



VISUAL MANUAL FOR EU BEEKEEPERS

# Proper beehive management (Vol. 3)



## Introduction

This third booklet visually presents the priority practices identified by European beekeepers on themes such as record-keeping, bee feeding and watering, and biosecurity measures in beekeeping to manage European foulbrood.

These practices will be discussed, developed, and defined in 13 EU countries in 2025 by the B-THENET Thematic Network.

Each practice is introduced with a short description and a picture taken by beekeepers. This document represents a baseline for starting the development of the International Guidelines for Advisors in Europe.

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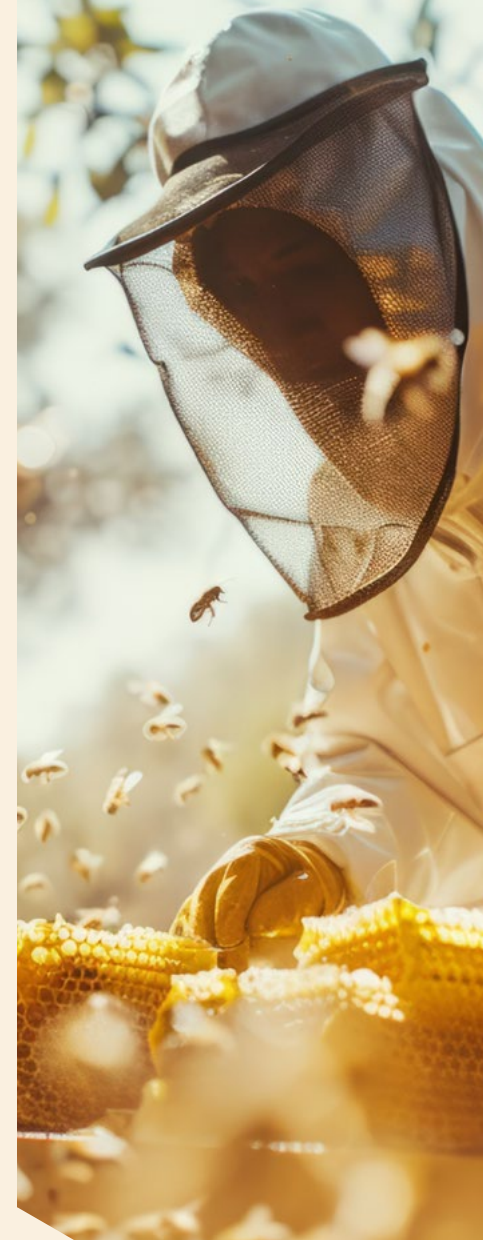
**Discover the initial practices in:**

[Proper Beehive Management \(Vol. 1\)](#)

**here**

[Proper Beehive Management \(Vol. 2\)](#)

**here**



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# GOOD BEEKEEPING PRACTICES

## BEE FEEDING AND WATERING



# GOOD BEEKEEPING PRACTICES

## BEE FEEDING AND WATERING

### CLUSTER 1

#### FEEDING

#### 1.1

#### Only use well recognised food types

It is important to use food that is free from pathogens and impurities that could be harmful to the bees. Only use food that you know the origin of.



*Feeding honey bee colonies with sugar solution in a separate feeder box or directly with the container with the pre made food.*

©Apinordica

# GOOD BEEKEEPING PRACTICES

## BEE FEEDING AND WATERING

### CLUSTER 1

#### FEEDING

#### 1.2

**Do not feed the bees with honey, pollen or supplements from dead colonies and only if there is clear absence of pathogens**

Never feed honey bee colonies with honey, pollen or supplements from dead colonies. It may contain pathogens or residues harmful to the bees.



*Dead colony with a lot of excrements on the frames. May contain pathogens causing disease if the food is used to feed another colony.*

© Apinordica



# GOOD BEEKEEPING PRACTICES

## BEE FEEDING AND WATERING

### CLUSTER 1

#### FEEDING

#### 1.3

#### Provide nucleus and swarms with adequate food supply

Provide food to nucleus and swarms, allowing them to develop and increase in strength.



*Preparation of nucleus on a double entrance bottom board. Space is left for an internal feeder.*

© Apinordica

## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 1

##### FEEDING

#### 1.4

### How to provide artificial feeding during times of shortage

You can provide supplementary feeding at times of shortage in the colony. If it is early spring, a sugar candy is the best, allowing bees to access it easily. During the season if there is no nectar flow and the storage of honey in the colony is empty, you can feed with sugar solution.



