Defra’s response to BBKA Research Concepts (January 2009)

Introduction

The BBKA’s Research Concepts document suggests areas for research into honey bee health. The suggestions were developed through discussions with (unnamed) technical experts and researchers. Defra was not involved in its development.

This note sets out Defra’s response to the document based on comparing the BBKA’s suggestions with Defra’s research priorities in support of its policy responsibilities on honey bee health. It identifies which of the proposed areas Defra would regard as important for providing evidence in support of policy development and operations on honey bee health. The note recognises that beekeepers have wider interests than Defra on honey bees, and as a result some of the proposals as outside the scope of Defra’s honey bee research programme.

Defra’s policy and statutory interests are on managing the risks to honey bee health associated with international trade and to control notifiable diseases and pests. Defra’s evidence needs in support of these policy interests fall into three main areas:

i. understanding the scientific context such as fundamental processes and phenomena;

ii. development of models, methodologies and tools; and,

iii. developing and using the evidence base to help set targets and formulate policy.

These three areas therefore provide the context for the research that Defra funds to underpin policy on honey bee health. Further details on the rationale and objectives for Defra’s research on honey bee health are set out in their ROAME statement which was issued for public consultation in April 2008 (www.defra.gov.uk/hort/Bees/Research/bhroame.pdf). Defra’s evidence needs and rationale and objectives for research in support of honey bee health policy provide the context and perspective for the comments below on the BBKA’s research suggestions.

Research suggestions identified by the BBKA

The BBKA’s concept document identifies 12 key areas where they consider there are current research needs. Some of these areas are consistent with those identified:

i. by Defra in their ROAME statement for research into honey bee health which sets out the scientific objectives to be pursued in support of policy objectives (on effective biosecurity to minimise pest and disease risks, good husbandry practices, and preventing and controlling impacts from pests, diseases and other hazards);

ii. by Defra (and Welsh Assembly Government WAG) in the Healthy Bees Plan (March 2009) (www.defra.gov.uk/hort/Bees/news/plan.pdf) which aims to address the challenges facing beekeepers in sustaining the health of honey bees and was developed in consultation with, and supported by beekeepers and associations, including the BBKA, with the overall aim of working together on key activities to sustain
honey bees. For example, the Plan identifies the urgent need to expand options for management of Varroa through a range of activities, including research;

iii. in the report to the National Audit Office (NAO) by Imperial College on Honey bee health (risks) in England and Wales as part of NAO’s report on the health of livestock and honeybees in England (March 2009);

iv. during the Frontiers meeting on Bee populations: health and the environment held at the Wellcome Trust in October 2008.

Defra’s comments on the 12 research areas

1. Varroa
Varroa is endemic in the UK and was de-regulated as a statutory notifiable disease following public consultation in 2006. Although it is no longer under statutory control, it remains a serious pest to honey bees and a significant management problem for beekeepers. Defra and WAG’s Healthy Bees Plan identified Varroa as needing particular attention, including expanding management and treatment options and their use through integrated pest management. As part of this work, Defra recognises that further research is needed to optimise management and treatment options with a view to developing techniques, based on integrated pest management, that beekeepers can apply.

Taking forward the results from biological control products is also relevant, although this work is not exclusively research as a key part would be development of an appropriate regulatory regime. Similarly, allocating Defra’s research funds to seek regulatory approval for the use of oxalic acid and to optimise thymol efficacy would not be permissible given the strict criteria that govern our commissioning of research projects with public money. However, given that improving control of Varroa is a key part of the Healthy Bees Plan, Defra would expect to give further consideration to these areas as part of the work with beekeepers, associations and others, such as the Veterinary Medicines Directorate (VMD), to implement the Plan. The VMD is already taking forward work in this area in consultation with beekeeping associations (http://www.vmd.gov.uk/VetSQP/Bee/actionplan.pdf); for example, it is encouraging pharmaceutical companies to apply for UK marketing authorisation for products containing oxalic acid, formic acid and lactic acid.

2. Nosema
Nosema apis and N. ceranae are both found in the UK but their impacts on honey bee health are currently unclear. Defra recognises that we need to understand the distribution and impacts of these species much better in order to undertake a risk assessment, and as necessary, identify mitigation measures. Defra has funded further work in this area which was completed in March 2009. The evidence from this study will be used to carry out a risk assessment and determine appropriate future actions. The proposals in the BBKA document focus on treatment and mitigation measures, which may or may not be relevant subject to the risk assessment which Defra plans to undertake using the results from the recently completed study.
3. European foul brood (EFB)
EFB is a statutory notifiable disease and widespread in GB posing a perennial risk to honey bees. It has proved difficult to eradicate, in spite of statutory controls, due mainly to gaps in our understanding. Defra and WAG’s Healthy Bees Plan identifies the need for government to work with beekeeping associations to develop strategies for controlling incidence of EFB (and American Foul Brood) to the lowest levels achievable.

Defra recognises EFB as an important area where further research is required, for instance to gain a better understanding of disease epidemiology and to optimise methods for disease control. Defra has funded a research project to assess the effectiveness of the shook swarm method for controlling EFB which finished in December 2008. Provided that further evidence from development studies shows that this technique can be effectively used to control EFB, this technique could be utilised by beekeepers. Roll out would be managed through the implementation of the Healthy Bees Plan being undertaken by Defra, WAG and beekeeping associations.

