



**Harper Adams
University**

Harper Adams University

Research Directory

harper.ac.uk/research

The University's strategic research aim for the 2021-30 has a focus on helping to achieve 'Net Zero' in agriculture and food supply chains in concert with the wider requirements for 'sustainable agriculture' (e.g. rural economies, social justice, animal welfare, nutrient cycling and pollution).

Our mission is to advance knowledge, inspire and equip learners in our specialisms to deliver real change, and contribute to a sustainable future for the inhabitants of and habitats across our living planet.

Our Vision is that by 2030, HAU will have realised its vision to combine being regarded as the UK's leading with being an internationally recognised university for food production and technology, animal health & wellbeing, and their contribution to sustainable, living environments for our planet's inhabitants.

Research at the University is structured into three multidisciplinary research centres and the five cross cutting groups.



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Centre for Crop & Environmental Science

The Centre for Crop and Environmental Science (CCES) serves as a multidisciplinary nexus, uniting researchers dedicated to understanding the core scientific principles and providing practical solutions for agricultural challenges. These encompass soil health, water management, crop nutrition, pest and disease control, and their interactions with changing climate and farming systems. Researchers delve into soil composition, efficient water use, optimized nutrient delivery, integrated pest management, and sustainable farming systems, all within the context of climate change, promoting resilience and environmental responsibility in agriculture.

CCES is form of five interacting groups;

- + Crop Science Group
- + Entomology Group
- + Nematology Research Group
- + Plant Pathology Research Group
- + Soil & Water Science Group



Prof Jim Monaghan

Position Professor of Crop Science

Department A&E

Research Group(s) Centre for Crop and Environmental Science, Crop Science Group



Brief summary

Jim is the Director of the Centre for Crop and Environmental Science at HAU. The centre brings together researchers and PhD students who are focussed on both understanding fundamental processes and translating them to applied solutions to the wide range of challenges regarding soil, water, nutrition, pests and diseases, and how they are affected by climate change and farming systems. His personal research group has expertise in crop physiology and phenotyping and has received funding from AHDB, BBSRC, Defra, Innovate UK, NERC and businesses including G's Fresh, PepsiCo & Syngenta. He has been PI on multipartner BBSRC, HortLINK and Innovate projects. He has supervised 13 PhD students to completion and is currently supervising 9 PhD students.

Areas of current research

- Natural England - *The Paludiculture Innovation Project* (PIP) (C17470) £202.9K
- BBSRC – *LED for faster and better propagation (LED4FaB Roots)*. In collaboration with G's, CambridgeHOK, Tozer seeds, Enza Zaden, Nunhems. £342,634 (TFS BB/Z514378/1)
- Defra - *Vegetable Genetic Improvement Network (VEGIN)*. In collaboration with Warwick University Project £2,962K; HAU £767K (PI Dr Beacham)
- Innovate UK - *Farming Futures: Environmental resilience, Feasibility - Robotic Strip Cropping*. NP Holloway & Son, ARRevolution Ltd. Total project £500 K; HAU £155 K (PI Dr Dickin)

Areas of research interest/expertise Crop phenotyping, non-combinable crop production, fresh produce food-safety

Key publications

Chunga, P.Z., Dickin, E.D., Harris, E.D., Monaghan, J.M. (In Press) Water but not temperature status at harvest affects damage susceptibility and tissue integrity of sugar beet (*Beta vulgaris*) roots. *Journal of Agricultural Science*. 1-32. (<https://doi.org/10.1017/S0021859625100166>)

Olu-Olusegun, O.F., Farrell, A., Monaghan, J.M., Kettlewell, P.S. (2025) Film-Forming and Metabolic Antitranspirants Reduce Potato Drought Stress and Tuber Physiological Disorders. *Agronomy*, 15(7):1564. (<https://doi.org/10.3390/agronomy15071564>)

Wharton, C., Beacham, A., Gifford, M.L., Monaghan, J. (2025) Roottrainertrons: a novel root phenotyping method to identify genotypic variation in lettuce rooting. *Plant Methods*. 21(1), p.29. (<https://doi.org/10.1186/s13007-025-01348-x>)

Jithesh, T., James, E.K., Iannetta, P.P.M., Howard, R., Dickin, E., Monaghan, J.M. (2024) Recent progress and future directions to enhance biological nitrogen fixation in faba bean (*Vicia faba*). *Plant-Environment Interactions*, 5(3), p.e10145. (<https://doi.org/10.1002/pei3.10145>)

Dr Matthew Back

Position: Reader in Nematology

Department: Agriculture and Environment

Research Group(s): Research lead, Nematology Group



Brief summary

Matthew Back leads the Nematology Group within the Centre of Crop & Environmental Science. Our projects play a vital role in supporting the sustainable management of plant parasitic nematodes including work on novel compounds, trap crops and biofumigants, and are underpinned by expertise in diagnosis, ecology, epidemiology and life cycle biology. I am actively involved in activities relating to knowledge exchange including writing articles in the farming press, speaking at industry events, organising conferences relating to research dissemination (coordinated four international meetings) and developing bespoke courses for members the industry. Additionally, I have roles on various industry and academic groups/panels (Innovate UK, Potato Treater Group) and am an editor for four scientific journals.

Areas of current research

- Biology and management of plant parasitic nematodes
- Novel methods of crop protection such as trap cropping, fungal endophytes and biofumigation
- Management of fungal pathogens such as *Rhizoctonia solani* and *Fusarium* spp.

Recent publications (2024-5)

1. **Back, M.A.**, Bonifácio, L., Inácio, M.L., Mota, M. & Boa, E. (2024) Pine wilt disease: A global threat to forestry. *Plant Pathology*, Available from <https://doi.org/10.1111/ppa.13875>
2. **Back, M.A.**, Hare, M.C. & Thoden T.C. (2024) Chemical Control of Nematodes In: *Plant Nematology 3rd Edition*, CABI, Wallingford, UK.
3. Chekanai, V., Neilson, R., Roberts, D., Edwards, S., & **Back, M.** (2024). In vitro nematicidal efficacy of brassica-derived isothiocyanates against the root lesion nematode, *Pratylenchus penetrans*. *Nematology*, 26(8), 899-908. <https://doi.org/10.1163/15685411-bja10347>
4. Chekanai, V., Neilson, R., Clark, M., Edwards, S. G., Roberts, D., & **Back, M.** (2024). Management of and future perspectives on plant parasitic nematodes associated with Narcissus grown in the UK. *The Journal of Horticultural Science and Biotechnology*, 1–10. <https://doi.org/10.1080/14620316.2024.2380398>
5. Mwangi, N. G., Stevens, M., Wright, A. J. D., Watts, W. D. J., Edwards, S. G., Hare, M. C., & **Back, M. A.** (2025). Population dynamics of stubby root nematodes (*Trichodorus* and *Paratrichodorus* spp.) associated with ‘Docking disorder’ of sugar beet (*Beta vulgaris* L.), in field rotations with cover crops in East England. *Annals of Applied Biology*, 1–15. <https://doi.org/10.1111/aab.70005>
6. Mwangi, N. G., Stevens, M., Wright, A., Edwards, S., Hare, M., & **Back, M.** (2024) Sensitivity of stubby root nematodes (*Trichodorus* and *Paratrichodorus* spp.) to isothiocyanates associated with Brassicaceae in an *in vitro* assay. *Nematology* 26(2), 203-210. <https://doi.org/10.1163/15685411-bja10302>
7. Mwangi N. G., Stevens, M., Wright, A.J.D., Edwards, S.G., Hare, M.C., **Back, M.A.** (2024) Grass–Endophyte Interactions and Their Associated Alkaloids as a Potential Management Strategy for Plant Parasitic Nematodes. *Toxins* 16(6):274. <https://doi.org/10.3390/toxins16060274>
8. Natalio, A.I.M., **Back, M.A.**, Richards, A. & Jeffery, S. (2024) Dynamics of Collembola ecomorphological groups within a no-till arable system. *Agricultural and Forest Entomology*, 1–12. Available from: <https://doi.org/10.1111/afe.12666>

Prof. Simon Edwards

Position Professor of Plant Pathology

Department Agriculture and Environment

Research Group(s) Plant Pathology



Brief summary

My main area of study was the epidemiology and control of *Fusarium* species on cereal crops. This has expanded into studies on *Fusarium* mycotoxins including large scale surveys on occurrence and modelling of mycotoxin concentrations against agronomic to identify Good Agricultural Practice to minimise mycotoxin contamination. I have developed PCR-based assays for the detection and quantification of several plant pathogens and nematodes.

Areas of current research

- Fungicide efficacy against common diseases of wheat, barley and oil seed rape
- Long-term impacts of removal of cereal seed treatments
- Varietal resistance to *Fusarium* in oats
- Good agricultural practice to reduce mycotoxins in European oat production
- Control of plant parasitic nematodes

Areas of research interest/expertise

- Epidemiology and control of mycotoxigenic fungi
- PCR-based detection and quantification of plant pests and diseases
- Mycotoxin occurrence and mitigation pre- and post-harvest

Recent key publications

BROWNE, E. Y., EDWARDS, S. G., DEAKIN, G., FERNÁNDEZ, F. F. & NELLIST, C. F. 2024. Survey and characterization of oomycete species associated with root rot in UK red raspberry (*Rubus idaeus*). *Plant Pathology*, 74, 770–785.

EDWARDS, S. G. 2022. Pydiflumetofen Co-Formulated with Prothioconazole: A Novel Fungicide for *Fusarium* Head Blight and Deoxynivalenol Control. *Toxins*, 14.

EDWARDS, S. G., CRESSEY, P. J., LEBLANC, J. C., LI, P. & SHEPHARD, G. S. 2023. Trichothecene toxins T-2 and HT-2 (addendum). Safety evaluation of certain contaminants in food: prepared by the ninetieth meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA). Geneva: World Health Organisation.

EDWARDS, S. G. & STANCIC, T. 2024. Susceptibility of UK oat (*Avena sativa*) varieties to infection by *Fusarium* species and subsequent HT-2 and T-2 toxin contamination. *Plant Breeding*, 143, 59-65.

FOCKER, M., VAN DER FELLS-KLERX, H. J., MAGAN, N., EDWARDS, S. G., GRAHOVAC, M., BAGI, F., BUDAKOV, D., SUMAN, M., SCHATZMAYR, G., KRŠKA, R. & DE NIJS, M. 2021. The impact of management practices to prevent and control mycotoxins in the European food supply chain: MyToolBox project results. *World Mycotoxin Journal*, 14, 139-154.

Prof. Dawn Arnold

Position Associate Pro Vice Chancellor Research & Research culture

Department DVC office

Research Group(s) Plant Pathology



Brief summary

I have over 30 years' experience working with bacterial pathogens and their interaction with their hosts, pea and bean. My work has involved molecular genetic studies of the genes responsible for controlling host specificity and pathogenesis. My main area of focus is specifically investigating the role of horizontal gene transfer in the evolution of pathogenicity. Other areas of work include investigations into tree pathogens, in particular the bacteria that are associated with Acute Oak Decline in the UK. My work was funded by BBSRC and charities such as Woodland Heritage. I was President of the British Society for Plant Pathology 2019 and am currently the treasurer for BSPP. I served on BBSRC Committee B from 2018 until 2024. I am currently a grant reviewer for The Royal Society and Innovate UK.

Areas of research interest/expertise

- Plant-pathogen interactions
- Tree pathogens
- Molecular genetics of bacteria plant pathogens.

Key publications

- Sabrina Dhaouadi, Diana Vinchira-Villarraga, Sanju Bijarniya, Amy J Webster, Federico Dorati, Carrie Brady, **Dawn L Arnold**, Mojgan Rabiey, Robert W Jackson (2025) A Sucrose-Utilisation Gene Cluster Contributes to Colonisation of Horse Chestnut by *Pseudomonas syringae* pv. *Aesculin* Mol Plant Pathol. 26(7):e70116.
- Brady, C., Crampton, B., Kaur, S., Maddock, D., Kile, H., **Arnold, D.**, Denman, S. (2024) Two novel *Raoultella* species associated with bleeding cankers of broadleaf hosts, *Raoultella scottia* sp. nov. and *Raoultella lignicola* sp. nov. *Frontiers in Microbiology* May 2;15:1386923
- D. Maddock, C. Brady, S. Denman and **D. Arnold**. Description of *Dryocola* gen. nov. and two novel species, *Dryocola boscaweniae* sp. nov. and *Dryocola clanedunensis* sp. nov. isolated from the rhizosphere of native British oaks. *Syst. Appl. Microbiol.* (2023) 46 (2): 126399
- D. Maddock, **D. Arnold**, S. Denman and C. Brady. Description of a novel species of *Leclercia*, *Leclercia tamurae* sp. nov. and proposal of a novel genus *Silvania* gen. nov. containing two novel species *Silvania hatchlandensis* sp. nov. and *Silvania confinis* sp. nov. isolated from the rhizosphere of oak. *BMC Microbiol.* (2022) 22:289
- Michelle T. Hulin, Andrea Vardillo Dieguez, Francesca Cossu, Samantha Lynn, Karen Russell, Helen C. Neale, Robert W. Jackson, **Dawn L. Arnold**, John W. Mansfield, Richard J. Harrison (2022) Identifying resistance in wild and ornamental cherry towards bacterial canker caused by *Pseudomonas syringae*. *Plant Pathology* 71; 949-965.
- Carrie Brady, Mario Orsia, James M. Doonan, Sandra Denman **Dawn Arnold** (2022) *Brenneria goodwinii* growth in vitro is improved by competitive interactions with other bacterial species associated with Acute Oak Decline. *Current Research in Microbial Sciences*. Volume 3, 100102.

Dr Samuel Eze

Position: Senior Lecturer in Soil Science

Department: Agriculture and Environment

Research Group(s): Soil and Water Research Group

Brief summary: I am a soil biogeochemist who specialises in soil carbon dynamics, with over a decade of teaching, capacity-building and research in soil health across the UK and Africa.



Areas of current research and interest: My research focuses on understanding the impacts of land use change and land management on soil functions that are relevant to food production, water quality and flood regulation, and climate change mitigation. Current research projects:

- Developing soil health assessment tools
- Impacts of water table depths on greenhouse gas emissions and crop productivity in peatlands
- The scope and impacts of regenerative/climate-smart agriculture systems
- The role of root exudates in soil organic carbon stabilization
- The impacts of biochar on nutrient retention

Key publications

Jennings et al., 2024. Stakeholder-driven transformative adaptation is needed for climate-smart nutrition security in sub-Saharan Africa. *Nature food*, 5(1), pp.37-47.

Eze et al., 2023. Meta-analysis of global soil data identifies robust indicators for short-term changes in soil organic carbon stock following land use change. *Science of the Total Environment*, 860, p.160484.

Eze et al., 2022. Assessing soil system changes under climate-smart agriculture via farmers' observations and conventional soil testing. *Land Degradation & Development*, 33(14), pp.2635-2646.

Chapman et al., 2021. Assessing the impact of climate change on soil erosion in East Africa using a convection-permitting climate model. *Environmental Research Letters*, 16(8), p.084006.

