

Management of Lice on Livestock

by Gregory Johnson, Professor of Veterinary Entomology

Cattle lice are an important winter time pest of livestock. Sucking and chewing lice can reduce the performance of livestock by lowering weight gains, feed efficiency and overall health of the animal. This guide provides chemical control options for preventing these ectoparasites from becoming established.



MONTANA
STATE UNIVERSITY

EXTENSION

MontGuide

MT201002AG New 3/10

THERE ARE APPROXIMATELY 5,000 KNOWN species of lice that parasitize wild birds and mammals feeding on blood (sucking lice), skin, hair or feathers (chewing lice) of a host. Most species are considered unimportant from a medical or veterinary perspective.

Lice are generally most abundant on livestock during the winter and early spring when animals are under stress from cold weather, have inadequate nutrition, are infested with internal parasites, or have a suppressed immune system. The interaction of these conditions with moderate to heavy lice infestations can result in poor feed efficiency, lower weight gains and milk production, slow recovery from disease, anemia, and general unthriftiness. The presence of lice causes animals to be restless and agitated; they will rub, scratch and lick excessively to get relief from the ectoparasites. The most obvious signs that livestock are infested with lice include hair rubbed off from scratching, blood stained hair or wool, and faces with a bluish/grayish appearance (especially on white-faced animals). Treatment of animals as described in this MontGuide will eliminate lice as a competing factor for livestock production and health.

General Biology and Life Cycle

Adult lice are small ($\frac{1}{16}$ to $\frac{1}{8}$ inch), wingless and flat-bodied. They spend their entire life on the host. Male and female lice feed on the host, mate, and the female cements eggs or nits individually to animal hairs. Females deposit about one egg per day and can live for about 35 days. Egg incubation takes four to 15 days before the nymph hatches and each nymphal stage last three to eight days. Life cycles are generally completed in three to four weeks.

Lice are unable to survive prolonged periods (a few days) off the host. They have specialized structures (claws, hooks and spines) that enable them to attach and stay on the host.

Lice are transferred from one animal to another by direct contact usually when animals are being fed, worked or shipped. A herd can be reinfested when untreated replacement animals are purchased and added to the herd

or stray animals join a herd or flock. Nose to nose contact by livestock sharing a common fence can be sufficient for spread of these insects, especially during the winter when infestations are greatest and occur on the head and face.

In the summer, a few lice persist on animals by moving to protected areas in the folds of skin protected from high temperatures and sunlight. Older cows or bulls are the most likely animals to carry lice during the summer months.

Cattle Lice and Control

There are four species of lice, one biting and three sucking, which can occur on beef and dairy cattle in Montana at any one time. The cattle biting louse, *Bovicola bovis*, is one of the most common species found on cattle in Montana. They have a broad reddish head and a pale brown abdomen with slightly darker brown stripes. Adult females are about $\frac{1}{16}$ inch in length. This species obtains nourishment for energy and egg production by feeding on skin, scurf and hair of the animal. Biting lice are frequently found on the top line of the back, especially the withers area and will spread to the poll and tail head.

Three species of sucking lice are found on cattle: the longnosed (*Linognathus vitulii*), the little blue (*Solenopotes capillatus*), and the shortnosed (*Haematopinus eurysternus*). These three species obtain nutrients for energy and egg production by feeding on blood from the animal. Female longnosed cattle lice are about $\frac{1}{10}$ inch in length with males slightly smaller. This species infests calves more frequently than mature animals. The preferred infestation sites are the shoulder, back, neck and dewlap. Morphologically, the second and third pair of legs are larger than the first and end in large claws for grasping.

The little blue louse is the smallest of the sucking lice; mature females are approximately $\frac{1}{16}$ inch in length. Little blue lice occur in clusters on the face, especially around the eyes and muzzle. Heavy infestations give the animal a bluish appearance which is especially obvious on white-faced animals. This species and the longnosed cattle louse are the two most common species found on cattle in Montana.

The shortnosed cattle louse is the largest found on cattle in the northern U.S. with females averaging about 1/8 inch in length. Infestations occur on the neck, dewlap and brisket. This is the least common species of cattle lice to occur in the Rocky Mountain region.

