



National Bee Unit

The Control of European Foulbrood

January 2022

European foulbrood (EFB) is a statutory Notifiable disease that legally requires beekeepers to inform the National Bee Unit if they suspect any of their colonies may be infected. An authorised Bee Inspector (ABI) will examine the colonies and assist the beekeeper in disease control measures. However, beekeepers should develop the skills to detect and prevent this disease using hygienic beekeeping practices.

Replacing brood comb in colonies on a regular basis will reduce the proportion of disease pathogens and will help control European foulbrood (EFB). Transference of combs between colonies is known to be a major risk factor for spreading disease. An ABI will decide which of the following treatments is appropriate and will treat accordingly:

- The destruction of the colony
- Carrying out a Shook Swarm (SSW)
- Administering an antibiotic; Oxytetracycline (OTC)

Destruction

Colonies that have less than 6 full frames of brood or have more than 50% visible infection or have been treated within the previous twelve months and there is a recurrence of the disease, must be destroyed. Beekeepers should seriously consider destruction for any colonies with more than 25% visible infection.

Shook Swarm

For a colony on 6 or more frames of brood, where there is less than 50% visible infection and is in otherwise good condition, a Shook Swarm is the preferred method of treatment. This is because it removes a lot of the infected material from the colony and is effective at combating EFB and reducing subsequent recurrence of the disease. A Shook Swarm is normally only carried out between mid-March to mid-July, depending on the locality and the season. It is usually too cool for bees to effectively draw new comb before March and the loss of brood may be detrimental at that time. If carried out later than early August, then brood that would take the colony into the winter is destroyed. The ABI, in discussion with the beekeeper, will decide if a Shook Swarm is appropriate. Where a Shook Swarm

has been carried out there is still a risk that the disease will return, and beekeepers should adopt stage 3 in the control measures below. The beekeeper should provide the necessary equipment and have the skills and time to manage the colony after the Shook Swarm.

Research shows that where visible symptoms exist in a colony there is an increased probability that the causative agent *Melissococcus plutonius* is present in other colonies in the same apiary. A whole apiary Shook Swarm has been shown to be beneficial in eradicating EFB from an apiary.

Antibiotics

Antibiotics may be used early or later in the season where Shook Swarms would be considered impractical and detrimental to colony health. This is a decision not taken lightly by the Bee Inspector and antibiotics are not routinely administered.

Beekeeper Responsibilities

It is important for beekeepers to develop and implement the necessary skills to recognise the signs of EFB and employ good apiary practices. Replacing brood comb frequently will reduce pathogens and decrease the incidence of EFB. Moving combs between colonies is known to be a major risk factor for spreading disease. Employing good apiary hygiene will also reduce the spread of the disease. Improved husbandry skills such as recognising the signs of foulbrood, understanding and practising good apiary hygiene and quarantine systems will reduce the spread of the disease and would result in a decline of the number of cases of EFB.

A reduction of EFB cases by 1 in 10 per year would cause a significant decrease in total cases, but a 1 in 10 increase per year would be devastating.

On the following page **Fig. 1** shows the changes expected with these rates:

- The horizontal black line ($r=1$) shows no change in 10 years from the initial 1,000 cases.
- The blue $r=1.1$ line (a 1 in 10 increase in cases per year) shows a steep upward increases in cases from the initial 1,000, reaching 2,500 cases in 5 years and then exceeding the scale of the graph.
- The green $r=0.9$ line (a 1 in 10 drop in cases per year) shows a gradual decrease in the number of cases to around 100 per year by the 10th year.

