

New research aims to support a sustainable revolution in British hop farming

Asahi UK and the Worshipful Company of Brewers have teamed up with the Royal Agricultural University (RAU) and the University of Warwick to fund two PhD research projects looking at how to develop sustainable approaches to British hop production in a bid to stop the further demise of the UK's hop growing industry.

Hops are a lesser-known UK crop, which is often not talked about, but they are a vital ingredient in our much-loved British beers, providing the bitterness and more complex fruity and floral flavours.

Despite the significance of hop farming to British heritage, climate change and the prevalence of disease has meant that hop production in the UK has declined substantially since the heyday in the 1800s when it is believed there were almost 3,000 hop growers, and more than 77,000 acres of hops, in the UK.

There are now just 45 hop growers, and only 2,000 acres of hops in the UK, and the total acreage dedicated to growing hops used in our traditional British beers has halved in size in the last decade.

Professor Duncan Westbury, Dean of Land and Property Management at the RAU, who will be supervising the PhDs, said: "Going forward, we need to support British hop growers and this includes developing approaches that make hop production more environmentally and economically sustainable.

"As well as the problems caused by a changing climate, growing hops in the UK is now also more difficult due to the increasing incidence of fungal pathogens in the soil, particularly a disease called Verticillium wilt which can significantly reduce yields.

"Hop growers currently do what they can to prevent disease and this includes the use of chemicals and regular cultivation of the alleyways between the hop bines.

"However, these practices not only significantly impact biodiversity and soil health, they are also carbon intensive meaning that, while they may support the short-term production of hops, they contribute to the long-term problem."

The two PhDs, for which the RAU is now inviting applications, will look to develop sustainable approaches to enhance UK hop production by increasing resilience to disease, through the implementation of wildflower alleyways, and the use of biochar, a carbon-rich, charcoal-like material.

It is hoped that use of these methods could also lock up more carbon in the soil thereby helping growers to address the climate emergency, enabling the sector to progress towards its goal of net zero.

In a recent climate-related risk analysis of their business, Asahi UK, brewer of British beer brands including Fuller's, Dark Star, and Meantime, found that hops were the highest areas of risk due to the adverse impacts of climate change which is driving the crop's vulnerability to disease.

Sam Goodenough, Sustainability Manager of Asahi UK, commented: "With climate change comes high temperatures and also more rainfall, increasing the chances of droughts and flooding which can lead to a decrease in crop yields. Hops are also particularly vulnerable to pests and disease and the strain these changes in weather put on the crop further lowers their resilience and increases their risk to disease.

"However, our research also found that the content of alpha acid, which is vital for delivering the flavour to beer, is likely to fall by up to 30% by 2050 under the current climate projections of hotter weather and more frequent droughts. We believe cross sector collaboration is key to identifying the solutions needed to safeguard the long-term future of hops and hop farming."

The two PhDs, which are expected to each take around three years, are being jointly funded by Asahi, the RAU, and the Brewers' Research and Education Fund, a major grants fund for the brewing industry which supports relevant scientific research and education.

Kate Longhurst, Livery Manager at the Worshipful Company of Brewers, said: "The Brewers' Company is delighted to support this work via a grant from the Brewers' Research and Education Fund."

The British Hop Association and UK hop producer Charles Faram will work as project partners.

Paul Corbett, Director of the British Hop Association, welcomed the news of the two PhDs. He said: "The use of biochar as a soil amendment needs to be proven in hop yards. The use of perennial wildflowers would be preferred but we need to overcome the concerns about Verticillium wilt and management practices.

"Both projects provide the opportunity to reduce carbon emissions and improve our ambition to reach net zero and we are delighted to see this initiative."

Will Rogers, Group Technical Director at British hop grower Charles Faram, added: "Sustainability in hop development and farming practices are at the heart of Charles Faram and also of Charles Faram Farms. By facilitating, advising, and assisting in research on biochar for soil health and the wildflower interventions, we are helping to foster a more sustainable agricultural future.

"These projects are not only aligned with our commitment to environmental issues, quality, innovation, expertise, and community, but also contribute to the long-term health of our soils and ecosystems, ensuring that British hop farming and our hop region landscapes thrive for generations to come."

The successful students will be supervised by the RAU's Professor Westbury and Professor John Clarkson from the School of Life Sciences at the University of Warwick.

Professor Clarkson said: "Through these PhD projects, and the partnership between the University of Warwick, the Royal Agricultural University, and industry funders, we will boost the environmental sustainability of British hop production.

"This is an exciting opportunity for the Warwick Crop Centre, in the School of Life Sciences, to apply our expertise in soilborne fungal disease systems to tackle the serious problem of Verticillium wilt and help develop new solutions. It's giving us a fantastic chance to expand our science into new research and start a new collaboration."

