

Proposal by the Bee Improvement and Bee Breeders Association (BIBBA) to:

(1) reduce the level of honey bee imports into the UK, and

(2) to improve the quality of our honey bees.

A Proposal for a National Honey Bee Improvement Programme

Introduction

The National Pollinator Strategy (The National Pollinator Strategy: for bees and other pollinators in England, November 2014) highlights the importance of insect pollinators in our environment and in our food production. The honey bee, *Apis mellifera*, ranks amongst the most important of pollinators due to the number of colonies, the number of individuals in each colony, their early spring build-up and the fact that colonies can be moved to crops for pollination.

Whilst the importation of honey bees into this country is not a new thing, in recent years we have seen a big increase in the numbers of these imports

(<https://secure.fera.defra.gov.uk/beebase/public/register.cfm?> See EU Import report for figures).

Concerns have been raised for the biosecurity of our honey bee population by DEFRA, by beekeepers and by beekeeping organisations. It is the official policy of the British Beekeepers Association (BBKA) to discourage the import of honey bee colonies and queens partly because of this risk.

There is also growing concern about the loss, through introgression, of locally adapted strains of honey bee due to the continuous introduction of honey bees that may not be accustomed to our climate and conditions. The Rural Network for Sustainable Bee Breeding (RNSBB) (the taskforce within COLOSS for breeding and conservation) <https://www.beebreeding.net/> states, 'We believe that the safeguarding of bee biodiversity, beyond its ethical and scientific dimensions, is also of high **economic interest**, because in the long run **locally adapted populations** are better suited than imported ones to cope with prevailing environmental conditions and health threats, and thus to **survive**' .

A key remit of the National Bee Unit (NBU), is stated in its "Healthy Bees Plan", (published in 2009 by DEFRA and the Welsh Government), is "to respond effectively to pest and disease threats and to put in place programmes to ensure a sustainable and productive future for beekeeping In England and Wales".

The current situation with ever increasing imports of bees and queens into the UK seems to be contrary to the aims of the Healthy Bees Plan and against the interests and advice of scientists and beekeeping associations. The question must be asked as to whether anything can be done to reduce the flow of imports and to satisfy the goals of reducing biosecurity risks at the same time as increasing the quality and sustainability of our bees nationwide. An added incentive to reducing imports would be provided if a system of improving our local honey bee populations was adopted and available to all beekeepers.

Reasons for the popularity of imports

Whilst, for a long time, there has been a body of opinion wishing to see a reduction in honey bee imports, there is still an appetite and a market for imported bees, particularly queens. It is a fact that some bee farmers and other beekeepers, favour the use of imported queens in their operations.

A more developed queen rearing and breeding industry has grown up in Europe and around the world than in the UK, partly due to more favourable weather conditions, but also perhaps due to a lack of initiative by UK Government and beekeeping organizations.

DEFRA formed a committee in 2018, known as the “Queen Rearing Working Group”, with representatives of various beekeeping organisations in England, to investigate the possibilities of increasing home queen production in order to reduce the demand for imported queens. In 2018 a survey of English beekeepers was carried out to get a better understanding of the reasons for importing stock and to find out more about beekeepers’ attitudes to queen rearing.

The DEFRA committee concluded that some of the reasons that beekeepers have for imports were as follows:

- Queens are readily available
- Queens can be produced more cheaply than in UK
- Queens are available earlier in the season
- Queens are regarded as of better quality than those available in the UK

It should be noted that not all imports are checked for biosecurity risks and that they may not be checked for all possible risks.

The problems of importing bees and offering an alternative

Increased home production of queens could lessen the demand for imported queens and thus reduce the biosecurity risk of bringing in more pests and diseases. However, given the advantages that foreign producers enjoy, particularly with regard to climate and length of season, how much can we realistically expect to reduce the level of imports? Are there other advantages to home reared queens which would make them more desirable than imported ones?

150 years of imports of queens, of various sub-species, have shown that, whilst a short-term improvement in quality may be experienced, over the long-term, no improvement is achieved. On the contrary, in most areas our honey bee population is generally viewed as hybridised or, perhaps more accurately, mongrelised. The argument that importation is good for the genetic diversity of our population has been shown, by the COLOSS experiment comparing the survival of imported stock with local stock, to be unbeneficial as we are merely importing genes which may be less suited to our environment and therefore of no real benefit. The resulting long-term effect of imports on our bee population are that they set up a vicious circle of poor-quality and often aggressive mongrelised bees that fuel the demand for more imports, providing a short-term fix but not a long-term solution.

