COOPERS®

LICE PROTECTION PLUS

LICE CONTROL

MSD Animal Health

COOPERS® LICE PROTECTION PLUS RANGE

FLEXOLT®, MAVERICK®, STRIKE®, BLOWFLY AND LICE, VANQUISH®

Protect your stock against production losses – choose an animal health company committed to supporting Australian sheep producers

Lice in Australia

Sheep lice continue to be a major problem for the Australian sheep industry and a leading industry report has estimated they cost the Australian wool industry $107.6M each year[1]. Sheep lice infestations are one of the three most economically important health issues for sheep production within Australia and can:

- Reduce fleece value by $3 - $10.
- Reduce greasy fleece weight by 0.2 - 1.1kg.
- Reduce yield by 2.6% - 6%.
- Decrease processing performance (reduced top yield and fibre length, increased carding and noil).

Body louse/Biting louse (Bovicola ovis)

The body louse or biting louse is the most prevalent and economically important species of louse found on sheep in Australia. The body louse feeds on skin debris and wool grease. The heaviest concentration of body lice is found along the sides of the sheep, from neck to flank. Body lice can also be found in the neck folds and shoulder areas. Sheep infested with the body louse will attempt to alleviate the irritation caused by their presence by scratching, rubbing, biting and pulling at their wool.

This results in:

- Cotted (matted) fleeces.
- Fleece discolouration (yellowing).
- Fleece derangement.
- Cockle (pelt defect which downgrades the value of the hide).
- Reduced appetite and body condition.

Lice life cycle

The time for completion of the louse life cycle from egg to adult lice will vary with environmental conditions. The minimum time under ideal conditions is 34 - 36 days.

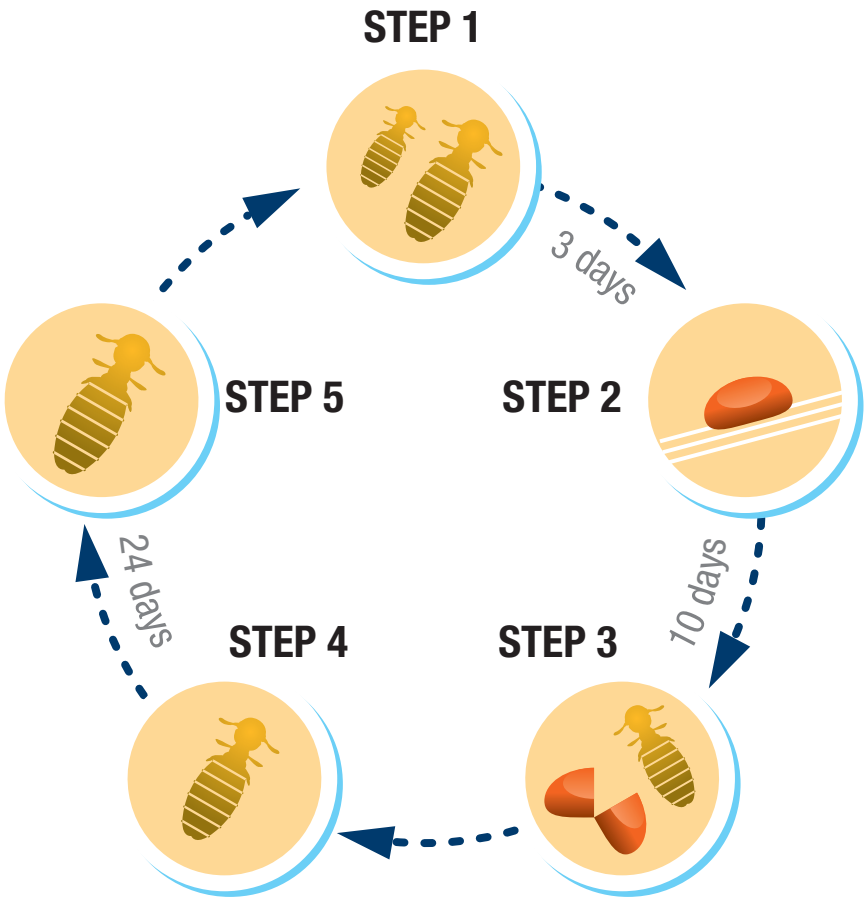
STEP 1: Each female louse lays eggs at a maximum rate of two eggs every three days. It is estimated that each female will lay 15 - 20 eggs in their lifetime.

STEP 2: The female louse attaches the eggs tightly to the wool fibre close to the skin.

STEP 3: Under ideal conditions, the eggs hatch in 10 days. From the egg emerges the first nymphal stage, which resembles the adult louse except it is smaller and colourless.

STEP 4: The louse moults again and grows bigger.

