

Bee Diseases and their Management

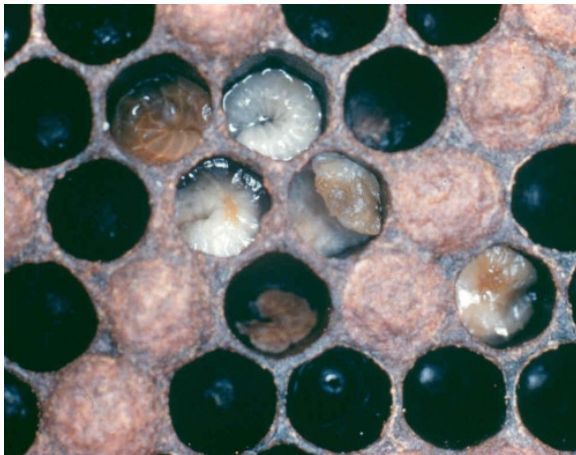


European Foul Brood (This is a currently notifiable disease)

European Foulbrood (EFB) is a serious, contagious, notifiable bacterial disease of honeybee open brood. The cause of EFB disease is the bacterium, *Melissococcus plutonius* which multiplies in the mid-gut of infected larvae. Unlike AFB bacteria they do not invade other larval tissue but remain in the gut competing for the larvae's food, eventually starving the larvae to death. Larvae infected with EFB generally die shortly before their cell is due to be sealed. As a result the dead remains can be infected with other secondary bacterial invaders causing further disease.

Note: Any suspected incidence must be reported without delay.

Recognition:



Infected hives show noticeable irregularity in the brood pattern and a change in the normal nose to tail curled larvae position. Dead and dying larvae look abnormally twisted and stretched along or across the cell and may look discoloured and deformed as though melted.

Normal larvae are white through, however it is possible to see the gut of infected larvae through its translucent body, the EFB bacteria causing a discolouration of the gut making it visible.

The infected larvae generally die before the cell is sealed however larvae can die from infection after sealing. In this instance sunken or perforated cappings are tell-tail signs as with AFB, but the remains although brown and sticky will not produce the same ropiness under test.

In badly infected colonies the brood pattern will appear patchy across the frame as dead brood is removed and the queen lays eggs in the vacant cells. When EFB is accompanied with other secondary bacteria an unpleasant odour can be detected. The dead larvae dry out and form loose scales within the cells. These are quite variable in colour and are rubbery in texture unlike AFB scale which are black, hard and firmly attached.

Vectors

European Foul Brood (and AFB) can spread easily on its own. The bacteria can exist in beekeeping equipment, honey, wax, dead brood and can spread even quicker with the help of the beekeeper during normal hive / colony manipulations. The pathogens responsible for EFB & AFB can exist in a contagious state for long periods of time on infected hive components, equipment and materials.

- Beekeepers - Transferring contaminated equipment / material between hives, colonies and apiary sites.
- Robbing - Colonies weakened by EFB will fall prey to robbing, transferring bacteria to other colonies and apiaries.
- Drifting - As with Robbing will transfer bacteria to other colonies.
- Swarming - Swarms can carry the bacteria with them to new sites where the disease will spread once new brood is produced.

Note: beekeepers are the principal and most rapid means of spreading European Foul Brood disease.

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Effects on *Apis mellifera mellifera* colonies

Colonies infested with EFB will show visible signs of its presence in the hive. EFB is not yet fully understood. It is known that it can develop within a colony over a period of months, seriously debilitating it but without killing it off, the severity increasing and decreasing sometimes with seasonal patterns thought to be relative to the number of nurse bees bringing food.

Note: EFB is a notifiable disease under UK Law, incidence must be reported without delay.

How to Manage European Foul Brood

All colonies in the UK are at risk of contracting foul brood diseases. If disease occurs but is not detected and controlled the infection will spread rapidly through not just your apiary but also those of neighbouring beekeepers. Early detection and intervention is necessary to contain and avoid further spread of this disease. Please obtain an up to date copy of the CSL 'Foul brood diseases of honey bees' booklet by visiting the DEFRA website or downloading direct from the EMBA website.