*Candy as supportive feeding during early spring.*

© Apinordica



## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 1

#### FEEDING

### 1.5

#### Do not heat sugar solutions over tap-warm temperature

If sugar solution is heated the HMF-content will increase in the solution. A high content of HMF is deadly for the bees. HMF stands for 5-Hydroxymethylfurfural and is formed in all kinds of sugars when they are heated or stored in warm conditions.



*Preparation of mixing of sugar and cold water in a stainless steel tank with the use of an electric pump. The sugar solution is transferred to a tank on a trailer, ready to depart for the apiaries.*

© Apinordica

## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 2

##### AVOID ROBBING

### 2.1

#### Reduce risk of robbing

The occurrence of robbing may be reduced by keeping strong colonies, monitoring the food supplies in all colonies so that they are balanced and, depending on weather conditions, keeping the hive entrance relatively closed.

Moreover, also the health conditions of some colonies may trigger robbing so it is important to monitor if colonies are struggling due to diseases or other external causes.



*Reducing the hive entrance space against robbing.*

© Filippo Jannoni-Sebastianini



## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 2

##### AVOID ROBBING

### 2.2

#### How to stop robbing, once it occurs

Colonies under attack by other bees or predators need to be protected.

Robbing in fact may spread diseases and also quickly deplete the food supplies of the colony that may ultimately lead also to its extinction.

Preventive measures may encompass moving the hive to a safer location, reducing the hive entrance, covering and closing any openings and cracks on the hive or at the connection surfaces of different sections (e.g. brood chamber, supers, bottom or top board).

In due course, another option of intervention for the colonies being robbed that may often also be weak is to reinforce them by adding new frames with bees.



*Checking for openings and cracks on the hive to reduce robbing.*

© Filippo Jannoni-Sebastianini

## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

## CLUSTER 3

### WINTERING (FOOD)

#### 3.1

#### How to provide artificial feeding for wintering

You can provide artificial feeding for wintering using several different devices. The main idea is that you use a feeder that prevents the bees from drowning in sugar solution, not pours out in the colony or causes robbing while in use.



*Different varieties of feeders.*

© Apinordica



## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 4

##### HYGIENE

#### 4.1

#### Clean the feeders after feeding the bees

To avoid mould in the containers and degradation of the equipment, clean the feeders from the old sugar solution after use. Water is enough as a cleaning agent.



*Cleaning of a box used for feeding with water steam.*

© Apinordica

## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 5

#### WATERING

### 5.1

#### Provide a constant water source

Access to a constant supply of water is extremely important for the welfare of the colony.

Water is used by the bees for working the nectar they collect and especially for ensuring proper thermoregulation inside the hive.

The encroaching climate change worldwide that tends to create hotter and more arid environments for the bees requires reliable and continuous sources of water for the colonies.



*Providing water in the feeder.*

© Filippo Jannoni-Sebastianini



## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

## CLUSTER 6

### COLONY MANAGEMENT

#### 6.1

#### Choose the right feeder for your needs

Depending on the hive models you use and the size of the colony, you can choose different varieties of feeders. Make sure that the feeder you use fits with your feeding practices and prevents robbing behaviour.



*One model of feeder method and providing sugar solution.*

© Apinordica

# GOOD BEEKEEPING PRACTICES

## RECORD-KEEPING

## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

### CLUSTER 1 APIARY MANAGEMENT

#### 1.1 Identify your apiary and colonies

The identification of the apiary and the colonies contained therein is very important for institutional monitoring of bee stocks, for disease prevention and control and also for the beekeeper to keep track of treatments and movements of colonies.

A univocal assignment of identification codes to the apiary and the hives is also requested as a mandatory requirement by the authorities for the national database. The apiary code is assigned by the authorities through the logging system whereas the codification of the hives is carried out by the beekeeper.



*Apiary identification panel located at the entrance of the apiary.*

© Filippo Jannoni-Sebastianini



## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

### CLUSTER 2

#### VETERINARY MEDICINES AND DISEASE MANAGEMENT

### 2.1

#### Record the health status of the colonies

Monitor colony health by recording diseases, mortality, and pest infestations. Use notebooks, templates, or digital tools for tracking. Identify issues early for effective management, ensuring productivity and regulatory compliance. Training in disease identification and consultation with experts can enhance management practices, supporting healthier colonies and sustainable beekeeping.



