 463, 12 pp. <https://doi.org/10.3390/insects12050463>. [Correction: *Insects* 12(9), 763, 6 pp. <https://doi.org/10.3390/insects12090763>].

**Williams, F., Constantine, K.L.,** Ali, A.A., Karanja, T.W., Kibet, S., Lingeera, E.K., Muthike, G., **Rwomushana, I., Godwin, J.** and **Day, R.** (2021) An assessment of the capacity and responsiveness of a national system to address the threat of invasive species: a systems approach. *CABI Agriculture and Bioscience* 2, 42, 17 pp. <https://doi.org/10.1186/s43170-021-00062-7>

**Williams, T.I., Edgington, S.,** Owen, A. and Gange, A.C. (2021) Evaluating the use of seaweed extracts against root knot nematodes: a meta-analytic approach. *Applied Soil Ecology* 168, 104170, 3 pp. <https://doi.org/10.1016/j.apsoil.2021.104170>

**Wood, S.V., Maczey, N.,** Currie, A.F., **Lowry, A.J.,** Rabiey, M., **Ellison, C.A.,** Jackson, R.W. and Gange, A.C. (2021) Rapid impact of *Impatiens glandulifera* control on above- and belowground invertebrate communities. *Weed Research* 61(1), 35–44. <https://doi.org/10.1111/wre.12454>

Yan, J., Pal, C., Anderson, D., Véték, G., Farkas, P., Burne, A., Fan, Q.-H., **Zhang, J.,** Gunawardana, D., Balan, R.K., George, S. and **Li, D.** (2021) Genetic diversity analysis of brown marmorated stink bug, *Halyomorpha halys* based on mitochondrial COI and COII haplotypes. *BMC Genomic Data* 22, 7, 19 pp. <https://doi.org/10.1186/s12863-021-00961-8>

Yan, J., Véték, G., Pal, C., **Zhang, J.,** Gmati, R., Fan, Q.-H., Gunawardana, D.N., Burne, A., Anderson, D., Balan, R.K., George, S., Farkas, P. and **Li, D.** (2021) ddRAD sequencing: an emerging technology added to the biosecurity toolbox for tracing the origin of brown marmorated stink bug, *Halyomorpha halys* (Hemiptera: Pentatomidae). *BMC Genomics* 22, 355, 15 pp. <https://doi.org/10.1186/s12864-021-07678-z>

Zapponi, L., Tortorici, F., Anfora, G., Bardella, S., Bariselli, M., Benvenuto, L., Bernardinelli, I., Butturini, A., Caruso, S., Colla, R., Costi, E., Culatti, P., Di Bella, E., Falagiarda, M., Giovannini, L., **Haye, T.,** Maistrello, L., Malossini, G., Marazzi, C., Marianelli, L., Mele, A., Michelon, L., Moraglio, S.T., Pozzebon, A., Preti, M., Salvetti, M., Scaccini, D., Schmidt, S., Szalatnay, D., Roversi, P.F., Tavella, L., Tommasini, M.G., Vaccari, G., Zandigiacomo, P. and **Sabbatini-Peverieri, G.** (2021) Assessing the distribution of exotic egg parasitoids of *Halyomorpha halys* in Europe with a large-scale monitoring program. *Insects* 12(4), 316, 13 pp. <https://doi.org/10.3390/insects12040316>

Zhan, H., Dewar, Y., **Zhang, J.,** Tian, J., Li, D., Qu, C., Yang, Z., **Li, F.** and Luo, C. (2021) Odorant-binding protein 1 plays a crucial role in the olfactory response of *Bemisia tabaci* to *R*-curcumene. *Journal of Agricultural and Food Chemistry* 69(43), 12785–12793. <https://doi.org/10.1021/acs.jafc.1c03825>

**Zhang, J., Chen, J.,** Zhou, C., Wang, Q., Shi, S., Li, Y. and **Zhang, F.** (2021) 铃木氏果蝇对不同品种蓝莓的为害调查研究 [Damages of different blueberry cultivars caused by *Drosophila suzukii*]. 植物保护 [Plant Protection] 47(4), 191–196. [In Chinese with English abstract].

Zhuo, F., **Li, H.**, Lv, J., Zhang, L., Zhu, J. and **Liu, W.** (2021) 2020年云南农区黄脊竹蝗应急防控策略及展望 [Strategies and prospects for the emergency prevention and control of *Ceracris kiangsu* Tsai in agricultural areas of Yunnan Province in 2020]. *中国植保导刊*[*China Plant Protection*] 41(5), 99–101, 83, 4 pp. [In Chinese].

### 2.4.3. Book chapters and proceedings papers (25)

Atchikpa, T.M., Kane, C.S., **Tambo, J.A.**, Abdoulaye, T. and Yabi, J.A. (2021) Impact of climate-smart innovations on food security of farming household in Benin: a case study of drought tolerant maize (DTM) varieties. In: Mbaye, A.A., von Braun, J., Mirzabaev, A. and Gueye, F. (eds) *Climate Change and Food Security in West Africa*. WASCAL, UCAD and ZEF, pp. 449–474. <https://research4agrinnovation.org/wp-content/uploads/2021/11/report-climate-change-FNS-west-africa.pdf> 

Barratt, B.I.P., **Colmenarez, Y.C.**, Day, M.D., Ivey, P., Klapwijk, J.N., Loomans, A.J.M., Mason, P.G., Palmer, W.A., Sankaran, K.V. and **Zhang, F.** (2021) Regulatory challenges for biological control. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 166–196.

**Beverly, C.** and **Thakur, M.** (2021) Plantwise: a knowledge and intelligence tool for food security through crop protection. In: Scott, P., Strange, R.N., Korsten, L. and Gullino, M.L. (eds) *Plant Diseases and Food Security in the 21st Century*. Springer International Publishing, Switzerland, pp. 231–248. [https://doi.org/10.1007/978-3-030-57899-2\\_11](https://doi.org/10.1007/978-3-030-57899-2_11) 

**Bloukounon-Goubalan, A.Y.**, Saïdou, A., **Clotey, V.A.**, Coulibaly, K., Erokotan, N., Obognon, N., Chabi, F. and Chrysostome, C.A.A.M. (2021) By-products of insect rearing: insect residues as biofertilizers. In: Hall, H., Fitches, E. and Smith, R. (eds) *Insects as Animal Feed*. CAB International, Wallingford, UK, pp. 60–71.

**Chaudhary M., Thakur, M.** and **Kumar, S.** (2021) Novel approaches towards the management of crop pests. [Extended abstract]. In: *Global Perspectives in Crop Protection for Food Security*. Compendium of Invited Papers. TNAU Golden Jubilee International Conference, 8–10 December 2021. Tamil Nadu Agricultural University, Coimbatore, India, pp. 210–211. <https://sites.google.com/tnau.ac.in/gpcp2021> 

**Chaudhary, M.**, Choudhary, B., Deshmukh, S.S., Krupnick, T.J., Rakshit, S. and **Davis, T.** (2021) Communications framework for integrated pest management of fall armyworm in Asia. In: Prasanna, B.M., Huesing, J.E., Peschke, V.M. and Eddy, R. (eds) *Fall Armyworm in Asia: A Guide for Integrated Pest Management*. CIMMYT, Mexico, pp. 154–172. <https://repository.cimmyt.org/handle/10883/21658> 

Collatz, J., **Hinz, H.L.**, Kaser, J.M. and Freimoser, F.M. (2021) Benefits and risks of biological control. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 142–165.

Day, M.D., **Cock, M.J.W.**, Conant, P., Cooke, B., Furlong, M.J., Paynter, Q., Ramadan, M.M. and Wright, M.G. (2021) Biological control successes and failures: Oceania region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 334–367.

**Eleftheriadou, N.**, Avtzis, D., Lubanga, U.K., Lefoe, G., Kwong, R.M., Elms, S., **Smith, D., Shaw, R., Seehausen, L., Kenis, M.** and Kavallieratos, N.G. (2021) Prospects for biological control of *Marchalina hellenica* in Australia using a silver fly. In: *Proceedings of the 1st International Electronic Conference on Entomology*, 1–15 July 2021, MDPI: Basel, Switzerland, 5 pp. <https://doi.org/10.3390/IECE-10602> 

Franco, J.P., Crespo, L.V., **Colmenarez, Y.C.** and van Lenteren, J.C. (2021) Control biológico en Bolivia. In: van Lenteren, J.C., Bueno, V.H.P., Luna, M.G. and **Colmenarez, Y.C.** (eds) *Control Biológico en América Latina y el Caribe: Su Rica Historia y Futuro Brillante*. Acribia, Zaragoza, Spain, pp. 67–80.

Jomantas, Š., Munthali, N., van Paassen, A., Almekinders, C., **Wood, A., Alokit, C., Oppong-Mensah, B., Ochilo, W.** and **Romney, D.** (2021) Mobilising knowledge sharing in the agricultural advisory system: the case of ICT-facilitated plant doctor chat groups. In: Ludwig, D., Boogaard, B., Macnaghten, P. and Leeuwis, C. (eds) *The Politics of Knowledge in Inclusive Development and Innovation*. Routledge, Abingdon, UK, pp. 227–239. <https://doi.org/10.4324/9781003112525> 

**Kenis, M.**, Pomalégni, S.C.B., Sankara, F., Nkegbe, E.K. and Koko, G.K.D. (2021) Insect production and utilization of insect products in Africa. In: Hall, H., Fitches, E. and Smith, R. (eds) *Insects as Animal Feed*. CAB International, Wallingford, UK, pp. 75–78. <https://doi.org/10.1079/9781789245929.0010>

Kokou, K., Afiademanyo, K.M. and **Agboyi, L.K.** (2021) Invasive alien species in Togo (West Africa). In: Pullaiah, T. and Ielmini, M.R. (eds) *Invasive Alien Species: Observations and Issues from Around the World. Vol. 1: Issues and Invasions in Africa*. Wiley, Hoboken, NJ, USA, pp. 291–312. <https://doi.org/10.1002/9781119607045.ch10>

Mason, P.G., Klapwijk, J.N. and **Smith, D.** (2021) Access and benefit-sharing and biological control. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 197–219.

McClay, A., **Cock, M.J.W.**, Duan, J.J., Liu, M., Rodríguez-del-Bosque, L.A. and Svircev, A.M. (2021) Biological control successes and failures: North American region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 467–510.

**Schaffner, U.**, Knapp, M. and **Seier, M.** (2021) Biological control successes and failures: Eurasian region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 403–437.

van Lenteren, J.C. and **Cock, M.J.W.** (2021) Adopción del control biológico en América Latina y el Caribe. In: van Lenteren, J.C., Bueno, V.H.P., **Colmenarez, Y.** and Luna, M.G. (eds) *Control Biológico en América Latina y el Caribe: Su Rica Historia y Future Brillante*. Editorial Acribia S.A., Zaragoza, Spain, pp. 495–527.

van Lenteren, J.C., Bueno, V.H.P., Luna, M.G. and **Colmenarez, Y.C.** (2021) Control biológico en América Latina y el Caribe: fuentes de información, organizaciones, tipos y enfoques de Control Biológico. In: van Lenteren, J.C., Bueno, V.H.P., Luna, M.G. and **Colmenarez, Y.C.** (eds) *Control Biológico en América Latina y el Caribe: Su Rica Historia y Futuro Brillante*. Acribia, Zaragoza, Spain, pp. 1–22.

van Lenteren, J.C. and **Colmenarez, Y.C.** (2021) Control biológico en Barbados. In: van Lenteren, J.C., Bueno, V.H.P., Luna, M.G. and **Colmenarez, Y.C.** (eds) *Control Biológico en América Latina y el Caribe: Su Rica Historia y Futuro Brillante*. Acribia, Zaragoza, Spain, pp. 45–60.

van Lenteren, J.C., Mason, P.G., Bueno, V.H.P., **Cock, M.J.W.**, **Colmenarez, Y.C.** and Luna, M.G. (2021) Biological control successes and failures: Latin American region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 511–554.

Vásquez, C., Ferrer, F., **Colmenarez, Y.C.** and Morales, J. (2021) Control biológico en Venezuela. In: van Lenteren, J.C., Bueno, V.H.P., Luna, M.G. and **Colmenarez, Y.C.** (eds) *Control Biológico en América Latina y el Caribe: Su Rica Historia y Futuro Brillante*. Acribia, Zaragoza, Spain, pp. 477–494.

Weber, D.C., Hajek, A.E., Hoelmer, K.A., **Schaffner, U.**, Mason, P., Stouthamer, R., Talamas, E.J., Buffington, M., Hoddle, M.S. and **Haye, T.** (2021) Unintentional biological control. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 110–140.

