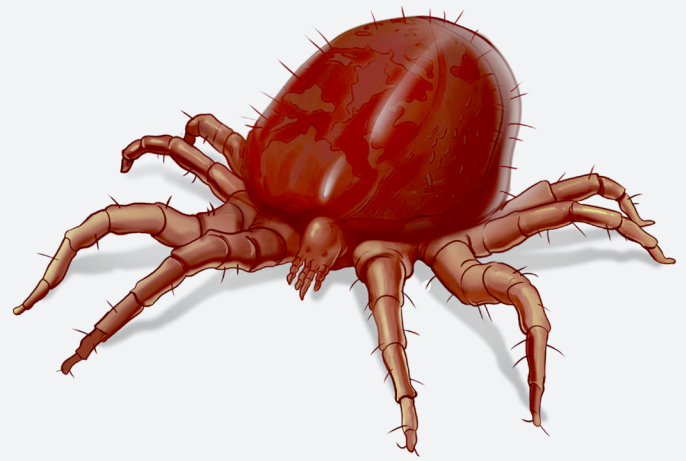
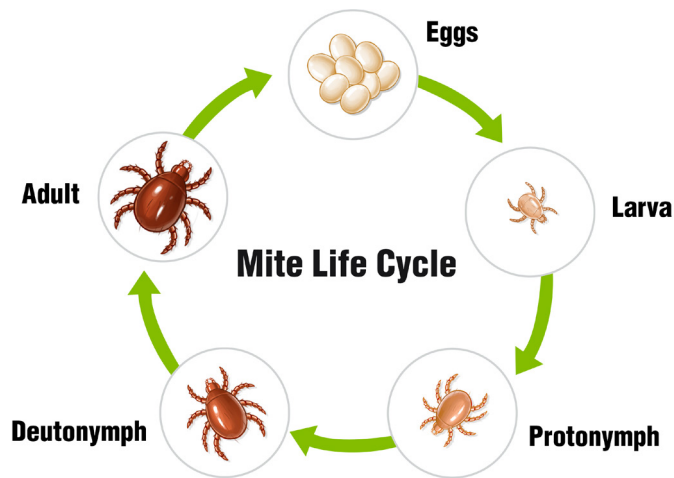


Mites in Poultry Facilities Protocol



Importance of Mite Control

- Ectoparasitic mites can have a significant impact on flock performance, their painful bites impact bird health, weight gain, feed conversion, egg production and egg quality.
- Heavy mite infestations can lead to anemia and, in some cases, death.
- Due to their small size, mite infestations often go unnoticed until populations are well established. Their short life cycle also allows populations to increase rapidly.
- Poultry red mites are recognized vectors of disease pathogens, including *E. coli* and *Salmonella*.
- Mites can also bite people, creating discomfort for workers and caretakers.
- Mites are easily transmitted from bird to bird through direct contact, as well as by people, rodents and contaminated equipment or machinery.



Understanding Mite Life Cycle and Habits in Poultry Facilities

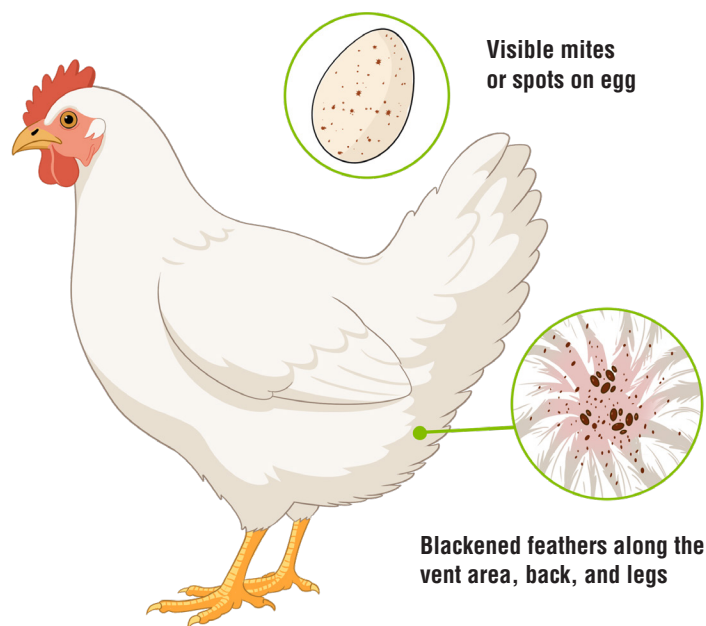
- Mites are tiny ectoparasitic arachnids, typically measuring about 1 mm in length.
- Mites develop through four life stages: egg, larva, nymph and adult.
- Scaly leg mite (*Knemidocoptes mutans*) burrows into the skin to feed on tissue and reproduce but is not typically found in caged layer systems.
- The two most important mite species in poultry facilities are the northern fowl mite and poultry red mite, both of which are blood-feeding ectoparasites.
 - Northern Fowl Mite (*Ornithonyssus sylviarum*)**
 - The most economically damaging mite species affecting poultry in the United States.
 - Protonymphs and adults feed on blood and are active during the day.
 - Spend their entire life cycle on the host, primarily around the vent area.
 - Can survive for up to three weeks off the host.
 - Northern fowl mites are more prevalent in caged systems.
 - Poultry Red Mite (*Dermanyssus gallinae*)**
 - Protonymphs, deutonymphs and adults feed on blood and are active at night.
 - Live and lay eggs off the host in cracks and crevices, traveling onto birds at night to feed.
 - Can survive for several months without a blood meal.
 - Poultry red mites are common in cage-free systems.