*Utilize notebooks, templates, or digital platforms to document illnesses, mortality rates, and pest outbreaks.*

© Aránzazu Meana



## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

### CLUSTER 2

#### VETERINARY MEDICINES AND DISEASE MANAGEMENT

### 2.2

#### Be informed about currently authorized veterinary medicinal products in your country

Stay updated on authorized veterinary medicinal products (VMPs) through government databases, veterinarians, or beekeeping associations. Use approved treatments responsibly, following dosage and withdrawal periods to avoid honey contamination. Keep records, monitor for resistance, and ensure compliance with local and international regulations to protect bee health and product safety.



*Keep informed via government databases, veterinary professionals, or local beekeeping organisations.*

© Aránzazu Meana

## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

### CLUSTER 3 COLONY MANAGEMENT

#### 3.1 Marking of hives that need subsequent attention

In order to recognise and subsequently isolate or treat the colonies that may have contracted diseases or that may require intervention it is important to have them previously marked with a unique identification code.

The code also allows an accurate record-keeping of all the interventions made on a given colony that may be consulted on a historical basis to check performance, response to treatment or for comparison with other colonies and/or apiaries.



*Hive identification code.*  
© Filippo Jannoni-Sebastianini



## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

### CLUSTER 3 COLONY MANAGEMENT

#### 3.2 Keep records of breeding activities and colony conditions

In order to carry out breeding activities consistently and effectively it is important to keep accurate records to monitor and compare the development of the colonies and their behaviour, resistance to diseases and performance.

The success in such practice is closely linked to the quality of the records taken at all the stages of the process applied as this also allows to constantly gauge the colony conditions.



*Keeping records of the colony activities and conditions on a field notebook.*

© Filippo Jannoni-Sebastianini



## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

### CLUSTER 4 HIVE PRODUCTS

#### 4.1

#### Record harvest and processing data

The accurate keeping of records of harvest and product processing allows to compare the yield of different years and apiaries, the climate conditions and establish the potential of different foraging areas, after taking into due consideration meteorological circumstances.