**Witt, A.B.R.**, **Cock, M.J.W.**, Day, M.D., Zachariades, C., Strathie, L.W., Conlong, D.E., Hill, M.P. and Roy, S. (2021) Biological control successes and failures: African region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 368–402.

Wyckhuys, K.A.G., Day, M.D., Furlong, M.J., Hoddle, M.S., **Sivapragasam, A.** and Tran, H.D. (2021) Biological control successes and failures: Indo-Pacific/Oriental region. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 438–466.

**Zhang, F.** and **Chaudhary, M.** (2021) Uptake of biological control. In: Mason, P.G. (ed.) *Biological Control: Global Impacts, Challenges and Future Directions of Pest Management*. CSIRO Publishing, Clayton South, Australia, pp. 312–332.

#### 2.4.4. Case studies, working papers, briefs and publications that were not peer-reviewed (27)

**Baloch, B.L.**, Nahiyoona, A.A., **Rehman, A.** and **Hussain, M.Z.** (2021) Pakistan National Organic Cotton Policy GAP Analysis. *CABI Working Paper* 19, 26 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8145> 

**Borowiec, N.**, **Seehausen, L.**, Girod, P., Thaon, M., Gard, B., Sauvignat, M., Risso, S., Kremmer, L., Cailleret, B., Ponchon, M., Idier, M., Gatti, J.-L., Ris, N. and **Kenis, M.** (2021) *Drosophila suzukii* et lutte biologique par acclimatation. *Phytoma* 740, 25–30.

**Chege, F.**, **Bundi, M.**, Kisingiri, J. B. and Nekambi, E. (2021) Assessing the impact of strengthening the phytosanitary capacity of the floriculture sector in Uganda. *CABI Working Paper* 17, 24 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8143> 

Cherix, D., **Seehausen, L.** and Ebener, A. (2021) Le frelon asiatique poursuit sa progression, la Suisse n'est pas épargnée ! [French]. Weitere Ausbreitung der Asiatischen Hornisse – die Schweiz bleibt nicht verschont [German]. Il calabrone asiatico prosegue la sua progressione, la Svizzera non è risparmiata! [Italian]. *Revue Suisse d'Apiculture* 5, 240–247. Available at: [https://www.abeilles.ch/fileadmin/user\\_upload\\_romandie/SAR-Docs/Revue\\_2021\\_05\\_corr.pdf](https://www.abeilles.ch/fileadmin/user_upload_romandie/SAR-Docs/Revue_2021_05_corr.pdf) [French]. *Schweizerische Bienen-Zeitung* 6, 12–15. Available at: [https://www.bienen.ch/fileadmin/user\\_upload\\_relaunch/Dokumente/SBZ-Ausgaben/2021/0621-SBZ-web.pdf](https://www.bienen.ch/fileadmin/user_upload_relaunch/Dokumente/SBZ-Ausgaben/2021/0621-SBZ-web.pdf) [German]. *Revista Svizzera di Apicoltura* 104, 14–19. Available at: [https://www.apicoltura.ch/fileadmin/user\\_upload\\_ticino/STA-Documents/L\\_APE/Ape2021/L\\_Ape\\_7\\_8\\_2021.pdf](https://www.apicoltura.ch/fileadmin/user_upload_ticino/STA-Documents/L_APE/Ape2021/L_Ape_7_8_2021.pdf) [Italian]. 

**Djeddour, D.**, **Pratt, C.**, **Constantine, K.**, **Rwomushana, I.** and **Day, R.** (2021) The Asian citrus greening disease (huanglongbing): evidence note on invasiveness and potential economic impacts for East Africa. *CABI Working Paper* 24, 94 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8158> 

**Djeddour, D.**, **Pratt, C.**, **Makale, F.**, **Rwomushana, I.** and **Day, R.** (2021) The apple snail, *Pomacea canaliculata*: an evidence note on invasiveness and potential economic impacts for East Africa. *CABI Working Paper* 21, 77 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8149> 

**Eschen, R.**, Mbaabu, P.R., Ramamonjisoa, B. and Abad, C.R. (2021) Bridging the science-practitioner gap in ecosystem research for development. Policy Brief No. 1. Swiss Programme for Research on Global Issues for Development (r4d programme), Bern, Switzerland, 4 pp. [https://p9q7c7a8.rocketcdn.me/wp-content/uploads/2021/08/r4d\\_PolicyBrief\\_SciencePracticeGap\\_Eschen\\_etal\\_2021.pdf](https://p9q7c7a8.rocketcdn.me/wp-content/uploads/2021/08/r4d_PolicyBrief_SciencePracticeGap_Eschen_etal_2021.pdf) 

**Flood, J.** (2021) 8.4 Vascular streak dieback (VSD). In: End, M.J., Daymond, A.J. and Hadley, P. (eds) *Technical Guidelines for the Safe Movement of Cacao Germplasm*. Revised from the FAO/IPGRI Technical Guidelines No. 20 (Fourth Update 2021). Global Cacao Genetic Resources Network (CacaoNet), Bioversity International, Rome, Italy, pp. 49–58. <https://hdl.handle.net/10568/117613> 

**Gurmessa, N.**, **Bundi, M.** and **Williams, F.** (2021) A study of effects of village-based plant clinic service in selected regions of Ethiopia. *CABI Working Paper* 23, 18 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8157> 

Kagorora, J.P.K., **Kansiime, M.K.**, Owuor, C. and Tumwine, J. (2021) A review of some aspects of Uganda's crop agriculture: challenges and opportunities for diversified sector output and food security. *CABI Working Paper* 26, 22 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8161> 

**Kansiime, M.K.**, Macharia, M., Adraki, P.K., Obeng, F. and **Njunge, R.** (2021) Agricultural knowledge and information flows within smallholder farming households in Ghana: intra-household survey. *CABI Working Paper* 18, 21 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8150> 

Kibwika, P., **Alokit, C.**, **Aliamo, C.**, **Bundi, M.**, Tukahirwa, B. and **Danielsen, S.** (2021) Effects of plant health rallies on farmers' knowledge, attitude and practice in Uganda. *CABI Working Paper* 22, 37 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8156> 

**Minter, D.W.** (2021) Heterosporis, Ovipleistophora, Pleistophora (Microsporidia) [*Heterosporis anguillarum*, *Ovipleistophora mirandellae*, *O. ovariae*, *Pleistophora finisterrensis*, *P. hippoglossoides*, *P. hypheobryconis*, *P. littoralis*, *P. macrozoarcidis*, *P. senegalensis*, *P. typicalis*]. *IMI Descriptions of Fungi & Bacteria* 229(2281–2290), 40 pp.

- Minter, D.W.** and Cannon, P.F. (2021) Lichens and lichenicolous fungi associated with heavy metals [*Acarospora sinopica*, *Catillaria stereocaulorum*, *Epilichen scabrosus*, *Gyalidea roseola*, *Myriospora scabrada*, *M. smaragdula*, *Rhizocarpon oederi*, *Stereocaulon dactylophyllum*, *S. pileatum*, *Veizdaea aestivalis*]. *IMI Descriptions of Fungi & Bacteria* 227(2261–2270), 58 pp.
- Minter, D.W.** and Cannon, P.F. (2021) Fungicolous and lignicolous Chaetothyriales and their black yeast anamorphs [*Berlesiella nigerrima*, *Capronia chlorospora*, *C. normandinae*, *C. pilosella*, *C. pleiospora*, *C. pulcherrima*, *C. sexdecimspora*, *Ceramothyrium linnaeae*, *Knufia peltigerae*, *Phialophora americana*]. *IMI Descriptions of Fungi & Bacteria* 228(2271–2280), 46 pp.
- Minter, D.W.** and Cannon, P.F.\* (2021) Ascomycetes on nettles and other dead herbaceous stems [*Acrospermum compressum*, *Calloria urticae*, *Calycina herbarum*, *Cyathicula coronata*, *C. cyathoidea*, *Diaporthopsis urticae*, *Lachnum sulphureum*, *Memnoniella dichroa*, *Ophioceras leptosporum*, *Plagiosphaera immersa*]. *IMI Descriptions of Fungi & Bacteria* 226(2251–2260), 61 pp. [\*Co-author, sheets 2256, 2259, 2260]
- Minter, D.W.** and Soliman, G.S. (2021) Basidiomycetes significant in biotechnology and medicine, part 1 [*Auricularia auricula-judae*, *Cerioporus squamosus*, *Fomes fomentarius*, *Fomitopsis betulina*, *Ganoderma applanatum*]. *IMI Descriptions of Fungi & Bacteria* 230(2291–2295), 66 pp.
- Morgan, A., Finbow, A., Martinez, G.J., **Ryan, M.**, Bhardwaj, N., Carvalho, P. and Kalia, P. (2021) *Life in Earth: Soil Microbes are Key to Achieving Net Zero*. KTN Microbiome Innovation Network, Eagle Genomics and CABI, 8 pp. <https://ktn-uk.org/wp-content/uploads/2021/11/Life-in-Earth-By-the-KTN-Microbiome-Innovation-Network-Eagle-Genomics-CABI.pdf> 
- Musebe, R.** and **Ogunmodede, A.** (2021) Do farmers adopt advice on good pesticide practices? A case study of plant doctor recommended pesticide use in maize and tomato production. *CABI Study Brief Impact*: 39, 10 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8162> 
- Nagpal, A.**, **Williams, F.E.**, **Jadhav, A.**, Malarvannan, S. and Rengalakshmi, R. (2021) Bundling agricultural services under seeing is believing and Plantwise: benefits and opportunities. *CABI Study Brief 38 Learning*, 12 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8159> 
- Ramnanam, N.** (2021) Back to the farm at Durga's Den. *Tourism Cases*, 8 pp. <https://doi.org/10.1079/tourism.2021.0018>
- Smith, D.**, **Ryan, M.J.**, **Luke, B.**, **Djeddour, D.**, **Seier, M.K.**, **Varia, S.**, **Pollard, K.M.**, **Pratt, C.F.**, **Kurose, D.** and **Shaw, R.H.** (2021) CABI UK and Nagoya Protocol triggered benefit sharing. *CABI Working Paper* 25, 33 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8160> 
- Taylor, B.**, Tonnang, H.E.Z., **Beale, T.**, **Holland, W.**, **Oronje, M.**, **Abdel-Rahman, E.M.**, **Onyango, D.**, **Finogold, C.**, Zhu, J., Pozzi, S. and **Murphy, S.T.** (2021) Leveraging data, models & farming innovation to prevent, prepare for & manage pest incursions: delivering a pest risk service for low-income countries. Center for Development Research (ZEF) in cooperation with the Scientific Group for the UN Food System Summit 2021, Bonn, Germany, 17 pp. <https://doi.org/10.48565/scfss2021-ty56> 
- Terefe, B.** and **Williams, F.E.** (2021) Gender assessment of the Plantwise programme, 2011–2019. *CABI Study Brief 41: Learning*, 13 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8164> 
- Wan, M.**, **Chen, J.**, **Li, H.**, **Zhang, J.**, **Yuan, B.**, **Zhang, Q.**, **Zhang, F.**, Wu, K., **Zhou, X.** and **Kuhlmann, U.** (2021) MARA-CABI Joint Laboratory: 12 years of achievement. *CABI Study Brief 37: Impact*, 14 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8148> 
- Williams, F.**, **Bundi, M.**, **Hill, S.**, **Finch, E.A.**, **Curry, C.**, **Mbugua, F.**, **Day, R.**, **Charles, L.** and **Richards, G.** (2021) Assessment of the use and benefits of the Invasive Species Compendium. *CABI Working Paper* 20, 46 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8146> 
- Williams, F.**, van Marwijk, A., **Rware, H.**, Essegbey, G., Beseh, P., **Duah, S.**, **Hevi, W.**, Karbo, N., Quaye, W. and Watiti, J. (2021) Fall armyworm management: lessons learnt from Ghana. *CABI Study Brief 40: Impact*, 19 pp. <https://dx.doi.org/10.1079/CABICOMM-62-8163> 

#### 2.4.5. Completed theses (3)

**Chen, J.** (2021) 茶翅蝽在猕猴桃园的发生为害规律及果实受水平研究. [The occurrence and damage of *Halyomorpha halys* (Stål) in kiwi orchard]. MSc Thesis, Jilin Agricultural University, China, 67pp. Supervised: Shi, S., **Zhang, J.**

Irelewuyi, O. (2021) Evaluating novel impacts of the new Murakami line of *Aphalaria Itadori* and its release survivability on initial release. MSc Thesis, Imperial College London, UK, 14 pp. Supervised: Bell, T., **Kurose, D.**

**Li, W.** (2021) 猕猴桃园茶翅蝽卵期寄生蜂多样性调查及其优势种的生物学特性研究. [Egg parasitoid survey of *Halyomorpha halys* and biological research of the predominant parasitoid in kiwi orchard]. MSc Thesis, Jilin Agricultural University, China, 67pp. Supervised: Shi, S., **Zhang, J.**

#### 2.4.6. Published datasets (2)

**Eschen, R., Beale, T., Bonnin, J.M., Constantine, K.L., Duah, S., Finch, E.A., Makale, F., Nunda, W., Ogunmodede, A., Pratt, C.F., Thompson, E., Williams, F., Witt, A. and Taylor, B.** (2021) Dataset: Towards estimating the economic cost of invasive alien species to African crop and livestock production. *CABI Datasets* <https://doi.org/10.34857/0069674>

**Eschen, R., Mbaabu, P.R., Ramamonjisoa, B.S. and Robledo-Abad, C.** (2021) Dataset: Factors enhancing the level of utilisation of research knowledge on ecosystems. *CABI Datasets* <https://doi.org/10.34857/0088569>

#### 2.4.7. 2020 Publications not previously listed (3)

Dutta, N.K., **Chaudhary, M., Thakur, M.,** Begum, K., Sarkar, M.A., Prodhan, M.Z.H. and Sarkar, D. (2020) Technical Manual: Biological Control of Fall Armyworm in Bangladesh. Entomology Division, Bangladesh Agricultural Research Institute (BARI) & CAB International (CABI) South Asia, xii + 136 pp.

