



**Harper Adams
University**

**Postdoctoral Researcher in Sustainable Agriculture Data Systems
[Full Time/Fixed Term up to 2 years with possibility of extension]**

Candidate Information Pack



Harper Adams is a friendly, talented community of more than 600 employees, working to ensure that everyone on the planet has access to food, and that this is achieved sustainably. Our work contributes to planetary health, animal health and wellbeing, and ultimately how this contributes to human health. We are passionate about what we do and are committed to making a difference.

Harper Adams University is committed to the wellbeing of our employees, and their personal and professional development. This is reflected in our annual employee survey - employees tell us they're proud to be a part of the university and that it is a good, safe place to work where they feel trusted to do their jobs and supported by their managers.

Whilst many of our teaching, research and knowledge exchange activities are delivered or coordinated from an attractive campus in rural Shropshire, our impact and reach is regional, national, and international. We offer free staff parking, leisure facilities, and we are only a short drive from the busy market town of Newport.

Some of the benefits of working at Harper Adams University are:

- Beautiful rural location
- Generous holiday entitlement
- On campus retail, catering and gym facilities
- Opportunity to purchase additional holiday
- Opportunities for agile working
- Employee Assistance Programme
- Disability Confident Employer
- Enhanced maternity benefits
- Enhanced sickness absence payments
- Cyclescheme supporter
- Workwear provided (*if applicable*)

Harper Adams University is the UK's premier educational institution serving the agri-food, animal wellbeing and connected industries, recognised as a world-leading specialist provider. Our focus is on food production and technology, animal health and wellbeing, management of land and property, and their contribution to sustainable living environments for our planet's population; we are equally committed to making the UK's food and farming competitive in a world where we will need to compete globally. Our education and research encompass food production and processing, animal sciences, environmental sustainability, mechanical engineering, land management and sustainable business management. We have strong relationships with companies in the UK and abroad, and with academic institutions across the world, collaborating in research and in the delivery of our courses. We are a University with regional, national and international reach and impact, repeatedly appearing in *The Times* and *The Sunday Times Good University Guide* as the UK's highest-ranked modern university.

The University began life in 1901 as Harper Adams Agricultural College and was granted University status in 2012. Our Chancellor is Her Royal Highness The Princess Royal; our current Vice-Chancellor is Professor Ken Sloan, who joined us in 2021. The University is based on a single campus in Shropshire, close to the old market town of Newport and within easy reach of the

modern town of Telford, which offers a range of housing possibilities and has excellent rail and road links to the West Midlands conurbation and beyond. Investment of more than £50 million over the last decade has ensured that our campus boasts the most up-to-date teaching, research and conference facilities as well as accommodation for around 800 students. Our most recent additions include contemporary laboratories and a purpose-built Veterinary Services Centre for teaching and research, swiftly followed by a £500,000 refurbishment of the veterinary nursing facilities. On-campus leisure facilities include a multi-gym, sports hall, dance and aerobics studio. And we are one of the very universities to have its own commercial farm: covering 494 hectares, its facilities include a £2 million leading-edge dairy unit with a robotic dairy.

For a virtual tour of campus, visit [www. Harper-adams.ac.uk/university-life/our-university/virtual-tour](http://www.Harper-adams.ac.uk/university-life/our-university/virtual-tour)

We are regarded as the UK's highest-ranked small specialist provider for the agri-food and animal wellbeing industries, consistently producing the largest cohort of graduates for the agri-food and animal wellbeing sectors, more than 99% of whom go immediately into employment. We currently have about 3,000 undergraduate and postgraduate students, studying both full-and part-time. Our courses cover not just every stage of the food chain – from developing the machinery used to prepare land through to how food is sold and the nutrients it delivers – but also broader subjects such as general business management, automotive engineering and veterinary professions, including, since the establishment of the Harper and Keele Veterinary School in 2020, Veterinary Medicine and Surgery. We have achieved the highest ratings in Quality Assurance Agency reviews. Our undergraduate curriculum is industry-aligned, work focused, co-developed and co-delivered with industry, rooted in partnerships with about 1,100 companies in the UK and abroad. At its heart is our mandatory Placement Year – a bespoke learning experience for our students, tailored to the real needs of employers. We offer a swathe of employer and philanthropically funded scholarships channelled through our Development Trust. And we support employers by providing a large range of (often bespoke) CPD courses – we have about 2,000 learners here – and with our Higher Level and Degree Apprenticeship Programmes launched in 2017. These courses enable us to address directly the skills needs of the UK's agriculture and food industry. We reinforced this work in 2021, by establishing, with support from the NFU, Morrisons and McDonalds, our School of Sustainable Food and Farming, tasked with ensuring that the sector has the skills to enable it to deliver its 2040 Net Zero goal.