*Recording the harvest data of the colony.*

© Marco Pietropaoli

## GOOD BEEKEEPING PRACTICES RECORD-KEEPING

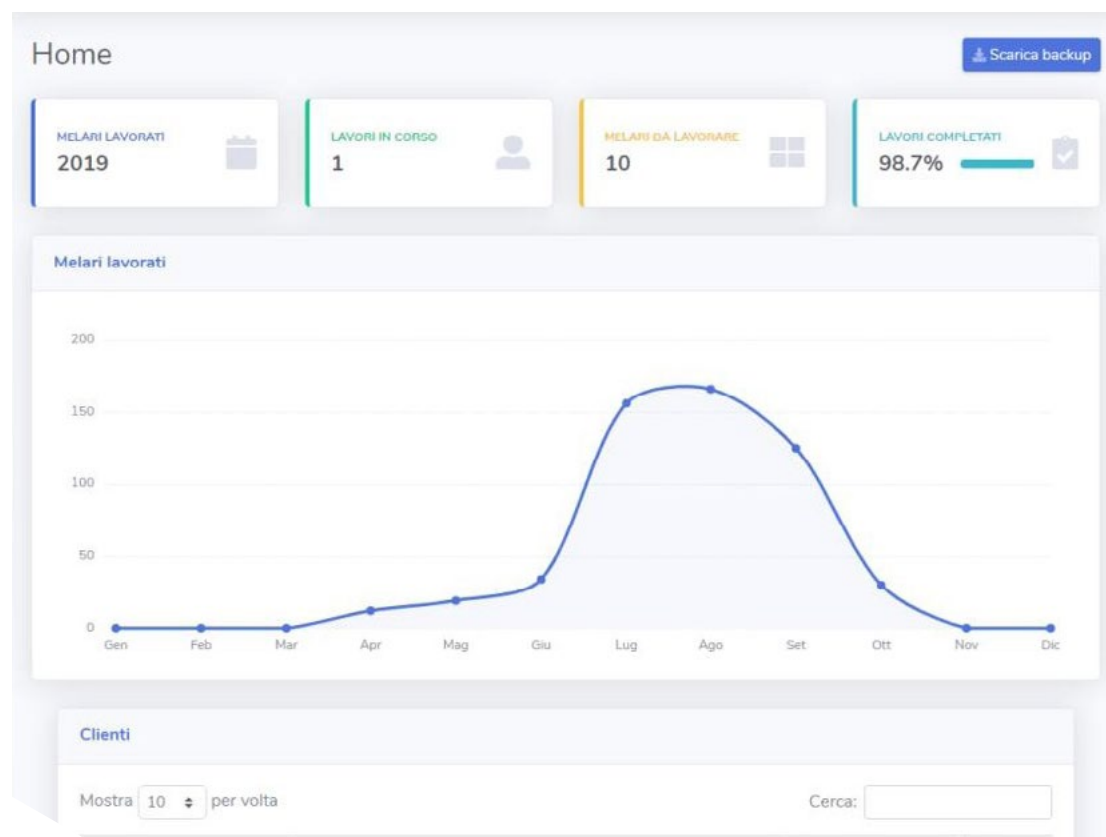
### CLUSTER 5 MONITORING TOOLS

#### 5.1

#### Use a recording solution that fits to your needs

The size of the apiary and the production orientation are key parameters for determining the modalities and the features of the record-keeping system to be adopted.

Small enterprises may use manual record-keeping complemented by computer data storage systems whereas large commercial beekeeping businesses may well opt for hand-held devices and QR code for monitoring the activities through information technology.



*Honey extraction data logged on the computer.*

© Marco Pietropaoli

## GOOD BEEKEEPING PRACTICES

### RECORD-KEEPING

## CLUSTER 6

### CHARACTERISTICS/SELECTION

#### 6.1

#### Record characteristics of honey bee queen

In order to ensure the efficiency of queen bees and decide on their replacement it is fundamental to keep track of their performance over the seasons and years and genetic lineage.

The performance of the queen bees could be assessed in terms of egg-laying pattern, colony resistance to diseases, production, swarming propensity and hygienic behaviour.



*Checking the performance of the honey bee queen.*

© Filippo Jannoni-Sebastianini



# BIOSECURITY MEASURES IN BEEKEEPING EUROPEAN FOULBROOD

# BIOSECURITY MEASURES IN BEEKEEPING

## EUROPEAN FOULBROOD

### CLUSTER 1 PREVENTION

#### 1.1

#### **Do not move used frames/ bees/materials/feeds from colonies with EFB to healthy colonies**

Avoid transferring used frames, bees, materials, or feed from colonies with European foulbrood (EFB) to healthy colonies. Identify the unsealed brood, in advanced cases with discolored sunken or punctured cappings, caused by *Melissococcus plutonius*. Always disinfect equipment, isolate infected colonies, and follow local guidelines for treatment or eradication to protect your apiary.



*Refrain from moving used frames containing unsealed brood, especially in advanced cases where the cappings appear discolored, sunken, or punctured.*

© Aránzazu Meana

# BIOSECURITY MEASURES IN BEEKEEPING

## EUROPEAN FOULBROOD

### CLUSTER 1 PREVENTION

#### 1.2

#### Inform your neighbours about EFB at your apiary

Informing your neighbours about European foulbrood (EFB) in your apiary is crucial to prevent its spread. Notify nearby beekeepers promptly so they can inspect and protect their colonies. Share the diagnosis, symptoms, and preventive measures while adhering to local regulations for disease management and fostering community collaboration.



Promptly inform nearby beekeepers to allow them to inspect and safeguard their colonies.

© Aránzazu Meana



# BIOSECURITY MEASURES IN BEEKEEPING

## EUROPEAN FOULBROOD

### CLUSTER 1 PREVENTION

#### 1.3

#### How to manage asymptomatic colonies when EFB cases have been detected in the apiary or in other hives of the same beekeeper

To manage asymptomatic colonies with EFB in the apiary, increase monitoring, minimize stress, disinfect equipment, and isolate healthy colonies. Quarantine affected hives and follow local guidelines for treatment or prevention. Regular inspections and preventive measures help control the spread and protect the entire apiary.