**Misawa, T. and Kurose, D.** (2020) *Rhizoctonia solani* AG-2-1-Subset3によるイチゴ芽枯病の発生. [The occurrence of bud rot of strawberry caused by *Rhizoctonia solani* AG-2-1 Subset 3]. *Annual Report of the Society of Plant Protection of North Japan* 71, 74–79. [In Japanese with English abstract and legends]. [https://doi.org/10.11455/kitanihon.2020.71\\_74](https://doi.org/10.11455/kitanihon.2020.71_74) 

**Sehto, G.N., Rajput, I.A., Ahmed, A.M., Kolachi, M.M., Pathan, A.K., Depar, M.S., Laghari, R.A.K. and Mal, B.** (2020) Monitoring cotton bollworms through synthetic sex pheromone traps. *Pure and Applied Biology* 9(3), 2007–2013. <http://dx.doi.org/10.19045/bspab.2020.90214> 

## 2.5. Scientific project reports (71)

**Annamalai, S.** (2021) Launch fund event report, ACIAR project: online masterclass on effective scientific communication for extension workers: skilling scientists to communicate green pest control in Myanmar. Unpublished report, CABI Malaysia, Serdang, Malaysia, 8 pp.

**Annamalai, S., Rothschild, G., Heong, K.L., Escalada, M., Loke, W.H., Myint, T., Nwe New, Y., Phyu, M.H., Nilar, A. and Chan, F.W.** (2021) ACIAR project: Project Plant Health – A major challenge to achieving sustainable ‘green’ agriculture in Myanmar (CROP/2019/103). Unpublished report, CABI Malaysia, 43 pp.

**Casey, J.** (2021) State of play review of climate risk assessment guidance. Commercial Agriculture for Smallholders and Agribusiness (CASA) Report, Wallingford, UK, 49 pp. <https://www.casaprogramme.com/evidence-details/?pan=20218400022>

**Casey, J., Bisaro, A., Valverde, A., Martinez, M. and Rokitzki, M.** (2021) Private finance investment opportunities in climate-smart agriculture technologies. CASA Programme. Commercial Agriculture for Smallholders and Agribusiness (CASA) Report, Wallingford, UK, 75 pp. <https://www.casaprogramme.com/evidence-details/?pan=20218400067>

**Chaudhary, M. and Thakur M.** (2021) Final project report for FAO -TCP “Technical Assistance to establish Solar Energy Based e-Pest Surveillance System”. Unpublished report, CABI India, New Delhi, India, 25 pp.

**Chaudhary, M. and Thakur M.** (2021) Project report for LOA for the FAO-TCP- “Regional Guidelines and Concept Note preparations for Coordinative surveillance and early warning for sustainable management of transboundary plant pests in Asia”. Unpublished report, CABI India, New Delhi, India, 15 pp.

**Chaudhary, M., Thakur, M.** and Srinivas, K. (eds) (2021) Regional guideline for regional coordinative surveillance and early warning for management of fall armyworm. Unpublished report, CABI India, New Delhi, India, 53 pp.

**Chaudhary, M., Thakur, M., Kadzamira, M.A.T.J.** and Srinivas, K. (eds) (2021) Desk review and survey feedback fall armyworm invasion in South & South East Asia. Unpublished report, CABI India, New Delhi, India, 39 pp.

**Chaudhary, M., Thakur, M., Kadzamira, M.A.T.J.** and Srinivas, K. (eds) (2021) Mapping opportunities and ecosystem analysis for surveillance, early warning and response to transboundary Pests. Unpublished report, CABI India, New Delhi, India, 56 pp.

**Chaudhary, M., Thakur, M., Kadzamira, M.A.T.J.** and Srinivas, K. (eds) (2021) Regional guideline for regional coordinative surveillance and early warning for management of desert locust. Unpublished report, CABI India, New Delhi, India, 40 pp.

**Chaudhary, M., Thakur, M., Kadzamira, M.A.T.J.** and Srinivas, K. (eds) (2021) Literature review: desert locust invasion in India and Pakistan. A critical analysis and review of current status. Unpublished report, CABI India, New Delhi, India, 30 pp.

**Colmenarez, Y., Sainz, C., Florido, M., Corniani, N.** and Vásquez, C. (2021) Sustainability assessment of Plantwise components in Peru. Unpublished report, CABI Brazil, Botucatu, Brazil, 35 pp.

**Colmenarez, Y., Sainz, C., Florido, M., Vásquez, C.** and **Corniani, N.** (2021) Sustainability assessment of Plantwise components in Bolivia. Unpublished report, CABI Brazil, Botucatu, Brazil, 36 pp.

**Cortat, G., Hiscock, M.** and **Perret-Gentil, A.** (2021) Biological control of hawkweeds, *Pilosella* spp. field. Annual report 2020. Unpublished report, CABI-CH, Delémont, Switzerland, 13 pp.

**Cortat, G., Hiscock, M., Perret-Gentil, A.** and **Hinz, H.L.** (2021) Biological control of garlic mustard, *Alliaria petiolata*. Annual report 2020. Unpublished report, CABI-CH, Delémont, Switzerland, 21 pp.

**Cortat, G., Hiscock, M., Perret-Gentil, A.** and **Hinz, H.L.** (2021) Biological control of field bindweed, *Convolvulus arvensis*. Annual report 2020. Unpublished report, CABI-CH, Delémont, Switzerland, 17 pp.

**Cortat, G., Hiscock, M., Perret-Gentil, A.** and **Hinz, H.L.** (2021) Biological control of swallow-worts, *Vincetoxicum rossicum* and *V. nigrum*. Annual report 2020. Unpublished report, CABI-CH, Delémont, Switzerland, 12 pp.

**Crozier, J., Hidalgo, E.** and **Constantine, K.** (2021) Perceptions of small-holder cacao producers and extension agents on the factors influencing uptake of pest and disease management practices in Colombia. Unpublished report, CABI-UK, Egham, UK and CABI, Brazil, Botucatu, Brazil, 25 pp.

**Djeddour, D., Kurose, D., Pollard, K., Pratt, C., Seier, M., Shaw, R.** and **Varia, S.** (2021) Biocontrol of water framework directive weeds, Defra project 32570. Progress April 2020 – March 2021. Unpublished report, CABI-UK, Egham, UK, 124 pp.

**Djeddour, D., Kurose, D., Pollard, K., Pratt, C., Seier, M., Shaw, R.** and **Varia, S.** (2021) Biocontrol of water framework directive weeds, Defra project 32570. Progress April 2021 – November 2021. Unpublished report, CABI-UK, Egham, UK, 55 pp.

**Fallet, P., Turlings, T.** and **Toepfer, S.** (2021) A novel strategy to control the fall armyworm with formulated entomopathogenic nematodes. Three-years report (2018–2020). Unpublished report, University of Neuchatel, Switzerland, 25 pp.

**Häfliger, P., Nardelli, M., Fattore, S., Rodriguez, M., Closça, C., Thomas, S., Kurose, D.** and **Hinz, H.L.** (2021) Biological control of flowering rush, *Butomus umbellatus*. Annual report 2020. Unpublished report, CABI-CH, Delémont, Switzerland, 24 pp.

- Hague, M., **Casey, J., Valverde, A., Terefe, B., Kadzamira, M.** and **Romney, D.** (2021) Commercial Agriculture Portfolio Review 2020. Commercial Agriculture for Smallholders and Agribusiness (CASA) Report, Wallingford, UK, xiv + 109 pp. [https://www.casaprogramme.com/wp-content/uploads/2021/05/CAPR-2020\\_May\\_Final.pdf](https://www.casaprogramme.com/wp-content/uploads/2021/05/CAPR-2020_May_Final.pdf)
- Haq, E., **Malik, A.H.** and **Ali, K.** (2021) Inception report: strengthening food security post covid-19 and locust attacks. Unpublished report, CABI–CWA, Rawalpindi, Pakistan, 74 pp.
- Haq, E., **Malik, A.H.** and **Ali, K.** (2021) Report on technologies for safe, economical, and environment-friendly management of locust and other pests: Strengthening Food Security Post Covid-19 and Locust Attacks. Unpublished report, CABI–CWA, Rawalpindi, Pakistan, 39 pp.
- Haye, T.** (2021) Distribution and target and non-target effects of the exotic parasitoid *Trissolcus japonicus*. Final Project Report 2021. CABI–CH, Delémont, Switzerland, 18 pp.
- Haye, T. Risse, M., Fattore, S.** and **Humair, L.** (2021) Arthropod Biological Control Program. Annual report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 45 pp.
- Haye, T.** and **Zhang, J.** (2021) 2nd deliverable March 2021 (biological control of *H. halys* and *D. mali*), CABI–CH, Delémont, Switzerland, 14 pp.
- Haye, T.** and **Zhang, J.** (2021) 2nd deliverable November 2021 (biological control of *L. delicatula*, *A. rubi*, *D. mali*). CABI–CH, Delémont, Switzerland, 22 pp.
- Hidalgo, E., Colmenarez, Y.** and Florido, M. (2021) Sustainability assessment of Plantwise components in Costa Rica. Unpublished report, CABI Brazil, Botucatu, Brazil, 22 pp.
- Hidalgo, E., Colmenarez, Y.,** Florido, M. and Vasquez, C. (2021) Sustainability assessment of Plantwise components in Nicaragua. Unpublished report, CABI Brazil, Botucatu, Brazil, 22 pp.
- Hidalgo, E., Colmenarez, Y.,** Florido, M. and Vasquez, C. (2021) Sustainability assessment of Plantwise components in Jamaica. Unpublished report, CABI Brazil, Botucatu, Brazil, 24 pp.
- Kadzamira, M.,** Boyer, D., **Pandit, V., Flood, J.** and **Neave, S.** (2021) Competitor analysis – value chains. Unpublished report, CABI HQ, Wallingford, UK, 51 pp.
- Kadzamira, M., Chaudhary, M.,** Rajkumar, R. and **Williams, F.** (2021) Local biopesticide production hubs and the empowerment of rural women in Tamil Nadu, India Cottage industries. Unpublished report, CABI–UK, Egham, UK, 35 pp.
- Kurose, D.** and **Seier, M.K.** (2021) Classical biological control of navua sedge (*Cyperus aromaticus*) using the rust fungus *Uredo kyllingae-erectae*. Unpublished progress report, CABI–UK, Egham, UK, 11 pp.
- Kurose, D., Ellison, C.A.** and **Seier, M.K.** (2021) Biological control of navua sedge (*Cyperus aromaticus* (Ridl.) Mattf. & Kük.) using the flower smut fungus *Cintractia kyllingae*. Unpublished progress report, CABI–UK, Egham, UK, 7 pp.
- Kurose, D., Thomas, S., Pratt, C., Djeddour, D.** and **Shaw, R.** (2021) Host-specificity test of the Murakami line of *Aphalara itadori* using three US genotypes of *Fallopia x bohémica*. Unpublished report, CABI–UK, Egham, UK, 7 pp.
- Li, H.,** Zhai, Y. and **Zhang, J.** (2021) 外来入侵害虫的监测预警与防控 [Monitoring, early warning and prevention and control of invasive insect pests]. In: Sun, W., Li, Z. and Yao, R. (eds) 2021 全球农业研究热点前沿分析解 [2021 Analysis and Interpretation of Global Agricultural Research Frontier]. Unpublished report, Agricultural Information Institute of Chinese Academy of Agricultural Sciences, Beijing, China, pp. 20–26.
- Maczey, N., Offord, L., Pratt, C.** and **Kurose, D.** (2021) Survey of herbivores and pathogens on *Rubus anglocandicans*, in its natural geographical range within the UK. Unpublished progress report, CABI–UK, Egham, UK, 9 pp.
- Marini, F., Cristofaro, M., **Hinz, H., Weyl, P.,** Vidović, B. and Moffat, C. (2021) Biological control of tree of heaven, *Ailanthus altissima*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 11 pp.

