

**Public release date: 1-Oct-2009**

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## £1 million award to address honeybee decline

Scientists at the University of Warwick and Rothamsted Research have been awarded £1Million by the Biotechnology and Biological Sciences Research Council (BBSRC) in partnership with Syngenta, to research the decline of honeybees.

UK government figures suggest bee numbers have fallen by 10-15% over the last 2 years; the British Beekeepers' Association (BBKA) quotes a figure nearer 30% for 2008. Since the declines were first reported a number of factors have been suggested. Most scientists now believe that a complex of interacting factors is the most likely cause.

University of Warwick researcher Dr David Chandler said "Honeybees are well known for their vital role as pollinators of crops, wild flowers and garden plants, but unfortunately their populations are in decline. We know that parasitic diseases caused by the varroa mite are partly to blame, but we think that there is also a link between these diseases and the quality of pollen and nectar that the bees are feeding on. Each bee colony contains about fifty thousand bees in the summer, and so you can appreciate that the interactions between each bee, their various diseases and food quality are highly complex. The only way to tackle this is to use advanced mathematics combined with lab and field experiments. This is precisely what we are doing in this project. "

Lead researcher, Dr Juliet Osborne said: "Bees living on agricultural landscapes have a lot to deal with! They must respond to sudden changes in availability of food – pollen and nectar – whilst dealing with a variety of diseases, parasites and other stresses. This project will provide us with a unique insight into how disease and food supply affect the survival of bees in farmed landscapes."

The team will use a combination of field work and computer modelling to look at how the bees' behaviour outside the hive, while looking for food, interacts with what is affecting bees in the hive – factors that have historically been studied separately. The ultimate aim of the project is to build a model that will allow us to understand how bees may respond to diseases in a changing farmed landscape.

Dr Peter Campbell, Syngenta said: "Honeybees are important pollinators for many crops, garden and wild flowers. They are essential both for food security and sustainable agriculture and horticulture. This work will substantially improve our understanding of the many factors affecting honeybee health. A main outcome of the project will be a predictive tool that can help beekeepers, farmers and other landscape managers to improve honeybee health."

Professor Janet Allen, Director of Research, BBSRC said: "We are all concerned about the decline in honeybee numbers and the effect this could have on our food supplies. It is highly likely that there is no one cause of the drop in numbers which makes this project absolutely critical."

As funders, the research councils and Syngenta are stepping up to the plate in the fight against declining honeybee populations. In addition to this project, Syngenta have also launched Operation Pollinator, a 5-year €1M programme in seven European countries (and the USA) to boost pollinating insects by providing wildflower strips. And Dr Osborne's project is one of four honey bee-related projects funded by the research councils in recent months,



**IMAGE:** This is Dr. David Chandler from University of Warwick.

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with a total investment of £2.1 million. For example, BBSRC is also funding a project led by Professor Ian Jones at Reading University, who is researching Israel Acute Paralysis Virus (IAPV), which is associated with colony collapse disorder and exacerbated by varroa mite infection. And the Natural Environment Research Council (NERC) is funding two projects: Dr William Hughes of the University of Leeds is investigating the effects of genetic diversity on transmission and evolution of infection of honeybees by the fungal parasite, chalkbrood and Professor Mike Boots of the University of Sheffield is looking at the evolution of virulence in viral diseases that infect honeybees via varroa mite.

BBSRC also manages the Insect Pollinators Initiative – a £10M joint funding source under the Living with Environmental Change (LWEC) partnership. This is a joint initiative from BBSRC, Defra, the Natural Environment Research Council (NERC), the Wellcome Trust and the Scottish Government. Projects funded under the initiative are due to be announced in July 2010.

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#### NOTES TO EDITORS

For further information about the Insect Pollinators Initiative please see:  
[http://www.bbsrc.ac.uk/funding/opportunities/2009/insect\\_pollinators\\_initiative.html](http://www.bbsrc.ac.uk/funding/opportunities/2009/insect_pollinators_initiative.html)

#### About BBSRC

The Biotechnology and Biological Sciences Research Council (BBSRC) is the UK funding agency for research in the life sciences. Sponsored by Government, BBSRC annually invests around £450 million in a wide range of research that makes a significant contribution to the quality of life for UK citizens and supports a number of important industrial stakeholders including the agriculture, food, chemical, healthcare and pharmaceutical sectors. BBSRC carries out its mission by funding internationally competitive research, providing training in the biosciences, fostering opportunities for knowledge transfer and innovation and promoting interaction with the public and other stakeholders on issues of scientific interest in universities, centres and institutes.

Rothamsted Research is one of five Institutes of BBSRC. The Institutes conduct long-term, mission-oriented research using specialist facilities. They have strong interactions with industry, Government departments and other end-users of their research.

For more information see: <http://www.bbsrc.ac.uk>

About Rothamsted Research - Rothamsted Research is based in Hertfordshire and is one of the largest agricultural research institutes in the country. The mission of Rothamsted Research is to be recognised internationally as a primary source of first-class scientific research and new knowledge that addresses stakeholder requirements for innovative policies, products and practices to enhance the economic, environmental and societal value of agricultural land. For more information see <http://www.rothamsted.bbsrc.ac.uk/>

About Warwick HRI, at the University of Warwick - Warwick is one of the UK's leading universities, with an acknowledged reputation for excellence, innovation and links to business & industry. The University, with 5,000 employees and 17,000 students (full-time equivalent), is an international and cosmopolitan body committed to tackling major global problems through research and teaching. Warwick HRI, The University of Warwick's Plant and Environmental Sciences department, apply their multidisciplinary expertise to solving major challenges in areas such as biodiversity, crop science, bioenergy, systems biology and climate change. For more information see [www.warwickhri.ac.uk](http://www.warwickhri.ac.uk)

About Syngenta- Syngenta is one of the world's leading companies with more than 24,000 employees in over 90 countries dedicated to their purpose: Bringing plant potential to life. Through world-class science, global reach and commitment to their customers Syngenta help to increase crop productivity, protect the environment and improve health and quality of life. For more information see [www.syngenta.com](http://www.syngenta.com) or [www.growmorefromless.com](http://www.growmorefromless.com)

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