Eze et al., 2020. Impacts of conservation agriculture on soil structure and hydraulic properties of Malawian agricultural systems. *Soil and tillage Research*, 201, p.104639.

Eze et al., 2018. Soil organic carbon stock in grasslands: Effects of inorganic fertilizers, liming and grazing in different climate settings. *Journal of environmental management*, 223, pp.74-84.

Dr Julia Casperd



Position Senior: Lecturer in Wildlife Conservation & Environmental Management

Department: Agriculture & Environment

Research Group(s)

Ecology, Evolution and Conservation Group

Soil and Water Group

Brief summary

I am a behavioural ecologist invested in sustainable landscape recovery. I am interested in participating in related research projects. I have a wide network of contacts and currently support the work of the North Shropshire Farmers, Marches Peat Partnership, the CIEEM Overseas Territories Special Interest Group and the Shropshire Mammal Group.

Areas of current research

Behavioural ecology of birds and mammals and sustainable landscape recovery. I am variously involved in the following research projects:

- [Alternative business models - wetter farming and land management on and around protected lowland raised bogs](#) - *Specialist Advisor*
- [Paludiculture Innovation Project \(PIP\)](#) - *Biodiversity & Knowledge Exchange Lead*
- [Patchy Peat Solutions Project](#) - *Principal Investigator*
- [The relationship between on farm biodiversity and transitioning to Net Zero.](#) - *Ph.D. Supervisor*

Areas of research interest/expertise

- Measurement & monetisation of natural capital
- Evolutionary biology & behavioural ecology of birds and mammals in the context of resilient landscapes.
- Nature based solutions & landscape recovery
- Peatland ecology and farm business opportunities on rewetted lowland peat
- Optimisation of farmer engagement

Key publications [ORCID](#)

Prof. Simon Jeffery



Position: Professor of Soil Ecology

Department: Agriculture and Environment

Research Group: Soil and Water Science Group

Brief summary:

I am a soil ecologist. My main research interests are in ecosystem functioning and how soil organisms drive processes and functions across a range of scales from local to global.

Areas of current research:

My research predominantly focuses on soil functions and soil management aimed at improving soil health and our sustainable use of soils.

Current Research Projects include:

- **SOB4ES** – Horizon Europe project aimed at identifying and quantifying links between soil biodiversity and soil-based ecosystem services
- **Earth Rover Program** – Aimed at developing high frequency seismic approaches for non-invasive investigation of soil structure
- **AI for Climate smart farming** – the use of an AI platform to reduce GHGs associated with agriculture
- **Regenerative Agriculture** – Identification of appropriate soil health frameworks for quantification of the efficacy of different regenerative approaches
- **Paludiculture** – quantification of the environmental impacts of farming on rewetted peat

Areas of research interest/expertise:

- Regenerative agriculture
- Soil health
- Soil carbon dynamics
- soil greenhouse gas emission
- High frequency seismology
- Meta-analysis

Selected recent publications:

Natalio, A.I., Back, M.A., Richards, A. and Jeffery, S., 2024. Dynamics of Collembola ecomorphological groups within a no-till arable system. *Agricultural and Forest Entomology*.

Muir, J.B., Jeffery, S., Collins, J., Marks, A., Brake, N. and Nissen-Meyer, T., 2024. Quantifying spatial peat depth with seismic micronodes and the implications for carbon stock estimates. *Science of The Total Environment*, 949, p.174769.

Natalio, A.I., Back, M.A., Richards, A. and Jeffery, S., 2024. Field-scale heterogeneity overrides management impacts following conversion to no-till within an arable system. *Applied Soil Ecology*, 193, p.105104.

Gholamhamadi, B., Jeffery, S., Gonzalez-Pelayo, O., Prats, S.A., Bastos, A.C., Keizer, J.J. and Verheijen, F.G., 2023. Biochar impacts on runoff and soil erosion by water: A systematic global scale meta-analysis. *Science of the Total Environment*, 871, p.161860.

Dr Lucy Crockford

Position: Senior Lecturer in Soil and Water Management

Department: Agriculture and Environment

Research Group(s): Soil and Water Science; Harper Institute of Technology



Brief summary:

I am a physical geographer who focuses on the impact of land management and external forcing on the quality of soil and water.

Areas of current research

I am the project lead for Harper Adams University on three Innovate UK projects.

1. Incorporating biochar as part of an arable cropping system
2. The use of augmented biochar in the reduction of agricultural nutrient losses and treatment of freshwaters
3. The use of mycorrhizal filters in removing nutrients from freshwaters and effluents

I am also a member of the Paludiculture Innovation Project team working on PEF2

I supervise two PhD students who are working within the Impact Case Study “Reducing losses of nutrients from farmland using diverse temporal resolution data analysis” and line manage one postdoctoral researcher.

Areas of research interest/expertise

My expertise covers hydrology, hydrogeology, and biogeochemistry predominantly with a working knowledge of ecology, particularly in aquatic ecosystems. I am a catchment scientist by training which requires a broad understanding of many systems and their interaction. I am an experienced modeller, particularly the quality of modelling and its application in understanding systems. I am proficient in ArcGIS and some spatial modelling as well some experience in R and Python. I really enjoy data analysis and interrogating the quality of a dataset and the story that it tells us. My passion however, really is freshwater. This has been the case since I was 9 years old on my first geography fieldtrip – and it would have to be considering I am excited when it rains and spend many days in inclement conditions collecting data!

Key publications

Crockford, L., 2022. Achieving cleaner water for UN sustainable development goal 6 with natural processes: Challenges and the future. *Frontiers in Environmental Science*, Research Topic: Eurosoil 2021: Sustainable Management of Soil Functions as a Basis to Avoid, Halt, and Reverse Land Degradation, 10:976687 <https://doi.org/10.3389/fenvs.2022.976687>

Stevenson, J.L., O’Riordain, S., Harris, W.E. and Crockford, L., 2021. An investigation into the impact of nine catchment characteristics on the accuracy of two phosphorus load apportionment models. *Environmental Monitoring and Assessment*, 193(3), pp.1-14. <https://link.springer.com/article/10.1007%2Fs10661-021-08875-9> or TBC

Shore, M., Murphy, S., Mellander, P.E., Shortle, G., Melland, A.R., Crockford, L., O’Flaherty, V., Williams, L., Morgan, G. and Jordan, P., 2017. Influence of stormflow and baseflow phosphorus pressures on stream ecology in agricultural catchments. *Science of the Total Environment*, 590, pp.469-483. <https://www.sciencedirect.com/science/article/pii/S0048969717303480>

Crockford, L., O’Riordain, S., Taylor, D., Melland, A.R., Shortle, G. and Jordan, P., 2017. The application of high temporal resolution data in river catchment modelling and management strategies. *Environmental monitoring and assessment*, 189(9), pp.1-20. <https://link.springer.com/article/10.1007/s10661-017-6174-1> or free download

Prof. Peter Kettlewell

Position Professor of Crop Physiology

Department Agriculture and Environment

Research Group Crop Science Group

Brief summary



I am interested in using crop physiology to help reduce practical crop production problems.

Areas of current research

Current research is focused on understanding how to use hydrophobic polymers as antitranspirants to reduce crop drought stress and as plant growth regulators to retard crop growth and to delay fresh produce production.

Areas of research interest/expertise

- Drought
- Plant growth regulation
- Climate change

Key publications

Drought

Olu-Olusegun, O. F., Farrell, A., Monaghan, J., & Kettlewell, P. (2025). Film-Forming and Metabolic Antitranspirants Reduce Potato Drought Stress and Tuber Physiological Disorders. *Agronomy*, 15(7), 1564. <https://doi.org/10.3390/agronomy15071564>

Mphande, W., Farrell, A. D., & Kettlewell, P. S. (2023). Commercial uses of antitranspirants in crop production: A review. *Outlook on Agriculture*, 52, 3-10. <https://doi.org/10.1177/00307270231155257>

Plant growth regulation

Kettlewell, P., & Monaghan, J. (2023). Restricting growth for improved fresh produce scheduling: a role for stomatal blockers? *Modern Agriculture*. 1, 83-85.

<https://onlinelibrary.wiley.com/doi/pdf/10.1002/moda.14>

Climate change

Kettlewell, P., Byrne, R., & Jeffery, S. (2023). Wheat area expansion into northern higher latitudes and global food security. *Agriculture, Ecosystems and Environment*, 351, 108499.

<https://www.sciencedirect.com/science/article/pii/S0167880923001585?via%3Dihub>

Prof. Tom Pope

Position Professor of Applied Entomology

Department Agriculture & Environment

Research Group(s) Entomology



Brief summary

I have over twenty-years of experience in applied entomology research and lead the Entomology Group within the Centre for Crop and Environmental Science at Harper Adams. My research has focused primarily on Integrated Pest Management (IPM), insect behaviour, plant-insect interactions and biological control. My research has focused on a wide range of pest species found both in the UK and globally, much of my work has been on aphid pests (e.g. peach-potato aphid, mealy cabbage aphid and damson-hop aphid) and beetle pests (vine weevil and cabbage stem flea beetle). I am currently chair of the Insecticide Resistance Action Group (IRAG).

Areas of current research

- Reducing the impact of aphid virus vectors in cereal and potato crops
- Understanding resistance of aphid pests to biological controls
- Enhancing biological pest control: learning mechanisms and olfactory conditioning in parasitoid wasps

Areas of research interest/expertise

- Insect behaviour
- Plant-insect interactions
- Biological control research
- Insecticide resistance testing

Key publications

1. Kettle, H., Coston, D., White, S., Roberts, J., **Pope, T.** & Ewing, D. (2025) A process-based life cycle of the cabbage stem flea beetle on winter oilseed rape: effects of temperature. *Journal of Theoretical Biology*. 612: 112185. doi.org/10.1016/j.jtbi.2025.112185
2. Zimba, K. J., Sohati, P. H., Munyinda, K., Roberts, J. M. & **Pope, T. W.** (2025) Can silicon complement mutation-derived resistance to cowpea aphid? *Arthropod-Plant Interactions*. 19: 2 (2025). Doi.org/10.1007/s11829-024-10116-y
3. Martinez-Chavez, L.M., Roberts, J.M., Karley, A.J., Shaw, B. & **Pope, T.W.** (2025) The influence of genetic variation on pre-oviposition processes for host-parasitoid co-evolution. *Ecological Entomology*. 50: 1-16. Doi.org/10.1111/een.13388
4. Roberts, J.M., Clunie, B., Leather, S.R., Harris, W. & **Pope, T.W.** (2023) Scents and Sensibility: Best practice in insect olfactometer bioassays. *Entomologia Experimentalis et Applicata*. 171: 808-820. Doi: 10.1111/eea.13351

Dr Matthew Hill

Position Senior lecturer in Conservation Science

Department Agriculture and Environment

Research Group(s) Ecology, Evolution and Conservation, Entomology

Brief summary

I am a freshwater ecologist and conservation biologist. My specific research interests are focused on (1) understanding the community assembly processes and environmental pressures (e.g., land-use change and climate change) influencing the spatial and temporal patterns in freshwater community structure and function and (2) developing more effective conservation and management practices at the landscape-scale to support freshwater biodiversity. My research spans a wide variety of environments, from urban gardens to tropical forest, to high mountain landscapes. Finally, I have emerging research interests in the relationship between blue-green spaces and human health and wellbeing.

Areas of current research and interests

- Community ecology: contribution of abiotic, biotic and spatial factors to community structure.
- Effects of multiple pressures on freshwater communities (e.g., urbanisation and pollution).
- Freshwater management: rewilding, restoration and creation.
- Landscape-scale conservation: practice and policy.
- Freshwater in the cryosphere: effects of deglaciation on pond communities.
- Neglected habitats: gardens, canals, ditches.
- Urban blue-green spaces and human health and wellbeing.

Recent publications (2023-)

Clifford, C., Bierzoza, M., Clarke, S.J., Pickard, A., Stratigos, M.J., **Hill, M.J.**, et al. 2025. Lines in the landscape. *Nature Communications; Earth & Environment*, 6, p.693.

Hill, M. J., et al. 2025. Both pond creation and restoration provide long term biodiversity gains in agricultural landscapes: implications for conservation. *Biological Conservation*, 309, 111279.

Milner, V.S., **Hill, M.J.**, Gething, K.J. and Cunningham, S.B., 2025. What a load of rubbish: the impact of anthropogenic litter on urban freshwater diversity. *Environmental Pollution*, p.126097.

White, J. C., Seddon, E., **Hill, M. J.**, Mathers, K. L., Bridger, M., Hannah, D. M. and Wood, P. J. 2025. Going to the archives: combining palaeoecological and contemporary data to support river restoration appraisals. *River Research and Applications*, 41, 23-36.

Mathers, K.L., Robinson, C.T., **Hill, M.**, Kowarik, C., Heino, J., Deacon, C. and Weber, C., 2024. How effective are ecological metrics in supporting conservation and management in degraded streams? *Biodiversity and Conservation*, 1-22.

Shen, M., Van Klink, R., Sagouis, A. **et al.** 2024. FreshLanDiv: a global database of freshwater biodiversity across different land uses. *Global Ecology and Biogeography*, p.e13917.

Mathers, K. L., Armitage, P. D., **Hill, M. J.**, Bickerton, M., Mckenzie, M., Pardo, I., Tickner, D. and Wood, P. J. 2024. Context specific effects of substrate composition on the taxonomic and functional diversity of macroinvertebrate communities in temperate lowland streams. *Ecology and Evolution*, 14, p.e70034.

Snåre, H., García-Girón, J., Alahuhta, **et al.** 2024. The relationships between biotic uniqueness and abiotic uniqueness are context dependent across drainage basins worldwide. *Landscape Ecology*, 39, 1-18.

Siqueira, T., Hawkins, C.P., Olden, J., **et al.** 2024. Ecological stability propagates across spatial scales and trophic levels in freshwater ecosystems. *Ecology*, 105, p.e4219.

Hill, M.J., Wood, P.J., White, J.C., Thornhill, I., Fairchild, W., Williams, P., Nicolet, P. and Biggs, J. 2024. Environmental correlates of aquatic macroinvertebrate diversity in garden ponds: implications for pond management. *Insect Conservation and Diversity*, 17, 374-385



Animal Science Research Centre

The aim of Animal Science Research Centre (ASRC) is improving Food Security, Animal Health & Welfare, and the Environment through applied and strategic research focused on livestock, aquaculture and companion animals. The ASRC comprises six specialised groups encompassing a diverse array of livestock, aquaculture and companion animals, each offering its own unique expertise and distinctive skill set.

- + Animal Behaviour & Welfare Research Group
- + Beef & Sheep Research Group
- + Companion Animal Health Sciences Research Group
- + Dairy, Heifer & Calf Research Group
- + Pig, Poultry & Aquatic Animals Group
- + Institute for Sustainable Livestock Health and Welfare (HKVS)



Prof. Liam Sinclair

Position: Prof. Animal Science

Department: Agriculture and Environment

Research Group: Director of the Animal Science Research Centre and lead of the Dairy, Heifer and Calf Research Group ([ASRC](#))



Brief summary

I am an animal nutritionist with a particular focus on dairy cow nutrition, performance, reducing the environmental impact of cattle and improving the nutritional quality of milk and meat for human consumption. I am a past president of the British Society of Animal Science, a Fellow of the Royal Agricultural Societies, and recipient of the Sir John Hammond memorial prize. I am also a board member of the journal *Animal* and trustee of the Trehane and the Frank Parkinson Trusts, and co-author on the 7th and 8th edition of the textbook *Animal Nutrition*.