- Muhamad, F., Chan, F.W. and Thanarajoo, S.S.** (2021) Annual report: conservation and sustainable utilization of the underutilized taro (PR-77-Malaysia). Unpublished report, CABI Malaysia, Serdang, Malaysia, 41 pp.
- Muhammad, F.** (2021) STDF inception meeting report: STDF safer spice project on food safety and market access in Vietnam, Cambodia and Laos (SDTF/PG/619). Unpublished report, CABI Malaysia, Serdang, Malaysia, 66 pp.
- Mulema, J., Karanja, L., Otieno, W., Karanja D.,** Macharia, I., Obare, I., Chepng'eno, M., Chemutai, C., **Mugambi, I.,** Nyaundi, O., Wanjiku, J., Kagundu, M., Munguti, F., Ngundo, G. and **Ochilo, W.** (2021) Potato diseases surveillance in Kenya, final project report. Unpublished report, CABI and Kenya Plant Health Inspectorate Services (KEPHIS), Nairobi, Kenya, 156 pp.
- Pollard, K.M. and Seier, M.K.** (2021) The biological control of cat's claw creeper *Dolichandra unguis-cati* (L.) L.G. Lohmann. Phase 1 Final Report (1 June 2018 – 30 May, 2021). Unpublished Report CABI–UK, Egham, UK, 30 pp.
- Pollard, K.M. and Seier, M.K.** (2021) The biological control of cat's claw creeper *Dolichandra unguis-cati* (L.) L.G. Lohmann. 6-month progress report (1 June 2021 – 30 November 2021). Unpublished Report, CABI–UK, Egham, UK, 8 pp.
- Reeder, R., Taylor, P. and Maczey, N.** (2021) Managing the pathogens threatening St Helena's biodiversity and food security. Unpublished half-year report, CABI–UK, Egham, UK, 3 pp.
- Rehman, A., Ali, K. and Weyl, P.** (2021) The host range and risk assessment of the stem-boring weevil, *Listronotus setosipennis* (Coleoptera: Curculionidae) proposed for the biological control of *Parthenium hysterophorus* (Asteraceae) in Pakistan. Unpublished report, CABI–CWA, Rawalpindi, Pakistan, 42 pp.
- Seehausen, M.L., Nacambo, S. and Kenis, M.** (2021) Suivi des insectes du hêtre dans le canton de Jura. Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 8 pp.
- Seehausen, M.L.,** Valenti, R., Fontes, J., Meier, M., Marazzi, C., Mazzi, D. and **Kenis, M.** (2021) Méthode d'évaluation des potentiels agents de lutte biologique classique en Suisse. Interim Report 2021. Unpublished report, CABI–CH, Delémont, Switzerland, 9 pp.
- Seier, M. and Kurose, D.** (2021) The potential for biological control of the two invasive *Rubus* species, *R. ellipticus* var. *obcordatus* and *R. niveus* in Hawaii (Phase 4). Final Report (1 February 2020 – 31 May 2021). Unpublished Report, CABI–UK, Egham, UK, 27 pp.
- Seier, M. and Pollard, K.** (2021) The biological control of invasive devil's claw (*Cryptostegia madagascariensis* Bojer ex Decne) in north-eastern Brazil. Third annual report (1 March 2020 – 28 February 2021). Unpublished Report, CABI–UK, Egham, UK, 18 pp.
- Seier, M., Ellison, C., Kurose, D. and Pollard, K.** (2021) Consultancy: Development of an agent for the biological control of invasive blackberry (*Rubus niveus*) in the Galapagos Islands. Third report 1 September – 31 December 2021. Unpublished Report, CABI–UK, Egham, UK, 26 pp.
- Seier, M., Ellison, C., Kurose, D. and Pollard, K.** (2021) Consultancy: Development of an Agent for the Biological Control of Invasive Blackberry (*Rubus niveus*) in the Galapagos Islands. Second report 1 June – 31 August 2021. Unpublished Report, CABI–UK, Egham, UK, 24 pp.
- Seier, M., Ellison, C., Kurose, D., Pollard, K. and Cafu, G.** (2021) Consultancy: Development of an agent for the biological control of invasive blackberry (*Rubus niveus*) in the Galapagos Islands. First report 1 January – 31 May 2021. Unpublished Report, CABI–UK, Egham, UK, 20 pp.
- Stutz, S. and Nardelli, M.** (2021) Prospects for the biological control of oxeye daisy, *Leucanthemum vulgare*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 29 pp.
- Stutz, S., Nardelli, M.,** Dolgovskaya, M.Yu., Volkovitch, M. and Reznik, S. (2021) Biological control of common tansy, *Tanacetum vulgare*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 17 pp.
- Terrettaz, M., Gilli, C. and **Seehausen, M.L.** (2021) Développement de la lutte biologique contre la cochenille farineuse dans les cultures arboricoles en Suisse. Interim Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 50 pp.

**Toepfer, S.** (2021) 1st Project report 2021. Comparing two methods in assessing the mating disruption of *Diabrotica v. virgifera* adults in maize field trials in Hungary, through spraying a commercial sex-pheromone formulation (2021, 2022). Confidential unpublished report, CABI–CH, Delémont, Switzerland, 43 pp.

**Toepfer, S.** (2021) Efficacy and selectivity of seed coatings and soil granules of a new insecticide against *Diabrotica v. virgifera* on maize in a potted plant trial under controlled greenhouse conditions. CABI project report to JAS, 2021. Confidential unpublished report, CABI–CH, Delémont, Switzerland, 18 pp.

**Wan, M.** and **Zhang, F.** (2021) Analysis of agro-input dealers needs assessment: China. Unpublished report, CABI East Asia, Beijing, China, 14 pp.

**Wan, M.**, Wan, H. and **Zhang, F.** (2021) Scoping Study Report: Developing and promoting of the “International Plant Doctor” backed agricultural production standard in China. Unpublished report, CABI East Asia, Beijing, China, 20 pp.

Wee, T.T., Rahul, R., Bill, J., Andrew, G., Dao, T.H., Nguyen, V.L., Khin, T.N., Amalin, D., Khonesavanh, C., **Muhammad, F.**, **Annamalai, S.** and Walsh, T. (2021). Final report CSIRO Project: Southeast Asian and Australian FAW population genomics for biosecurity preparedness. Unpublished report, CABI Malaysia, Serdang, Malaysia, 32 pp.

**Weyl, P.**, Asadi, G., Vidović, B., Petanović, R., Marini, F. and Cristofaro, M. (2021) Biological control of Russian olive, *Elaeagnus angustifolia*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 11 pp.

**Weyl, P.**, **Cloșca, C.** and **Hinz, H.L.** (2021) Biological control of whitetops, *Lepidium draba*, *L. chalepense* and *L. appelianum*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 11 pp.

**Weyl, P.**, **Cloșca, C.** and Marini, F. (2021) Biological control of Russian knapweed, *Rhaponticum repens*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 11 pp.

**Weyl, P.**, **Cloșca, C.**, Marini, F. and **Hinz, H.L.** (2021) Biological control of dyer's woad, *Isatis tinctoria*. Annual Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 13 pp.

**Weyl, P.**, Ensing, D. and **Hinz, H.L.** (2021) Feasibility for the biological control of parrot's feather, *Myriophyllum aquaticum* in Canada. Report 2020. Unpublished report, CABI–CH, Delémont, Switzerland, 18 pp.

**Zhang, F.** and **Wan, M.** (2021) A preliminary case study of voluntary certification scheme for agro-input dealers: Guangdong, China. Unpublished report, CABI East Asia, Beijing, China, 15 pp.

**Zhang, F.** and **Zhang, J.** (2021) Use of *Trichogramma* wasps to control *Helicoverpa armigera* on tomato in China: A short review. Unpublished report, CABI East Asia, Beijing, China, 6 pp.

**Zhang, J.**, **Chen, J.**, **Mi, Q.** and **Zhang, F.** (2021) BMSB impacts and phenology on kiwifruit and associated parasitoids twenty-fourth months' work plan report. Unpublished report, CABI East Asia, Beijing, China, 6 pp.

**Zhang, J.**, **Tian, X.Y.**, **Chen, J.**, **Mi, Q.** and **Zhang, F.** (2021) BMSB impacts and phenology on kiwifruit and associated parasitoids thirty months report. Unpublished report, CABI East Asia, Beijing, China, 25 pp.

## 2.6. Oral presentations at scientific meetings (110)

CABI authors are shown in **bold**, the presenting author is underlined.

**Agboyi, L.K.** (2021) Networking of plant protection stakeholders in sub-Saharan Africa. International Symposium on Plant Protection in Africa, 30 November–4 December 2021, Ouagadougou, Burkina Faso.

**Agboyi, L.K.** (2021) Opportunities for growth in the African biocontrol sector. Global BioControl Conference, 7–8 April 2021 (online).

**Agboyi, L.K.**, Layodé, N.F.R., Fening, K.O., Beseh, P., **Clotney, V.A.**, **Day, R.**, **Kenis, M.** and **Babendreier, D.** (2021) Assessing the potential of inoculative release of *Telenomus remus* to control the fall armyworm, *Spodoptera frugiperda*, in real field condition in Ghana. Virtual Workshop of the IWGO

Sub-Group Fall Armyworm: Research on biological control of FAW in Africa using parasitoids, predators and nematodes, 16–17 March 2021 (online).

**Ali, K., Rehman, A. and Weyl, P.** (2021) Classical biological control programme against *Parthenium hysterophorus* in Pakistan: Host range testing of *Listronotus setosipennis*. Biocontrol of *Parthenium* Webinar hosted by the Feed the Future Innovation Lab for Integrated Pest Management. The U.S. Government's Global Hunger and Food Security Initiative, 30 March 2021 (webinar).

**Casey, J.** (2021) Climate-Smart Pest Management: nature-based solutions for the climate and environment. 2nd International Congress of Biological Control (ICBC2), 26–30 April 2021, Davos, Switzerland (online).

**Chaudhary, M.** (2021) Fall armyworm management through biological control. Voice of Basai, Krishi Jagaran, 2 April 2021 (online). <https://www.facebook.com/krishi.jagran/videos/2740105029447666>

**Chaudhary, M. and Kadzamira, M.** (2021) The catalytic role of plant clinics in livelihood improvement of women engaged in local biopesticide production in India. Cultivating Equality: Advancing Gender Research in Agriculture and Food Systems, online conference, 12–15 October 2021 (online).

**Chaudhary, M. and Thakur, M.** (2021) Plantwise: smartphone-based advisory services for crop protection in Myanmar rice production. Workshop: Reimagining opportunities for ICT-driven innovation in agriculture and its transformative potential for rice smallholders, 26–27 July 2021 (online).

**Chaudhary, M., Thakur, M. and Kumar, S.** (2021) Novel approaches of sustainable management of crop pests. International Conference: Global Perspectives in Crop Protection for Food Security (GPCP 2021), Tamil Nadu Agricultural University (TNAU), 8–10 December 2021, Coimbatore, India.

**Colmenarez, Y.** (2021) Agroecological practices for fall armyworm management. Coordinative surveillance and early warning for sustainable management of transboundary plant pests in Asia, under a CABI-FAO project, CABI, 21 October 2021 (online).

**Colmenarez, Y.** (2021) Manejo integrado de plagas (MIP) en agricultura sostenible en América Latina y el Caribe. LXII Convención Nacional de Entomología, 22–25 November 2021 (online).

**Colmenarez, Y.** (2021) Programas de control biológico em América Latina y perspectivas para su expansión. XXIX Curso Nacional de Control Biológico, La Sociedad Mexicana de Control Biológico, 15 October 2021 (online).

**Colmenarez, Y. and Chaudhary, M.** (2021) The importance of technology transfer and collaboration platforms for the implementation of biological control programs in Latin America and Asia. 2nd International Congress of Biological Control (ICBC2), 26–30 April 2021, Davos, Switzerland (online).