NORTHERN FOWL MITE <i>Ornithonyssus sylviarum</i>	IDENTIFICATION	IMMATURES	ADULTS
	Adults are oval shaped and can range in size from 0.5-1 mm Light gray when unfed and dark red-brown or black after a blood meal	Eggs hatch in 1-2 days	Egg to adult in 5-12 days. Adult females usually lay 1-3 eggs per feeding.
POULTRY RED MITE <i>Dermanyssus gallinae</i>	IDENTIFICATION	IMMATURES	ADULTS
	Adults are oval shaped and can range in size from 1-1.5 mm Gray, or dark brown when unfed and red after a blood meal	Egg hatch after ~2 days	Egg to adult in 7-14 days. Adult females can lay 4-8 eggs per week.



Signs of Infestation

- Dirty, mite-infested feathers, particularly around the vent.
- Mites visible on eggs.
- Scabs, skin irritation and lesions.
- Loss of feathers.
- Increased stress behaviors, including excessive scratching, preening and pecking.
- Clusters of mites in cracks and crevices throughout the poultry house.



Inspection

- Conduct manual inspections of birds during the production cycle when possible.
 - Prioritize inspection of roosters for northern fowl mites, as they often harbor higher mite populations.
 - If looking for poultry red mites, examine the poultry house during the evening or at night when mites are most active and feeding.
- Use monitoring devices, such as corrugated cardboard traps, secured on or near perches and other harborage areas to help detect poultry red mites.
- Inspect eggs for the presence of mites or blood spots, which may indicate poultry red mite activity.
- Determining whether mites are found on the host or in the environment can help identify the species; however, species confirmation is recommended. Poultry red mites require treatment of both birds and environmental harborage sites throughout the facility.

Common Resting and Breeding Sites

- Nest boxes
- Curtains
- Fans
- Ventilation shafts
- Feed and water lines
- Egg flats
- On birds and eggs

Pre-Treatment

- Prevention is the best method of mite control. Maintain strict biosecurity measures and inspect birds, cages and equipment prior to placement.
- Mites can readily sustain themselves on wild bird and rodent populations. Controlling rodent and wild bird populations is important to help reduce infestations.
- If possible, limit harborage areas by sealing small cracks and crevices.
- Increasing ventilation and reducing moisture and humidity helps make the environment less favorable for mite populations.

Interior Control Measures

- Controlling northern fowl mites will require on-bird applications, select products approved for use over poultry.
- For over-poultry applications open nest boxes before application.
- Apply insecticides to cracks and crevices, walls, posts and any other areas that may serve as mite harborage.
- Apply insecticides to all equipment and housing materials.
 - If possible, remove equipment from the barn and place it outside to cure in the sun. Heat from the sun may help kill mites. If weather conditions do not allow for outdoor curing, removing equipment still allows for more thorough insecticide coverage of equipment.
- If possible, complete a full cleanout of the poultry house, including manure pits, before applying insecticides.
- Feed-thru and dust products may be used as part of an integrated mite management program.

Exterior Control Measures

- Apply a residual insecticide, such as Onslaught® FastCap Spider & Scorpion Insecticide, around the exterior perimeter of poultry houses.
- Because mites can be reintroduced by wild birds and rodents, focus exterior applications around potential entry points, including fans, foundations, soil, rafters, cracks and crevices.



Recommended Equipment

- Backpack or hand sprayer – Commonly used for spot, crack or crevice treatments around the premises. Users can opt for fan spray or pin stream. Do not apply insecticide to runoff.
- Cold foggers (ULV) – Generate fog by a mechanical action that breaks down the liquid while combining it with a high volume of air at low pressure. Users can calibrate the unit to produce optimum sized drops for the situation or product being used.
- Backpack mist blowers or power sprayers – Commonly used when applying adulticides. For exterior applications, truck mounted spray rigs may help with efficiency and complete coverage.