Areas of current research

- reducing the methane output and carbon footprint of milk and meat
- improving the nitrogen use efficiency in dairy cows
- enhancing the use of home grown forages
- optimising the rumen microbiome and metabolism
- trace mineral nutrition of cattle
- improving the human nutritional properties of milk and meat

Key publications in relevant areas include:

- Chowdhury, M.R., Wilkinson, R.G. and **Sinclair, L.A.** (2024). Reducing dietary protein and supplementation with starch or rumen-protected methionine and its effect on performance and nitrogen efficiency in dairy cows fed a red clover and grass silage-based diet. *Journal of Dairy Science* 107: 3543-3557. <https://doi.org/10.3168/jds.2023-23987>
- Hart, K.J., Huntington, J.A., Wilkinson, R.G., Bartram, C.G. and **Sinclair, L.A.** (2015). The influence of grass silage to maize silage ratio and concentrate composition on methane emissions, performance and milk composition of dairy cows. *Animal* 9: 983-991.
- McCaughern, J.H., Mackenzie, A.M., Bleach, E.C.L. and **Sinclair, L.A.** (2024). Over-feeding copper during rearing affects liver function and fertility of replacement dairy heifers. *Veterinary Record* e4397. <https://doi.org/10.1002/vetr.4397>
- Snelling, T.J., Condren M., Huntington, J.A., Taylor Pickard, J. Warren, H., and **Sinclair, L.A.** (2025). The rumen microbiota and metabolism of dairy cows are affected by the dietary rate of inclusion of *Yucca schidigera* extract. *Microbiology Spectrum*. <https://doi.org/10.1128/spectrum.00641-25>
- Till, B.E., Huntington, J.A., Posri, W., Early, R., Taylor-Pickard, J. and **Sinclair, L.A.** (2019). Influence of rate of inclusion of microalgae on the sensory characteristics and fatty acid composition of cheese and performance of dairy cows. *Journal of Dairy Science* 102, 10934-10946. <https://doi.org/10.3168/jds.2019-16391>

Prof. Michael Richard F Lee

Position: Deputy Vice Chancellor – Professor of Sustainable Livestock Systems

Department: DVC Office/School of Sustainable Food and Farming

Centre/Research Group(s): Animal Science Research Centre / Beef & Sheep Group.



Brief summary

I am an expert in sustainable livestock systems, defining their role in securing global food security at the same time as protecting environmental health (Livestock's role in human and planetary health). I have published over 400 research articles and papers including articles in *Nature* and *Science*. I was awarded the Sir John Hammond Memorial Prize in 2015 for services to Animal Science and fellowships of the Royal Societies of the Arts and Biology in 2019 and 2023, respectively. I was also awarded Associateship of the Royal Agricultural Societies in 2023 and Fellowship of the Royal Agricultural Society of England in 2024. I have served on Presidents of the British Society of Animal Science from 2018-2022 and was a Trustee of the society for 12 years. In August 2019, I was elected President of the European Federation of Animal Science Livestock Farming Systems Commission. I represent the UK on Animal Task Force, a Public-Private think-tank informing the EU parliament in Brussels and is co-chair of the UK Universities Climate Network – Net Zero group. In 2023 I was selected to join a Technical Advisory Group of the UN's Food and Agriculture Organization (FAO) and represents Harper Adams University on FAO LEAP (Livestock Environment Assessment and Performance). I also sit on the BBC's Rural Affairs Committee, the Agriculture Advisory Group convened by the UK's Climate Change Committee (CCC) and the Scientific Council of the World Farmers Organization (WFO).

Areas of current research:

- Livestock's role in a sustainable food system that co-delivers to human and planetary health
- Nutrition life cycle assessment and metrics which better define sustainable agri-food
- Circular Bioeconomy – valorisation of waste streams and nutrient stripping
- Food Data Transparency and environmental data Measuring, Recording and Validation
- Nutritional Biochemistry – especially – lipids, micro-nutrients and protein

Recent Publications

- JEBARI A., TAKAHASHI T., LEE M.R.F., COLLINS A.L., COLEMAN K., CARSWELL A., SEGURA C., CARDENAS L., MCAULIFFE G.A. 2025. Life Cycle Assessment of greenhouse gas mitigation measures for beef production grazing systems in temperate climates. *International Journal of LCA*. <https://doi.org/10.1007/s11367-025-02428-9>
- MAREE E., BLIGNAUT J., MANZANO P., TRUTER W., POLKINGHORNE R., GILLILAND J., MCCOSKER T., LEE M.R.F., DU TOIT L., PEYRAUD J-L., WEINHEIMER B., RANSOM J. 2025. Livestock farmers and industry are leading innovation to deliver human nutrition and improved environmental outcomes through sector lifecycle collaboration: A review of case studies. *Animal Frontiers*. 15: 55-71. <https://doi.org/10.1093/af/vfae050>
- AKPENSUEN T.T., CARTMILL A., PEREZ-MARQUEZ S., SHERIDAN H., LEE M.R.F., RIVERO J.R. 2025. Make African grasslands climate-change resilient. *Communications Earth & Environment*. 6:111 <https://doi.org/10.1038/s43247-025-02109-3>
- COOKE A., STORKEY J., ACQUAH G., LEE M.R.F., RIVERO M.J. 2025. Trade-offs between forage nutrition and ruminant carrying capacity in response to fertiliser application – Findings from the Park Grass Long-Term Experiment (1860-2020). *Field Crops Research*. 324: 109791 <https://doi.org/10.1016/j.fcr.2025.109791>
- BELK K., EDERER P., LEE M.R.F., DUNSHEA F.R., LEROY F. 2025. Critiquing the Dublin Declaration based on underpowered analysis and inadequate methods undermines trust in the sciences – A response to Krattenmacher et al. 2024. *Environmental Science and Policy*. 168: 104054 <https://doi.org/10.1016/j.envsci.2025.104054>
- PEREYRA-GODAY, F., CASTILLO, J., ROVIRA, P., AYALA, W., LEE M.R.F., RIVERO, M.J. 2025. Nitrogen use efficiency of crop-livestock systems at different levels of intensification. *Frontiers In Sustainable Food Systems*. 9:1522557. <https://doi:10.3389/fsufs.2025.1522557>

Dr Annabelle Beaver

Position: Senior Lecturer in Animal Behaviour and Welfare

Department: Animal Health, Behaviour and Welfare

Research Group(s): Animal Behaviour and Welfare Research Group

Brief summary: I am an interdisciplinary animal welfare scientist with specific expertise in dairy cattle. My research integrates methods from ethology, animal welfare science, psychology, and epidemiology, and applied statistics. I also serve as an Advisory Editor for the Animal Welfare Book Series (Springer Nature).



Areas of current research:

- Dairy calf rearing and enrichment
- Welfare implications of dairy cattle housing systems (including cow-calf systems)
- Using behaviour to predict health and welfare compromises in farm animals
- Precision Livestock Farming and human-animal relationships (PLF and HAR)
- Pedagogy of Animal Welfare Science

Selected publications from 2020-2025 related to these areas

Dairy calf rearing and enrichment:

- García-Alvarez, J., ...and **Beaver, A.**, 2025. Effects of a synthetic analog of the bovine appeasing pheromone on the overall welfare of dairy calves from birth through weaning. *Journal of Dairy Science*, 108(2), pp.1964-1977.
- Calderón-Amor, J., **Beaver, A.**, et al., 2020. Calf-and herd-level factors associated with dairy calf reactivity. *Journal of Dairy Science*, 103(5), pp.4606-4617.

Welfare implications of housing systems:

- **Beaver, A.** et al., 2021. Differences in the fecal microbiota of dairy calves reared with differing sources of milk and levels of maternal contact. *JDS communications*, 2(4), pp.200-206.
- **Beaver, A.** et al., 2021. Invited systematic review: The welfare of dairy cattle housed in tiestalls compared to less-restrictive housing types. *Journal of Dairy Science*, 104(9), pp.9383-9417.
- **Beaver, A.**, et al., 2021. The freestall reimaged: Effects on stall hygiene and space usage in dairy cattle. *Animals*, 11(6), p.1711.

Using behaviour to predict health and welfare compromises:

- Sahar, M.W., **Beaver, A.**, et al., 2022. Measuring lameness prevalence: Effects of case definition and assessment frequency. *Journal of Dairy Science*, 105(9), pp.7728-7737.
- Sahar, M.W., **Beaver, A.**, et al., 2020. Feeding behavior and agonistic interactions at the feed bunk are associated with hyperketonemia and metritis diagnosis in dairy cattle. *Journal of Dairy Science*, 103(1), pp.783-790.

PLF and HAR:

- Williams, E. and **Beaver, A.**, 2024. Human-animal interactions and machine-animal interactions in animals under human care: A summary of stakeholder and researcher perceptions and future directions. *Animal Welfare*, 33, p.e27.
- **Beaver, A.** and Rutter, S.M., 2023. Precision livestock farming technologies for dairy and beef production. In *Cattle Welfare in Dairy and Beef Systems: A New Approach to Global Issues* (pp. 297-321). Springer International Publishing.

Pedagogy of Animal Welfare Science:

- **Beaver, A.**, and Ventura, B. 2025. Undergraduate student attitudes towards animal welfare science: An investigation to inform teaching approaches. *Animal Welfare*. Accepted July 2025.

Professor Jude Capper

Position ABP Chair of Sustainable Beef and Sheep Production

Department Agriculture & Environment

Research Group(s) Beef and Sheep



Brief summary

Reducing resource use and greenhouse gas emissions is a key focus of our research programme, yet we work synergistically to concurrently improve other aspects of sustainability, including biodiversity, water use, soil health, economic viability and social acceptability. Key partnerships with industry stakeholders ensure that we are focused on the needs of the beef and sheep sectors, undertaking research that is applicable, appropriate and adoptable by producers within the UK and further afield. We are committed to effective knowledge transfer, ensuring that the results of our research are disseminated across the industry, encouraging behavioural change.

Areas of current research

[The ABP PRISM 2030 project](#)

Sustainability of UK sheep production systems

Areas of research interest/expertise

- Sustainability
- Beef production
- Sheep production
- Ruminant nutrition
- Environmental impacts

Key publications

1. **Capper, J. L.** 2023. The impact of controlling diseases of significant global importance on greenhouse gas emissions from livestock production. *One Health Outlook*. <https://doi.org/10.1186/s42522-023-00089-y>
2. **Capper, J. L. and P. L. Williams.** 2023. Investing in health to improve the sustainability of cattle production in the United Kingdom: a narrative review. *The Veterinary Journal*. <https://doi.org/10.1016/j.tvjl.2023.105988>
3. **Capper, J. L., T. B. De Carvalho, A. S. Hancock, O. G. S. Filho, I. Odeyemi, and D. J. Bartram.** 2021. Modeling the effects of steroid implant use on the environmental and economic sustainability of Brazilian beef production. *Translational Animal Science*. <https://doi.org/10.1093/tas/txab144>
4. **Capper, J. L.** 2021. Current issues and controversies in assessing the environmental impacts of livestock production. *CAB Reviews*. <https://doi.org/10.1079/PAVSNNR202116044>
5. **Capper, J. L.** 2020. Opportunities and challenges in animal protein industry sustainability: The battle between science and consumer perception. *Animal Frontiers*. <https://doi.org/10.1093/af/vfaa034>
6. **Capper, J. L. and R. A. Cady.** 2019. The effects of improved performance in the U.S. dairy cattle industry on environmental impacts between 2007 and 2017. *Journal of Animal Science*. <https://doi.org/10.1093/jas/skz291>

Dr Gemma Charlton

Position Senior Lecturer in Animal Behaviour and Welfare

Department Animal Health, Behaviour and Welfare

Research Group(s) Animal Behaviour & Welfare

Brief summary

I am an animal behaviour and welfare scientist, with a focus on improving the lives of dairy cows and calves. I am the Deputy Lead of the Animal Behaviour and Welfare Research Group.



Areas of research interest/expertise

My research interests include the welfare benefits of pasture access, the influence of early life experiences, and the role of environmental enrichment for dairy cows and calves. I also specialise in the development, validation and application of precision livestock technologies to enhance welfare assessment, support disease detection and inform evidence-based management.

Areas of current research

- ‘Fulfilling the ‘promise of precision’? A user-centred study of sensor technology for farm animal welfare’
- ‘Wearable sensor technology for dairy goats; on-farm validation and farmer perceptions’
- ‘The welfare and production effects of dairy cow-calf rearing systems’
- ‘Enriching the lives of dairy heifers’
- ‘Exploring the short- and long-term value of transition milk for dairy calves’
- ‘Feeding strategies towards enhancing well-being through the weaning transition of dairy-bred calves’
- ‘Exploitation of VOC detection at abattoir as a non-invasive method of improving animal welfare, red meat quality, and operative health and safety in the meat supply chain’

Key publications

- **Charlton, G. L.** et al. 2024. Behaviour of Cows with Johne’s Disease (Paratuberculosis). Ruminants. <https://doi.org/10.3390/ruminants4040037>
- **Charlton, G. L.** et al. 2022. Assessing the accuracy of leg mounted sensors for recording dairy cow behavioural activity at pasture, in cubicle housing and a straw yard. Animals. <https://doi.org/10.3390/ani12050638>
- **Charlton, G. L.** et al. 2017 Normal behaviour of housed dairy cattle with and without pasture access: a review. AABS. <https://doi.org/10.1016/j.applanim.2017.05.015>
- **Charlton, G. L.** et al. 2016. Can automated measures of lying time help assess lameness and leg lesions on tie-stall dairy farms? AABS. <https://doi.org/10.1016/j.applanim.2015.02.011>
- **Charlton, G. L.** et al. 2014. Stocking density, milking duration and lying times of lactating cows on Canadian free-stall dairy farms. JDS. <https://doi.org/10.3168/jds.2013-6923>

Prof. Vasil Pirgozliev



Position	Professor of Poultry Nutrition
Department	Agriculture and Environment
Research Group(s)	Pig, Poultry and Aquatic Animals

Brief summary

I am a monogastric nutritionist specializing in poultry and pig nutrition, with expertise in the mode of action of feed additives, energy metabolism, and animal health. My research focuses on predicting the feeding value of cereals for monogastric animals and alternative protein sources, including insect-derived products, to enhance efficiency, sustainability, and animal welfare. In addition to my research, I serve on the editorial boards of Poultry Science, British Poultry Science, and the Archives of Animal Nutrition.

Areas of current research

- rye as sustainable feed ingredient in poultry nutrition
- insect protein and fat as feed for monogastric animals
- enhancing the use of locally produced protein sources in poultry diets
- functional fibres in poultry nutrition
- improving the human nutritional properties of hen eggs

Recent key publications

Pirgozliev, V., Mansbridge, S.C., Watts, E.S., Whiting, I.M., Rose, S.P., Brearley, C.A. and Bedford, M.R., 2025. Effects of phytase supplementation on energy and nutrient availability, and phytate degradation in turkeys. *Poultry Science*, p.105309.