**Colmenarez, Y., Vasquez, V. and Corniani, N.** (2021) Protocolo de Nagoya y bancos de recursos genéticos microbianos: la importancia de preservar los recursos genéticos y su relación con la implementación de programas de biocontrol. II Congreso de Control Biológico Aplicado, 28–29 October 2021, Quito, Ecuador (online).

**Colmenarez, Y.C., Wals, G.C., France, A., Vasquez, C. and Sá, L.A.N.** (2021) Regulatory challenges for the exchange and use of biological resources in Latin America. 2nd International Congress of Biological Control (ICBC2), 26–30 April 2021, Davos, Switzerland (online).

**Cortat, G., Tosevski, I. and Hinz, H.L.** (2021) Two additional potential biocontrol agents for field bindweed in North America. Field Bindweed Webinar, 14 January 2021 (webinar).

**Day, R. and Chaudhary, M.** (2021) Combating invasive species – a case study of fall armyworm. Regional consultation meeting on Fall Armyworm – the status, challenges and experiences among the SAARC Member States, 27–28 January 2021 (online).

**Durocher-Granger, L., Mfunne, T., Musesha, M., Fiorito, S., Kambanja Mudenda, S., Lowry, A., Reynolds, K., Buddie, A., Cafu, G., Offord, L., Chiboola, M.M., Chipabika, G., Kenis, M., Dicke, M., Ludwig, D. and Leeuwis, C.** (2021) Biocontrol of *Spodoptera frugiperda* in rural Zambia: from natural enemies to collective pest management. Online conference: Developing Smallholder Oriented IPM Strategies for Fall Armyworm Management, 24–26 August 2021 (online).

**Durocher-Granger, L.**, Mfune, T., Musesha, M., Fiorito, S., Kambanja Mudenda, S., **Lowry, A., Reynolds, K., Buddie, A., Cafà, G., Offord, L.**, Chiboola, M.M., Chipabika, G., **Kenis, M.**, Dicke, M., Ludwig, D. and Leeuwis, C. (2021) Biocontrol of *Spodoptera frugiperda* in rural Zambia: from natural enemies to collective pest management. Online conference: Les espèces envahissantes et leurs enjeux socio-environnementaux: Leçons d’Afrique et d’ailleurs, 14–17 December 2021 (online).

**Durocher-Granger, L.**, Mfune, T., Musesha, M., Munyumbwe, G., **Lowry, A., Reynolds, K., Buddie, A., Cafà, G., Offord, L.**, Chipabika, G., Dicke, M. and **Kenis, M.** (2021) Conservation biocontrol of FAW in Zambia. Virtual Workshop of the IWGO Sub-Group Fall Armyworm: Research on biological control of FAW in Africa using parasitoids, predators and nematodes, 16–17 March 2021 (online).

**Faheem, M.** (2021) Case Study 2: Import risk analysis: case of the pest risk analysis for *Bactrocera dorsalis* Diptera: Tephritidae with respect to mango export industry. Delivery of Training on Import Risk Analysis supported by WINROCK International and the Building Safe Agricultural Food Enterprises (B-SAFE) Project, Philippines, 1–2 December 2021 (online).

**Faheem, M.** (2021) Evaluation of production practices of underutilised taro and main challenges in Malaysia, Indonesia and Philippines. 1st International Webinar on Taro ‘Initiatives on Taro Development: its Challenges and Opportunities’ organized by Central Bicol State University of Agriculture, Philippines, 19 November 2021 (webinar).

**Faheem, M.** (2021) Import risk analysis: pest risk management process and risk communication framework. Delivery of Training supported by WINROCK International and the Building Safe Agricultural Food Enterprises (B-SAFE) Project, Philippines, 1–2 December 2021 (online).

**Faheem, M.** (2021) Introduction to farmers field school and its implementation in the project. Webinar Training of Trainer (ToT): Conservation and Sustainable Utilisation of Taro Crops under the BSF International Project, 27–28 July 2021 (webinar).

**Fazlullah, Rashid, K., Hussain, D., Farooq, M. and Zada, N.** (2021). Assessment of larval diets for development of fall armyworm, *Spodoptera frugiperda*. Developing smallholder-oriented IPM strategies for fall armyworm management, online conference, 24–26 August 2021 (online).

**Finegold, C.**, Bebbler, D., **Chaloner, T., Day, R., Godwin, J., Lowry, A.**, Reid, J. and **Szyniszewska, A.** (2021) Measuring “The Global Burden of Crop Loss (GBCL)” in order to increase food security, protect the environment and secure livelihoods. Our Plants, Our Future, British Society for Plant Pathology and European Foundation for Plant Pathology, 6–8 December 2021, University of Birmingham, UK.

Frances, A., **Smith, D.** and **Colmenarez, Y.** (2021) Control biológico dentro de los programas de manejo integrado de plagas en América Latina: Potencial y desafíos. II Congreso de Control Biológico Aplicado, 28–29 October 2021, Quito, Ecuador (online).

**Häfliger, P.** (2021) Biological control of flowering rush. Annual TAG (USDA Technical Advisory Group for Biological Control Agents of Weeds) meeting, 20–22 April 2021 (online).

**Haye, T.** (2021) Aliens unter uns: Wie winzige Wespen uns helfen können. Science Lunch of the Zurich University of the Arts, 31 March 2021, Zurich, Switzerland (online).

**Haye, T.** (2021) Einblicke in die Biologie der Marmorierten Baumwanze und Möglichkeiten der Biologischen Kontrolle. Südtiroler Obstbauseminar, 18 January 2021, Italy (online).

**Haye, T.** (2021) Einheimische und exotische Wanzen im Obstanbau. 46th Bundessteinobstseminar, 1 December 2021, Alzey, Germany.

**Haye, T.**, Moraglio, S.T., Tortorici, F. and Tavella, L. (2021) Does the fundamental host range of *Trissolcus japonicus* match its ecological host range in Europe? Second International Congress of Biological Control, 26–30 April 2021, Davos, Switzerland (online).

**Hinz, H.L.** (2021) Facts, challenges and opportunities of classical biological control of weeds. Keynote Speaker, National Symposium on Biological Invasions, 5–7 May 2021, South Africa (online).

**Hinz, H.L.** (2021) Weed biocontrol update, CABI Switzerland. NAISMA Biocontrol Summit, 1 December 2021 (online).

**Hinz, H.L.** (2021) Weed project updates CABI Switzerland. Montana Weed Control Association, Biocontrol Session, 27 January 2021 (online).

**Hinz, H.L.** (2021) Weed project updates CABI Switzerland. Montana Organic Growers Association Meeting, 11 March 2021 (online).

**Hinz, H.L.** and **Cortat, G.** (2021) When no-choice tests under confined conditions fail: the case of an agromyzid fly on field bindweed. Annual TAG (USDA Technical Advisory Group for Biological Control Agents of Weeds) meeting, 20–22 April 2021 (online).

**Hinz, H.L.** and **Weyl, P.** (2021) Weed biocontrol project updates CABI Switzerland. Meeting of Weed Biological Control Steering Committee, 2 November 2021 (online).

**Hussain, S., Rehman, A., Khan, Y.S., Ali, K.** and **Fazlullah** (2021) Insecticidal potential of eco-friendly entomopathogenic fungi for the management of fall armyworm (*Spodoptera frugiperda*) under in-vitro condition. Smart plant protection conference, 27 January 2021, Institute of Plant Protection, MNS University of Agriculture, Multan, Pakistan.

**Karanja, L.,** Obare, I., Macharia, I., Rono, M., Nyaundi, O., Chemutai, C., Kagundu, M., Wanjiku, J., Thungu, L., Munguti, F., Ngundo, G., **Ochilo, W., Mulema, J.** and Muthomi, J. (2021) Occurrence of *Pectobacterium* species in soils of smallholder potato farmers in Kenya. 3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya.

**Kenis, M.** (2021) Classical biological control of *Spodoptera frugiperda* in Africa using parasitoids from America. Virtual workshop of the IWGO Sub-Group Fall Armyworm: Research on biological control of FAW in Africa using parasitoids, predators and nematodes, 16–17 March 2021 (online).

**Kenis, M.** (2021) IFWA, Insects as Feed in West Africa. IFWA workshop at the r4d Science Fair West Africa, Bopa, Benin, 27–30 September 2021.

**Kenis, M.** (2021) Progress in classical biological control of fall armyworm in Africa and Asia using exotic parasitoids. Online conference: Developing smallholder-oriented IPM strategies for fall armyworm (*Spodoptera frugiperda* Smith) management, 24–26 August 2021 (online).

**Kenis, M., Nacambo, S.** and **Seehausen, L.** (2021) Situation de *Cydalima perspectalis* en bosques de boj en Europa y el posibilidad de control biológico. Online conference: Noves dades sobre la situació actual de la papallona del boix (*Cydalima perspectalis*) a Catalunya, 13 March 2021 (online).

**Kenis, M.,** Sankara, F. and IFWA partners (2021) Use of insects as animal feed in (West) Africa. One solution for 3 problems? ICRC Agro-Livestock Workshop, 9–15 December 2021 (online).

**Kuhlmann, U.** (2021) Transferring scientific-based knowledge to where it is needed: the importance of extension services. 2021 World Conference on Science Literacy, 30 November–3 December 2021, Beijing, China (online).

**Kuhlmann, U., Williams, F., Jenner, W.** and **Zhang, F.** (2021) Improved extension advice reduces food losses: building on lessons learned in Plantwise. International Conference on Food Loss and Waste, 9–11 September 2021, Jinan City, Shandong Province, China (online).

**Li, H.** and **Luke, B.** (2021). Study on biological mechanism analysis and control mechanism of crop diseases and insect pests. Field demonstration and onsite training workshop of wheat disease management, 9–10 May 2021, Henan, China.

**Li, H., Wang, J.** and **Luke, B.** (2021) Utilizing Earth Observation and UAV technologies to deliver pest and disease products and services to end users in China. Project annual meeting, 7 December 2021 (online).

**Li, H., Wang, M.,** Zhu, J. and **Luke, B.** (2021) Crop pest early warning system and pest management technology sharing. Field demonstration and onsite training workshop of rice insect pests and diseases management, 29–30 September 2021, Hunan, China.

Macharia, I., Kosiom, T., Koome, F., Munguti, F., Mukoye, B., **Rwomushana, I.**, **Oronje, M.** and Kimenju, W. (2021) Biosecurity threat posed by increasing pest incursions in Kenya. 3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya.

Macklin, J. and **Ryan, M.J.** (2021) Appreciating the little things in life: molecular technologies driving new methodologies in specimen preservation and management. SPNHC: Digitization and Data Management in the Preservation of Natural History Collections, 10 June 2021 (online).

Martin, G.D., Coetzee, J.A. and **Weyl, P.** (2021) Amazon frogbit jumping its way through Africa. National Symposium on Biological Invasions, 5–7 May 2021, South Africa (online).

Momanyi, G., Mwarey, H., Avedi, E., Guantai, M., Mukoye, B., Munene, P., Munguti, F., Muvea, A., Mwangi, J., Nyamai, I., Obare I., Ombuya, A., Omwenga, B., Macharia, I., **Oronje, M.** and **Mulema, J.** (2021) Horizon scanning for prioritizing invasive alien species with potential to threaten Kenya's agriculture, biodiversity and economy. 3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya.

Mweke, A., **Rwomushana, I.**, Okelo, A., **Chacha, D.** and **Luke, B.** (2021) Novel approach in management of fall armyworm (*Spodoptera frugiperda* JE Smith) using virus extract from larvae treated with baculovirus. 3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya.

**Ogunmodede, A.M.**, **Tambo, J.A.**, Gulak, D.M. and Adeleke, A.T. (2021) Assessment of farmers' willingness to pay towards the sustainability of plant clinics: evidence from Bangladesh, Rwanda and Zambia. 31st International Conference of Agricultural Economists (ICAE), 17–31 November 2021 (online).

**Oronje, M.**, **Felder, H.**, **Cullum, J.**, **Page, A.**, **Rwomushana, I.**, **Mulema, J.** and **Day, R.** (2021) Horizon scanning and insight reporting for monitoring and managing phytosanitary risks. 3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya.

**Reeder, R.** (2021) The story of Plantwise, a global programme fostering stronger plant health partnerships. Our Plants, Our Future, British Society for Plant Pathology; European Foundation for Plant Pathology, 6–8 December 2021, University of Birmingham, UK.

