Introduction
Bed bugs had all but disappeared in developing countries, but a recent resurgence is causing serious problems. These bloodsucking parasites are now frequently reported in human establishments like hotels and dormitories and are becoming more frequently observed in poultry facilities.

Bed bugs are flightless and rely on passive transportation to move from facility to facility. These bugs can be moved in boxes, bags, luggage, clothes, shoes, vehicles, crates, and any other equipment, supplies, or personal items. They can be extremely difficult to eliminate, and control is becoming more challenging as bed bugs become more resistant to pyrethroid pesticides that are commonly used. While they do not normally stay on poultry like mites or ticks do, they will feed on the birds, posing a major pest problem for both the birds and the people managing them. Careful attention to detail and early detection will be needed to prevent this pest from growing in number.

Identification and Life Cycle
Bed bugs are reddish-brown insects that may resemble unfed ticks or small cockroaches. They are sucking pests with modified mouthparts that form an elongated sharp beak, or proboscis, that is used to penetrate the skin. Bed bugs typically feed at night. Overall, it takes about 5 to 10 minutes for an adult bed bug to feed. After feeding, bed bugs will retreat to a hiding place, where they will remain during daylight hours to digest the blood meal. When hosts are present, bed bugs will feed every few days, but they may live up to 18 months without a blood meal.

Under favorable conditions, bed bugs can live for 6 to 10 months and may lay up to 550 eggs. Eggs are white and deposited in the crevices where bed bugs congregate. However, eggs are not laid when temperatures are below 50°F. Maximum egg laying occurs at 70°F. Depending on temperature, eggs hatch in 4 to 28 days. Newly hatched bed bugs resemble adults, just smaller in size. Bed bugs will molt, or shed their exoskeleton, five times before reaching maturity. This process can take 4 to 6 weeks in the warmer summer months. There may be up to four generations a year depending on circumstances, and populations can double every 16 days. Bed bugs may overwinter as adults in unheated facilities, or if conditions remain suitable, they may continue to produce new generations year-round.
Impact on Poultry

Bed bugs are not known to carry any diseases that are transmittable to poultry, and at low numbers they may not even be noticeable without scouting. However, with increasing population numbers of bed bugs and the resulting stress to poultry, heavy infestations may lead to feather loss, lesions, cloacal irritation, and anemia. As a consequence, feed consumption may increase and production may decrease. Egg value may be reduced if fecal spots are observed on eggs.

Control

Control of bed bugs in poultry facilities requires persistent biosecurity efforts and scouting to intercept infestations before they become so numerous that eliminating them is a challenge.

Scouting

A good integrated pest management (IPM) program should include scouting for bed bugs when supervising floor poultry housing. Careful attention may prevent this pest from gaining a foothold on the farm. Bed bugs will not be found on birds during daylight hours. When scouting for these pests, look along perch and nest sites where poultry congregate. Other locations where bed bugs can hide include rails to slat platforms, nest boxes, and under nest pads. Slat panels can be lifted to see if bugs are hiding between the slats and the support beams. A flashlight can aid in spotting bugs. Nest pads should be lifted to see if bed bugs are hidden in the corners of the nest box. This pest can also congregate along door frames, window sills, and any cracks and crevices in walls. As bed bug populations grow, dark spots (droppings) can be seen on walls and areas where they congregate. Bed bugs can also burrow into wall and ceiling insulation on both sides of a wall’s vapor barrier. Inspect the exterior of the house as well and remove any bird nests or refuse that may be near the building. Keep all grass low around poultry housing to discourage rodents.

As an infestations progress, bed bug hiding areas may become filled with eggshells, molted skins, and dead insects, all fused into a more or less solid mass by bed bug excrement. These areas may be darkened with fecal spots as well.

All parts of the house can harbor bed bugs, including
manure storage and egg rooms. Packing materials for eggs and other dry storage should be inspected. Also check moving crates and buggies to see if bed bugs are present. Any visitors to the farm can potentially be carriers for bed bugs, so proper documentation of prior farm visits in a visitors log is essential for good biosecurity.

Sanitation

Regular cleaning and disinfecting of nest boxes and slats or other removable items will not only help with scouting but also remove bugs if they are found. If bed bugs are found or suspected, a complete inspection of workers and their clothing and shoes should be made. Boxes, bags, purses, bottles, or other items should not be transported from an infested house to a noninfested house. This may require changing clothes and shoes each time after working in infested areas.

All individuals should take extra steps to use disposable outerwear and change out and bag shoes before entering any vehicle. Bag any laundry and gloves that would be used again. Launder and heat dry all reusable clothing, as heat over 130°F will kill the bugs and their eggs. Be sure to remove floor mats and check carpet edges and weather stripping in the vehicle for evidence of bed bugs. Vacuum vehicles often including seats and floors.

Physical/Mechanical Control

Exclusion methods can be used to some extent to prevent or slow infestation. Sealing cracks and crevices and removing unnecessary items in and around the houses can reduce harborage. This can also put more bugs in contact with chemical insecticides, if used.

Heat can also kill bed bugs; however, collateral damage to pipes and other sensitive building materials can be problematic in whole-house heating. In addition, sustained heat of 130°F can be difficult to maintain in all areas where bed bugs may hide. It is important that all houses are treated with heat and perimeters of the houses treated with residual insecticides to prevent bed bugs from leaving the house during treatment only to return after it cools or moving to untreated houses. Steam cleaners can be used on coops, crates, buggies, and trailers to cook and remove bugs and eggs. Materials must be able to withstand the heat of steam, and painted surfaces may be marred by repeated steam-cleaning cycles.
Chemical Control

If identified early, direct contact with insecticides, dusts, and other materials can kill bed bugs. Residual sprays may not always work if they are applied in areas that the bugs are not traveling. Furthermore, bed bugs are known to be resistant to some compounds, such as Tempo® (cyfluthrin) and permethrin. Nonpyrethroid pesticide such as Durashield® (chlorpyrifos) or RaVap® (chlorpyrifos plus dichlorovos) may be more effective in the houses. RaVap® can be used when birds are present, but Durashield® cannot, and it must be applied by a licensed pesticide applicator. Refer to label guidelines and state regulations in all cases before selecting and using insecticides. When spraying, make sure to spray all corners, cracks, crevices, and other areas that may be potential bed bug hiding spots. Pull up slat floors and nest pads in order to treat places where bugs may be hiding. Since the eggs may not always be killed during treatment, repeat spraying after approximately two weeks may target remaining pests. All houses should be treated at the same time; also consider a perimeter spray to prevent bed bugs from approaching a poultry house.

Fumigation is the last—and an extreme—measure for bed bug control. This can only be performed by licensed pest control contractors and would pose a danger to adjoining animal housing as well as people. Vehicles that may become infested can be tent fumigated to control the pests. Partial removal of sheeting and other equipment may be warranted before tenting to ensure the fumigant gets to all parts of the building or vehicle.

Be sure to fully read and understand pesticide labels and Safety Data Sheets before applying any pest control product on the farm. Consult with your state certifying organization on the use and limits of pest control products in organic production areas. Consult licensed pest control professionals for application services in your area.

Whole-house fumigation should be a last resort for bed bug management in poultry facilities.

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