The proposals on EFB in the BBKA document also recognise the importance of understanding more about disease epidemiology and control methods and the general thrust of these proposals is consistent with Defra’s priorities.

4. Genetic potential
There is a large amount of useful information that can be gathered using the published honey bee genome sequence including developing a better understanding of honey bee biology and behaviour. Defra considers the BBKA’s proposals in this area to be basic research and not currently a priority with respect to Defra funding on honey bee health. However, Defra recognises there are potential benefits for beekeepers from improving strains.

5. Queen quality
Defra recognises that the selection of queens with desirable qualities would be useful for managing colonies and is of particular interest to beekeepers. However, queen rearing and swarm management are not within the remit of Defra’s current research programme on honey bee health, which is guided by policy and statutory interests on managing the risks to honey bee health associated with international trade and on controlling notifiable diseases and pests.

6. Honey bee nutrition
This is a subject of interest to beekeepers, but as with queen quality, it is not within the remit of Defra’s current research programme on honey bee health.

7. Husbandry
Good husbandry skills are vital for maintaining healthy colonies and have been identified as one of the key outcomes to achieve in Defra and WAG’s Healthy Bees Plan. Integrated pest management is an important husbandry tool. Defra recognises that there is scope to identify innovative and novel husbandry techniques and methods through research, and that new
methods could be used as part of integrated pest management. However, just as important as further research and as set out in the Healthy Bees Plan, is the need to ensure that beekeepers follow the good practice advice that is already available (for example on Bee Base).

From Defra’s perspective, the BBKA’s research proposals on husbandry are not a high priority. Further, the project on hive cleansing to reduce pathogen levels is not consistent with current good husbandry advice which recommends using fresh combs and foundation in hives to reduce disease risks.

8. Small Hive Beetle (SHB)

SHB represents one of the greatest exotic pest threats to EU and UK bee colonies given the significant damage from this pest in other countries and the difficulties in controlling it. For successful eradication it is vital that the beetles are detected as soon as they arrive in the UK. Defra has funded research aimed at developing a monitoring system for SHB which finished in March 2009. The initial results were promising but evaluation of the final report will determine whether further work is required. It is also clear that contingency planning is important, which is one of the key areas of the Healthy Bees Plan; the intention is to ensure that beekeepers are aware of the contingency plan and what they will be expected to do.

The proposals on SHB in the BBKA document recognise the importance of effective eradication of this pest and the general thrust of these proposals is consistent with Defra’s priorities.

9. Viruses

Viruses clearly have a major impact on honey bees particularly in association with other pests and diseases. Viruses most frequently cause a problem in association with varroa and therefore control of varroa mites will reduce the impact of the viruses. Molecular diagnostic tools for detecting some viruses are available and were developed through Defra’s honey bee health research programme. Defra is undertaking further research on bee viruses.

The focus of the proposal on viruses in the BBKA document is on monitoring which is not within the remit of Defra’s current research programme on honey bee health.

10. Agrochemicals

Government has a robust system for assessing risks to honeybees from the use of pesticides. The assessment for systemic seed treatments determines risk via the use of a tented field study or field study where bees are exposed to flowers that have grown from seed grown from treated crop. The risk assessment on neonicotinoid pesticides includes such studies and concluded there was no significant difference on bee behaviour and mortality in crops grown from treated and untreated seed. Since there is no evidence of an unacceptable risk to bee health in the UK further research is not required, although this will be kept under review. At present, Defra considers that the BBKA’s proposal on agrochemicals is not a high priority.

11. Medicinal properties of honey
Defra recognises that this is a relevant area of research for beekeepers, but as with queen quality and nutrition, it is not with the remit of Defra’s current research programme on honey bee health.

12. Honey bee habitat
Defra recognises that this is a relevant area of research for beekeepers, but it is not within the remit of Defra’s current research programme on honey bee health research. However, it may be more relevant to other Defra R&D programmes as maintaining honey bee habitat falls under one of Defra’s strategic objectives which is to sustain ‘A healthy, resilient, productive and diverse natural environment’.

Honey bee habitats (and some of the other areas in the BBKA document) may be addressed in projects to be funded under the Insect Pollinator Initiative (a jointly funded research programme by Defra, BBSRC, NERC, Scottish Government and the Wellcome Trust, for which a call for proposals was announced to the research community on 3 July 2009; final decisions on projects to be funded will be made by mid-2010). The Initiative seeks to promote innovative research aimed at understanding and mitigating the biological and environmental factors that adversely affect insect pollinators. Defra’s funding of this Initiative reflects our responsibilities for honey bees and also for other insect pollinators as part of our remit to secure a healthy and natural environment.

Conclusions
The BBKA’s document highlights a number of priority areas for research that are consistent with Defra’s priorities for honey bee health, particularly on Varroa, EFB, SHB and good husbandry. Some of the BBKA’s proposals (such as on honey bee nutrition and queen quality) are outside the scope of Defra’s immediate policy and research interests in honey bees, and are consistent with beekeepers’ wider interests on honey bees.

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