Rono, M., **Karanja, L.**, Obare, I., Macharia, I., Nyaundi, O., Chemutai, C., Kagonda, M., Wanjiku, J., Thungu, L., Munguti, F., Ngundo, G., **Ochilo, W.** and **Mulema, J.** (2021) Extensive surveillance of key potato growing areas in Kenya confirms absence of *Clavibacter sepedonicus*. 3rd International Phytosanitary Conference, 13–16 September 2021, Kenya Plant Health Inspectorate Service (KEPHIS) Headquarters, Nairobi, Kenya.

**Ryan, M.J.** (2021) Collections: adapting to meet the needs of global microbiome research. GloMiNe (Global Microbiome Network), 17 January 2021, Peru (online).

**Ryan, M.J.** (2021) Culture collections and the microbiome – challenges and opportunities. MIRRI – Cutting-edge Technologies for 2030 Microbial Culture Collections, 19 November 2021 (online).

**Ryan, M.J.**, Mauchline, T., Malone, J., Jones, S. and Holden, N. (2021) Culture collections, the microbiome and the UK Crop Microbiome Cryobank. ECCO XXXIX, 23 September 2021 (online).

**Schaffner, U.** (2021) Biological control for one health: the environment. Second International Congress of Biological Control, 26–30 April 2021, Davos, Switzerland (online).

**Schaffner, U.** (2021) Classical biological control of weeds: misconceptions and untapped opportunities. Webinar of the North American Invasive Species Association, 15 December 2021 (webinar).

**Schaffner, U.** (2021) Managing invasive alien plant species, or why do we need classical biological control? Guest lecture at Michigan State University, 4 March 2021 (online).

**Schaffner, U.** (2021) Sustainable management of *Prosopis juliflora*. Meeting of the Ethiopian National Prosopis Advisory Group, Adama, Ethiopia, 12 May 2021 (recorded).

- Schaffner, U.** (2021) The Woody Weeds project: understanding the social-ecological impacts of invasive alien trees in Eastern Africa to inform management. National Launch of the Woody Weeds + project, Nairobi, Kenya, 13 October 2021 (recorded).
- Schaffner, U.** (2021) Weeding with insects. Guest lecture at University of Freiburg, Germany, 31 January 2021 (online).
- Seehausen, M.L.** (2021) Die Asiatische Hornisse in der Schweiz. Online presentation for apiservice, 12 August 2021, Switzerland (online).
- Seehausen, M.L.** (2021) Le frelon asiatique en Suisse. Meeting of the Fédération cantonale neuchâteloise d'apiculture (FCNA), 25 March 2021, Switzerland (online).
- Seehausen, M.L.** (2021) Le frelon asiatique en Suisse. Meeting of the Fédération jurassienne d'apiculture (FACJ), 7 May 2021, Switzerland (online).
- Seehausen, M.L.** (2021) Le frelon asiatique en Suisse. Training for beekeeper counselors of the Société romande d'apiculture (SAR), 6 March 2021, Switzerland (online).
- Seehausen, M.L.** (2021) Searching Asian hornet nests using radio telemetry. North Scarborough Rotary Club Meeting, 12 May 2021, Canada (online).
- Seehausen, M.L.** and **Kenis, M.** (2021) Biological control policies: an assessment of PM6/4 from the scientists' perspective. 14th Joint EPPO/IOBC Panel Meeting on Biological Control Agents, 12–14 October 2021, Paris, France (online).
- Seehausen, M.L.,** Afonso, C. and Branco, M. (2021) A global perspective on biological control policies: between patchwork and harmonization. IUFRO meeting on Biological Invasions in Forests: Trade, Ecology and Management, 20–24 September 2021, Prague, Czech Republic.
- Seehausen, M.L.,** Racca, A., Girod, P., Ris, N., Collatz, J., Häner, N. and **Kenis, M.** (2021) Suitability of the Asian parasitoid *Ganaspis brasiliensis* for classical biological control of *Drosophila suzukii*. Second International Congress of Biological Control, 26–30 April 2021, Davos, Switzerland (online).
- Seehausen, M.L.,** Rimmer, A., Wiesner, A., Scott-Dupree, C., Llewellyn, J., **Kenis, M.** and Smith, S.M. (2021) Modelling the potential distribution of the box tree moth *Cydalima perspectalis* in North America using CLIMEX. Annual Meeting of the Entomological Society of America, 31 October–3 November 2021, Denver, Colorado, USA (online).
- Seier, M.** (2021) Invasive devil's claw (*Cryptostegia madagascariensis*) in North Eastern Brazil – the menace and the solution. IOBC-NTRS webinar, 15 April 2021 (webinar).
- Seier, M., Djeddour, D., Kurose, D., Pollard, K., Pratt, C.** and **Varia, S.** (2021) Updates on biocontrol initiatives for GB. 12th Local Action Group Workshop, 27 January 2021 (online).
- Seier, M.K., Constantine, K.L., Cortat, G., Djeddour, D.H., Eschen, R., González-Moreno, P., Kurose, D., Pollard, K.M., Pratt, C.F., Shaw, R.H., Thomas, S.E., Varia, S.** and **Wood, S.** (2021) Navigating regulatory procedures for weed biological control using non-native agents in the UK. Second International Congress of Biological Control, 26–30 April 2021, Davos, Switzerland (online).
- Seier, M.K., Djeddour, D.H., Kurose, D., Pollard, K.M., Pratt, C.F., Shaw, R.H.,** and **Varia, S.** (2021) Classical biological control – a management strategy for non-native invasive weeds in the UK. ESENIAS & DIAS Scientific Conference, 7–9 December 2021 (online).
- Shaw, R.H.** (2021) Invasive plants – the enemy of your enemy is your friend. Our Plants, Our Future, British Society for Plant Pathology; European Foundation for Plant Pathology, 6–8 December 2021, University of Birmingham, UK.
- Sivapragasam, A.** (2021) Alternatives to HHPs – what are elements of success? Webinar on Community of Practice on Highly Hazardous Pesticides (HHPs) organized by SAICM Secretariat and University of Cape Town, 20 October 2021 (webinar).

- Sivapragasam, A.** (2021) Case Study 3: Import risk analysis: case of the coconut rhinoceros beetle in the South Pacific with specific reference to the Papua New Guinea coconut industry. Delivery of Training on Import Risk Analysis supported by WINROCK International and the Building Safe Agricultural Food Enterprises (B-SAFE) Project, Philippines, 1–2 December 2021 (online).
- Sivapragasam, A.** (2021) Role of integrated pest management in sustainable organic agricultural production. National Seminar on Organic Farming (SKOr) organized by MARDI, 22–23 February 2021 (online).
- Sivapragasam, A.** (2021) Vegetables insecticides evaluation: harmonization of bio-efficacy testing protocols on key insects. ASEAN PHASE V: Harmonization of Bio-efficacy Testing Protocols and Mutual Acceptance of Bio-efficacy Data in ASEAN, 1 December 2021 (online).
- Sivapragasam, A., Day, R. and Zhang, F.** (2021) Response to fall armyworm in the SEA Region: CABI's contributions. Managing Fall Armyworm (FAW) in Corn Production in Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) Sub-Region, 20 January 2021 (online).
- Smith, D.** (2021) CABI experiences in the collection, distribution and use of microorganisms in agricultural research. 39th Annual Meeting of the European Culture Collections' Organisation 22–24 September 2021 (online).
- Stutz, S.** (2021) Discussion on the necessity of testing annual species for biocontrol candidates that need perennial species to complete their development. Annual TAG (USDA Technical Advisory Group for Biological Control Agents of Weeds) meeting, 20–22 April 2021 (online).
- Stutz, S.** (2021) Update on weed biological control research at CABI Switzerland. AISC (Alberta Invasive Species Council) Virtual Conference, 15–19 March 2021 (online).
- Tambo, J.A., Kansime, M., Mugambi, I., Agboyi, L.K., Beseh, P. and Day, R.** (2021) Changes in smallholders' management of fall armyworm: A panel data analysis for Ghana. Developing Smallholder Oriented IPM Strategies for Fall Armyworm Management Conference, 24–26 August 2021 (online).
- Tambo, J.A., Matimelo, M., Ndhlovu, M., Mbugua, F. and Phiri, N.** (2021) Who benefits? The gender-differentiated impacts of plant clinics in Zambia. Annual Conference of the Agricultural Economics Society, 29–30 March 2021 (online).
- Tambo, J.A., Matimelo, M., Ndhlovu, M., Mbugua, F. and Phiri, N.** (2021) Who benefits? The gender-differentiated impacts of plant clinics in Zambia. 31st International Conference of Agricultural Economists (ICAE), 17–31 August 2021 (online).
- Tambo, J.A., Uzayisenga, B., Mugambi, I., Bundi, M. and Silvestri, S.** (2021) The impact of plant clinics on farm performance and poverty alleviation: panel data evidence from Rwanda. XVI European Association of Agricultural Economists (EAAE) Congress, 20–23 July 2021, Prague, Czech Republic (online).
- Taylor, P. and Reeder, R.H.** (2021) A global comparison of fungicide recommendations and what it tells us about their use. Our Plants, Our Future, British Society for Plant Pathology; European Foundation for Plant Pathology, 6–8 December 2021, University of Birmingham, UK.
- Thakur, M.** (2021) Knowledge management and communication initiatives for managing fall armyworm. Management Strategy of Fall Armyworm (FAW) in Jammu, DOA, Jammu, 16 June 2021 (webinar).
- Thakur, M.** (2021) Role of CABI in promoting biological control: global initiatives and perspectives. Quality control and production of biopesticides, 5 days training programme organized by SKUAST, Jammu, 22 September 2021.
- Weyl, P. and Ensing, D.** (2021) How cold is too cold? Pushing the limits of biological control: *Myriophyllum aquaticum* in Canada. 2021 NAISMA Annual Conference, 27–30 September 2021 (online).
- Weyl, P., Andreas, J., Lake, E., Milan, J. and Randal, C.** (2021) Success in biological control. 2021 NAISMA Annual Conference, 27–30 September 2021 (online).
- Weyl, P., Hinz, H.L. and Schwarzländer, M.** (2021) Upcoming petition: the seed feeding weevil, *Ceutorhynchus peyerimhoffi* for the biological control of dyer's woad, *Isatis tinctoria*. Annual TAG (USDA Technical Advisory Group for Biological Control Agents of Weeds) meeting, 20–22 April 2021 (online).

**Witt, A.** (2021) Plant invasions and their management in Africa. California-IPC 30-Year Anniversary Symposium, 26–29 October 2021 (online).

**Zhang, F.** (2021) Promoting agricultural science and technology cooperation through international organization: concept and practice. 2021 Symposium on International Cooperative Management of Tropical Agriculture, China Society of Tropical Crops, 4 November 2021, Chengmai, Hainan, China.

**Zhang, F.** (2021) Statement by CABI at 57th Ministerial Session – Contributions towards Sustaining the Coconut Sector. 57th ICC Session & Ministerial Meeting, International Coconut Community, 26–28 October 2021, Jakarta, Indonesia (online).

**Zhang, F.** and **Li, H.** (2021) Working with international organization to strengthen international collaboration on agriculture: concept and practice. Training Workshop on International Cooperation Capacity Upgrading, Chinese Academy of Tropical Agricultural Sciences, 26 October 2021, Haikou, Hainan, China.

**Zhang, F., Day, R.** and **Annamalai, S.** (2021) FAW biological control: farmer acceptance and scale-up issues. ASEAN FAW Regional Action Plan: Technical Workshop Series on Biocontrol, 18 March 2021, Grow Asia (online).

**Zhang, F., Li, H., Zhang, J.** and **Wan, M.** (2021) Sustainable management of the fall armyworm. 2nd Conference on Remote Sensing of Vegetation Pests and Diseases, Aerospace Information Research Institute, Chinese Academy of Sciences, 28–29 June 2021, Beijing, China (online).

**Zhang, F., Li, H., Zhang, J., Wan, M.** and **Mi, Q.** (2021) CABI action on invasive species management: sustainable prevention and control of *Spodoptera frugiperda*. Technical Workshop on Prevention and Control of Fall Armyworm, Anhui Academy of Agricultural Sciences, 9 June 2021, Hefei, Anhui, China.

**Zhang, J.** (2021) Green control of brown marmorated stink bug. Chinese National Biological Pest Control Symposium, 23–26 October 2021, Panjin, Liaoning, China.

**Zhang, J., Zhang, F.** and **Grossrieder, M.** (2021) Biological control research and application of natural enemies. Jilin Agricultural University, PhD course, Modern Entomology, 12 November 2021, Jilin, China.

**Zhou, X., Kuhlmann, U.,** Chen J. and **Li, H.** (2021) Joint Laboratory Annual Review 2020 & Plan 2021. 13th Joint Steering Committee Meeting of MARA-CABI Joint Laboratory for Bio-safety and MARA-CABI High Level Dialogue, 8 April 2021, Beijing, China.