We have a strong research profile. Our work is esteemed nationally and internationally for its quality and impact, particularly in areas such as entomology, sustainable agriculture, crops, livestock nutrition, autonomous and precision farming. In the 2021 Research Excellence Framework, 60% of our research was judged to be world-leading or internationally excellent. Our research is both strategic and applied. Our strategic research tackles the inter-related challenges of food security and sustainability, focusing on the need to achieve Net Zero in agriculture and food supply chains in concert with the requirements for sustainable agriculture. We focus particularly on smart agriculture; improving soil health; sustainable land use and rural communities; reducing the impact of ruminant livestock; sustainable food systems and the circular economy, and integrated pest and disease management. Our applied research, in collaboration with regional, national and international companies, addresses their particular needs and is an important part of our research portfolio. Student research also contributes

significantly to our research output - a research project is part of all our degree courses, undergraduate and postgraduate. Our research is structured around two overarching research centres covering Crop and Environmental Science, and Animal Welfare, each containing a number of themed groups; we also have cross-cutting multidisciplinary research groups, and our Future Farm – our focus to realise a pathway to Net Zero within wider sustainability parameters.

Harper Adams is a young university, energetic and purposeful – one that says not just ‘can do’ but ‘will do’ – ambitious and forward -looking. We are an optimistic, pragmatic and collaborative community, facing challenges with confidence, ready to grasp new opportunities. We aim by 2030 to combine being regarded as the UK’s leading specialist institution with being an internationally recognised university for food production animal health and wellbeing and their contribution to sustainable living environments for the world’s population. Our Vice-Chancellor, Professor Ken Sloan, has recently led a revision of our Strategy to take us up to 2030: this sets out how we can achieve this ambition by focusing on goals of inclusion, community, influence and sustainability. It charts a path that offers both opportunities and challenges – a pioneering journey that involves our whole Harper Adams’ community, one to which everyone working to make a difference belongs.

Facilities

Harper Adams has extensive, well-equipped facilities and is constantly investing in its campus. Facilities include a range of modern teaching facilities and an extensive library, a variety of IT suites including an engineering design centre, newly extended laboratory facilities, a field laboratory and a livestock project centre, a glasshouse complex, an agricultural engineering unit with a large, covered soil working area and a number of sustainable technology installations. New facilities opened since 2017 include new laboratories, an Agri-Tech Innovation Hub and SMART Dairy Unit. A Veterinary Education Centre opened 2021, in support of existing programmes and the new Harper & Keele Veterinary School. Capital funding to support the development of many of these facilities has been provided through the work of the Development Trust.

The University also provides a range of training and professional development opportunities via its staff development programme.

Catering and Sports Facilities

The University’s Students’ Union operates a membership fee paying gym that staff may join. The University has bowling green and tennis courts that are available for staff use during the summer period. A variety of university catering outlets provide access to lunch facilities on campus.

For further details about the University, please visit our website: <http://www.harper-adams.ac.uk>

JOB DESCRIPTION

Title of the post: Postdoctoral Researcher in Sustainable Agriculture Data Systems
[Full Time/Fixed Term up to 2 years with possibility of extension]

Department: Agriculture and Environment

Reporting to: Dr. Ed Harris

Centre for Agriculture Data Science (AgriDat) and Harper Adams University Future Farm

We seek to recruit a Postdoctoral Research Assistant to work on an ambitious project to develop and demonstrate a data-driven framework to support farmers and other stakeholders to access insights to improve outputs while lowering costs and environmental impacts like carbon emissions. This initiative will emphasize data accessibility, both for on-farm data capture and by identifying opportunities to join farm data with remote sensing information, biodiversity monitoring, and other data sources. This post has some flexibility in the scope for the successful candidate to pursue their own strengths or interests within the aims of the post and research group. The position would be suitable for someone with strong quantitative experience and a subject-relevant background and interest in crop modelling, carbon modelling, conservation impacts, biodiversity monitoring, or related fields, and an interest in applying data science tools within a scientific agriculture and environmental framework.