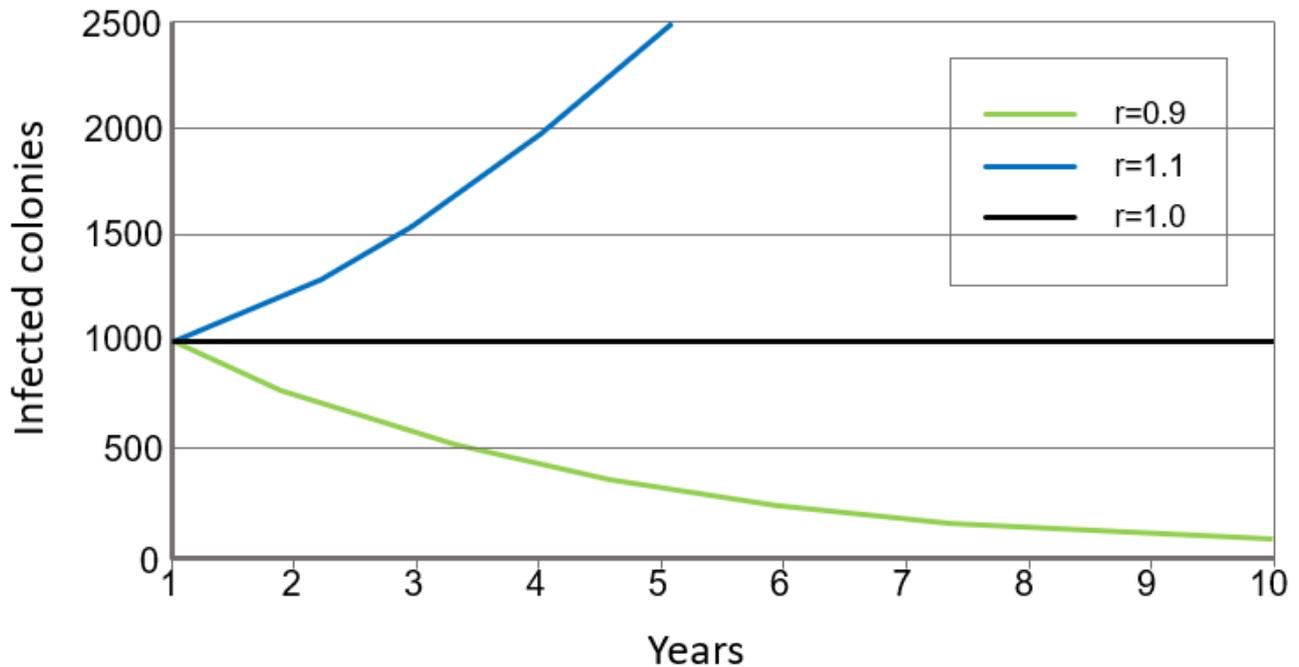


Fig.1: influence of new infection rate on changes in disease level

EFB Control Measures

Various control plans are listed in stages that are related to EFB risk. Please note – any findings of EFB are required by law to be reported to and treatment agreed by an ABI.

Stage 1 Where EFB is not in the area:

- Check colonies for disease signs twice a year
- Change three or four broods comb in each colony each year
- Basic apiary hygiene
- Quarantine supers, brood and excluders at apiary level

Stage 2 Where EFB is in the area:

- Check colonies for disease signs three times a year
- Change all brood combs every two years
- Strict apiary hygiene
- Quarantine supers and excluders at colony level

Stage 3 Where EFB has been diagnosed in the apiary in the previous 12 months

- Check colonies for disease four times a year
- Change all broods comb in each colony preferably by shook swarms
- Strict apiary hygiene
- Quarantine supers, brood, feeders and excluders at colony level

Stage 4 Where EFB has been persistent in the apiary for two years or more.

- Check colonies for disease signs at every apiary visit; Very strict apiary hygiene
- Very strict apiary hygiene
- Quarantine supers, brood, feeders and excluders at colony level; Quarantine other equipment at apiary level
- ‘Shook Swarm’* all colonies each year
- Destroy all colonies showing signs of EFB
- Maintain a hospital apiary

Some of these measures may seem a little extreme but they can be selected to suit the needs of the individual and the local situation. If beekeepers do nothing and EFB escalates it could cause a huge impact with lost honey production, pollination and beekeeper numbers. If husbandry and recognition skills are improved EFB should become a less common disease problem, honey production and pollination increasing significantly.

Further information on these procedures can be found on BeeBase in these Factsheets: ‘Replacing old Brood Comb’, ‘Apiary Hygiene and Quarantine’, ‘Shook Swarming’ and in the advisory leaflet ‘Foulbrood Disease of Honey Bees and Other Common Brood Disorders’.

National Bee Unit

APHA, Room 11G03, York Biotech Campus,

Sand Hutton, York YO41 1LZ

Telephone: 03003030094 email: nbu@apha.gov.uk

Web site: www.nationalbeeunit.com

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