## 2.7. Poster presentations at scientific meetings (5)

**Faheem, M.** (2021) Developing smallholder oriented IPM strategies for fall armyworm management. International online conference organized by CIFOR-ICRAF, 24–25 August 2021 (online).

**Kenis, M., Nacambo, S.** and **Seehausen, M.L.** (2021) Invasion, impact, and biological control of the box tree moth, *Cydalima perspectalis*. IUFRO meeting on Biological Invasions in Forests: Trade, Ecology and Management, 20–24 September 2021, Prague, Czech Republic.

**Maczey, N., Pratt, C.,** Malumphy, C., Glass, T., Atkinson, A., Schofield, A. and Hall, J. (2021) Saving Tristan's only native tree and its associated unique buntings. Second International Congress of Biological Control (ICBC2), 26–30 April 2021 (online).

Shaefullah, U., Sharmin, D. and **Chaudhary, M.** (2021) Distribution of fall armyworm *Spodoptera frugiperda* in Bangladesh and farmer's perception on its management. Online Conference, Developing Smallholder-Oriented IPM Strategies for Fall Armyworm (*Spodoptera frugiperda* Smith) Management, 24–26 August 2021 (online).

**Zhang, J.,** Tian, X., Avila, G., Li, J., Shi, S. and **Zhang, F.** (2021) Biological control of brown marmorated stink bug. Annual Conference of the Entomological Society of China, 13–16 October 2021, Xian, China.

## 3. Other outputs

### 3.1. Support for introduction of classical biological control agents

For many years, CABI has been known for its work supporting national agencies to implement classical biological control programmes against insect and weed pests. Here we list those classical biological control agents for which applications to release have been made, or which have been released, in 2021, based on CABI's research and technical support.

Biological control agent studied	Target weed/Insect pest	Status end 2021	Released in 2021	Country of release or intended release
<i>Aphalara itadori</i> (Aphalaridae)	<i>Fallopia japonica</i> / <i>F. x bohemica</i>	Permission to release granted by Canada, UK and USA authorities	Yes	Canada, Netherlands, UK, USA
<i>Dichrorampha aeratana</i> (Tortricidae)	<i>Leucanthemum vulgare</i>	Petition for field release submitted to USA and Canada authorities	No	USA and Canada
<i>Ganaspis cf. brasiliensis</i> (Figitidae)	<i>Drosophila suzukii</i>	Permission from Swiss authorities for field cage releases	Field cage releases	Switzerland
<i>Listronotus elongatus</i> (Curculionidae)	<i>Hydrocotyle ranunculoides</i>	Permission to release granted by UK authority	Yes	UK
<i>Listronotus setosipennis</i> (Curculionidae)	<i>Parthenium hysterophorus</i>	Permission for experimental field release granted by Pakistan authority	Yes	Pakistan
<i>Mogulones borraginis</i> (Curculionidae)	<i>Cynoglossum officinale</i>	In 2021 USDA Technical Advisory Group (TAG) recommended release	No	USA
<i>Mycosphaerella polygoni-cuspidati</i> (Mycosphaerellaceae)	<i>Fallopia japonica</i>	Ongoing experimental field trials	Yes	UK
<i>Puccinia lantanae</i> (Pucciniaceae)	<i>Lantana camara</i>	Rust supplied to South Africa and being bulked up for release	No	South Africa

### 3.2. Extension material

CABI staff contributed to 31 extension materials in the Plantwise knowledge bank in 2021. This included 29 Plantwise factsheets for farmers, and one Pest Alert, all of which can be seen here: <http://www.plantwise.org/KnowledgeBank/SearchResults.aspx?q=aa:cabi%20AND%20yr:2021>.

CABI drafted a regional Maize Lethal Necrosis Disease (MLND) strategy for the Southern Africa Development Community (SADC) Member States under the FAO-led Support Towards the Operationalization of the SADC Regional Agricultural Policy (STOSAR) project. CABI also developed a technical guide for the identification and sustainable management strategies for the Asian citrus greening disease, or Huanglongbing (HLB), under the Land O'Lakes Venture 37-led Capacity building for Surveillance, Notifications and Emergency Response in EAC project.

### 3.3. Distribution maps of plant pests/diseases

In 2021, 54 *Distribution Maps of Plant Pests/Diseases* were issued, and can be found here on CABDirect.

<https://www.cabdirect.org/cabdirect/search/?q=sc:fv%20or%20sc:fw&sort=Relevance&facets=1&facet1f=Year&facet1v=2021&facet1o=OR>

### 3.4. CABI Bioscience identification service and Genetic Resources Collection

In 2021, CABI Bioscience responded to 542 separate enquiries. The Microbial Identification Service issued 116 identification reports on 784 samples, and the Genetic Resources Collection sent out 385 cultures in response to 226 enquiries in 2021. 335 strains originated from Member Counties (the UK, the Netherlands, India and China). In addition, the collection preserved 106 batches of cultures, 43 of which were cultures from Member Countries (China, Ethiopia, Kenya, Guyana, India, Nigeria, Tanzania, Pakistan, UK, Canada). In the above, 56 identifications were provided for five customers from four CABI Member Countries: Ethiopia: 11; Ghana: 8; Mauritius: 15; Nigeria: 22.

## 4. CABI staff, students and associates

### 4.1. Scientific staff

Location	Family name	First name	Highest degree
Austria	Valverde	Alvaro	MSc
Brazil	Colmenarez	Yelitza	PhD
Brazil	Corniani	Natália	PhD
China	Li	Hong-Mei	PhD
China	Wan	Min	PhD
China	Zhang	Feng	PhD
China	Zhang	Jin-Ping	PhD
Costa Rica	Hidalgo	Eduardo	PhD
Ethiopia	Gurmessa	Negussie	PhD
Ghana	Agboyi	Lakpo	PhD
Ghana	Boafo	Hettie Arwoh	MSc
Ghana	Clotey	Victor	PhD
Ghana	Duah	Solomon Agyeman	MA
Ghana	Hevi	Walter	MPhil
Ghana	Oppong-Mensah	Birgitta	MSc
Hungary	Toepfer	Stefan	DnatSc
India	Chaudhary	Malvika	PhD
India	Jadhav	Arun	BTech
India	Khanna	Kritika	MA
India	Nagpal	Akanksha	MTech
India	Pandit	Vinod	PhD
India	Ramasamy	Gopi	MPhil
India	Sunil	Kumar	PhD
India	Thakur	Manju	PhD
Kenya	Akiri	Morris	PhD
Kenya	Bundi	Mary	MSc
Kenya	Chacha	Duncan	BSc
Kenya	Chege	Florence	MSc
Kenya	Kansiime	Monica	PhD
Kenya	Karanja	Daniel	PhD
Kenya	Karanja	Lucy	MSc

Location	Family name	First name	Highest degree
Kenya	Kouko	Edith	MSc
Kenya	Makale	Fernadis	MSc
Kenya	Mibei	Henry	MSc
Kenya	Migiro	Lorna	PhD
Kenya	Miller	Selpha	PhD
Kenya	Mugambi	Idah	MSc
Kenya	Mulema	Joseph	PhD
Kenya	Musebe	Richard	PhD
Kenya	Nunda	Winnie	BSc
Kenya	Ochilo	Willis	PhD
Kenya	Onyango	David	MSc
Kenya	Oronje	MaryLucy	PhD
Kenya	Otieno	Washington	PhD
Kenya	Rangi	Dennis	PhD
Kenya	Romney	Dannie	PhD
Kenya	Rware	Harrison	MSc
Kenya	Rwomushana	Ivan	PhD
Kenya	Williams	Frances	MSc
Malaysia	Annamalai	Sivapragasam	PhD
Malaysia	Chan	Fook Wing	BSc
Malaysia	Faheem	Muhammad	MSc
Malaysia	Thanarajoo	Sathis Sri	PhD
Netherlands	Boerefijn – van Schaaikj	Lieke	MSc
Netherlands	Danielsen	Solveig	PhD
Netherlands	Durocher-Granger	Léna	MSc
Netherlands	Vos	Janny	PhD
Pakistan	Ahmed	Shakeel	PhD
Pakistan	Ali	Kazim	PhD
Pakistan	Asad	Haibat Ullah	PhD
Pakistan	Asif	Muhammad	MSc
Pakistan	Aslam	Naeem	PhD
Pakistan	Bajwa	Babar Ehsan	PhD
Pakistan	Baloch	Babar	MSc
Pakistan	Bhatti	Hamzah Shahbaz	MSc
Pakistan	Danish	Muhammad	MSc
Pakistan	Dhaunroo	Ashfaq Ali	MSc
Pakistan	Faisal	Shah	MSc
Pakistan	Farooq	Muzammil	PhD
Pakistan	Honey	Sabyan Faris	PhD
Pakistan	Imran	Muhammad	MSc
Pakistan	Khan	Kausar	PhD
Pakistan	Khan	Muhammad Hamza	MSc
Pakistan	Khan	Saad Muhammad	MSc
Pakistan	Mahmood	Riaz	MSc

Location	Family name	First name	Highest degree
Pakistan	Naqvi	Azeem Hayder	MMS
Pakistan	Rehman	Abdul	MSc
Pakistan	Rehman	Hafiz Mahmood	PhD
Pakistan	Riaz	Rehan	PhD
Pakistan	Safdar	Umair	PhD
Pakistan	Saleem	Yasir	MSc
Pakistan	Ullah	Fazl	MSc
South Africa	Witt	Arne	PhD
Switzerland	Babendreier	Dirk	DnatSc
Switzerland	Bateman	Melanie	PhD
Switzerland	Cortat	Ghislaine	MSc
Switzerland	Eschen	René	DnatSc
Switzerland	Grossrieder	Manfred	MSc
Switzerland	Häfliger	Patrick	DnatSc
Switzerland	Haye	Tim	DnatSc
Switzerland	Hinz	Hariet	DnatSc
Switzerland	Holmes	Keith	PhD
Switzerland	Jenner	Emma	PhD
Switzerland	Jenner	Wade	PhD
Switzerland	Kenis	Marc	DnatSc
Switzerland	Kuhlmann	Ulrich	DnatSc
Switzerland	Nacambo	Saidou	MSc
Switzerland	Schaffner	Urs	DnatSc
Switzerland	Seehausen	Lukas	PhD
Switzerland	Stutz	Sonja	DnatSc
Switzerland	Tambo	Justice	PhD
Switzerland	Weyl	Philip	PhD
Switzerland	Wood	Anna	PhD
Trinidad & Tobago	Ramnanan	Naitram	MPhil
Uganda	Alokit	Christine	MSc
UK	Cock	Matthew	PhD
UK	Day	Roger	PhD
UK (Egham)	Beeken	Joseph	MSc
UK (Egham)	Bonnin	Miguel	BSc
UK (Egham)	Buddie	Alan	PhD
UK (Egham)	Cafá	Giovanni	PhD
UK (Egham)	Caine	Thelma	
UK (Egham)	Cobb	Emma	MSc
UK (Egham)	Constantine	Kate	MSc
UK (Egham)	Crozier	Jayne	PhD
UK (Egham)	Djeddour	Djami	MSc
UK (Egham)	Edgington	Steve	PhD
UK (Egham)	Flood	Julie	PhD
UK (Egham)	Hudson	Ken	MSc

Location	Family name	First name	Highest degree
UK (Egham)	Kermode	Anthony	BSc
UK (Egham)	Kopera	Anita	MSc
UK (Egham)	Kurose	Daisuke	PhD
UK (Egham)	Lamontagne-Godwin	Julien	PhD
UK (Egham)	Lowry	Alyssa	MSc
UK (Egham)	Luke	Belinda	PhD
UK (Egham)	Maczey	Norbert	PhD
UK (Egham)	Madden	Esther	BSc
UK (Egham)	Minter	David	PhD
UK (Egham)	Offord	Lisa	BSc
UK (Egham)	Ogunmodede	Adewale	MSc
UK (Egham)	Pollard	Kate	MRes
UK (Egham)	Pratt	Corin	MSc
UK (Egham)	Reeder	Rob	PhD
UK (Egham)	Reeve	Mike	PhD
UK (Egham)	Ryan	Matthew	PhD
UK (Egham)	Seier	Marion	PhD
UK (Egham)	Shaw	Richard	PhD
UK (Egham)	Smith	David	PhD
UK (Egham)	Smith	Vince	BSc
UK (Egham)	Stewart	Helen	BSc
UK (Egham)	Taylor	Bryony	PhD
UK (Egham)	Taylor	Phil	PhD
UK (Egham)	Thom	Nikolai	BA
UK (Egham)	Thomas	Sarah	PhD
UK (Egham)	Tymo	Lukasz	MSc
UK (Egham)	Varia	Sonal	PhD
UK (Egham)	Whelan	Rhian	BSc
UK (Egham)	White	Gretel	PhD
UK (Egham)	Wood	Suzy	BSc
UK (Egham)	Yeap	Yuen Ting	MSc
UK (HQ / Egham)	Beale	Tim	BSc
UK (HQ / Egham)	Chaloner	Thomas	PhD
UK (HQ / Egham)	Curry	Claire	MSc
UK (HQ / Egham)	Day	Charlotte	MSc
UK (HQ / Egham)	Finch	Lizzie	PhD
UK (HQ / Egham)	Finegold	Cambria	MSc
UK (HQ / Egham)	Holland	William	MSc
UK (HQ / Egham)	Iqbal	Mariya	MSc
UK (HQ / Egham)	Isaac	Adaugo	MSc
UK (HQ / Egham)	Kadzamira	Mariam	PhD
UK (HQ / Egham)	Msengezi	Chipo	MSc
UK (HQ / Egham)	Musker	Ruthie	MSc
UK (HQ / Egham)	Parr	Martin	PhD

