

Dewormer/Insecticide Best Management Practices For Conservation Grazing on MN Wildlife Management Areas (WMAs) November 19, 2014

What is the Problem?

Successful pest management is an essential part of efficient and profitable livestock production. It is also important to the success of conservation grazing because insect annoyance may cause livestock to bunch in certain areas and reduce their grazing.

Although pest-related losses are often inconspicuous, flies, lice, mites, and ticks can cause significant reductions in weight gain. Several livestock pests also transmit diseases.

Pesticides used by livestock producers can be found in water and may pose a risk to local aquatic life, pollinators and other beneficial insects, and increase the cost of treating drinking water.

In Minnesota, due to legislation on pollinators, state land managers must develop and follow best management practices that will minimize harm to pollinators.

General exemptions:

- Vaccinations and Antibiotics do not need to be limited. Use is not thought to harm pollinators or other beneficial insects.
- At this time, neonicotinoids are not used with livestock except in some fly scatter bait that is used in confinement situations and would not be used in pastures.

Best management practices for livestock insecticide and dewormer use:

1-3 Month Prior to Livestock Arrival at WMA/Public Land

- 1) Work with local veterinarians and livestock producer to determine what pests are prevalent in the proposed grazing area and what products or methods of application cause the least impact to the environment.
- 2) If there are no known pest problems, preferably do not treat cattle prior to release, rather, the cattle can be treated later if thresholds of infestation become harmful.
- 3) Not everyone treats for flies, but many producers do. It is important to correctly identify the fly or flies you wish to control or if dewormers are necessary.

- 4) If treatment is necessary due to a known pest problem, application should be done 14-30 days prior to release on state lands, depending on the label recommendations/type of chemical used/method of application. See list of products below for details.
- 5) Avoid applications of the listed pour-ons (below) within 30 days of anticipated turnout at the WMA. All of the pour-ons listed below should be of moderate concern. Residues of their active ingredients (AIs) are eliminated mainly in feces and at levels that are likely to be harmful to the dung inhabiting flies and beetles that occur in Minnesota, at least for a couple of weeks after application.
- 6) It should be noted the three pour-on macrocyclic lactones (doramectin, eprinomectin and ivermectin) are effective dewormers, as are their injectable counterparts. If pour-on doramectin, eprinomectin and ivermectin are used, they should be applied at least 30 days prior to turnout. This is because dung pats from the treated animals would be hazardous to beneficial insects for as much as a month after application, depending on the extent of temporal overlaps with onset of spring insect activity.
- 7) The remaining formulations and active ingredients pose a negligible hazard, either because residues do not occur in dung or they are harmlessly low. At this time, Moxidectin insecticide causes the least harm to dung beetles.
- 8) If ear tags are used - Be aware that horn fly resistance is beginning to occur and then the ear tags fail to provide control. Because of resistance, we recommend that cattle producers refrain from using insecticidal tags or use them only once in every three or four seasons. Attach tags in late May or early June after fly populations have begun to increase. Remove tags in September or October. Do not use pyrethroid or organophosphate tags repeatedly for more than two successive seasons. It would be better to rotate between the two active ingredients in alternate years.
- 9) At this time, Azole dewormer is a good option for treatment directly prior to turnout.

While livestock are on State Land

1. Monitor cow behavior. If cows start out grazing broadly over a pasture and over time you notice them bunching in tight groups, it is likely that there is a fly problem. Not only is this detrimental to livestock, it also does not achieve most conservation grazing goals.
2. Control biting flies based on threshold infestations: Horn fly infestations of up to 100 to 200 flies per animal produce little or no effect on the rate of gain. Although face flies annoy cattle, even heavy infestations do not cause reductions in the rate of gain. Face flies can transmit the pathogen that causes pinkeye, but pinkeye outbreaks also occur in the absence of face flies.
3. Insecticide treatment of livestock should not be conducted on state land except in an emergency.
4. If treatment is needed during the agreement period, the best practice is to remove the livestock, treat them, and then return them to the site after the recommended amount of time. Pink eye might be an example of this situation.
5. Ideally, if a livestock becomes sick, the affected animal(s) should be removed and replaced with another of similar age and size.
6. Due to public perception, dusters or pour-ons are not allowed on state land, (although they are a good alternative on home pastures and usually do not cause rapid insecticide resistance).
7. A protocol should be established with manager for fly treatment – it will depend on how long/late the cattle will be on the sites.
8. If salt/mineral blocks are used, determine if any insecticides are included in the block. If methoprene (Altosid) or stirofos (Rabon) are used, these have low ecological concerns. If a new product is used, the producer, WMA manager, and local veterinarian should discuss if this is acceptable to wildlife. Feed additives in mineral blocks prevent the development of face fly and horn fly larvae in cattle dung. Face flies and