A key challenge this project will address is that of farm data management. While data are often curated in farming environments, they are not necessarily easily accessible and exist in a wide variety of siloed, proprietary formats. This project will address this by developing a data-stream to curate and analyse data derived from farm practice, encompassing facets like crop and livestock productivity, predictive crop modelling, animal welfare metrics, and biodiversity surveillance. The aim is to align data curation strategies and standards from across Future Farm with wider agricultural data ecosystems, such as Harper Adams Long Term Experiments, Global Farm Platform and Sustainable Farm Network. The project encompasses opportunities for skill enhancement for a postholder with subject-specific experience to quantitative skills in modelling and data science.

Agricultural sustainability in modern agriculture systems is contingent upon the interplay between knowledge, technological innovation, and efficient resource utilization. Beyond the traditional reliance on human observational capacities and experiential insights, there exists an imperative to incorporate data-driven agricultural technologies and precision agriculture methodologies (Rozenstein et al., 2023). By harnessing the potential of state-of-the-art sensor technologies and AI algorithms, we aim to leverage technology to innovate agriculture practice within natural systems. Such knowledge is paramount to achieve the overarching goals of sustainability and food security.

Rozenstein, O., Cohen, Y., Alchanatis, V., Behrendt, K., Bonfil, D.J., Eshel, G., Harari, A., Harris, W.E., Klapp, I., Laor, Y. and Linker, R., 2023. Data-driven agriculture and sustainable farming: friends or foes?. *Precision Agriculture*, pp.1-12.

Aims

- Integrate existing and new data and informatics systems with on-farm and ecological relevance
- Synthesize and transform farm and environmental data streams into accessible information relevant to efficient and sustainable agricultural practices
- Collaborate within an interdisciplinary team dedicated to innovating contemporary agriculture and ecology paradigms

Key responsibilities

The successful candidate will work to develop a farm data system integrating agronomic and environmental data systems for modelling on-farm carbon scenarios, crop yield and biodiversity impacts. This will involve collaborative integration with farm stakeholders by establishing and maintaining robust working relationships with academics, industry professionals, agricultural consultants, and farmers. Central to this will be to contribute to the establishment of an open data policy to demonstrate best practice for farm data integration. A central element of this data system will be to demonstrate carbon emissions modelling by developing and appraising best-practice for replicable farm carbon emissions modelling and scenario exploration.

The postholder will have the opportunity to participate in the development of a novel research project and long term experiments that aligns with practice within the research group, where we have strengths in integrating artificial intelligence into biodiversity monitoring methods, crop modelling systems, remote sensing. There will be opportunities for teaching and technical skill development.

Personal Specification

	Essential	Desirable
Qualifications	<p>A PhD (or equivalent experience) in agriculture, ecology, or a related field, with a strong element of statistical analysis/modelling</p> <p>An interest and experience in the use of statistical analysis and modelling in research</p>	<p>Track record of relevant scientific peer-reviewed publications related to this role</p>
Experience, knowledge and skills	<p>A track record of scholarly writing</p> <p>A willingness and aptitude to working and contributing to a multi-disciplinary research team, while leading the delivery of a defined component of the work</p> <p>Project organisation skills and self-motivation, organization, determination to succeed in the delivery of multiple concurrent tasks, confident initiative,</p>	<p>Experience of working in multi-disciplinary research teams</p> <p>Previous crop modelling experience (e.g. DSSAT)</p> <p>Advanced skill in reproducible programming languages such as R or Python</p> <p>Experience with farm data systems or carbon modelling (e.g. Omnia, Muddy Boots, Sandy, AgriCalc)</p>