[Applications for the two PhD projects](#) are now open and close early next month with interviews taking place later in November. The two successful applicants are expected to start work on the projects in early 2025.

Professor Westbury added: “On successful completion of the projects, the students will have gained key skills and expertise in approaches to sustainable production which will enable them to seek a wide variety of employment opportunities in further research, or in a consultancy or advisory role. The development of such experts is vital if we are to address the climate and biodiversity emergencies by managing land more sustainably.

“These students will work directly with growers, giving them an excellent opportunity to experience the industry from the growers’ perspective. They will also be required to report directly to the funders which will help them to further develop their communication skills with different types of stakeholders.”

It is hoped that the projects will lead to the development of robust guidelines on how British hop growers can boost their environmental sustainability credentials and contribute to net zero farming as part of a sustainable production system.

Professor Westbury concluded: “We hope that this research will demonstrate how British growers can reduce their reliance on chemicals by implementing wildflower habitats to boost both biodiversity and natural enemies of crop pests as well as capturing and storing more carbon in the soil meaning that growers will be able to grow hops with greater confidence and enhance yields.”

Ends

Notes to editors:

More details of the two PhDs can be found here <https://www.rau.ac.uk/courses/postgraduate/phd-programme>

[Asahi UK](#) is a subsidiary of Asahi Europe & International and is responsible for sales, marketing and customer operations across the UK and Ireland. Though the portfolio of Super Premium Beer brands, Asahi UK enriches consumer experiences through innovation, high-quality service and an exceptional portfolio of premium beer, ale and cider brands which include Peroni Nastro Azzurro (PNA), Asahi Super Dry (ASD), Fuller’s London Pride, Cornish Orchards, and Meantime. The Woking based business is focused on developing quality, super premium brands and delivering commercial value in the marketplace, through a strong belief in collaboration, customer excellence and people development.

[The Worshipful Company of Brewers](#), or Brewers' Company as it is more generally known, is one of the ancient Livery Companies of the City of London. Once responsible for governing the beer trade in London, the Company today remains closely connected to the brewing industry through its members.

The Brewer’s Company is active in promoting the brewing industry by providing a meeting place and facilities for member companies and a forum for social contact for those within the industry and associated organisations, as well as promoting education and training in the brewing sector.

In common with many Livery Companies, the Brewers' Company has inherited responsibility for several charitable Foundations and Trusts over the years. Its charities, which between them distribute around £2 million annually, support four schools, as well as awarding grants principally focusing on young people and the needy.

[The University of Warwick](#) is one of the UK's leading universities with over twenty-eight thousand students from 147 countries. Ranked 9th in the UK by The Guardian University Guide, it has an acknowledged reputation for excellence in research and teaching, for innovation, and for links with business and industry.

The recent Research Excellence Framework classed 92% of its research as 'world leading' or 'internationally excellent'. The University of Warwick was awarded Midlands University of the Year by The Times and Sunday Times.

[The Royal Agricultural University \(RAU\)](#), the first agricultural college in the English-speaking world, has been at the forefront of agricultural education, research, and innovation since 1845. Today, we have around 1,100 undergraduate and postgraduate students from more than 46 countries studying subjects ranging from agriculture, land management, and rural policy, to sustainable food systems, cultural heritage, business and entrepreneurship, and equine science, at our Cirencester campus.

One of only five 'highly trusted' UK universities recognised by the Chinese Ministry of Education, we have established three successful partnerships with universities in China. Meanwhile, our twinning initiative with Sumy National Agrarian University in Ukraine is a role model for others in providing humanitarian, teaching and research collaboration and support for 'academics at risk' worldwide

In 2022 the RAU cofounded the International Agriculture University (IAU) in Tashkent with the Uzbekistan Ministry of Agriculture and, in early 2024, we worked with the Government of the Emirate of Sharjah in the UAE to establish the new University of Al Dhaid where students will have the opportunity to study for a BSc in Sustainable Agriculture developed from existing RAU programmes.

The RAU prides itself on its links with industry and its ability to meet the demand for land-based expertise worldwide. Our courses are developed with industry partners and our award-winning enterprise and employability programme has led to the University being re-accredited as a Centre of National Excellence by the Institute of Enterprise and Entrepreneurs for a further three years – the only small and specialist university in the UK to be so.

We were awarded Silver in the national Teaching Excellence Framework (TEF) 2023 with our student experience and student outcomes being assessed as 'typically very high quality', and emerged as the leading specialist university in England for research, with more than half of our research being praised as 'world-leading and international in quality', in the national Research Excellence Framework (REF) 2021.

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