

Hive Cleaning, Sterilisation and Good Practices for the Hobbyist Beekeeper

by Jason Learner, NBU

Honey bee colonies are subject to infestation or infection by a range of pests and diseases. These include viruses and bacteria, such as the microbes that cause American or European foulbrood (AFB and EFB); *Paenibacillus larvae* and *Melissococcus plutonius* respectively. Such infections can be rapidly spread by the beekeeper and by drifting or robbing of colonies by other honey bees. Good hygiene and beekeeping husbandry practices are therefore essential in reducing the impact that harmful bacteria and viruses have on colonies and the apiary. Additionally, good hygiene practices should extend to beekeeping equipment and clothing, as well as to the apiary itself. For example, as a minimum measure, using sterile disposable gloves and washing hive equipment in a solution of washing soda between each apiary visit. This article seeks to address some of the questions posed by small scale beekeepers and gives practical advice on sterilisation of equipment and hygiene practices around the apiary.



Good husbandry practices and a clean apiary will help reduce robbing and are less likely to attract pests. Alternate the direction of your hive entrances to discourage robbing and drifting of other bees. All photos courtesy of The Food and Environment Research Agency (Fera), Crown Copyright; images supplied by the National Bee Unit at Fera.

What best practices should I be using when travelling from apiary to apiary?

When travelling from one apiary to the next, there are some essential tools that every beekeeper should have to help minimise the transference of infections. Disposable gloves are essential and, at the very minimum, they should be changed between each apiary in foulbrood clear zones. If, however, you receive an email notifying you that foulbrood has been found within 3km of an apiary, then gloves should be washed between each colony. You may find it useful to wear more than one layer; this will increase the thickness of the material and offer greater confidence for those beekeepers who are new to the craft, and it will allow you to pull off the top layer if necessary. In addition, it is also worth investing in a 10L bucket with a lid. In this you should prepare a washing soda solution made from 1kg of washing soda in 5L of water (i.e. use a 1:5 ratio solution). On the bucket, mark an expiry date of one month after the solution was made up. Change the solution when

this time passes or sooner if it becomes excessively discoloured. Use a stainless steel pan scourer with the solution to clean your hive tools between each colony and also your smoker (paying particular attention to the bellows). Stainless steel hive tools can

“ Good husbandry practices and a clean apiary will help reduce robbing and are less likely to attract pests. ”

be left to soak in the soda solution between apiary visits. It is also useful to have a small, sealable container for putting brace and burr comb and other scraps of wax that can be accumulated and rendered down. Discarding old bits of wax on the ground can encourage robbing by bees and by pests such as wax moths or wasps. When carrying out inspections in an apiary, leave any colonies known to be under suspicion of disease or that have been previously treated against EFB until last to avoid the risk of contaminating clothing and equipment.

How and when do I clean gloves and bee suits?

Try to ensure that all clothing and equipment is clean and free from accumulations of honey, propolis etc. before commencing an inspection of an apiary. Bee suits should be washed regularly in accordance with the manufacturers' recommendations; a half cup of washing soda added at the start of the wash will help to remove propolis staining and wax. Leather gloves should be avoided. They harbour disease causing pathogens which can be transferred from colony to colony without the beekeeper knowing. Additionally, they make working the hive a clumsy task, especially when the gloves become hardened by propolis and age.

How can I keep bees away from supers that are awaiting extraction while letting the odd bee escape from them?

Supers awaiting extraction should not be left exposed, even when left in a shed. These sorts of practices encourage robbing by bees that may carry and spread harmful infections to other colonies. All supers should be stacked together properly, with any holes being sealed with foam or tape. The stack should be stood in a suitable tray or on several sheets of newspaper and a crownboard to catch any honey and the top covered with a bee-tight roof. Ensure that debris and spills of wax and honey are cleaned up. On the top of the stack, the roof can be replaced with a crownboard and the porter bee escape left in to allow the odd bee to escape. It may not be possible to get all bees out of the supers and some bees may be left in. If they are still alive when you come to extracting the combs, a window can then be opened and the bees nursed out of it. Be sure to close the window after so that returning bees are not able to access the room. Should the Small Hive Beetle ever reach UK shores, it could very quickly become a serious problem in honey extraction and storage facilities, particularly where hygiene



Proper storage of equipment can help to minimise problems with robbing and pests.

is poor. Poor storage of supers gives the opportunity for beetle infestations to increase very rapidly, especially when kept in a protected environment. Following these precautions will greatly reduce the beetles' impact.

How can I clean honey extracting equipment and dry it without getting thousands of robbers coming to clean up?