	<p>rapid (successful) solutions to unpredictable problems.</p> <p>Experience using a range of statistical approaches for data analysis and modelling.</p> <p>Recognition of the practical constraints relating to data management in an applied setting</p> <p>Knowledge of reproducible programming languages such as R or Python</p>	<p>Experience working with remote sensing, spatial data</p>
Personal Qualities	<p>A self-motivated person who has a proactive approach to work and who has the ability to apply knowledge to solve practical problems.</p> <p>Self-motivation, well-honed interpersonal skills, tact, and diplomacy</p> <p>Ability and determination to deliver research objectives within the required timescales and resources availability.</p> <p>A track record of sound planning, good organisational skills, determination to succeed in the delivery of multiple concurrent tasks</p>	<p>Willingness to undertake occasional travelling to meetings, industry events, conferences, or field sites etc., sometimes spanning two or three days.</p>

Conditions of Service

The national recommendations which have arisen from the negotiations between UCEA and the unions recognised at national level, the Joint Negotiating Committee for Higher Education Staff (JNCHES), directly affect the terms and conditions insofar as they have been adopted by the Board of Governors.

Salary	The commencing salary will be within the range £33,966 to £37,099 per annum. The point of entry will be dependent upon relevant qualifications and experience. Salaries are paid monthly, in arrears, by credit transfer on the 28 th day of the month.
Contract Term	This is a full-time, fixed term post. The employment may be terminated during the course of the contract by either party giving one month notice in writing.

Hours of Work	<p>The routine working week is 37 hours over Monday to Friday, inclusive. There may be a requirement for overtime working from time to time and time off in lieu may be allowed for agreed hours worked in excess of 37 per week.</p>
Holidays	<p>The annual holiday entitlement is 22 working days, plus statutory bank holidays. In addition to this there are 8 University closure days during the full annual leave year. The holiday year runs from 1 August to 31 July and in the holiday year in which the employment commences or terminates the holiday entitlement will accrue on a pro-rata basis for each complete week of service. The timing of holidays is subject to the agreement of the Line Manager.</p> <p>All annual holiday entitlement (including bank holidays and University closure days) is pro-rata for part-time employees. Further details will be confirmed on appointment.</p>
Sick Leave	<p>During periods of certified sickness, the post-holder will be eligible to receive sick pay in accordance with the University Sick Pay Policy. The payment of sick pay is subject to compliance with the University rules for the notification and verification of sickness absence, details of which will be provided to the successful applicant upon commencement of employment.</p>
Pension	<p>The post-holder will be entitled to join the Harper Adams Group Pension Scheme and details will be provided to the successful applicant upon commencement of employment.</p>
Exclusivity of Service	<p>You are required to devote your full-time attention and abilities to your duties during working hours and to act in the best interests of the University at all times. Accordingly, you must not, without written consent of the University, undertake employment or engagement including external consultancy, which might interfere with the performance of your duties or conflict with the interests of the University.</p> <p>It follows that, regardless of whether you are employed on a full-time or part-time contract, you are required to notify your line manager of any employment or engagement which you intend to undertake whilst in the employment of the University (including any such employment or engagement which commenced before your employment under this contract). Your line manager will then notify you within 10 working days whether such employment or engagement is prohibited.</p>
Criminal Convictions	<p>The post involves the opportunity for access to children and young persons under the age of 18. For this reason, the University is entitled to consider any criminal convictions, cautions or impending case(s) that it considers to be relevant to this post.</p>

The post is exempt from the provisions of the Rehabilitation of Offenders Act 1974. This means that applicants are not entitled to withhold information about convictions which for other purposes are “spent” under the provisions of the Act.

Applicants must therefore complete the part of the application form declaring any criminal convictions and cautions from any court or police authority. The successful applicant will have to undergo a Disclosure and Barring Service Check before an appointment can be made.

References

Candidates should ensure that they provide full details of the name and postal address of their referees. Please include e-mail addresses and telephone numbers wherever possible. Referees should include your present, or most recent, employer.

Application Procedure:

All applications should be completed and submitted using the Harper Adams e-Recruitment programme at <http://jobs.harper-adams.ac.uk>

To be submitted no later than midnight on Friday 15 December 2023.

Interviews will be scheduled for January 2024