



Effective Darkling Beetle Control

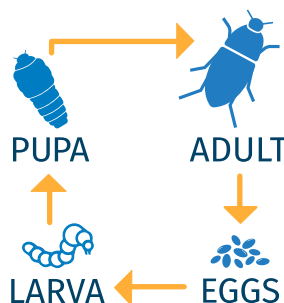
Darkling beetles (*Alphitobius diaperinus*) are the most common poultry-house pests¹ and vectors of numerous poultry diseases.² They can be present in extremely high numbers, reduce productivity³ and damage facilities.

Disease transmission and bird health

Chickens commonly feed on beetles, which presents the risk of transmitting diseases and fostering parasites, including *Salmonella* spp, Infectious Bursal Disease (Gumboro), *E. coli* and avian influenza.² Beetle larvae can also bite chicks and broilers, causing mortality in young chicks and sores or scabs on older birds.

Biology and behavior^{1,4,5}

Depending on the season, temperature and downtime between flocks, the life cycle of beetles can extend from two months up to a year. Adults can lay up to 800 eggs in a 42-day period, with eggs hatching in approximately four to seven days. Larvae burrow into the ground as they pupate over a three-month period and it takes two to three weeks for an adult beetle to emerge.



The lifespan of a darkling beetle, from egg to adulthood, can be anywhere from two months to a full year.

Novel mode of action

Effective against all mobile stages of beetles — larva and adult — Elector PSP works on a different part of the nervous system. This novel mode of action requires the pest to adapt to two receptors instead of one, making it hard for the insect to survive.

Elector PSP acts on the AChE (acetylhydrolase) receptor and additionally blocks the chloride channel of another receptor. This effect results in progressive paralysis due to loss of body fluid, which eventually kills the insect. The full effect is apparent after three to five days, hence the delayed mode of action.⁶

When used as part of an Integrated Pest Management (IPM) program, Elector PSP can be used in combination with other adulticides or larvicides for resistance management. Animals may be present at the time of premise treatment and no protective equipment is required.

Elector® PSP — Effective, flexible darkling beetle control

Indicated for control of darkling beetles, Elector PSP provides continued control of darkling beetles for weeks after application. Because Elector PSP has shown no cross-resistance with existing chemistries, it can be rotated with organophosphates, pyrethroids and neonicotinoids.⁶

Beetle control delivers a return on investment (ROI) by improving feed efficiency.⁴

	Savings/cost
4 pts. of improved FC (From 2.13 to 2.09)	\$0.036/bird
X 100,000 birds	\$3,600
Approximate treatment cost (5 houses)	-\$600
Total ROI per 100,000 birds	\$3,000

Assumptions: 4 pts. of feed conversion = \$0.13/lb. of feed at a cost of \$330/ton x body weight (5.6 lb.) \$120 per house treatment x 5 houses = \$600

Facility destruction⁷

Darkling beetles tend to gather around feed lines where there is food, heat and moisture. They burrow down in litter as an escape mechanism and will move into soil and insulation when birds are absent. After bird removal, beetles will migrate from under feed lines to side walls within 48 hours, causing damage to nearly every part of a facility, including:

- Wood structures
- Insulation
- Sill sealers and vapor barriers

Confidence raised.

For more information, visit elanco.us/poultry

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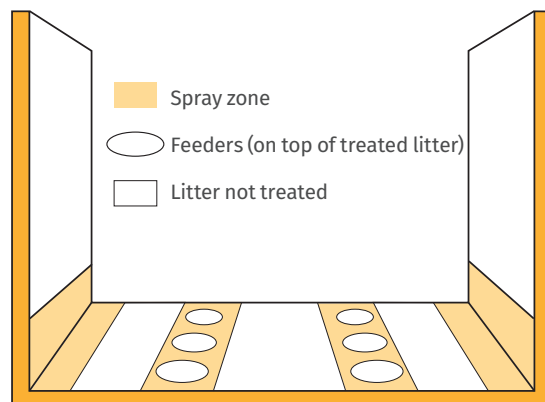
Treatment options

There are two primary types of treatment: pre-flock and mid-flock. For both options, the key to successful treatment is application. To ensure correct application, always follow the label directions.

Pre-flock treatment

- Provides control of beetles from bird introduction into the house until mid-flock

Treatment example: pre-flock

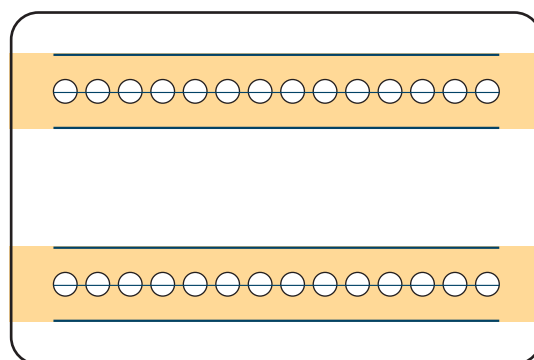


The sample treatment above shows the banded application technique. It's important in this type of application to use enough water to cover the entire treatment area, especially the litter, along feed and water lines, walls and support beams. Low to moderate volumes of spray work best.

Mid-flock treatment

- Controls beetles where they're located — in the flock, under the feeders and along the side wall
- Extends the duration of the pre-flock treatment

Treatment example: mid-flock



Darkling beetles tend to gather around feed lines where there is food, heat and moisture. Brood chambers tend to have the highest populations.

The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions.

Directions for Use:

For control of darkling beetles (*Alphitobius diaperinus*) infesting poultry:

- Low-volume spray: up to 15 gallons of diluted spray applied to 20,000 sq. ft.
- Moderate volume spray: up to 40 gallons of diluted spray applied to 20,000 sq. ft.
- 2 fl. oz. (60 mL) of product treats 5,000 sq. ft. (8 fl oz of product treats 20,000 sq. ft.)
- For severe infestations, 4 fl. oz. of product may be used to treat 5,000 sq. ft. (16 fl. oz. treats 20,000 sq. ft.)
- Apply to floor area, especially to litter around feed and water lines and to walls and support beams, but do not allow run-off to occur.
- Application should also be made into cracks and crevices around insulation and where pests have been seen or can find harborage.
- Reapply after each grow-out or sanitation procedure.
- Indoor control can be enhanced by making perimeter treatments to the outside of building foundations to prevent migrating adult beetles.

¹Adams J. Vector abatement plan—darkling beetles. CAMM Poultry. 2003;10-c-5.

²Grogan K. Beetles and houseflies play role in disease transmission. Poultry Times. 2008;1:1-2.

³Despins J, Axtell R. Feeding behavior and growth of broiler chicks fed larvae of the darkling beetle *Alphitobius Diaperinus*. Poult. Sci. 1995;74:331-6.

⁴Grogan K, Arends J. Darkling beetles and their economic impact. Poultry Times. 2008;1-2.

⁵The Ohio State University Extension. Bulletin 853: poultry pest management.

⁶Spinosa Technical Bulletin. Dow AgroSciences LLC. 2001.

⁷The University of Georgia Cooperative Extension Service. Darkling beetles...costs and control. Poultry Housing Tips Newsletter. 2005;17:12.