horn flies fly considerable distances, so larval control in the dung of a single herd may not substantially reduce fly populations if other herds in the area do not also receive boluses (large pill) or feed additives. Animals must consume the recommended dosage for the feed additive to be effective.

After the livestock are removed

No formal monitoring protocols have been established for conservation grazing on WMAs with regard to pollinators.

Authority Guidelines

- 1) Area wildlife managers have authority to approve chemical applications off the state land.
- 2) Permission is needed from the regional wildlife supervisor for insecticide treatment of livestock on state land, in an emergency.
- 3) Ear tags are an exception—area managers have authority to allow ear tags on state land—based on the chemical(s) that are in the tag. See table below for additional ear tag details. Keep in mind that pyrethroids are highly toxic to aquatic organisms. Because the pyrethroids can accumulate in sediments, risk to sediment-dwelling organisms is an area of particular concern.

Table 1. Products registered to control external horn flies and/or internal parasite worms on beef cattle, grouped by formulation and active ingredient, and rated for level of concern for impacts on dung degrading flies and beetles. Product list was adapted from University of Nebraska's *2013 Nebraska Pasture Fly Control Product Recommendations*. Concern ratings based on research literature documenting toxicity to dung inhabiting insects under field or laboratory conditions.

Pour-ons

Active ingredient (AI)	Trade name	Insecticide class	% AI, dose (if stated)	Used to control	Concern
Moxidectin	Cydectin	Macrocyclic lactone		Flies and worms	Low
Cyfluthrin	CyLence	Pyrethroid	1%, 4 ml/400 lb body weight	Flies	Moderate
Doramectin*	Dectomax	Macrocyclic lactone	0.5%, 1 ml/22 lb body weight	Flies and worms	Moderate
Eprinomectin*	Eprinex	Macrocyclic lactone	5 mg/ml, 1 ml/22 lb body weight	Flies and worms	Moderate
Ivermectin*	Ivomec (+ generics)	Macrocyclic lactone	0.5 %, 1 ml/22 lb body weight	Flies and worms	Moderate
λ -cyhalothrin	Saber	Pyrethroid	1%	Flies	Moderate
Permethrin	Many brand names	Pyrethroid		Flies	Moderate
	DeLice Synergized	Pyrethroid	1% + 1% piperonyl butoxide (PBO) synergist	Flies	Moderate
	Boss	Pyrethroid	5%	Flies	Moderate
	Ultra Boss	Pyrethroid ^{1%}	5% Permethrin + 5% PBO	Flies	Moderate
	Brute	Pyrethroid	10%	Flies	Moderate
	Permethrin CDS	Pyrethroid	7.4% Permethrin + 7.4% PBO	Flies	Moderate
Spinosad	Elector	Macrocyclic lactone	2.46%	Flies	Fate unknown

Injectable

Active ingredient (AI)	Trade name	Insecticide class	% AI, dose (if stated)	Used to control	Concern
Ivermectin	Ivomec	Macrocyclic lactone		Flies and worms	moderate
Eprinomectin	Eprinex	Macrocyclic lactone		Flies and worms	moderate
Doramectin	Dectomax	Macrocyclic lactone		Flies and worms	moderate
Abamectin		Macrocyclic lactone		Flies and worms	moderate
Clorsulon	Ivomec Plus			Flies and worms	moderate (contains IVM)

Oral Drench (also includes feed additives and bolus treatments)

Active ingredient (AI)	Trade name	Insecticide class	% AI, dose (if stated)	Used to control	Concern
Moxidectin	Cydectin	Macrocyclic lactone		Flies and worms	low
Albendazole	Valbazen	benzimidazole	4 ml/100lb	Worms	low
Fenbendazole	Safeguard*	benzimidazole		Worms	low
Levamisole	Levasole, Tramisole	imidazothiazole	Prohibit 2ml/100lb	Worms	low
Oxfendazole	Synanthic**	benzimidazole		Worms	low
Ivermectin	Ivomec (Sheep Drench)	Macrocyclic lactone		Flies and worms	moderate
Morantel	Rumatel ***	tetrahydropyrimidine		Worms	?
Coumaphos	Baymix	organophosphate		Flies	?