Control

Many insecticide formulations and application methods are available for cattle lice control. The most popular application method is a pour-on because of the ease of application and reduced stress when treating animals. To apply a pour-on the correct amount of insecticide, based on animal weight, is poured along the mid-line of the back of the animal starting at the withers. Insecticide dust applied through a dust bag will provide some control of cattle lice but will not eradicate lice on the animal. Dust bags work best when they are placed where cattle will use them daily (e.g., entrance to water tank, gateways). Dust bags need to be checked weekly and periodically recharged with dust. Liquid insecticides used for backrubbers or oilers will also suppress lice densities provided the backrubbers are recharged with a mixture of diesel and insecticide. Certain insecticide ear tags applied in the fall will control biting lice.

Insecticides for lice control include pyrethroids, avermectins and spinosad. The most common active ingredient in many pour-ons is a pyrethroid, such as cypermethrin, permethrin, or cyfluthrin, and several products contain the synergist, piperonyl butoxide, to increase insecticide activity. These non-systemic insecticides last for several days. They do not kill eggs, thus two applications are required 14 days apart for optimal lice control. The second application will kill newly hatched nymphs. Most pyrethroids are ready-to-use (i.e., do not require mixing) and can be applied to beef and dairy cattle. An exception is Saber Pour-on (lambda-cyhalothrin) which is labeled for use only on beef cattle.

Avermectins are systemic insecticides that are derived from a soil microorganism, *Streptomyces avermitilis*. Avermectins include patented and generic compounds (ivermectin, moxidectin, doramectin, eprinomectin and generic ivermectins) that are formulated as pour-ons or injections. Pour-ons are very effective against sucking and biting lice on beef cattle. Eprinex (eprinomectin) and Cydectin (moxidectin) are registered for use on lactating dairy cattle. They cost more than pyrethroid pour-ons but they control a number of internal parasites (cattle grubs, roundworms and lungworms). Days to slaughter vary by product and applicators should check the label before applying.

Injectable avermectins are only registered for use on beef cattle and are effective against sucking lice only. Producers using injectable avermectins in the fall will likely need to apply a non-systemic insecticide for biting lice control.

Spinosad is derived from a soil-dwelling bacterium soil, *Saccharopolyspora spinosa*, and is effective against sucking

and biting lice. It has low mammalian toxicity and can be used on beef and dairy cattle. Spinosad is non-systemic and requires two applications 45 to 60 days apart for maximum lice control.

Representative insecticides for controlling biting and sucking lice on cattle are grouped by application method. Insecticides are listed by trade name followed by common name and percent active ingredients.

Insecticide Dusts

- 1% Livestock Dust (1% coumaphos)
- Permethrin, Prozap, Insectrin 0.25% D (0.25% permethrin)
- Python Dust (0.075% zeta-cypermethrin and 0.15% piperonyl butoxide)
- Rabon 3% Livestock Dust (3% tetrachlorvinphos)

Backrubber Insecticides

- Permethrin II, Brute, Durvet permethrin, Insectrin, Prozap X, others (10% permethrin)
- Co-Ral ELI (11.6% coumaphos EC) or Co-Ral Fly and Tick Spray (6.15% coumaphos)
- Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)
- Ectiban, Insectaban or Insectrin 5.7% EC (5.7% permethrin)
- Prolate/Lintox HD (11.75% phosmet)

Pour-ons

- Cylence (1% cyfluthrin)
- Brute (10% permethrin)
- Boss (5% permethrin)
- Ultra Boss, Synergized DeLice Pour-ons (5% permethrin + 5% piperonyl butoxide)
- Ectiban synergized de-Lice Pour-on (1% permethrin + 1% piperonyl butoxide)
- Durasect II Long-Acting Livestock Pour-On (5% permethrin + 0.1% pyrethrin + 1% piperonyl butoxide), Biting lice only
- Clean-up Pour-on (5% diflubenzuron + 5% permethrin)
- Saber Pour-on (1% lambda-cyhalothrin)
- Ultra Saber Pour-on (1% lambda-cyhalothrin + 5% piperonyl butoxide)
- Elector (2.46% spinosad)
- Ivomec, Ivermax, Promectin B pour-on (0.5% ivermectin)
- Cydectin (0.5% moxidectin)
- Dectomax (0.5% doramectin)
- Eprinex (0.5% eprinomectin)