Pirgozliev, V.R., Kljak, K., Whiting, I.M., Mansbridge, S.C., Atanasov, A.G., Enchev, S.B., Tukša, M. and Rose, S.P., 2025. Dietary stinging nettle (*Urtica dioica*) improves carotenoids content in laying hen egg yolk. *British Poultry Science*, 66(2), pp.275-280.

Scott-Cook, H.M., Mansbridge, S.C., Mackenzie, A.M., Yovchev, D.G. and Pirgozliev, V.R., 2025. Enhancing diet specification to maximise feed efficiency and production characteristics of the Redbro slow growing broiler chicken. *British Poultry Science*, pp.1-11.

Pirgozliev, V.R., Mansbridge, S.C., Watts, E.S., Whiting, I.M., Enchev, S.B. and Rose, S.P., 2024. Investigations into the chemical composition and nutritional value of different batches of rapeseed meals for turkey poults. *Archives of Animal Nutrition*, 78(3), pp.273-284.

Yordanova, G., Nedeva, R.D., Apostolov, A.P., Whiting, I.M., Mansbridge, S.C., Rose, S.P. and Pirgozliev, V.R., 2024. Estimation of the digestible energy value of fat obtained from black soldier fly larvae (*Hermetia illucens*) for growing pigs. *Archives of Animal Nutrition*, 78(4-6), pp.315-324.

Pirgozliev, V.R., Mansbridge, S.C., Whiting, I.M., Kljak, K., Jozwik, A., Rollinger, J.M., Atanasov, A.G. and Rose, S.P., 2023. Feeding black pepper (*Piper nigrum*) or exogenous xylanase improves the blood lipid profile of broiler chickens fed wheat-based diets. *Veterinary Sciences*, 10(9), p.587.

Dr Stephen Mansbridge



Position: Reader in Animal Science & Bioinformatics

Department: Agriculture and Environment

Research Group(s): Pig, Poultry and Aquatic Animals (group lead)

Brief summary

Stephen is a registered animal scientist accredited by the British Society of Animal Science (BSAS) and is both a Chartered Biologist and Chartered Scientist. Graduating with a BSc (Hons) in Agriculture and a PhD in Animal Science (pig nutrition and health) from Harper Adams University, Stephen leads the Pig, Poultry & Aquatic Animals Research Group of the Animal Science Research Centre. He is an AMTRA qualified animal medicines advisor (all species), with a background in agriculture and specialist interests in animal health and non-ruminant nutrition. With a particular focus on livestock production research, Stephen serves as an Editor-in-Chief of CAB International Animal Science Cases and is a member of the Food Safety Subgroup of the Pig Health and Welfare Council.

Areas of current research:

- feed materials, e.g. insects, wheat and rye for pigs and poultry
- managing highly productive poultry and pigs
- feed enzymes, e.g. xylanase, phytase
- functional fibres in pig and poultry nutrition, e.g. prebiotic GOS & XOS
- veterinary medicines and their resistance, e.g. pharmaceutical zinc oxide and anthelmintics

Recent key publications:

Stanley, J. S., Mansbridge, S. C., Bedford, M. R., Connerton, I. F. and Mellits, K. H. 2025. Prebiotic Xylo-Oligosaccharides Modulate the Gut Microbiome to Improve Innate Immunity and Gut Barrier Function and Enhance Performance in Piglets Experiencing Post-Weaning Diarrhoea. *Microorganisms*, 13(8), 1760. <https://doi.org/10.3390/microorganisms13081760>

Chobanova, S., Karkelanov, N., Mansbridge, S.C., Whiting, I.M., Simic, A., Rose, S.P. and Pirgozliev, V.R. 2023. Comparison of a Traditional Soybean Meal-Based Diet to a Defatted Black Soldier Fly Larvae Meal-Based Diet for Broilers. *Poultry*, 2, pp. 430–441. DOI: 10.3390/poultry2030032

Šimić, A., González-Ortiz, G., Mansbridge, S.C., Rose, S.P., Bedford, M.R., Yovchev, D. and Pirgozliev, V.R. 2023. Broiler chicken response to xylanase and fermentable xylo-oligosaccharide supplementation. *Poultry Science*, p.103000. DOI: 10.1016/j.psj.2023.103000

Lee, A., Mansbridge, S.C., Liang, L., Connerton, I.F. and Mellits, K.H. 2023. Galacto-oligosaccharides increase abundance of beneficial probiotic bacteria and improve gut architecture and goblet cell expression in poorly performing piglets, but not performance. *Animals*, 13(2). [Online]. DOI: 10.3390/ani13020230

Dr James McCaughern

Position: Senior Lecturer in Beef Systems

Department: Agriculture & Environment

Research Group(s): Dairy, Heifer and Calf Research Group (1) + Beef and Sheep Research Group (2)



Brief summary

Dr James McCaughern is a Senior Lecturer in Beef Systems at Harper Adams University, with over 10 years of commercial experience working within dairy, beef and sheep production systems.

Areas of current research

- Leveraging metabolomics to identify and profile copper toxicity and rumen pH within the dairy industry.
- ABP PRISM 2030: produce a step-change in sustainability (greenhouse gas emissions) within the UK beef and lamb sectors.
- Dairy Carbon Network: systemic testing of multiple carbon saving measures in practice.
- Circular nutrient management: transforming phosphorus and nitrogen in farm slurry to stable commercial fertilisers.

Areas of research interest/expertise

- Trace element nutrition of ruminant species (beef, sheep and dairy).
- Feeding value of feed ingredients within ruminant diets.
- Metabolomics for production disease diagnosis within dairy cattle.
- Greenhouse gas emissions in beef and sheep production systems.

Key publications

Marsh, A.P., Sinclair, L.A., Roberts, J.M., Mackenzie, A.M. and **McCaughern, J.H.**, 2025. A Re-evaluation of the Optimal Liver Copper Concentrations for Health, Performance and Fertility of Replacement Holstein–Friesian Heifers. *Biological Trace Element Research*, pp.1-9.

McCaughern, J.H., Mackenzie, A.M., Bleach, E.C. and Sinclair, L.A., 2024. Overfeeding copper during rearing affects the liver function and fertility of replacement dairy heifers. *Veterinary Record*, 195(2), pp. 1-8.

McCaughern, J., Evans, R., Upton, E., Wilkinson, R. and Small, R., 2022. Effect of dietary metabolisable protein concentration during the housed growing phase upon the finishing performance of Aberdeen-Angus cross Holstein steers and heifers at grass. *Animal-science proceedings*, 13, pp. 75-76.

McCaughern, J.H., Mackenzie, A.M. and Sinclair, L.A. 2020. Dietary starch concentration alters reticular pH, hepatic copper concentration, and performance in lactating Holstein-Friesian dairy cows receiving added dietary sulfur and molybdenum. *Journal of Dairy Science*, 103(10), pp. 9024-9036.

McCaughern, J.H., Mackenzie, A.M. and Sinclair, L.A. 2020. Effect of dietary copper supply during the rearing phase on Holstein-Friesian heifer performance, fertility, and hepatic copper concentration. *Advances in Animal Biosciences*, 11, pp. 29.

Dr Sarah Morgan

Position: Lecturer in Beef & Sheep Production

Department: Agriculture & Environment

Research Group(s): Beef & Sheep



Brief summary

I am an applied grazing livestock systems scientist with experience of working on collaborative, transdisciplinary research projects involving a diversity of academic and industry partners operating in the fields of agri-food and agri-technology.

Areas of current research

My current research predominantly focuses on sustainably lowering ruminant GHG emissions. Active research projects in this area include:

- Breed for CH₄nge – Breeding lower methane sheep
- PRISM 2030 – Improving the sustainability of red meat in the UK by 2030
- Breeding Better Beef & Sheep: Co-designed breeding strategies to achieve net zero

Recent research has also explored the use of virtual fencing technology for agroecological outcomes:

- D4AgEcol – Digitalisation for agroecology

Areas of research interest/expertise

- Sustainable grazing practices (impacts on productivity and the environment)
- System dynamics of grazing (soil-plant-animal interactions)
- Regenerative farming (mob grazing, integration of livestock into arable)
- Ruminant GHG emissions
- Use of precision livestock technologies in grazing livestock systems
- Consequences of livestock management on behaviour & welfare
- Meat quality (nutritional and sensory)

Key publications

Morgan & Rutter (2026) 'Advanced Livestock Management Solutions (practical)', in Ferguson *et al.* (eds.) *Advances in Sheep Welfare*. 2nd edition. Elsevier.

Fajardo *et al.* (2025) Animal and Pasture Responses in Contrasting Temperate Pasture-based Cattle Management Systems: Set-Stocking versus Cell Grazing. *Animal*. In submission.

Maritan *et al.* (2024) A multi-objective optimisation analysis of virtual fencing in precision grazing. 16th International Conference on Precision Agriculture, 21-24.

Romero-Ruiz *et al.* (2023) Grazing livestock move by Lévy walks: Implications for soil health and environment. *Journal of Environmental Management*, 345, 118835. <https://doi.org/10.1016/j.jenvman.2023.118835>

Lee *et al.* (2021) Nutritional value of suckler beef from temperate pasture systems. *Animal*, 15 (7), 100257. <https://doi.org/10.1016/j.animal.2021.100257>.

Prof. Mark Rutter

Position Professor of Applied Animal Behaviour

Department Animal Health, Behaviour and Welfare

Research Group(s) Animal Behaviour and Welfare



Brief summary

I have nearly forty years' experience in applied animal behaviour research, especially in the automatic recording of domestic ruminant behaviour. Earlier in my career I developed a patented ruminant jaw movement recorder, and I led the first project in the world to use GPS to track domestic farm animals. More recently, I have used my expertise to help commercial companies develop the next generation of Precision Livestock Farming (PLF) technologies, usually with co-funding from Innovate UK. I advise Defra and the Welsh Government on the implementation of bovine electronic identification (bEID). I am a Fellow of the Royal Society of Biology, and past president of the International Society for Applied Ethology (ISAE). I now work part-time.

Areas of current research

My current research is mainly in the area of Precision Livestock Farming (PLF). I provide support and expertise to other members of staff across a range of research projects.

Areas of research interest/expertise

- Automatic recording of farm animal behaviour
- The use of automated measures of behaviour in on-farm PLF decision support systems
- The use of patterns of spatial behaviour to understand herd social dynamics in cattle
- The preferences of dairy cattle for pasture and comfortable lying spaces
- Bovine electronic identification (bEID)

Key publications

- Garcia-Alvarez, J., Teruel, E., Cozzi, A., Harris, E., Rutter, S.M, Beaver, A. 2025. Effects of a synthetic analog of the bovine appeasing pheromone on the overall welfare of dairy calves from birth through weaning. *Journal of Dairy Science*. 108(2), P1964-1977. DOI: 10.3168/jds.2024-25452
- Rozenstein, O., Cohen, Y., Alchanatis, V., Behrendt, K., Bonfil, D.J., Eshel, G., Harari, A., Harris, W.E., Klapp, I., Laor, Y., Linker, R., Paz-Kagan, T., Peets, S., Rutter, S.M., Salzer, Y., Lowenberg-DeBoer, J. 2023. Data-driven agriculture and sustainable farming: friends or foes? *Precision Agriculture*. DOI 10.1007/s11119-023-10061-5
- Shewbridge Carter, L., Haskell, M.J., Ball, D., Gibbons, J., Harris, W.E., Rutter, S.M. 2022. Dairy cows value an open area for lying down. *PLoS One*. 17(5):e0268238. DOI: 10.1371/journal.pone.0268238
- van Erp-van der Kooij, E. and Rutter, S.M. 2020. Using precision farming to improve animal welfare. *CAB Reviews*, 15 No. 051 DOI: 10.1079/PAVSNNR202015051
- Charlton, G.L., Bleach, E.C.L. and Rutter, S.M. 2019. Cows with paratuberculosis (Johne's disease) alter their lying behavior around peak lactation. *Journal of Dairy Science*, 102, 11328-11336. DOI: 10.3168/jds.2019-16854

Dr Hannah Shaw

Position Lecturer

Department Animal Health, Behaviour and Welfare

Research Group(s) Engaging for Change, Animal Behaviour and Welfare, 3RG

Brief summary

I am an experienced parasitologist with an interest in livestock health, knowledge exchange between farmers and veterinary professionals, and the public health implications of catchment management.

Areas of current research

Investigating parasite contamination in public drinking and recreational water sources to inform effective catchment management strategies. Exploring parasite control and management practices to support animal health and productivity.

Areas of research interest/expertise

Veterinary parasitology, epidemiology, animal health and welfare, biosecurity and knowledge exchange.

Key publications

Edwards, C. E., Katzer, F., Bartley, P.M., Roden, J., Shaw, H.J., 2025. *Cryptosporidium* prevalence in calves and its effect on local water quality prior to abstraction and treatment. *Current Research in Parasitology & Vector-Borne Diseases* (Accepted).

Shaw, H.J., Armstrong, C., Uttley, K., Morrison, L.J., Innes, E.A. and Katzer, F., 2021. Genetic diversity and shedding profiles for *Cryptosporidium parvum* in adult cattle and their calves. *Current Research in Parasitology & Vector-Borne Diseases*, 1, p.100027.

Shaw, H.J., Innes, E.A., Morrison, L.J., Katzer, F. and Wells, B., 2020. Long-term production effects of clinical cryptosporidiosis in neonatal calves. *International journal for parasitology*, 50(5), pp.371-376.

Wells, B., Shaw, H., Hotchkiss, E., Gilray, J., Ayton, R., Green, J., Katzer, F., Wells, A. and Innes, E., 2015. Prevalence, species identification and genotyping *Cryptosporidium* from livestock and deer in a catchment in the Cairngorms with a history of a contaminated public water supply. *Parasites & vectors*, 8(1), p.66.

Wells, B., Shaw, H., Innocent, G., Guido, S., Hotchkiss, E., Parigi, M., Opsteegh, M., Green, J., Gillespie, S., Innes, E.A. and Katzer, F., 2015. Molecular detection of *Toxoplasma gondii* in water samples from Scotland and a comparison between the 529bp real-time PCR and ITS1 nested PCR. *Water research*, 87, pp.175-181.



Dr Ellen Williams

Position: Senior Lecturer in Animal Behaviour & Welfare

Department: Animal Health, Behaviour & Welfare

Research Group(s): Animal Behaviour & Welfare, Engaging for Change, Companion Animal Health Sciences



Brief summary

I am an experienced ethologist and specialist in zoo animal behaviour and welfare studies and work as a consultant/expert advisor for a number of accrediting bodies and zoological facilities.

Areas of current research:

My research predominantly focus on understanding the effect of the zoo environment on animal behaviour and welfare and identifying opportunities for mitigation efforts to ensure positive welfare in zoo-housed animals.

