

Issue 27

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# nexxusnews

Connecting & communicating life sciences in Scotland



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a leading centre for science and research

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# Corker of a project

**LACK OF** data on agricultural pollution in diverse forest locations and ongoing pressure on forest management - mainly due to different regulatory systems within and outwith the EU - provides opportunity for ample interdisciplinary research, to address management and remediation opportunities. And, potential for these restricted substances to enter the human food chain adds impetus to the need to gather comprehensive information.

University of the West of Scotland's Professor and Geochemistry expert Andrew Hursthouse, together with a number of European partners, is co-directing a NATO Science for Peace project. The project aims to strengthen collaborations between scientists in NATO countries and those bordering NATO members. The project involves a mix of research teams with very different scientific backgrounds to address a critical issue in relation to the contamination of cork oak forests in Southern Europe and North Africa.

Cork oak forests are sustainable, often ancient, manmade environments, covering over 2.7 million ha in Portugal, Spain, France, Italy, Algeria, Morocco and Tunisia. They represent one of the highest levels of biodiversity in forest habitats and support 100,000s of human inhabitants who gain livelihood from cork processing or agriculture within the forests. Cork bark is harvested from the trees every 10 years or so, and the recent decline in the use of cork stoppers in wine is likely to impact greatly

on forest management and threatens livelihoods. There are many interrelated reasons for changes in stopper use, but one often cited is the 'cork taint' problem, which costs the wine industry billions of US dollars per year. The taint is attributed to the presence of trichloranisol (TCA) and other chlorinated anisols, as fungal metabolites of chlorophenols. The exact sources are debated, but have been attributed to environmental contamination by Persistent Organic Pollutants (POPs), such as pesticides common in many locations of Europe. Whilst POPs contamination is a global concern, accumulation specifically in cork forests is suspected to explain observations of chlorinated pesticides in cork slabs and formed stoppers, highlighting contamination at early stages in production.

The project, which started in 2007, brought together research groups with complementary experience in cork mycology, taxonomy, biochemistry, bacteriology and environmental biotechnology with soil science, hydrology, environmental geochemistry and analytical

science. Led by IBET, Lisbon, Portugal, researchers in UCSC, Piacenza, Italy; IRNST, Haman Lif, Tunisia; and University Hassan-II, Casablanca, Morocco have been working with Andrew and his colleagues at UWS to provide a thorough understanding of the impact of human activities on these forests. The behaviour of pentachlorophenol - widely used in wood preservation - has been particularly identified as a target POP and research has focused on tracing its presence to identify human impacts from forest soil ecology through to cork manufacture.

'This project will have a critical role in identifying good practice in forest management,' said Andrew. 'It also provides us with a salutary lesson on the interaction between human activities and natural resources - cork forests can only survive with human intervention, but when the quality of the main product is questioned, the system is on a knife edge, with wider repercussions for regional ecology.'

'This research has been a valuable exercise in building links between life and environmental/chemical sciences. We have been lucky to recruit and train very talented researchers and PhD students and give them the opportunity to work across disciplines as well as in different cultures. The icing on the cake has been the opportunity to undertake fundamental research with this group and find the justification to keep a healthy (but responsible) interest in good wine!'

The project will finish at the end of 2010 but Andrew already has plans to extend the work and collaborations established to further investigate these ecosystems.

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## The beauty of science

**NOTHING REVEALS** the beauty of science like an amazing image of it - whether it be of cells in a dish, animals in the field or high tech equipment in a lab.

Images of all kinds are invited from life science related organisations in central Scotland for consideration for the Nexxus 2011 Life-Sci Visions Calendar. All submissions will be showcased on the Nexxus website, displayed at the Annual Nexxus Awards events in November and the 12 selected entries will be reproduced in c 3,000 copies of our calendar in December which will be distributed with the Winter issue of Nexxus News. Closing date for submissions is 22 October 2010.

*For more information see [www.nexxusscotland.com/calendar](http://www.nexxusscotland.com/calendar).*