Injections, Sucking lice only

- Ivomec (1% ivermectin)
- Dectomax (1% doramectin)
- Cydectin (1% moxidectin)
- Noromectin, Agri-mectin (1% ivermectin)

Horse and Lice Control

Two species of lice, one biting and one sucking, occur on horses, donkeys and mules in the Rocky Mountain region. Although these species are not as common as cattle lice, infestations may reduce the vigor of the animal or predispose them to diseases. In addition to being spread by animal to animal contact, horse lice can be transmitted through grooming equipment and blankets.

The horse biting louse (*Bovicola equi*), similar in appearance to the cattle biting louse, is generally more common than the horse sucking louse. This species is about 1/10 inch in length and typically infests the neck, flanks, and tail base where it prefers to lay eggs. These lice feed on skin, hair and skin secretions. Signs of a biting louse infestation include a scruffy or rough hair coat and excessive rubbing or scratching.

The sucking louse (*Haematopinus asini*), infests coarse hair especially the forelock, mane, base of the tail and on hairs just above the hoof. It's about 1/8 inch in length and is slate gray. The shape of the body and head is similar in appearance to sucking lice species found on cattle. Sucking lice infestations can result in scratching, rubbing and biting at the infested areas.

Control

Insecticides for controlling lice on horses are available as body sprays, wipe-ons or dust. Look for age restrictions on the insecticide label as some products or application methods should not be used on foals under three months of age. Products listed under Body Sprays and Wipe-ons can be applied as a spray only (designated by S), spray or wipe-on (S/W), or a wipe-on only (W). Body sprays are mixed and applied by a hand pressurized sprayer or mist sprayer. Thoroughly cover the animal but avoid getting the product into horse's eyes and other sensitive areas such as the mouth or nose. It is recommended to use a piece of clean, absorbent cloth (Turkish toweling) or sponge to apply insecticide to

the facial area. A second treatment 14 to 21 days later is recommended. Insecticide dust can be applied by shaker can or dusting glove. The personal protective equipment (PPE) that should be worn when handling and applying insecticides includes: long sleeved shirt, long pants, shoes and socks, chemical resistant (waterproof or rubber) gloves, and safety glasses or other appropriate eye protection.

Body Sprays and Wipe-ons

- (S) Permethrin II, Brute Pour-on (10% permethrin)
- (S/W) Flysect Super C (1% permethrin + PBO)
- (S) Atroban 11% EC (11% permethrin)
- (S) Prozap Insectrin X (10% permethrin)
- (S/W) Endure Sweat-Resistant Fly Spray, Tri-Tec 14 (0.15% cypermethrin + 0.2% pyrethrin + 1.6% piperonyl butoxide)
- (S/W) Zonkit! 35 (0.5% permethrin)
- (S/W) Bug Block, Bug Block Swipe Bottle, Duraguard Insecticide/Repellent (0.2% permethrin + 0.1% pyrethrin)
- (S/W) Permethrin CDS Pour-on, Buzz Off (7.4% permethrin + 7.4% piperonyl butoxide)
- (S/W) Flysect Super 7 (0.2% permethrin + 0.2% pyrethrin + 0.5% piperonyl butoxide)
- (S/W) Absorbine Ultrashield EX (0.5% permethrin + 0.1% pyrethrin + 1.0% piperonyl butoxide)
- (W) Ultrashield Towlettes (0.4% permethrin + 0.08% pyrethrin + 0.79% piperonyl butoxide)
- (W) Tuttle's Brute Insecticide (10% permethrin)
- (S/W) Repel-35 Insect Spray (0.5% permethrin)
- (S) Gardstar 40% EC (40% permethrin)
- (S/W) Bronco Equine Fly Spray (0.033% prallethrin + 0.1% permethrin + 0.5% piperonyl butoxide)

Dust

- Python Dust (0.075% zeta-cypermethrin and 0.15% piperonyl butoxide)
- Co-Ral Zipcide Equine & Livestock Dust (1% coumaphos)
- Prozap Insectrin Dust (0.25% permethrin)

Carefully read and follow the insecticide label concerning the application of any insecticide to livestock. Products are not listed in order of preference or superiority for lice management on livestock. Due to constantly changing labels, laws and regulations, MSU Extension can assume no liability for the suggested use of chemicals contained herein. Pesticides must be applied legally, complying with all label directions and precautions on the pesticide container and any supplemental labeling and rules of state and federal pesticide regulatory agencies.