Current research projects include:

- Applying citizen science in zoos
- The impact of educational settings on animal welfare
- The role of animal personality in animal experiences
- Behaviour and welfare of red squirrels
- The impact of human-animal interactions on wild and managed animals

Areas of research interest/expertise:

- Welfare assessment – development of tools and assessment of welfare state
- Animal social behaviour
- Animal personality
- Elephants
- Impacts of human-animal interactions
- Positive welfare indicators for zoo-housed animals

Recent publications

Hunton V et al. (2025) What is the evidence of human-wildlife interactions with wild mesocarnivores in Africa? A systematic map protocol. *PROCEED*.

Rutherford L et al (2024) Personality in elephants: Temporal stability and methods of assessment. *Personality and individual differences*.

Williams E et al. (2024) Human-animal interactions and machine-animal interactions in animals under human care: a summary of stakeholder and researcher perceptions and future directions. *Animal Welfare*

Williams E et al (2023) The Impact of Visitors on Non-Primate Species in Zoos: A Quantitative Review. *Animals*.

Dr Holly Vickery

Position: Lecturer in Animal Behaviour & Welfare

Department: Animal Health, Behaviour & Welfare

Research Group(s): Animal Behaviour & Welfare, Engaging for Change, Companion Animal Health Sciences

Brief summary

I am an Animal Behaviour and Welfare scientist with a particular interest in the application of knowledge to promote change in practice, therefore my research focuses on understanding both animal and stakeholder experiences in order to promote sustainable, long-lasting welfare improvements.



Areas of current research:

My research interests are broad within the field of Animal Behaviour and welfare and include animal individuality, how animals are used in education, youngstock rearing, and dairy small ruminants.

Current research projects include:

- Wearable sensor technology for dairy goats: validation and stakeholder perspectives
- Bridging the Data-Action Gap using Artificial Intelligence and Language models in poultry Areas of research interest/expertise:
- The future of the UK pig industry: exploring farmer perspectives of 'a good life' and strategies to fulfil it on farm'

Recent publications

Vickery, H.M., Johansen, F.P., Meagher, R.K., 2024. Evaluating the consistency of dairy goat kids' responses to two methods of assessing fearfulness. *Appl. Anim. Behav. Sci.* 272, 106209.

<https://doi.org/10.1016/j.applanim.2024.106209>

Vickery, H.M., Meagher, R.K., Stergiadis, S., Neal, R.A., 2023. A preliminary investigation of the feeding behaviour of dairy goat kids reared away from their dams on a computerised ad libitum milk feeding system. *Appl. Anim. Behav. Sci.* 261, 105898.

<https://doi.org/10.1016/j.applanim.2023.105898>

Vickery, H.M., Neal, R.A., Meagher, R.K., 2022a. Rearing goat kids away from their dams 1. A survey to understand rearing methods. *Anim. Int. J. Anim. Biosci.* 16, 100547.

<https://doi.org/10.1016/j.animal.2022.100547>

Vickery, H.M., Neal, R.A., Meagher, R.K., 2022b. Rearing goat kids away from their dams 2. Understanding farmers' views on changing management practices. *animal* 16, 100548.

<https://doi.org/10.1016/j.animal.2022.100548>

Centre for Social Science

The study of people and the interactions between individuals in society is crucial to gain knowledge about how to foster sustainable and 'just' transitions in agri-food systems and beyond. The Centre for Social Science explores how "social, economic, cultural, environmental and policy contexts" (ibid) affect, and are affected by, science and innovation. It aims to advance methods to study interactions between society and innovation, as well as to inspire efforts to include humans (and non-humans) substantively in the co-design of change. In doing so, the Centre's work provides recommendations to policy, industry, funders, and non-social scientists on how to co-design research and use policy instruments for sustainable and 'just' transitions.

The Centre includes the following research groups:

- + Rural Resilience: exploring the robustness, recovery, and reorientation capacities of rural actors in a rapidly changing world.
- + Engaging for Change: exploring how to include human 'stakeholders' substantively in designing and implementing sustainable change.
- + Global Institute for Agri-Tech Economics: linking people, economics and science to analyse the role of innovative agricultural technologies in achieving global economic, environmental, and social objectives.



Prof. David Christian Rose

Position: Elizabeth Creak Chair in Sustainable Agricultural Change

Department: Agriculture + Environment

Centre/Research Group(s): Director, Centre for Social Science; Engaging for Change.



Brief summary

I am a Rural Geographer and lead a research group focused on helping farmers and related stakeholders to make sustainable and just transitions. Handling Editor at The Journal of Agricultural Education and Extension, and the Journal of Agromedicine.

Areas of current research:

Our research predominantly focuses on agricultural extension and education, behaviour change, farmer mental health, and responsible innovation. Current research projects:

- Behavioural change of farmers with a focus on net zero (in Ireland and UK).
- ‘Landscapes of support’ for farmer mental health and those that support them.
- Mental health education in ag universities + young farmer mental health.
- The opportunities and risks of generativeAI for agricultural extension.
- Responsible innovation of emergent agtech – e.g. robotics, cultured meat.
- How technology shapes and changes life on the farm.

Publications (related to some of these areas)

Behaviour change:

- Rose et al. (2024). A RESET of dairy farmer animal health planning behaviour: symbiotic advisory relationships and knowledge brokering in HerdAdvance. DOI: [10.1080/1389224X.2024.2371295](https://doi.org/10.1080/1389224X.2024.2371295)

Landscapes of support for mental health:

- Shortland et al. (2023). Landscapes of support for farming mental health: Adaptability in the face of crisis. *Sociologia Ruralis*. <https://doi.org/10.1111/soru.12414>

Young farmer mental health:

- Rose et al., (2023). The mental wellbeing of young farmers in Ireland and the UK: driving factors, help-seeking, and support. *Scottish Geographical Journal*. <https://doi.org/10.1080/14702541.2023.2274004>

Responsible innovation of agtech and just transitions:

- Ayris et al. (2024). Exploring inclusion in UK agricultural robotics development: who, how, and why?. *Agriculture and Human Values*. <https://doi.org/10.1007/s10460-024-10555-6>
- Goodman et al. (2024). Analysis of the Narrative Grammars of Cultured Meat in UK Food and Farming Media. *IJSAF*. DOI: [10.48416/IJSAF.V30I2.684](https://doi.org/10.48416/IJSAF.V30I2.684)
- De Boon et al. (2024). To adapt or not to adapt, that is the question. Examining farmers’ perceived adaptive capacity and willingness to adapt to sustainability transitions. *Journal of Rural Studies*. <https://doi.org/10.1016/j.jrurstud.2023.103171>

Technology shaping life on the farm

- Rose et al. (2023). The old, the new, or the old made new? Everyday counter-narratives of the so-called fourth agricultural revolution. *A+HV*. DOI: [10.1007/s10460-022-10374-7](https://doi.org/10.1007/s10460-022-10374-7)
- Rose et al., (2018). Exploring the spatialities of technological and user re-scripting: The case of decision support tools in UK agriculture. *Geoforum*. <https://doi.org/10.1016/j.geoforum.2017.12.006>

Prof. Karl Behrendt

Position Elizabeth Creak Chair in Agri-Tech Economic Modelling

Department Harper Adams Business School

Research Group(s) Global Institute of Agri-Tech Economics, Centre for Social Science, Agroecology for sustainable food systems



Brief summary

My research focuses on the economics of innovative agricultural technology and digitalisation through the application of interdisciplinary systems based approaches to inform decision making at multiple levels. The objectives of my research are to develop approaches that link economics and science to provide greater insights into how agricultural systems work and how they can be manipulated to achieve the objectives of stakeholders and society. This includes the analysis of the impact of innovative technology, climate change and management on economic, environmental and social outcomes.

Areas of current research

- [Pasture to Plate](#) Identifying the consumer acceptance of using novel human edible grass based proteins, their techno-economic efficiency and impacts on global trade as a substitute for products like soybean protein and palm oil.
- [Defining the economic and social benefits of regenerative farming systems](#) Defining the social, environmental and economic benefits of Australian farmers adopting regenerative agriculture.
- [ABP PRISM 2030](#) – Using economic analysis to identify pathways to net zero for UK's beef and sheepmeat producers
- [D4AgEcol - Digitalisation for Agri-Ecology](#) Defining the economic and agroecological impacts of using digitalisation and technology for more agroecologically based farming
- Economic valuation of soil biodiversity and cost-effectiveness of soil health indicators (Horizon/UKRI funded SOB4ES project)
- Breed for Ch4nge: economics and GHG emission impacts of breeding more efficient sheep
- Socio-economics of wetter farming/paludiculture (LAWDWP+)

Areas of research interest/expertise

- Economics of developing and adopting innovative technology and digitalisation in farming and value chains. With additional interests in agri-environmental economics and social impacts of policies and changing external environments.
- My core expertise is in bioeconomic/techno-economic modelling of agricultural and ecological systems, agricultural risk and investment analysis, and agribusiness strategy.

Key publications

- **Behrendt, K.;** Brown, C.G.; Qiao, G.; Bao, Z. (2022). Assessing the opportunity costs of Chinese herder compliance with a payment for environmental services scheme. *Ecological Economics*. 193, 107313. <https://doi.org/10.1016/j.ecolecon.2021.107313>
- **Behrendt, K.;** Takahashi, T.; Kemp, D.R.; Han, G.D.; Li, Z.; Wang, Z.; Badgery, W.; Liu, H. (2020). Modelling Chinese grassland systems to improve herder livelihoods and grassland sustainability. *The Rangeland Journal*. 42(5), 329-338. <https://doi.org/10.1071/RJ20053>

Dr Kreseda Smith

Position Senior Lecturer in Rural Criminology and Social Sciences

Department A&E

Research Group(s) Director of the Rural Resilience Research Group (3RG)



Brief summary

Her PhD explored the impact of farmer behaviour on crime prevention decision-making. Her teaching includes organised rural criminality, crime in the global property market, and introduction to research methods for undergraduate students. She has extensive experience in supervising student projects at undergraduate level, and currently directs several PhD students. She is the Chair of the European Rural Criminology Working Group, is an ISSRC Executive member, a Research Associate of the Centre for Rural Criminology at University of New England, and Director of Harper Adams University's Rural Resilience Research Group (3RG). Dr Smith has been working in the field of rural criminology for over a decade and has established a significant national and international reputation for her work. She regularly publishes in high quality academic journals, provides academic input to police forces, insurers, and a range of national bodies, and presents her work at various national and international conferences.

Areas of current research

Organised Agricultural Criminality, farmer mental health, rural community confidence in the police, farmer crime prevention decision-making

Areas of research interest/expertise

Cultural Property and Heritage Asset Crime in the Rural setting, MSHT in agriculture, second- and third-order impacts of crime in the rural space

Key publications

Smith, K. Under Review. The Challenge of Organised Agricultural Criminality: Psychological and Wider Societal Impact. CEPOL European Law Enforcement Research Bulletin.

Smith, K. 2025. Crime and safety in rural England. In A. Harkness and V. Ceccato (Eds.) Crime, People and Places. Routledge.

Smith, K. & Byrne, R. 2024. The darker side of rural masculinity: second and third order impacts of low help-seeking behaviour following the trauma of victimisation. International Journal of Rural Criminology Special Issue 8(1), pp. 642-670. <https://doi.org/10.18061/ijrc.v8i4.9971>

Smith, K. 2024. The Intersection of Rural Criminology and Food Security: The Impact of Organised Criminal Groups in the Rural Space. In G. Mesko, S.K. Ivkovic, R. Hacin (Eds.) The UN Sustainable Development Goals and Provision of Security, Responses to Crime and Security Threats, and Fair Criminal Justice Systems. University of Maribor Press: Ljubljana, pp. 185-208. Available at: <https://press.um.si/index.php/ump/catalog/book/894>

Smith, K. 2023. Farm Crime Victimisation and Prevention Decision Making: Can insights from England and Wales inform the Baltic Sea Region? NK Neue Kriminalpolitik, 35(4): 434-454. <http://doi.org/10.5771/0934-9200-2023-4>

Smith, K. 2022. Piling on the Pressure: Crime and Stress in British Farming. International Journal of Rural Criminology, 6(2): 197-222. <http://doi.org/10.18061/ijrc.v6i2.8754>

Smith, K. 2020. Desolation in the Countryside: How agricultural crime impacts the mental health of British farmers. Journal of Rural Studies, 80: 522-531. <http://doi.org/10.1016/j.jrurstud.2020.10.037>

Dr Hairong Mu

Position: Senior Lecturer in Economics

Department: Harper Adams Business School

Research Group(s): Centre for Social Science – Global Institute for Agri-Tech Economics



Brief summary:

My research interests lie broadly within Microeconomics, with a particular focus on Competition Policy and Regulation.

Areas of current research

My recent research has focused on the marine industry in China, where I investigate the interplay between economic efficiency and environmental regulation. In this context, I examine the challenge and opportunities for achieving sustainable development within the marine economy. In addition to analysing industry performance and regulatory impact, my work also contributes to the formulation of practical policy recommendations designed to support long-term economic growth while safeguarding environmental resources.

Areas of research interest/expertise

- Microeconomics
- Industrial Organization
- Competition Policy and Regulation
- Marine Economy and Policy
- Education of Economics

Key publications

- J. Sun, M. Li, N. Zhai, H. Mu, W. Li, H. Liu (2025) [Enhancing carbon neutrality through blue carbon fisheries: Spatial analysis in Shandong](#) *Regional Studies in Marine Science*, **85**.
- J. Sun, W. Li, H. Mu, M. Li, N. Zhai, H. Liu (2025) [Mapping the Evolving Landscape of Urban Resilience: A Scientometric Analysis Using CiteSpace](#) *Journal of Planning Literature*.
- J. Sun, N. Zhai, H. Mu, J. Miao, W. Li, M. Li (2023) [Assessment of urban resilience and subsystem coupling coordination in the Beijing-Tianjin-Hebei urban agglomeration](#) *Sustainable Cities and Society*, **100**.
- J. Sun, N. Zhai, J. Miao, H. Mu, W. Li (2022) [How do heterogeneous environmental regulations affect the sustainable development of marine green economy? Empirical evidence from China's coastal areas](#) *Ocean & Coastal Management*, **232**.
- H. Zheng, L. Zhang, W. Song, H. Mu (2022) [Pollution heaven or pollution halo? Assessing the role of heterogeneous environmental regulation in the impact of foreign direct investment on green economic efficiency](#) *Environmental Science and Pollution Research*.
- J. Sun, J. Miao, H. Mu, J. Xu, N. Zhai (2021) [Sustainable development in marine economy: assessing carrying capacity of Shandong province in China](#) *Ocean & Coastal Management*, **216**.
- H. Zheng, X. Liu, Y. Xu, H. Mu (2021) [Economic spillover effects of industrial structure upgrading in China's coastal economic rims](#) *Sustainability*, **13**.
- H. Zheng, J. Zhang, X. Zhao, H. Mu (2020) [Exploring the affecting mechanism between environmental regulation and economic efficiency: new evidence from China's coastal areas](#) *Ocean & Coastal Management*, **189**.
- H. Zheng, H. Mu, X. Zhao (2018) [Evaluating the demand for aquaculture insurance: An investigation of fish farmers' willingness to pay in central coastal areas in China](#) *Marine Policy*, **96**. pp.152-162.