Cleaning an extraction room can be a sticky and messy task. It is important to employ good hygiene around the extraction room and make sure tasks are done efficiently and as quickly as possible. Leaving full supers lying around for extended periods of time will attract foragers and cause robbing. They should be extracted as soon as possible after harvesting from hives and comb or wax cappings should not be left exposed. If you do have to leave the extractor with remains of honey in it, ensure that the lid of the extractor is closed and that all windows and doors to the room are shut. You may even find that the keyhole to the outside door needs blocking up to prevent bees or wasps getting in. When cleaning extraction equipment, use cold water and rinse the equipment thoroughly. Waste



Clean extraction facilities will discourage any unwanted visitors.

How best to remove propolis and wax from frames and tools?

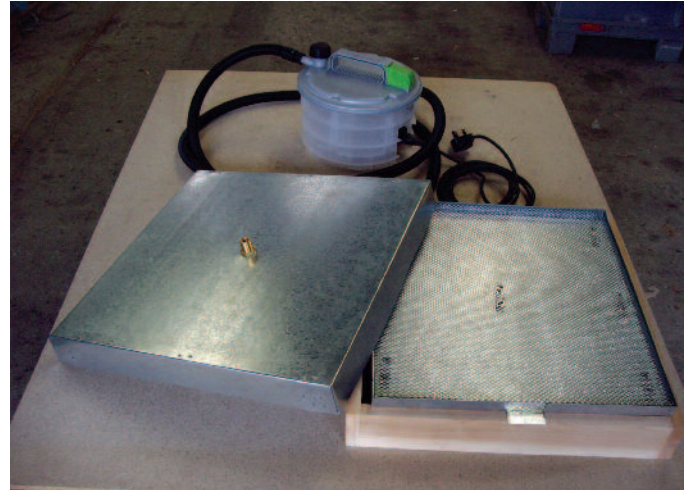
By boiling

To sterilise frames, lay newspaper down on the working surface and then start by scraping all the frames over the paper as thoroughly as possible. Ensure that all the propolis or wax falls onto newspaper underneath so that it can then be burnt once you have finished. Prepare a mixture of soda solution (at a 1:5 ratio) in a pan large enough to hold the frames and bring the water to the boil. Next, fill a separate pan with cold water and place it nearby. Submerge your frames in the boiling soda solution for a minute or until the frame is clean of any remaining wax and propolis. Remove the frames from the soda solution and then rinse them in the pan of cold water. Leave them to dry and fit them with fresh foundation.

By steam

Hot steam is very effective for melting wax from dirty wooden brood boxes and frames prior to their reuse. Apparatus consists of a source of steam, for example from a domestic wallpaper stripper, a plastic hose pipe, a collection tray, a modified brood box and lid. Equipment as described is available to purchase or can be home-made.

Begin by placing a box filled with dirty frames onto the purpose built collection tray, which needs to be similar in size and



Equipment used for steam cleaning frames of propolis and wax.

shape to a hive floor but with a small opening at one edge and cover with the lid. Attach the end of the hose pipe from the steam chamber into the top of the sealed box. As the wax softens and melts it runs down through the box and out of the opening in the tray, from where it can be collected. The stripped and cleaned wooden frames can be reused. Allow at least one hour of treatment for each box of frames. Frames can then be refitted with fresh foundation.

How can I chemically sterilise old frames and equipment when given to me from a contact?

Old comb should never be re-used when coming from an unknown source. Instead, the comb should be cut out and burnt. The frames can then be sterilised by boiling or steaming as described above. Equipment such as polystyrene hives can be cleaned in a solution of sodium hypochlorite. This is present at a concentration of about 3% in household bleach. Immersion, for twenty minutes, in a solution of 0.5% sodium hypochlorite and water will kill AFB spores and other bacteria. Therefore, you will need to make a solution of one part of household bleach to five parts of water to get a 0.5% solution for sterilising your equipment. Be sure that you scrape all equipment of wax and propolis as thoroughly as possible because the solution needs to be in contact with all areas of the surface in order to be effective.

What do I do if bees do not 'clean' the supers properly for dry storage?

If supers are still wet when going into late autumn and contain a lot of stores, beekeepers can place the super under the brood box over winter. The bees will then shift the honey up into the brood box as a preference. If the combs are just 'wet' with remains of honey after extraction, the super can either be placed above the crownboard for a few days in autumn (with the porter bee escape open) so that the bees clean the super, or, can be stored wet in a dry environment over winter and given to the colony in spring to clean up. ✿