Location	Family name	First name	Highest degree
UK (HQ / Egham)	Szyniszewska	Anna	PhD
UK (HQ)	Allen	Uma	MSc
UK (HQ)	Berthelemy	Mark	BSc
UK (HQ)	Bird	Damian	BSc
UK (HQ)	Bishop	James	BSc
UK (HQ)	Broom	Fiona	MSc
UK (HQ)	Cameron	Katherine	MSc
UK (HQ)	Campaign	Alice	MSc
UK (HQ)	Casey	Jonathan	MSc
UK (HQ)	Charles	Lucinda	BSc
UK (HQ)	Cooper	Ward	BSc
UK (HQ)	Cullum	James	MSc
UK (HQ)	Davis	Tamsin	BSc
UK (HQ)	Doroszenko	Anton	PhD
UK (HQ)	Elger	Daniel	PhD
UK (HQ)	Fielder	Hannah	PhD
UK (HQ)	Head	Tracy	BSc
UK (HQ)	Hemming	David	PhD
UK (HQ)	Holt	Alistair	BSc
UK (HQ)	Makepeace	Caroline	BSc
UK (HQ)	Mcgillivray	Lesley	PhD
UK (HQ)	Neave	Suz	MSc
UK (HQ)	O'Brien	Tim	BSc
UK (HQ)	Osborn	Janice	BSc
UK (HQ)	Page	Anna	PhD
UK (HQ)	Palmer	Mark	MSc
UK (HQ)	Parfitt	Claire	BSc
UK (HQ)	Rendell-Dunn	Alexis	BSc
UK (HQ)	Richards	Gareth	PhD
UK (HQ)	Robinson	Andy	PhD
UK (HQ)	Stubbs	Rebecca	MSc
UK (HQ)	Swarbrick	Phil	PhD
UK (HQ)	Taylor	Robert	BSc
UK (HQ)	Weeks	Lalitha	MSc
UK (HQ)	Wilford	Shankari	BSc
UK (HQ)	Wilshire	Neil	BSc
UK (HQ)	Wood	Rachel	BSc
UK (HQ)	Zhang	Qiaoqiao	PhD
Zambia	Kasoma	Chapwa	PhD
Zambia	Phiri	Noah	PhD

## 4.2. CABI staff working towards a research degree

Location	Name of staff member	Degree for which registered	University	CABI supervisor(s)
Ghana	Boafo, Hettie Arwoh	PhD	University of Ghana	Marc Kenis
Ghana	Hevi, Walter	PhD	Kwame Nkrumah University of Science and Technology, Ghana	-
Ghana	Oppong-Mensah, Birgitta	PhD	University for Development Studies – Ghana	–
Kenya	Chacha, Duncan	MSc	University of Nairobi, Kenya	–
Kenya	Karanja, Lucy	PhD	University of Nairobi, Kenya	–
Kenya	Nunda, Winnie	MSc	Jomo Kenyatta University of Agriculture and Technology, Kenya	–
Netherlands	Durocher-Granger, Léna	PhD	Wageningen University, Netherlands	Marc Kenis
Pakistan	Fazlullah	PhD	University of Haripur, Pakistan	–
Pakistan	Khan, Yasir Saleem	PhD	Sindh Agriculture University, Pakistan	–
Malaysia	Faheem, Muhammad	PhD	Bahauddin Zakariya University, Pakistan	Rana M. Shafique (Ex-RD CABI Pakistan)
UK	Kermode, Anthony	PhD	Royal Holloway, University of London, UK	Matthew Ryan
UK	Pollard, Kate	PhD	Royal Holloway, University of London, UK	Marion Seier
UK	Wood, Suzy	PhD	Royal Holloway, University of London, UK	Norbert Maczey
UK	Constantine, Kate	PhD	Royal Holloway, University of London, UK	Frances Williams

### 4.3. Research students

Location	Name of student	Degree to which attachment will contribute	University of student	CABI supervisor(s)
China	Bukero, Abdul Azizi	PhD	Graduate School of Chinese Academy of Agricultural Sciences (CAAS)	Zhang Feng, Li Hong-Mei
China	Ali, Muhammad Yasir	PhD	Graduate School of CAAS	Zhang Feng, Zhang Jin-Ping
China	Luo, Zheng-Yu	MSc	Changjiang University	Zhang Jin-Ping
China	Tian, Xin-Yue	MSc	Jilin Agricultural University, China	Zhang Jin-Ping
China	Wang, Jun-Ya	MSc	Northeast Forestry University	Li Hong-Mei
China	Wang, Mei-Zhi	MSc	Beijing University of Agriculture	Li Hong-Mei
Hungary – Switzerland	Toth, Szabolcs	MSc	Sz. Istvan University, Hungary	Stefan Toepfer
Kenya	Ochieng, Violet	MSc	University of Nairobi, Kenya	Ivan Rwomushana
Kenya	Chirchir, Jackline	MSc	Kenyatta University, Kenya	MaryLucy Oronje
Kenya	Odunga, Stacey	MSc	University of Nairobi, Kenya	MaryLucy Oronje
Switzerland	Allen, Tabea	MSc	Hochschule für Agrar-, Forst- und Lebensmittelwissenschaften (HAFL), Switzerland	Marc Kenis
Switzerland	Fallet, Patrick	PhD	Université de Neuchâtel, Switzerland	Stefan Toepfer
Switzerland	Haener, Nina	PhD	Université de Neuchâtel, Switzerland	Tim Haye
Switzerland	Mathlouthi, Enis	MSc	HAFL, Switzerland	Lukas Seehausen
Switzerland	Rossi, Jérémy	MSc	HAFL, Switzerland	Lukas Seehausen
UK	Peck, Lily	PhD	Imperial College, UK	Matthew Ryan
UK	Spence, Ellie	PhD	Warwick University, UK	Steve Edgington
UK	Williams, Tamsin	PhD	Royal Holloway, University of London, UK	Steve Edgington
UK	Irelewuyi, Oyetade	MSc	Imperial College, UK	Daisuke Kurose
UK(HQ)	Davis, Tamsin	MSc	Reading University	–

## 4.4. Masters of Advanced Studies in Integrated Crop Management

The Masters of Advanced Studies in Integrated Crop Management (ICM) is an initiative started in 2015 as a collaboration between CABI's centre in Switzerland, the University of Neuchâtel, and the Canton Jura. Scientists, teachers, extension officers and policy makers come to Switzerland to enrich their knowledge about the importance of ICM, supporting its adoption as a long-term strategy to address global challenges.

Due to COVID-19 restrictions and the decision to adapt the programme to a digital learning format, the course did not run during the 2021 academic year. Instead, 2021 was used to create the content for online learning, with the aim to have three complementary courses, each called a Certificate of Advanced Studies (CAS) in ICM. The first CAS-ICM is being run from January to August 2022.

## 4.5. CABI Associates

Location	Name	Highest Qualification	Role
Afghanistan	Faizi, Zakariya	MSc	CABI Associate, Afghanistan
Bolivia	Florido, Miguel	MSc	CABI Associate, Bolivia
Bolivia	Sainz, Claudia	MSc	CABI Associate, Bolivia
Ghana	Beseh, Patrick	MSc	CABI Associate, Ghana
India	Parveen, Shama	PhD	CABI Associate, India
Kenya	Agwanda, Charles	PhD	CABI Associate, Kenya
Kenya	Oduor, George	PhD	CABI Associate, Kenya
Malaysia	Annamalai, Sivapragasam	PhD	CABI Associate, Malaysia (from October 2021)
Malaysia	Loke Wai Hong	PhD	CABI Associate, Malaysia
Malaysia	Lum Keng Yeang	PhD	CABI Associate, Malaysia
Malaysia	Soetikno, Sastroutomo S.	PhD	CABI Associate, Malaysia
Myanmar	Thaung, Myint	PhD	CABI Associate, Malaysia (until June 2021)
Nicaragua	Medina, Luis	MSc	CABI Associate, Nicaragua
Philippines	Joshi, Ravindra	PhD	CABI Associate, Malaysia
Switzerland	Gassmann, André	DnatSc	Consultant
UK	Evans, Harry C.	DSc	Emeritus Fellow
UK	Gonzalez-Moreno, Pablo	PhD	CABI Associate, UK
UK	Hunt, David	PhD	Emeritus Fellow
UK	Murphy, Sean T.	PhD	CABI Research Fellow
UK	Rutherford, Mike	PhD	CABI Associate, UK
UK(HQ)	Stewart, Janet	BSc	CABI Associate, UK
Vietnam	Nguyen, Thi Kim Ngan	MSc	CABI Associate, Malaysia
Vietnam	Costa, Arnaud	PhD	CABI Associate, Malaysia

## 4.6. Visiting scientists

Due to COVID-19 restrictions, there was only one visiting scientist this year.

Where located	Name	Highest degree	Home institute	Dates (2021)
UK-Egham	Jones, Ian	PhD	University of Toronto	2021–22

## 4.7. Technical support

Centre	Name	Qualification
China	Chen, Xin	MSc
China	Yuan, Bo	MSc
Kenya	Karanja, Peter	HNDip
Malaysia	Baki, Haji Razali	Technician
Malaysia	Yahya, Hanifah	Technician
Pakistan	Ahmed, Ejaz	Matric
Pakistan	Ali, Saqib	Graduate
Pakistan	Anjum, Daud Hussain	Matric
Pakistan	Rasheed, Khalid	Intermediate
Switzerland	Cloşca, Cornelia	MSc
Switzerland	Donzé, Quentin	DiplGard
Switzerland	Willemin, Florence	DiplGard
UK (Egham)	Adamin, Tomasz	
UK (Egham)	Clayton, Teresa	
UK (Egham)	Hannon, Janet	
UK (Egham)	Tilling, Anna	BSc
UK (Egham)	Alexander, Tasmin	MSc

## 4.8. Temporary research students / Interns

Where located	Name	Highest degree	University	Dates (2021)
China	Li, Ze-Lin	MSc	China Agricultural University	August–October
China	Liu, Ya-Nan	BSc	Hebei North University, China	March–August
China	Wang, Yi-Peng	BSc	Jilin Institute of Chemical Technology, China	May–August
China	Yin, Ke-Ke	BSc	Hebei North University, China	April–August
China	Zhang, Long	BSc	Changjiang University, China	July–September
Hungary	Chambyal, Tamnna	BSc	University of Szeged, Hungary	June–September
Hungary	Vajka, Bence	MSc	Hungarian University of Agriculture and Life Sciences MATE (formerly Sz. Istvan University), Hungary	April–November
Kenya	Mathenge, Michael	MSc	University of Nairobi, Kenya	March 2021–February 2022
Switzerland	Fontes, João Pedro	MSc	University of the Azores, Portugal	June–October
Switzerland	Forgione, Laura	MSc	University of Fribourg, Switzerland	April–October
Switzerland	Fraschini, Clara	BSc	Liverpool John Moores University, UK	May–June
Switzerland	Frei, Nadia	BSc	HAFL, Zollikofen, Switzerland	April–August
Switzerland	Jego, Léna	MSc	Université de Lorraine, France	April–August
Switzerland	Majnaric, Stefan	MSc	University of Zagreb, Croatia	April–July
Switzerland	Sherwood, Jade	BSc	University of the Fraser Valley, Canada	May–August
Switzerland	von Berg, Lea	MSc	University of Hohenheim, Germany	April–September
Switzerland	Wiltse, Jodie	BSc	University of Victoria, Canada	May–August



# Contact CABI

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KNOWLEDGE FOR LIFE