Prof. James Lowenberg-DeBoer

Position Elizabeth Creak Professor of Applied Agri-Tech Economics

Department: Harper Adams Business School

Research Group(s): Global Institute of Agri-Tech Economics, Harper Institute of Technology, Centre for Social Science



Brief summary Prof. Lowenberg-DeBoer focuses on the economics of new technology. He works with teams of engineers and other scientists in the initial conception and does the economic feasibility analysis of prototypes. After commercialization, he works to understanding who adopted the technology and why.

Areas of current research

- Economics of agricultural robotics and automation
- Agricultural technology adoption
- Responsible innovation in agriculture
- Non-market factors in Total Factor Productivity (TFP)

Areas of research interest/expertise

- Economic assessment of new technology
- Farm mathematical optimization modelling
- Econometrics of technology adoption

Key publications

- Strine, Joshua, Chad Fiechter, James Lowenberg-DeBoer (2025). The economics of US row crop production with large-scale autonomous machines. *Smart Agricultural Technology*, 12. <https://doi.org/10.1016/j.atech.2025.101599>
- Franklin, K., Gill, J., Lowenberg-DeBoer, J., Gutteridge, M., Abell, M., Godwin, R. (2025). Hands free Hectare: The heuristics of the first arable crop produced by robots, *Smart Agricultural Technology*, 12. <https://doi.org/10.1016/j.atech.2025.101475> .
- Maritan, Elias, Evangelos Anastasiou, Vasilis Psiroukis, James Lowenberg-DeBoer, Spyros Fountas, Karl Behrendt (2025) An agroecological assessment of uncrewed aerial vehicle spraying in Greek viticulture, *Smart Agricultural Technology*, <https://doi.org/10.1016/j.atech.2025.100837>
- Al-Amin, A. K. M. Abdullah, Lowenberg-DeBoer, J., Erickson, B. J., Evans, J. T., Langemeier, M. R., Franklin, K., & Behrendt, K. (2024). Economics of strip cropping with autonomous machines. *Agronomy Journal*, 1–18. <https://doi.org/10.1002/agj2.21536>
- Lowenberg-DeBoer, James, and Bruce Erickson, “Setting the Record Straight on Precision Agriculture Adoption,” *Agronomy Journal* 111 (2019), p. 1552-1569. <https://doi:10.2134/agronj2018.12.0779>

Dr Dimitrios Paparas

Position: Reader in Economics

Department: Harper Adams Business School

Research Group(s) GIATE, Centre for Social Science



Brief Summary

I am currently a Reader in Economics. With over 15 years of academic experience, I have developed a multidisciplinary research profile that spans applied economics, agricultural and environmental sustainability, energy economics, fiscal policy, and agri-tech. I am also a regular contributor to international conferences, journals, and editorial boards.

Areas of Current Research

- Economic-environmental modelling for sustainability transitions.
- Quantile connectedness in agri-commodity and energy markets.
- Empirical assessments of fiscal and monetary policy impacts on carbon emissions.
- Agricultural productivity and price transmission within supply chains.
- The interface between trade openness, energy mix, and environmental performance.

I am currently leading or involved in funded research projects on agricultural productivity (DEFRA, CEIA), environmental sustainability (QR HAU), and market dynamics (Worshipful Company of Butchers).

Areas of Research Interest/Expertise

- Environmental and Energy Economics
- Agri-food Supply Chains and Price Transmission
- Sustainable Development and Circular Economy
- Fiscal Policy and Economic Growth

Key publications

1. **Ghosh, B., Gubareva, M., Ghosh, A., Paparas, D., & Vo, X. V.** (2024). Food, energy, and water nexus: A study on interconnectedness and trade-offs. *Energy Economics*, 133, 107521. <https://doi.org/10.1016/j.eneco.2024.107521>
2. **Kostakis, I., Paparas, D., & Tsagarakis, K. P.** (2023). Disaggregated energy use and socioeconomic sustainability within OECD countries. *Journal of Environmental Management*, 334, 117475. <https://doi.org/10.1016/j.jenvman.2023.117475>
3. **Hasanov, F., Sbia, R., Papadas, D., & Kostakis, I.** (2024). The consumption-based carbon emissions effects of renewable energy and total factor productivity: The evidence from natural gas exporters. *Energy Reports*. <https://doi.org/10.1016/j.egy.2024.11.054>
4. **Barboza Martignone, G. M., Ghosh, B., Papadas, D., & Behrendt, K.** (2024). The rise of soybean in international commodity markets: A quantile investigation. *Heliyon*, 10(15), e34669. <https://doi.org/10.1016/j.heliyon.2024.e34669>
5. **Ghosh, B., Kazouz, H., Kostakis, I., & Papadas, D.** (2024). Quantile connectedness in renewable energy companies and related commodities during COVID-19 outbreak. *Environmental Economics and Policy Studies*. <https://doi.org/10.1007/s10018-024-00410-7>
6. **Khan, M., Papadas, D., Arnold, L., & Behrendt, K.** (2024). Sustainability challenges in the multi-tier crop agri-food sector: A systematic review. *Agricultural and Food Economics*, 12(1), 25. <https://doi.org/10.1186/s40100-024-00319-5>
7. **Khan, M., Behrendt, K., Papadas, D., & Arnold, L.** (2024). Strategic sustainable development: The role of intermediaries in managing the sustainability compliance of a multi-tier crop agri-food supply chain. A developing economy perspective. *Sustainable Development*. <https://doi.org/10.1002/sd.3159>

Dr Daniel May

Position: Senior Lecturer in Rural Economy

Department: Business School

Research Group(s): Global Institute for Agri-Tech Economics.



Brief summary

I am an economist and social science researcher focused on international trade in agriculture, strategic behaviour, and historic rural landscapes.

Areas of current research

My main area of research consists of modelling international trade of agricultural and food processed goods under market power. The topics that this research includes are: agricultural trade liberalisation; trade shock impacts on the trade system; and simulations to predict trade events using real data.

My secondary areas of research are strategic behaviour and historic rural landscapes. Regarding strategic behaviour, I study economic and socio-psychological drivers of behaviour to understand consumers' and farmers' decision-making. Regarding historic rural landscapes, my research focuses on extracting information from the rural landscape to explore how people in the past organised the landscape by means of network analysis.

Key publications

- May, D.E., Soza-Amigo, S., and Tremma, O. (2025). A theoretical assessment of informal agricultural cooperation under distrust: implications from a network perspective. *Journal of Agricultural & Food Industrial Organization* 23(1): 65-72.
- May, D.E. (2025). Exploring the Rural Landscape of the Marches of the Welsh Borders in Roman Times Through Intervisibility Analysis. *Land* 17(4): 728.
- May, D.E. (2024). Mixed Methods in Landscape Archaeology: An Application to Explore Identity Formation in the Romano-British Period, Shropshire Region. *Journal of Mixed Methods Research* 19(2): 165-190.
- May, D. and Tremma, O. (2023). Effects of Sustainable Regulations at Agricultural International Market Failures: A Dynamic Approach. *Sustainability* 15(3): 2419.
- May, D., Arancibia, S. and Manning, L. (2021). Understanding UK farmers' Brexit voting decision: A behavioural approach. *Journal of Rural Studies* 81: 281-293.
- May, D.E., Arancibia, S., Behrendt, K., and Adams, J. (2019). Preventing young farmers from leaving the farm: investigating the effectiveness of the young farmer payment using a behavioural approach. *Land Use Policy* 82: 317-327.
- May, D.E. (2016). International Trade Networks under Global Treaty Stability. *Bulletin of Economic Research* 68(S1): 171-181.
- May, D.E. (2015). Inefficient Stable International Trade Networks. *Studies in Microeconomics* 3(1): 12-34.

Dr Dimitrios Iakovidis

Position: Senior Lecturer in Farm Business Management

Department: Agriculture and Environment

Research Group(s): GIATE - Centre for Social Science



Brief summary: I am an applied agricultural economist and farm business management specialist whose research focuses on the interface between farm business performance, sustainability, and agri-tech adoption. My work combines quantitative modelling and participatory approaches to assess economic resilience, farmer decision-making, and sustainable transitions in global farming systems.

Areas of current research

- 📄 Economic and social evaluation of sustainable and regenerative farming systems.
- Adoption and impacts of Agri-Tech and digital innovations on farm performance.
- Financial and risk management in agri-food supply chains.
- Economic analysis of climate adaptation and resource use in global agriculture.
- Applied research on farmers' behaviour and business resilience.

Areas of research interest/expertise

- Farm business management and benchmarking.
- Agricultural economics and policy analysis.
- Sustainable intensification and resilience metrics.
- Knowledge exchange, stakeholder engagement, and agri-innovation adoption.
- Rural development and international agricultural capacity building.

Key publications

- **Iakovidis, D.**, Gadanakis, Y., Campos-Gonzalez, J. et al. Optimising decision support tools for the agricultural sector. *Environ Dev Sustain* (2024). <https://doi.org/10.1007/s10668-024-04743-x>
- **Iakovidis, D.**, Gadanakis, Y., & Park, J. (2023). Farmer and Adviser Perspectives on Business Planning and Control in Mediterranean Agriculture: Evidence from Argolida, Greece. *Agriculture*, 13(2) (450). <https://doi.org/10.3390/agriculture13020450>
- **Iakovidis, D.**, Gadanakis, Y., & Park, J. (2022). Farm-level sustainability assessment in Mediterranean environments: Enhancing decision-making to improve business sustainability. *Environmental and Sustainability Indicators*, 15 (March), 100187. <https://doi.org/10.1016/j.indic.2022.100187>

Dr Fiona Williams

Position: Senior Lecturer in Rural Land use and Management

Department: Harper Adams Business School

Research Group(s): Rural Resilience Research Group (3 RG)



Brief summary

I am a rural geographer, often working at the policy-practice interface. A farming background continues to shape my research interests. I sit on related external groups, including the Rural Geography Research Group (RGRG) Committee of the Royal Geographical Society (RGS), and the Farming in Protected Landscapes Review Panel for the Shropshire Hills.

Areas of current research

- Generational renewal in farming
- Careers in agriculture and allied professions
- Rural digital society, particularly digital engagement and inclusion
- Rural community flood vulnerability and resilience
- Behavioural change of farmers with a focus on technology / policy

Key publications (related to these areas)

Generational renewal/ farming careers:

Toogood, C., Williams, F., & Nye, C. (2025) [Exploring calling to farming careers in the United Kingdom: a scoping review](#) *British Journal of Guidance & Counselling*

Rural digital society:

Philip, L., Williams, F. (2019) [Healthy Ageing in Smart Villages? Observations from the Field](#). *European Countryside* **11**

Philip, L., Cottrill, C., Farrington, J., Williams, F., Ashmore, F. (2017) [The digital divide: patterns, policy and options for connecting the final few in rural communities across Great Britain](#). *Journal of Rural Studies* **54**

Williams, F., Philip, L., Fairhurst, G. Farrington, J. (2016) 'Digital by Default' and 'the hard to reach': exploring solutions to digital exclusion in remote rural areas. *Local Economy* **31**

Rural flood vulnerability:

Jones, D., Williams, F. Mis, N., Marren, P. (2025) [Towards Equity? Advancing Rural Consideration in Flood Risk Management](#). *CIWEM Journal of Flood Risk Management* **18**

Jones, D., Bhattacharya Mis, N., Williams, F. (2024) [The evolution of the disaster risk management cycle and its continuing applicability to an evolving flood threat](#). In J. Lamond, D. Proverbs, N. Bhattacharya Mis (Eds), *Research Handbook on Flood Risk Management*, pp 9-24. Elgar Publishing

Policy and technological drivers and farmer behaviour:

Philip, L., Williams, F. (2019) [Remote rural home-based businesses and digital inequalities: Understanding needs and expectations in a digitally underserved community](#). *Journal of Rural Studies* **68**

Williams, F. (2018) [Digital Connectivity](#). In Reuschke, D. and M. Domecka. *Policy Brief on Home-Based Businesses, OECD SME and Entrepreneurship Papers, No. 11, OECD Publishing, Paris. pp 28-30*

Centre for Agricultural Data Science

The Centre for Agriculture Data Science (AgriDat) brings together experts in Agriculture Data Science, acting as a focal point for a team of multidisciplinary researchers. Drawing from statistics and computer science within applications subject areas including agronomy, animal science, and ecology, this centre is dedicated to utilizing best practice in experimental design and data acquisition. By transforming data into actionable insights, AgriDat aims to advance scientific understanding and provide accessible data-driven solutions for farmers, policy makers, and industry stakeholders, contributing to the enhancement of global food security and environmental stewardship. AgriDat has a strategic role in building data-centric research capacity and practice across the university and beyond.



Dr Megan Lewis

Position: Postdoctoral Research Assistant Farm Data

Department: Office of the Deputy Vice-Chancellor/ Agriculture and Environment

Research Group(s): Centre for Agricultural Data Science; Environmental Sustainability Farm Group: Data



Brief summary:

Megan's research interests lie at the intersection of agriculture, ecology and data science. Megan has a background in wildlife conservation (BSc Honours) and entomology (MSc) which provided her with a solid foundation during her PhD which focused on the use of livestock anthelmintics using targeted selective treatment regimens and the impacts on non-target insect communities in Australia. More recently, Megan has begun to focus more on the use of digital tools and data science and how this can be used to support farm management while maintaining biodiversity and ecosystem services.

Areas of current research:

- Developing a system to collate Harper Adams biodiversity data for easier monitoring of biodiversity and FAIR data access
- River Severn Partnership Advanced Wireless Innovation Region: Digital Innovation Farm North – Investigating the use of advanced wireless networks in rural environments for improved data collection and decision-making.

Areas of research interest/expertise:

- Entomology with a focus on dung beetle ecology
- Wildlife Conservation in an agricultural context
- Biodiversity Monitoring
- Farm Data Systems
- Data-driven agriculture
- Data Science

Key publications:

- **Lewis, M. J.**, Didham, R. K., Evans, T. A. and Berson, J. D. 2024. Experimental evidence that dung beetles benefit from reduced ivermectin in targeted selective treatment of livestock parasites. *The Science of The Total Environment*, 945 (4): 174050. <https://doi.org/10.1016/j.scitotenv.2024.174050>
- Berson, J. D., Edwards, P. E., Ridsdill-Smith, T. J., Taylor, C. K., ... **Lewis, M. J.**, ... Didham, R. K., and Evans, T. A. 2024. Deliberately introduced dung beetles in Australia: 12 years of occurrence and abundance records from 2001 to 2022. *Ecology*, 105 (7): e4328. <https://doi.org/10.1002/ecy.4328>
- **Lewis, M. J.**, Berson, J. D., Didham, R. K. and Evans, T. A. 2023. A simple technique to assess resource use in dung beetle breeding studies. *Ecological Entomology*, 48 (6), Pp. 627-635. <https://doi.org/10.1111/een.13277>
- Noriega, J. A., Hortal, J., ... **Lewis, M. J.**, ... and Santos, A. M. C. 2023. *Nature Communications*, 14, 8070. <https://doi.org/10.1038/s41467-023-43760-8>

Resercher IDs etc:

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=58571555000>

ORCID: 0000-0002-8707-9211

Agroecology for Sustainable Food Systems

Agroecology for Sustainable Food Systems is a cross-disciplinary research group that works across fields and University research centres, towards a common purpose – more sustainable food systems. The group brings together natural scientists, economists, social scientists, on-farm ecologists, livestock and crop production specialists, and experts working in the wider food chain. The multidisciplinary research team investigates contemporary challenges and opportunities in the food chain, from innovative and regenerative agriculture, to resilient food supply chains, and sustainable consumption.