If, as an alternative to the importation of queens, we established a National Bee Improvement Programme which selected and propagated the best local bees, a good reason could then be made for not using imported bees. Beekeepers would benefit in two ways, that is, in a reduction in the biosecurity risks associated with imports, and through the opportunity of supporting and participating in a project that could deliver a better-quality bee. Taking part in a scheme to sustainably improve our bees would provide a definite reason to refrain from the use of imported bees.

Participation in the Programme

To be effective and to have a significant impact on the current level of imports, there would need to be a high level of beekeeper participation in the scheme to improve our bees. It should be remembered that in DEFRA's survey of English beekeepers, which received nearly 4000 replies, about 80% of beekeepers said they would support a bee improvement programme based on the native bee. From this response, it is logical to see if a programme aimed at selecting the best of our local bees in preference to imported bees could be successfully launched.

The Bee Improvement and Bee Breeders Association (BIBBA) has long campaigned for the use of native and near-native bees but fully understands the differences of opinion within beekeeping circles. The term 'local' is perhaps not easily defined and the same may be said of 'near-native'. At this point, the important thing is to draw into the project as many beekeepers as possible from a wide range of conditions and localities. The aim must be to make the project inclusive and possible for all beekeepers to participate, if they so wish, and to recognise that in different areas of the country variations in the bees' characteristics may be required.

Participation would be encouraged from all types of beekeepers, from those with one or two hives to bee farmers with several hundred or more. Small-scale beekeepers would be encouraged to work together, perhaps through their local beekeeping associations or through BIBBA Groups, to allow them to exert a greater influence on their local stock. Larger-scale beekeepers would be particularly welcome, and there may be opportunities for them to supply queens to help reinforce local improvement programmes. Participating in the programme will also increase the skill levels of beekeepers.

It may be that many beekeepers are not able to take an active role in the project, due to pressure of time or resources, but, nevertheless, their support, in principle, for the scheme, would be welcome. It may be that these beekeepers would be able to benefit, for example, by the availability of queens that the programme was able to produce and by an improved drone population.

Supporters would be expected to agree to certain conditions, the principal one being the abstention from the use of imported stock or offspring from recently imported stock. Thus, the stock of bees that we already have in this country would be the resources that we work from, and the breeding stock would be selected from these resources. There are many examples of this already being achieved.

Ideas and methods to get maximum support and participation would have to be considered as well as looking into what publicity would be required. The project would need a professional feel to it and branding and marketing techniques would play an important role. Information and advice on how the project would be put into practice would have to be distributed, possibly in a guidebook. The costs of running the programme would need to be assessed and decisions made as to the funding of the project.

At present, due to ever-increasing importations, there is huge variation, and much hybridisation, of our bees, but it is believed that through the selection and rearing of queens, we could progress to more consistent stock and therefore achieve more reliability into our selection programmes. A combination of natural selection, and selection for the qualities that we favour, will allow us to see a

sustainable improvement in our bees. Bees that are better suited to their locality are more likely to be survivors, therefore a reduction in losses, over time, could be expected.

A brief outline of how the National Bee Improvement Programme would work

1. Participating beekeepers would be issued with a standard record card to be used to record the performance of each colony.
2. From these records, 'breeder queens' would be selected for rearing the next generation of queens.
3. These daughter queens, having been reared from good stock, would produce 'good' drones regardless of what drones they have mated with.
4. 'Improvement' or 'mating' zones would be identified where the influence of imported queens was low, and where colonies headed by these daughter queens could saturate the area with good drones to mate with the next generation of queens.
5. By repeating the selection of breeder queens each year, and fortifying the mating zones, a more homogenous strain could be developed, making possible more rapid progress in selection and improvement.

Compromises and reaching agreement on guiding principles

Participation in the scheme would be dependent on agreeing to some guiding principles and may require some compromises from participants. The basic principle of the scheme is that we would refrain from using imported or offspring from recently imported stock but instead would aim to select and develop the best characteristics from bees that do well in our conditions. We will be starting from very different baselines with regards to the bees in different regions, but over time, through natural and artificial selection and without the constant input of new genes from other climates and sub-species, it is expected that characteristics would converge, to some extent, whilst maintaining genetic diversity, which is crucial to maintaining a healthy and dynamic population.

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