Detection

Hive Examination - Close examination of brood frames in spring and autumn is required to detect EFB. Bees should be gently shaken from the frames to allow full inspection, abnormalities are then easily spotted.

Checking Brood Pattern and Condition - Carefully examine the whole frame by holding it to the light and checking both sealed and unsealed brood for abnormalities such as unusual brood patterns, discoloured larvae, perforated cappings, or loose EFB scales in the cell (completely dried out larvae). Use an EFB Diagnostic Test Kit to check suspect brood.

Uncapping Brood - Open any cells with abnormal looking cappings and check the consistency of any dead remains by probing with a matchstick (ropy - AFB, not ropy - EFB). Dispose of the matchstick into the lit smoker, do not discard it as it will be infected.

Vectors

As with many honeybee related diseases, the beekeeper is the main vector in the spread of this disease by transferring, selling or exchanging frames and combs, honey or equipment which is infected. Robbing of infected and depleted hives and swarms from infected colonies also transmit the disease.

Monitoring

Vigilance is important with all honeybee diseases. Check all apiaries and colonies regularly for health and suspect any colonies that are not thriving where there is no already known reason. Colonies that die out should be examined thoroughly and sealed to prevent robbing and spread of any disease present.

Controls

EFB and AFB (European and American Foul Brood) are present in the UK and are notifiable under the Bee Diseases Control Order 1982. Due to their destructive nature prompt action is the only means of control. Beekeepers must notify the authorities immediately of any suspected incidence. Colonies found to be infected are destroyed by burning under the supervision of a bee inspector. Bees and combs are both destroyed, however hives and appliances can be sterilised for re-use by scorching and other equipment such as gloves, overalls, boots and smoker by washing with hot water. Recent changes in the approach to EFB permit other treatments such as terry mycin and shook swarm.

Note: Presently there are no effective medical treatments for AFB or EFB

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Apiary Housekeeping:

- Always maintain a high level of hygiene in all your beekeeping practices
- Carry out methodical health inspections on a regular basis, checking for brood disease particularly in spring and autumn.
- Never transfer combs between colonies without checking for brood diseases
- Systematically replace old brood combs in your hives melting down the old comb to maintain clean and healthy brood.
- Never bring colonies or equipment into your apiary without establishing their origin, condition, and disease status.
- Sterilise any second hand equipment or hive components before introducing them into your apiary
- Discourage drifting and robbing in the apiary
- Suspect stray swarm health until you know otherwise
- Report any incidence of disease or suspicious conditions immediately to your Local Association

EFB / AFB Suspected? Beekeepers must immediately contact their Local Bee Inspector

Bee Inspector	Address	Telephone	Area Office
Angus Cameron	161 Brooms Road, Dumfries, Dumfries & Galloway, DG1 3ES angus.cameron@scotland.gsi.gov.uk	01387274400	Dumfries
Clem Cuthbert	Longman House, 28 LongmanRoad, Inverness, Highland, IV1 1SF clem.cuthbert@scotland.gsi.gov.uk	01463253053	Inverness
Sandy Lister	Strathearn House, Broxden Business Park, Lamberkine Drive, Perth, Perth & Kinross, PH1 1RZ sandy.lister@scotland.gsi.gov.uk	01738602000	Perth
Angus MacAskill	Cotgreen Road, Tweedbank, Galashiels, Scottish Borders, TD1 3SG angus.mackaskill@scotland.gsi.gov.uk	01896892400	Galashiels
John Smith	Russell House, King Street, Ayr, South Ayrshire, KA8 0BG john.smith@scotland.gsi.gov.uk	01292291300	Ayr
Steve Sunderland	Cameron House, Albany Street, Oban. PA34 4AE steve.sunderland@scotland.gsi.gov.uk	01631 563071	Oban
Kirsteen Sutherland	Thainstone Court, Inverurie, Grampian, Aberdeenshire, AB51 5YA kirsteen.sutherland@scotland.gsi.gov.uk	01467626247	Inverurie
Paul Svenson	Strathearn House, Broxden Business Park, Lamberkine Drive, Perth, Perth & Kinross, PH1 1RZ paul.svenson@scotland.gsi.gov.uk	01312446599	Perth

Remember - you are required by law to report foul brood diseases.