Dr Richard Byrne

Position : Principal Lecturer Food Security and Land Management

Department ; Harper Adams Business School

Research Group(s) Agroecology for Sustainable Food Systems



Brief summary

Richard has over 25 years of experience in land management and food security. His career spans challenging environments including Afghanistan, Angola, Nigeria, and Zambia, where he has led policy and livelihoods initiatives within the Human Security domain.

For the past 15 years, Richard has concentrated on advancing Stabilisation Agriculture and designing integrated livelihood solutions for conflict-affected and post-conflict regions, promoting food security and economic resilience. His current research explores the nexus of climate (in)security and food systems, focusing on strategies to mitigate climate-related risks.

Areas of current research

Climate insecurity and food systems in the Hashemite Kingdom of Jordan

Development of supplementary sustainment growing systems for use in HADR (Humanitarian Assistance and Disaster Relief) environments.

Areas of research interest/expertise

Black Sea agriculture and trade

Climate (In)Security and food systems

Conflict and food systems.

Key publications

P.S. Kettlewell, R. Byrne, S. Jeffery (2023) Wheat area expansion into northern higher latitudes and global food security Agriculture, Ecosystems & Environment, 351.

Ministry of Defence - contributing author (2021) Ministry of Defence Climate Change and Sustainability Strategic Approach

A. Adam-Bradford, G. El-Kahlout, R. Byrne, J. Wright, M. Rahman (2020) Stabilisation agriculture: reviewing an emerging concept with case studies from Afghanistan and Iraq. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 15.

N. Verrall, M. Dunkley, T. Gane, R. Byrne (2019) Dangerous liaisons: A 'Big Four' framework that provides a 'hint' to understanding an adversary's strategy for influence. The RUSI Journal, 164. pp.52-68

Dr Marie Kirby

Position: Senior Lecturer in Animal Science

Department: Agriculture and Environment



Research Group(s): Agroecology for Sustainable Food Systems; Soil and Water Science Group

Brief summary: My main research interests involve the use of novel engineering technologies to develop processes to circularise the valorisation of agricultural wastes and by-products. This research has explored the optimisation of waste/residue utilisation, bioenergy production and the reduction in greenhouse gas emissions and environmental impacts of our current agricultural practises. More recently, my research has examined the removal of fertiliser components from animal slurries and manures to make replacement crop fertilisers, examining their effectiveness for crop utilisation and environmental impacts. I have also investigated the survivability of pathogens and antibiotics from manures through anaerobic digestion, prior to land application.

Areas of current research:

- Nutrient removal and recovery from animal slurries, manures and anaerobic digestates to generate novel crop nutrient products (for example [Phosphorus circularity project](#))
- Optimisation of anaerobic digestion, pyrolysis and smouldering systems
- Pathogen surveillance and reduction in agricultural environments
- Reducing the environmental impact (air, soil and water) of agricultural practises

Areas of research interest/expertise:

Novel technology development and integration (nutrient recovery, anaerobic digestion, pyrolysis, smouldering, pre-treatments); Development of associated regulatory, socio-environmental and systematic mapping assessments

Key publications:

- Kirby, M.E.** et al. 2024. Thermo-catalytic reforming pyrolysis of ensiled *Saccharina latissima* dominated macroalgal pellets for bioenergy production. *Energy Conservation and Management: X*. <https://doi.org/10.1016/j.ecmx.2024.100692>
- Hall, D. et al. 2023. Valorisation of Poultry Litter: A socio-environmental cost-benefit comparison of traditional land application and anaerobic digestion. In: Proceedings of the 6th Symposium on Agri-Tech Economics for Sustainable Futures. HAU, Newport, UK, 18-19 September 2023, pp 122-137.
- Gallagher, J.A. et al. 2020. Bio-processing of macroalgae *Palmaria palmata*: metabolite fractionation from pressed fresh material and ensiling considerations for long-term storage. *Journal of Applied Phycology*. <https://doi.org/10.1007/s10811-020-02295-x>
- Kirby, M.E.** et al. 2020. Increasing the Methane Potential of Oat Husks Using a Novel Extrusion Pre-Treatment Technology Prior to Anaerobic Digestion. *Frontiers in Energy Research*. <https://doi.org/10.3389/fenrg.2020.579034>
- Kirby, M.E.** et al. A novel nitrogen removal technology pre-treating chicken manure, prior to anaerobic digestion. *Sustainability*, 12(8). <https://doi.org/10.3390/su12187463>
- Kirby, M.E.** et al. 2019. Destruction of *Staphylococcus aureus* and the impact of chlortetracycline on biomethane production during anaerobic digestion of chicken manure. *Heliyon*, 75, e02749. <https://doi.org/10.1016/j.heliyon.2019.e02749>
- Oreggioni, G.D. et al. 2017. Techno-economic analysis of bio-gas upgrading for bio-methane production from agriculture and food industry waste. *Energy Procedia*, 123, 1-20. <https://doi.org/10.1016/j.egypro.2017.07.252>

Dr Claire Munialo

Position: Senior Lecturer in Food Science

Department: Harper Food Innovation

Research Group(s): Agroecology for Sustainable Food Systems, Engaging for Change,



Brief summary:

My research encompasses experimental approaches to understanding the functional properties of food in particular proteins. I am a registered nutritionist and food scientist who is interested mainly in understanding the framework of exchangeability of proteins, where animal-based proteins can be exchanged with alternatives such as those of plant-origin and the impact of this on nutritional aspects of food and food products as well as environmental impact of substituting or replacing animal-based food products with alternative proteins.

Areas of current research

Techno-functional aspects of emerging alternative proteins such as lupine, but also of those proteins that have been around and studied for a while such as soy proteins.

Environmental impact of alternative proteins

Nutritional aspects of alternative proteins

Areas of research interest/expertise

Emerging technologies for the formulation of products from alternative proteins

New product formulation using alternative proteins

Technofunctional characterisation of proteins

Key publications

Munialo, C. D., & Nyambayo, I. (2025). An Exploration of the Link Between Genes and Nutrition and How They Affect Food Behavior and Choice. *Nutrition Reviews*, nuaf108.

Munialo, C. D., Baeghbali, V., & Acharya, P. (2025). Plant-based alternatives to meat products. *Foods*, 14(8), 1396.

Ogutu, Fredrick O., Gertrude Okiko, George Wanjala, Susan Luvitaa, Boniphase Oure, Frank Vriesekoop, and Claire D. Munialo. "Food Safety Aspects as Potential Impediment to the Adoption of Plant-Based Alternative Protein Products in Sub-Saharan Africa." *Food Science & Nutrition* 13, no. 4 (2025): e70050.

Centre for Evidence-Based Agriculture

The Centre for Evidence-Based Agriculture 'synthesises' existing agri-food evidence to support decision-making in policy, industry, practice and research. CEBA use structured 'evidence synthesis' methods to collate and evaluate existing research to support decisions. The CEBA is an interdisciplinary centre & works widely with external partners to address real-world questions relating to agri-food, the wider environment and related socio-economic issues. Evidence syntheses can vary in their scope and methodology and are influenced by the type of question being addressed and also by the timescale available.



Dr Iona Y Huang, ORCID: 0000-0003-0559-3952

Position: Reader

Department: Harper Adams Business School

Research Group(s): Centre for Evidence-Based Agriculture; Global Institute for Agri-Tech Economics; Business and Land Based Decision Making



Brief summary

Principal Investigator and Co-Investigator on major interdisciplinary projects funded by EPSRC, DEFRA, the European Commission (H2020), Natural England, and AHDB, with expertise in Sustainable, Resilient and Responsible Food Supply Management. Research informs policy (DEFRA, Welsh Government, AHDB), contributes to international standards (ISO, BSI), and delivers real-world impact through community initiatives such as the Harper Adams Community Fridge

Areas of current research

- Food insecurity and food waste reduction (community initiatives, international standards, food supply chain management practices)
- Sustainable land management (agroforestry, peatland restoration, regenerative agriculture, ELM schemes, resilience building)

Areas of research interest/expertise

- Food system sustainability and resilience
- Agri-food policy and governance
- Responsible and circular supply chains incl. food waste management
- Regenerative and climate-smart agriculture
- Adoption of agricultural technology
- International and intercultural dimensions of higher education and sustainability

Key publications

- Huang, I.Y., Forero, O.A., Wagner-Medina, E.V., Florez Diaz, H., Tremma, O., Fargetton, X., Lowenberg-DeBoer, J. (2025) Resilience of food supply systems to sudden shocks: A global review and narrative synthesis *Global Food Security* 44, 100842
- Huang, I.Y., James, K., Thamthanakoon, N., Pinitjitsamut, P., Rattanamanee, N., Pinitjitsamut, M., Yamklin, S. and Lowenberg-DeBoer, J. (2023) Economic outcomes of rubber-based agroforestry systems: a systematic review and narrative synthesis. *Agroforestry Systems* 97(3), pp.335-354.
- Huang, I.Y., Manning, L., Wood, V., James, K.L., Millington, A., Grigoriadis, V. and Ward, S. (2022) Creating sustainable value through food waste management: does retail customer value proposition matter? *British Food Journal* Vol. 124 No. 10, pp. 3201-3219.
- Huang, I.Y., Manning, L., James, K.L., Grigoriadis, V., Millington, A., Wood, V. and Ward, S. (2021) Food waste management: A review of retailers' business practices and their implications for sustainable value. *Journal of Cleaner Production* 285, p.125484.
- Huang, I. Y., Williamson, D., Lynch-Wood, G., Raimo, V., Rayner, C., Addington, L. and West, E. (2020) Governance of agents in the recruitment of international students: A typology of contractual management approaches in higher education, *Studies in Higher Education*, V.47, 1150-1170.
- Lowenberg-DeBoer, J. Huang, I.Y., Grigoriadis, V. and Blackmore, S. (2019) [Economics of robots and automation in field crop production](#) *Precision Agriculture*, Volume 21, pages 278–299.

Dr Katy James

Position Principle Postdoctoral Research Associate

Department Agriculture and Environment Department

Research Group(s) Centre for Evidence-Based Agriculture; Agroecology for Sustainable Food Systems



Brief summary

I work in the CEBA, a reviewing, training and co-ordinating hub for the collation and synthesis of agri-food evidence to support decision-making. I develop evidence synthesis methodology to inform environmental and agricultural decision-making, and I have over 10 years' experience in carrying out evidence syntheses covering a wide range of topics. I also have background and PhD in agroecology and contribute to the [Agroecology for Sustainable Food Systems](#) research centre at Harper Adams University.

Areas of current research (Please see my HAU staff directory profile for full list of projects)

Examples include - Humane stunning of wild-caught finfish; Value of mob grazing to support historic and ecological asset management; Innovations in arable cultivation systems and their impacts on buried heritage assets; Slurry storage ammonia emissions and their mitigation; Food and feed safety in circular economy; Economic outcomes of rubber-based agroforestry systems; Food waste management in retail; Cultural control of aerial oomycete-associated diseases in protected horticulture.

Areas of research interest/expertise

Development of evidence synthesis methodology; Carrying out evidence syntheses including systematic maps, rapid evidence reviews and quick scoping reviews on a wide range of topics.

Key publications (examples)

Reviewing methodology: James, K.L., Randall, N.P., Haddaway, N.R. 2016. A methodology for systematic mapping in environmental sciences. *Environmental Evidence* 5:7

Agroecology: Dicks, L.V., Ashpole, J.E., Dänhardt, J., James, K., Jönsson, A. M., Randall, N., Showler, D.A., Smith, R.K., Turpie, S., Williams, D. and Sutherland, W.J. Chapter 4 Farmland Conservation. In: Sutherland, W.J., Dicks, L.V., Petrovan, S.O. and Smith, R.K (eds) 2021. *What Works in Conservation 2021*. Cambridge, UK: Open Book Publishers, 2021.

Animal welfare: James, K.L., Prats Aparicio, S., Jayasuriya, N.S., Herath, T.K., Lines, J., Sneddon, L.U., Amarasinghe, U.S., Randall, N.P. 2025. Humane stunning or stun/killing in the slaughter of wild-caught finfish: The scientific evidence base. *Animal Welfare* 34:e33. doi:10.1017/awf.2023.30

Food and feed safety: James, K., Millington, A., & Randall, N. (2022). Food and feed safety vulnerabilities in the circular economy. *EFSA Supporting Publications*, 19(3), 7226E.

Food waste: Huang, I.Y., Manning, L., James, K.L., Grigoriadis, V., Millington, A., Wood, V., Ward S. 2021. Food waste management: a review of retailers' business practices and their implications for sustainable value. *Journal of Cleaner Production* Volume 285:125484

Plant pathology: Beacham, A.M., James, K.L., Randall, N.P. and Monaghan, J.M. 2023. Challenges and recommendations for the development of cultural control of aerial oomycete-associated diseases in protected horticulture. *European Journal of Plant Pathology* 167(2), 207-219.

Harper Institute of Technology

The Harper Institute of Technology is a network of leading multidisciplinary researchers working on innovative agricultural technology for sustainable agriculture, precision farming, automation and robotics. The Harper Institute of Technology has a wide expertise in agricultural technology, engineering and agri-tech economics ranging from swarm robotics, drones, autonomous vehicles, telemetrics, electronic identification and artificial intelligence to precision spraying, sustainable soil management (Controlled Traffic Farming, Low Tyre/Track Pressure Systems, reduced tillage strategies), soil engineering (soil-tyre-tine interactions) and advanced agronomy (eg. intercropping). In collaboration with the Global Institute for Agri-Tech Economics (GIATE) the group is linked to a worldwide network of agri-tech economics researchers.



Prof Fernando Auat Cheein

Position Professor

Department Engineering of Engineering

Research Group(s) Harper Institute of Technology



Brief summary Prof. Fernando Auat Cheein is a Professor of Engineering at Harper Adams University, UK, specializing in robotics, artificial intelligence, and sensing systems for agriculture and biosystems engineering. His research focuses on the design, control, and validation of autonomous systems for farming, with particular expertise in field robotics, perception, and technology adoption. Prof. Auat Cheein has held academic and research positions in the UK, Chile, Argentina and Brazil, and has collaborated extensively with both academia and industry worldwide. He has published widely in robotics and agricultural engineering journals, serves on editorial boards, and leads multidisciplinary projects at the intersection of automation, sustainability, and food security. Fernando is an IEEE Senior Member and Fellow from IAgrE.

Areas of current research Robotics, Agricultural robotics, Sensing, Vision systems, SLAM and Machine learning applications

Areas of research interest/expertise Crop modelling, 3D modelling and reconstruction, autonomous navigation, energy efficiency in vehicles, motion control systems.