Post-Treatment

- After being inside an infested poultry house, be sure to change clothes. Wash clothing in hot water and dry on high heat if possible. Alternatively, clothing may be placed directly in the dryer on high heat.
- Isolate infested flocks, including equipment, to minimize spread.
- Thoroughly clean the barns between flocks, replacing bedding and nesting material
- Continue to monitor populations to catch infestations early by checking the following:
 - People – shoes and clothing
 - Birds
 - Personal items
 - Production equipment

Tips and Tricks From the MGK Technical Department

- If possible, provide birds with access to a dustbox.
- Understand the basics of how active ingredients work. Some actives, like pyrethrins, do not provide long residual activity, meaning that direct contact with mites and thorough coverage are key to success.
- Selecting oil or water-based formulas: Oil-based formulations (ex. ULD® BP-100 Contact Insecticide II) are sometimes preferred because the product stays on the surface a bit longer. Water-based formulations tend to disperse more quickly and are sold as concentrates.
- Early detection is important but challenging due to mite size. Pay attention to bird behavior and increase inspections if you notice stress behaviors increasing.

PRODUCT	IRAC GROUP	ANIMALS PRESENT DURING APPLICATION	RATES	APPLICATION METHODS
EverGreen® Pro 60-6	3A	Yes	0.21 fl. oz. per gallon.	Spray crevices of roost poles and cracks in walls and nests where mites hide, followed by spraying over the birds with a fine mist.
Onslaught® FastCap Spider & Scorpion Insecticide	3A	No	1 fl. oz. per gallon.	Apply as a general surface, spot and/or crack and crevice treatment when birds are not present. Treat stanchions, pipes, windows, doors, posts, cage framing, gates, under (but not in) feeders and waterers, and other areas where mites hide or congregate.
Pyganic® Specialty	3A	Yes	2.5-4 fl. oz. per gallon.	Spray crevices of roost poles and cracks in walls and nests where mites hide, followed by spraying over the birds with a fine mist. Do not apply more than 1 time per day.
Riptide® Waterbased Pyrethrin ULV	3A	Yes	1 part concentrate to 25 parts water.	Spray crevices of roost poles and cracks in walls and nests where mites hide. Do not apply more than 1 time per day.
Sector® Misting Concentrate	3A	Yes	Severe infestations: • 1.28 fl. oz per gallon. Normal infestations: • 0.64 fl. oz. per gallon. Maintenance use: • 0.32 fl. oz. per gallon.	Spray crevices of roost poles, cracks in walls and cracks in nests where mites hide. Spray birds with a fine mist paying particular attention to vents. Use at the rate of 1 gallon of spray per 100 birds.
Tobex® Multi MoA Concentrate	3A, 7C	No	2-4 fl. oz. per gallon.	Apply as a general surface, spot and/or crack and crevice treatment when birds are not present. Treat stanchions, pipes, windows, doors, posts, cage framing, gates, under (but not in) feeders and waterers, and other areas where mites hide or congregate.
ULD® BP-100 Contact Insecticide II	3A	Yes	Full strength applied at 1 fl. oz. per 1,000 cu. ft.	Disperse toward areas suspected of harboring the greatest infestations of listed pests, contacting as many as possible.



PREMISE SPRAY



Onslaught® FastCap Spider & Scorpion Insecticide

- Microencapsulated residual insecticide and knockdown agent to deliver fast-acting and residual control
- Flexible application methods, including indoor and outdoor broadcast use
- Synergized with piperonyl butoxide (PBO) to combat metabolic resistance and increase effectiveness



Tobex® Multi MoA Concentrate

- Combines a knockdown agent with controlled-release technology
- Formulated with NyGuard® IGR for dual modes of action to control immature and adult insects
- Synergized with piperonyl butoxide (PBO) to combat metabolic resistance and increase effectiveness

Over-Animal Insecticides



EverGreen® Pro 60-6

- Contains botanically based pyrethrins synergized with piperonyl butoxide (PBO) for knockdown and kill
- Formulated with a 1:10 pyrethrins to PBO ratio to combat resistance and increase effectiveness
- Effective where resistance may be a concern to flush pests from harborage areas for faster control



Pyganic® Specialty

- Contains botanically based pyrethrins for rapid knockdown and kill
- OMRI Listed and meets USDA NOP requirements for organic production
- Flushes insects from harborage for faster control



Riptide® Waterbased Pyrethrin ULV

- Contains botanically based pyrethrins synergized with piperonyl butoxide (PBO) for knockdown and kill
- Formulated with a 1:5 pyrethrins to PBO ratio to combat resistance and increase effectiveness
- Water-based insecticide that can be automatically misted or manually applied



Sector® Misting Concentrate

- Formulated with synergized permethrin to provide knockdown and residual control
- Synergized with piperonyl butoxide (PBO) to combat metabolic resistance and increase effectiveness
- Water-based insecticide that can be automatically misted or manually applied



ULD® BP-100 Contact Insecticide II

- Contains botanically based pyrethrins synergized with piperonyl butoxide (PBO)
- Oil-based fogging concentrate for better adhesion to bird feathers
- Formulated with a 1:5 pyrethrins to PBO ratio to combat resistance and increase effectiveness

Contact your local MGK or distributor sales representative for more information.

See the label for a full list of insects controlled, detailed instructions and proper PPE.

Toll Free: 800.645.6466 | **Tel:** 763.544.0341 | **Fax:** 763.544.6437

7325 Aspen Ln N, Minneapolis, MN 55428 | **MGK.com**

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