*Routine inspections and preventive actions are essential for controlling the spread and safeguarding the entire apiary.*

© Aránzazu Meana

## BIOSECURITY MEASURES IN BEEKEEPING EUROPEAN FOULBROOD

### CLUSTER 2 DISINFECTION OF MATERIALS OF EFB- CONTAMINATED COLONIES

#### 2.1

#### **Disinfect/incinerate the contaminated beekeeping equipment and hive materials of EFB symptomatic colonies**

To prevent the spread of European Foulbrood (EFB), disinfect or incinerate all contaminated beekeeping equipment, hive materials, and tools from symptomatic colonies. This includes frames, combs, protective clothing, and all type of tools. Effective cleaning or destruction ensures that bacteria are eradicated, reducing the risk of further contamination to healthy colonies.



*Sanitize or burn all contaminated beekeeping equipment, hive materials, and tools from affected colonies to prevent the spread of European Foulbrood (EFB).*

© Aránzazu Meana



# BIOSECURITY MEASURES IN BEEKEEPING

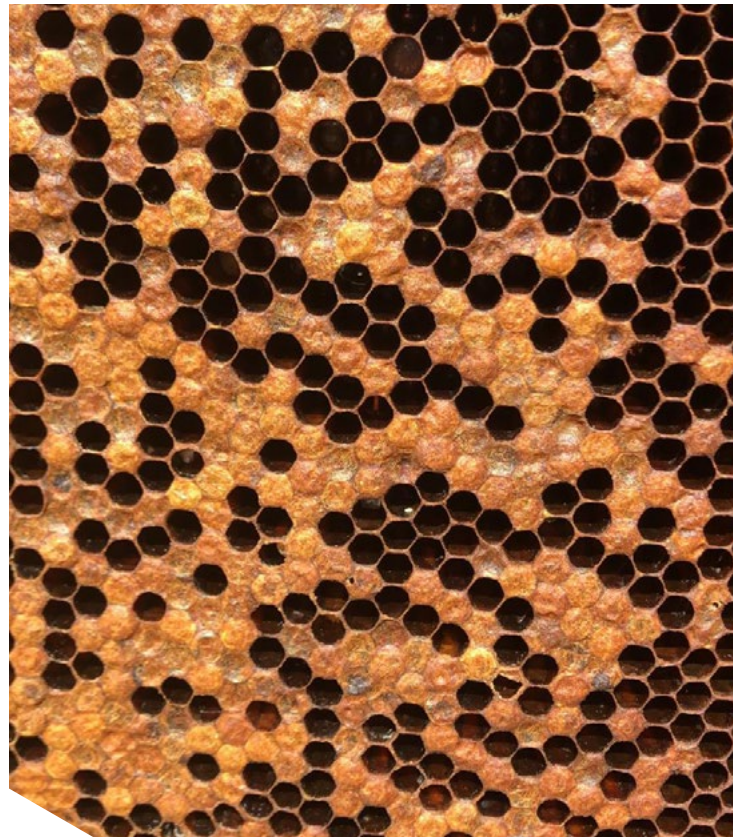
## EUROPEAN FOULBROOD

### CLUSTER 3 DETECTION

#### 3.1

#### Detection of EFB typical signs and laboratory analysis

This disease affects only the larvae when they are only 4-5 days old and is easily seen when the colony population is building to its maximum strength. Larvae lie curled in the bottom of their cells with flabby bodies, soon turning from yellowish white to brown and black and sometimes sour odor. Dead larva has a watery consistency, rarely sticky. Laboratory analysis, such as PCR tests or bacterial cultures, can confirm the presence of *Melissococcus plutonius*.



Look for signs such as sunken, discolored brood that often emits a foul odor. Affected larvae may appear gray or yellowish, with the brood becoming twisted and having a melted appearance.

© Aránzazu Meana and Miguel Alonso



## GOOD BEEKEEPING PRACTICES

### BEE FEEDING AND WATERING

#### CLUSTER 4

MANAGEMENT OF HIVES THAT  
SHOW CLINICAL SYMPTOMS OF EFB

#### 4.1

#### Make a (partial) shook swarm in case of EFB clinical signs

In the case of European Foulbrood (EFB) clinical signs, a partial shook swarm can be performed to control the disease. This involves shaking the adult bees from the affected hive onto clean frames or a clean box, while discarding contaminated brood, combs, and equipment. The shaken bees are then reintroduced into a new hive with clean foundation. This method helps remove infected brood and prevents the spread of *Melissococcus plutonius*, though it may require further treatments or monitoring to ensure complete control.



*Shake adult bees onto clean frames in new hives to eliminate infected brood to stop *Melissococcus plutonius* dispersal and locate them in a new place.*

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