Key publications

Vasconez J.P., Kantor G.A., Auat Cheein F.A.
Human-robot interaction in agriculture: A survey and current challenges
(2019) Biosystems Engineering, 179, pp. 35 – 48

Auat Cheein F.A., Carelli R.
Agricultural robotics: Unmanned robotic service units in agricultural tasks
(2013) IEEE Industrial Electronics Magazine, 7 (3), art. no. 6603408, pp. 48 – 58

Vasconez J.P., Delpiano J., Vougioukas S., Auat Cheein F.
Comparison of convolutional neural networks in fruit detection and counting: A comprehensive evaluation
(2020) Computers and Electronics in Agriculture, 173, art. no. 105348

Narvaez F.Y., Reina G., Torres-Torriti M., Kantor G., Cheein F.A.
A survey of ranging and imaging techniques for precision agriculture phenotyping
(2017) IEEE/ASME Transactions on Mechatronics, 22 (6), art. no. 8062821, pp. 2428 – 2439

Auat Cheein F., Steiner G., Perez Paina G., Carelli R.
Optimized EIF-SLAM algorithm for precision agriculture mapping based on stems detection
(2011) Computers and Electronics in Agriculture, 78 (2), pp. 195 - 207

Dr Marcelo Precoppe

Position: Reader in Agricultural Engineering

Department: Engineering

Research Group(s): Harper Institute of Technology



Brief summary:

I am an academic specialising in agricultural engineering with expertise in multiphysics simulation, participatory design, and sustainable agricultural technologies. I currently lead the Collaborative Simulation Lab and serve as Team Leader for Knowledge Exchange in the Engineering Department, fostering industry partnerships. My extensive international research portfolio spans postharvest technologies, solar-powered processing systems, and agricultural value chain enhancement across Africa, Europe, Asia, and Latin America.

Areas of current research:

My research predominantly focuses on advanced simulation techniques for agricultural challenges and sustainable technology development. Current research projects include:

- Utilising Finite Element Analysis (FEA), Multi-Body Dynamics (MBD), Discrete Element Method (DEM), and Computational Fluid Dynamics (CFD) for co-simulation of complex agricultural systems.
- Developing energy-efficient drying systems and food processing technologies
- Leading research on decentralised solar-powered cooling and processing systems to reduce post-harvest losses.

Areas of research interest/expertise:

- Multiphysics simulation, Finite Element Analysis (FEA), Computational Fluid Dynamics (CFD), Discrete Element Method (DEM), Multi-Body Dynamics (MBD), co-simulation methodologies.
- Postharvest technology, drying systems, food processing equipment design, machinery optimisation, energy efficiency in agricultural systems.
- Solar-powered processing systems, smallholder farmer technology adoption, agricultural value chain enhancement, food loss reduction.
- Participatory design approaches, technology development, knowledge exchange, stakeholder engagement, project management.

Key publications:

Stathers, T., Otieno, B., Kipkoech, B., et al. (2025). Developing commercial-scale fresh sweetpotato root storage in tropical areas of sub-Saharan Africa. *Journal of Stored Products Research*, 111, 10252223.

Amjad, W., Munir, A., Akram, F., et al. (2023). Decentralized solar-powered cooling systems for fresh fruit and vegetables to reduce post-harvest losses in developing regions: A review. *Clean Energy*, 7(3), 635-65323.

Precoppe, M. (2024). Simulation-based participatory technology development for rural enterprises. *BHM Berg- und Hüttenmännische Monatshefte*, 169 (8). pp. 444-452.

Dr Sven Peets

Position: Senior Lecturer in Mechatronics in Agricultural Engineering

Department: Engineering

Research Group(s): Harper Institute of Technology



Brief summary: My research focuses on automation, robotics, and efficiency improvements in agriculture, with the goal of addressing labour shortages and enhancing food security. As an agricultural engineer, I take a multidisciplinary and applied approach, aiming to develop sustainable and farmer-friendly technologies that can be adopted in real-world settings. My research activities have included development of a strawberry harvesting robot, Controlled Traffic Farming on grassland, rural energy systems, mechanisation of smallholders in Zambia, smallholder finger millet farming in Kenya, and a cost-effective imaging system for monitoring poultry behaviour in small-scale poultry sheds.

Areas of current research: Currently I am working on the collaborative project Agri-Robotics Regulatory Network (ARRNet) where I am leading the work on investigating stakeholder requirements on training provision.

Areas of research interest/expertise: Sustainable smallholder mechanisation, telemetry data for monitoring and efficiency, precision farming, traceability, automation in agriculture, human-machine interface, energy efficiency in agricultural systems, measurements and instrumentation.

Key publications

Rozenstein, O., Cohen, Y., Alchanatis, V., Behrendt, K., Bonfil, D.J., Eshel, G., Harari, A., Harris, W.E., Klapp, I., Laor, Y., Linker, R., Paz-Kagan, T., Peets, S., Rutter, S.M., Salzer, Y., Lowenberg-DeBoer, J. 2024. Data-driven agriculture and sustainable farming: friends or foes? *Precision Agriculture*, 25(1), 520–531. <https://doi.org/10.1007/s11119-023-10061-5>

Morgan, J.D.K., Peets, S., Mashatise, E. 2023. A cost-effective imaging system for monitoring poultry behaviour in small-scale Kenyan poultry sheds. *Agronomy Research*, 21(Special Issue 2), 537–550. <https://doi.org/10.15159/AR.23.033>

Hargreaves, P.R., Peets, S., Chamen, W.C.T., White, D.R., Misiewicz, P.A., Godwin, R.J. 2019. Improving grass silage production with controlled traffic farming (CTF): agronomics, system design and economics. *Precision Agriculture*, 20(2), 260–277. <https://doi.org/10.1007/s11119-018-09633-7>

Antille, D.L., Peets, S., Galambošová, J., Bienvenido, J.F., Godwin, R.J. 2019. Review: Soil compaction and controlled traffic farming in arable and grass cropping systems. *Agronomy Research*, 17(3), 653–682. <https://doi.org/10.15159/ar.19.133>

Samuel Oliver Wane

Position **Senior Lecturer**
Department **Engineering**
Research Group **Harper Institute of Technology**



Brief summary

Mr Sam Wane is a Senior Lecturer in Engineering at Harper Adams

University, UK, specialising in robotics, control and embedded systems. His research focusses on the implementation of Control Systems and Robotics in agriculture. He is the Principle Investigator for a variety of funded projects, notably Laser Weeding, Self-Driving vehicle, and automated phenotyping.

He has published topics on applied control along with teaching technologies in engineering and is passionate about the dissemination of STEM subjects. He is the current regional chairperson of the IET for the North West Midlands.

Areas of current research

Autonomous robotics, robotic handling, vision and applied deep learning

Areas of research interest/expertise

Embedded systems, programming, applied control, development of teaching aides

Key publications

Vargas Fernández, J. I., Wane, S., Arevalo-Ramirez, T. and Auat Cheein, F. 2025. Dynamic weed control using selective laser application with object tracking and target scheduling. *Computers and Electronics in Agriculture*, 239

Wane, S. O., Butler, M. and Bautista, A. J. 2024. Development of a microcontroller based robot and its use in teaching control and navigation. *Proceedings on Engineering Sciences*, 6 (4), pp. 1685–1694.

Wane, S. O., Butler, M. and Bautista, A. J. 2024. Development of a microcontroller based robot and its use in teaching control and navigation. *Proceedings on Engineering Sciences*, 6 (4), pp. 1685–1694.

Hu, W., Wane, S. O., Zhu, J., Li, D., Zhang, Q., Bie, X. and Lan, Y. 2023. Review of deep learning-based weed identification in crop fields. *International Journal of Agricultural and Biological Engineering*,

Bautista, A. J. and Wane, S. O. 2018. ATLAS Robot:A Teaching Tool for Autonomous Agricultural Mobile Robotics, [ICCAIS 2018 - 7th International Conference on Control, Automation and Information Sciences](#) DOI: 10.1109/ICCAIS.2018.8570494

Bautista, A. J., Wane, S. O., Nario, F., Torres, J. L. and Danao, T. E. 2018, ATLAS Robot:A Teaching Tool for Autonomous Agricultural Mobile Robotics [2018 International Conference on Control, Automation and Information Sciences \(ICCAIS\)](#)

Harper Food Innovation

Harper Food Innovation is a collaborative research group at Harper Adams University, dedicated to shaping a healthier, more sustainable, and more resilient food future. The group brings together food scientists, nutritionists, sensory analysts, product developers, supply chain specialists, and sustainability researchers, working closely with industry partners and other University centres.

From concept to consumer, the team explores the full breadth of the food system — developing innovative products, improving nutritional quality, enhancing food safety, and reducing environmental impact. Research spans sustainable ingredient sourcing, novel processing technologies, consumer behaviour, and the creation of supply chains that can adapt to global challenges.

By combining scientific expertise with creativity and real world insight, Harper Food Innovation addresses pressing issues in food production and consumption, delivering solutions that meet the needs of people, the planet, and the marketplace.



Dr Graham A. McAuliffe

Position: Reader in Environmental Assessments of Food Systems

Department: Harper Food Innovation

Research Group(s) HFI; TBD (seeking EU funding to launch an LCA centre)



Brief summary

Dr Graham McAuliffe is a Reader in Environmental Assessments of Food Systems at Harper Adams University, specialising in the application and advancement of Life Cycle Assessment (LCA) methodologies within agri-food systems. His research has carved a niche in refining LCA practices to address critical uncertainties of pollutant quantification—through precise experimental measurements of methane and nitrous oxide—and in pioneering the rapidly growing discipline of nutritional LCA (nLCA). This innovative field integrates nutritional composition and quality into environmental impact assessments, enhancing our understanding of food system footprints at the Enviro-Nutritional nexus.

Areas of current research

Life Cycle Assessment; Enviro-nutritional Analyses; Food matrix integration to Sustainability Assessments; Optimising Interdisciplinary Pedagogies

Areas of research interest/expertise

Greenhouse gas measurements & modelling; development of bespoke sustainability models; machine learning & automation; systematic literature reviews; meta-analyses; big data

Key publications (see [Google Scholar](#) for full list)

[Jebari et al., 2025](#). Carbon footprints of greenhouse gas mitigation measures for a grass-based beef cattle finishing system in the UK. *Int. J. LCA*. | [Pereyra-Goday et al., 2024](#). Carbon footprint of mixed farming crop-livestock rotational-based grazing beef systems using long term experimental data. *Ag. Sust. Dev.* | [McAuliffe et al., 2023](#). Are single global warming potential impact assessments adequate for carbon footprints of agri-food systems? *Env. Res. Letters*. | [McAuliffe et al., 2023](#). Protein quality as a complementary functional unit in life cycle assessment (LCA). *Int. J. LCA*. | [McAuliffe et al., 2022](#). Assessing catchment scale water quality of agri-food systems and the scope for reducing unintended consequences using spatial life cycle assessment (LCA). *J. Env. Manage.*

Dr Frank Vriesekoop

Position: Senior Lecturer

Department: Harper Food Innovation

Research Group(s)

Brief summary:

I am a food scientist in its broadest interpretation. Much of my research interests fall under the banner of food biotechnology. I currently look after about anything related to fermented beverages, which includes the university's vineyard. I am actively involved in editorial roles for a number of academic journals and the production of a textbook on food chemistry.



Areas of research interest/expertise

My research is quite varied and includes:

Consumer science related to alternative proteins

This includes research in a large number (10+) of countries to assess how people perceive the quality and value of alternative proteins such as: cultured, insects, mycoproteins, and plant-based proteins.

Consumer science related to gluten free foods

This includes research in a large number (20+) of countries to assess how people perceive the quality and value of gluten free products in their local shops, but also the price differences and affordability of gluten free products.

Fermentation related projects

This includes any fermentation related process (liquid & solid state fermentations). Some of this includes the production of alcoholic beverage, but with a great emphasis on the production of non-alcoholic versions of beer, wine, and spirits.

Food Industry byproduct utilisation

This has traditionally focussed on brewery by-products, but can include any industry where byproducts can be repurposed for the production of new foods.

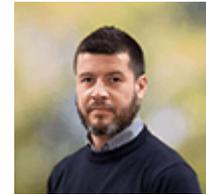
Key publications

- Gómez-Luciano, et al. 2019. Consumers' willingness to purchase three alternatives to meat proteins in the United Kingdom, Spain, Brazil and the Dominican Republic. *Food Quality and Preference*
- Kerby, C., & Vriesekoop, F. 2017. An overview of the utilisation of brewery by-products as generated by British craft breweries. *Beverages*
- Ogutu, et al. 2025. Food Safety Aspects as Potential Impediment to the Adoption of Plant-Based Alternative Protein Products in Sub-Saharan Africa. *Food Science & Nutrition*
- Mumbi, et al. 2025. Exploring consumer acceptance of grass-derived proteins in the UK: A structural equation modelling approach. *Food Quality and Preference*
- Dean, et al. 2024. Against the grain: consumer's purchase habits and satisfaction with gluten-free product offerings in European food retail. *Foods*
- Boereboom, et al. 2022. Brits and British Muslims and their perceptions of cultured meat: How big is their willingness to purchase? *Food Frontiers*
- Zhang, et al. 2024. Correlation between Microorganisms and Volatile Compounds during Spontaneous Fermentation of Sour Bamboo Shoots. *Fermentation*

Dr Eric Siqueiros

Position: Senior Lecturer

Department: Harper Food Innovation



Research Group(s) Agroecology for Sustainable Food Systems, Centre for Agricultural Data Science, Global Institute for Agri-Tech Economics (GIATE)

Brief summary

Dr Eric Siqueiros works as Senior Lecturer in the HFI and Innovation Manager for the Sustaining Shropshire project. His main interests are in developing processes and strategies for the sustainability metrics of the Food and Agricultural Sector. Eric holds a PhD focused in Sustainable Energy and Waste Recovery from Newcastle University. In recent years he has been working with sustainability assessment tools for farm management as well as Life Cycle Assessment of different farming systems.

Areas of current research

- Life Cycle Assessment of different crop and farming systems
- Novel approaches for LCA in agricultural products and waste valorisation
- Low-energy dehydration technology for food preservation
- Low methane sheep breeding for sustainable agriculture
- Modular insect farming for sustainable protein production
- Energy recovery from food industry waste

Areas of research interest/expertise

- Life Cycle Assessment (LCA)
- Sustainability assessment tools for agriculture
- Food waste valorisation and energy recovery
- Agricultural sustainability metrics
- Data Science and experimental design to address challenges in food production and environmental sustainability.
- Renewable energy applications in food processing
- Innovation management in agri-tech sector

Key publications

- 🔗 Siqueiros, E., Lamidi, R.O., Patharea, P.B., Wang, Y., Roskilly, A.P. (2018). Energy Recovery from Brewery Waste: experimental and modelling perspectives. *Energy Procedia*.
- 🔗 Sturm, B., Meyers, S., Zhang, Y., Law, R., Siqueiros Valencia, E.J., et al. (2015). Process intensification and integration of solar heat generation in the Chinese condiment sector. *Energy Conversion and Management*, 106, 1295–1308.
- 🔗 Chan, C.W., Siqueiros, E., Ling-Chin, J., Royapoor, M., Roskilly, A.P. (2015). Heat utilisation technologies: A critical review of heat pipes. *Renewable and Sustainable Energy Reviews*, 50, 615–627.



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