Sheep and Lice Control

Three species of lice can occur on sheep and goats: the African blue louse (*Linognathus africanus*), the sheep foot louse, (*L. pedalis*), and the sheep biting louse (*Bovicola ovis*). The sheep biting louse, while considered the number one louse problem on domestic sheep worldwide, is uncommon, if not absent, in the Rocky Mountain States. It is similar in both appearance and feeding behavior to other biting lice found on livestock.

The sheep foot louse is widely distributed in North America. Light infestations of this species occur as small colonies of lice between and around the accessory digits. In heavy infestations not only the legs support heavy numbers of lice but also the scrotum of rams. This louse is not considered very injurious since feeding occurs on the hairier parts of the sheep's body and the animal exhibits little discomfort. In severe infestations, however, it may cause some lameness.

The African blue louse is established in sheep producing regions in southwestern and western U.S. where it has become a major pest of sheep and has been reported on goats. Currently, this is the only louse species of economic importance in Montana. Female lice are 1/10 inch in length and males are slightly smaller. Infestations in the winter can be found on the rib and shoulder areas of sheep. Lambs and yearlings are more susceptible to lice than older animals with heaviest infestations occurring in animals in these age groups that are under stress from poor nutrition or disease. Heavily infested sheep in full fleece can have large patches of blood stained wool which is bloody fecal material from the lice (Figure 1).

Control

Sheep susceptibility to lice can vary among individuals within a flock, so only a few animals may appear to be infested. Because other animals may be carrying low levels of lice which will serve to reinfest the flock, it is recommended that all animals in a flock be treated. It is also important to treat replacement animals to prevent a new infestation from being introduced. For optimum lice control with

spray and pour-on products, manufacturer's recommend a second application 10 to 14 days after the first treatment. The pour-

on insecticides listed below are oil-based and may leave an oily residue on the wool. Insecticide dust can be applied by shaker can, dusting glove or mechanical dusting applicator.

Sprays

- Atroban 11% EC (11% permethrin)
- Gardstar (40% permethrin)
- Goat Lice Remover (8.5% permethrin + 4.25% piperonyl butoxide)
- Prozap Insectrin X (10% permethrin)

Pour-ons

- Permethrin CDS Pour-on, Buzz Off (7.4% permethrin + 7.4% piperonyl butoxide)
- Ultra Boss Pour-on, Synergized DeLice Pour-on (5% permethrin + 5% piperonyl butoxide)
- Atroban De-Lice Pour-on (1% permethrin)
- Synergized Delice Pour-on (1% permethrin + 1% piperonyl butoxide)
- Goat Lice Remover (8.5% permethrin + 4.25% piperonyl butoxide)

Dusts

- Python Dust (0.075% zeta-cypermethrin and 0.15% piperonyl butoxide)



FIGURE 1. Blood stained wool caused by an infestation of African blue lice. Scouring of the wool will not remove the stain.



To order additional publications, please contact your county or reservation MSU Extension office, visit our online catalog at www.msueextension.org/publications.asp or e-mail orderpubs@montana.edu

Copyright © 2010 MSU Extension

We encourage the use of this document for nonprofit educational purposes. This document may be reprinted for nonprofit educational purposes if no endorsement of a commercial product, service or company is stated or implied, and if appropriate credit is given to the author and MSU Extension. To use these documents in electronic formats, permission must be sought from the Extension Communications Coordinator, 115 Culbertson Hall, Montana State University, Bozeman MT 59717; E-mail: publications@montana.edu

The U.S. Department of Agriculture (USDA), Montana State University and Montana State University Extension prohibit discrimination in all of their programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital and family status. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Douglas L. Steele, Vice Provost and Director, Montana State University Extension, Bozeman, MT 59717.