* drench or paste, blocks, minerals and feed products

** this is a form of fenbendazole

*** Medicated feed or bolus for cattle (pill)

Ear tags

Active ingredient (AI)	Trade name	Insecticide class	% AI, dose (if stated)	Used to control	Concern
Abamectin	XP 820	Macrocyclic lactone	8% Avermectin B1a and B1b + 20% PBO	Flies	Low
β -cyfluthrin	Cyguard	Pyrethroid	15% β -cyfluthrin	Flies	Low
Coumaphos	Corathon	Organophosphate	15% Coumaphos + 35% Diazinon	Flies	Low
Diazinon	Terminator II	Organophosphate	20% Diazinon	Flies	Low
	OPTimizer	Organophosphate	21% Diazinon	Flies	Low
	Patriot	Organophosphate	40% Diazinon	Flies	Low
	Warrior	Organophosphate	30% Diazinon + 10% Chlorpyrifos	Flies	Low
λ -cyhalothrin	Saber Extra	Pyrethroid	10% λ -cyhalothrin + 13% PBO	Flies	Low
	Double Barrel VP	Pyrethroid	6.8% λ -cyhalothrin + 14% Pirmiphos methyl	Flies	Low
Permethrin	Gardstar Plus	Pyrethroid	10% Permethrin	Flies	Low
Pirmiphos-methyl	Dominator	Organophosphate	20% Pirmiphos-methyl	Flies	Low
	Double Barrel VP	Pyrethroid	14% Pirmiphos-methyl + 6.8% λ -cyhalothrin	Flies	Low
Zeta-cypermethrin	Python	Pyrethroid	10% Zeta-cypermethrin + 20% PBO	Flies	Low
	Python Magnum	Pyrethroid	10% Zeta-cypermethrin + 20% PBO	Flies	Low

Whole body sprays

Active ingredient (AI)	Trade name	Insecticide class	% AI, dose (if stated)	Used to control	Concern
Coumaphos	Co-Ral EC	Organophosphate	6.5% EC	Flies	Low
Permethrin	Atroban EC	Pyrethroid	11% EC	Flies	Low
	Ectiban	Pyrethroid	5.7% EC	Flies	Low
	GuardStar EC	Pyrethroid	40% EC	Flies	Low
	Permethrin II	Pyrethroid	10% EC	Flies	Low
Phosmet	Prolate/Lintox-HD	Organophosphate	11.75% EC	Flies	Low
Spinosad	Electro	Macrocyclic lactone	0.04%	Flies	Fate unknown
Stirofos	Rabon WP	Organophosphate	50% WP	Flies	Low
	Ravap EC	Organophosphate	23% Rabon + 5.7% Vapona	Flies	Low

Dusts

Active ingredient	Trade name		% Active Ingredient	Used to control	Concern
Coumaphos	Co-Ral	Organophosphate	1%	Flies	Low
Permethrin	Permethrin	Pyrethroid	0.25%	Flies	Low
Stirofos	Rabon	Organophosphate	3%	Flies	Low
Zeta-cypermethrin	Python	Pyrethroid	0.75% zeta-cypermethrin + 0.10% PBO	Flies	Low

Mineral block additives

Active ingredient	Trade name		% Active Ingredient	Used to control	Concern
Methoprene	Altosid	Insect growth regulator	0.02%	Flies	Low
Stirofos	Rabon	Organophosphate	1.23%	Flies	Low

Sources

University of Nebraska's *2013 Nebraska Pasture Fly Control Product Recommendations*.

Insect Pest Management for Livestock and Livestock Buildings http://web.aces.uiuc.edu/vista/pdf_pubs/iapm2k/chap08.pdf

Michigan State University Extension Beef Team

<http://beef.msu.edu/Resources/Management/BestManagementPracticesforFlyControl/tabid/586/Default.aspx>