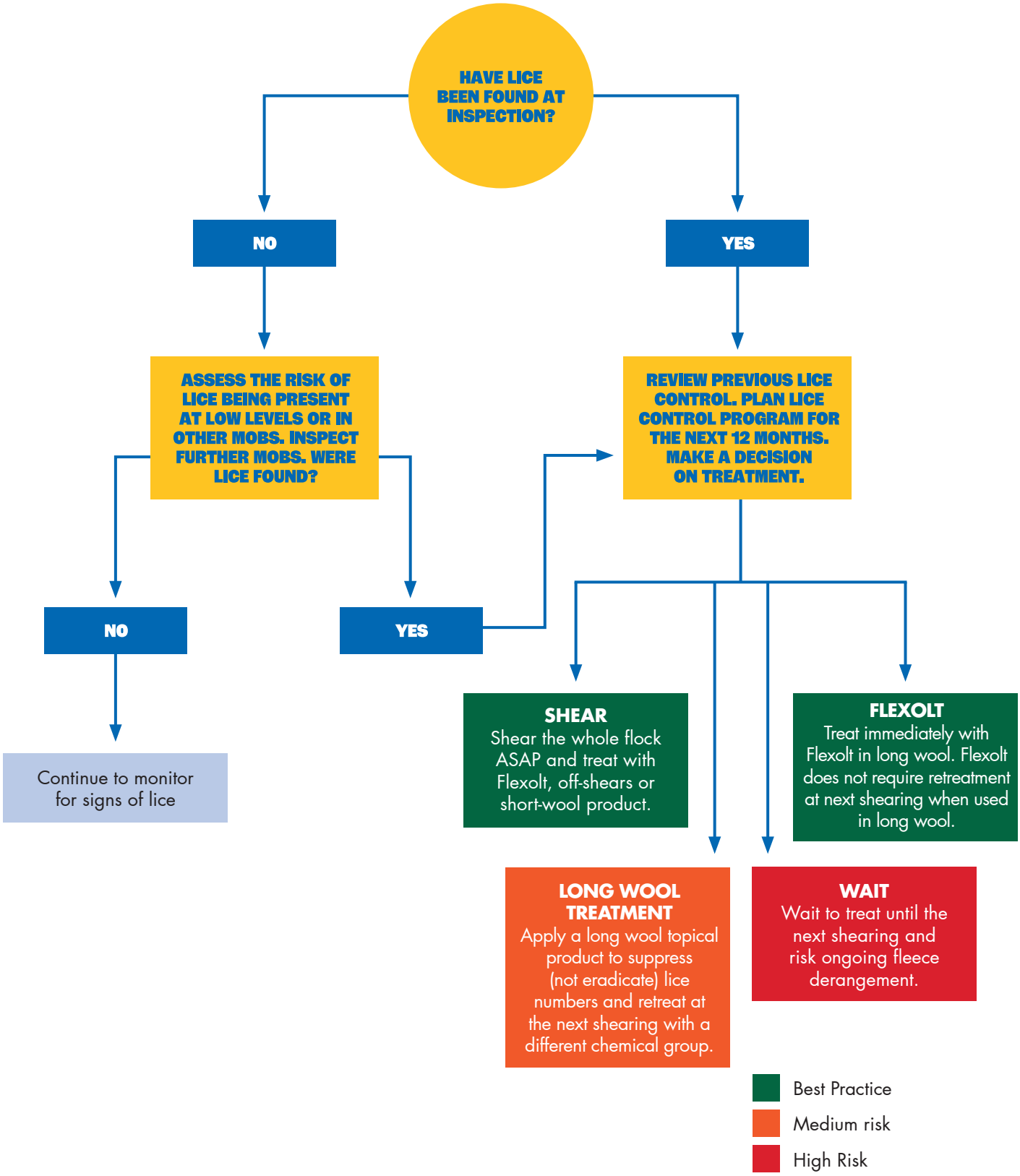
STEP 5: The louse moults a third and final time to become an adult louse and the process takes a total of 21 - 24 days. The adult female is ready to lay eggs 3 - 4 days later and the cycle continues.



1. MLA_B.AHE.0327_Final_Raport_Priority list of endemic diseases for the red meat industry_2022 update_30 June - Cost of lice (p.147) the annual cost of lice in Australia at 107.6M
2. James, Peter. "Why Control Sheep Lice? Economic Effects of Lice on Production." LiceBoss, liceboss.com.au/why-control-sheep-lice-economic-effects-of-lice-on-production/.

Identifying, Eradicating and Preventing Lice

Minimising prevalence of lice is essential in maximising returns and welfare while minimising costs of production and labour inputs. Gold standard lice management involves good planning and management to minimise reinfestation and production losses and reduce or avoid unnecessary chemical treatments. The lice management decision tree below can help guide you through management and treatment options for your current lice situation. If you require further assistance in developing a lice management plan for your flock please contact your local MSD Animal Health representative for assistance.



LICE MANAGEMENT PLANS

Maintaining the effectiveness of sheep lice treatment products is critical to keeping the industry prevalence of lice low. For sheep producers, in the current economic climate, maximising returns and minimising costs of production and labour inputs are critical to maintaining financial viability. Management to minimise the frequency and expense of applying lice treatments can significantly reduce costs[2].

Detection of lice

For optimum lice control programs, detection of lice infestations is of critical importance – both to assess treatment and for early detection of reinfestation after eradication. All mobs should be inspected for lice at least twice a year. To inspect a mob for lice select 10 sheep, focus on sheep which show any sign of wool derangement. Adult lice:

- Are only 1 - 2 mm long.
- Are pale brown with dark bands across the body.
- Live on the skin surface and along wool fibres, where they feed on the skin debris, wool grease and bacteria.
- Are mainly found under the neck, especially in long wooled areas during first 3 months.
- Become fairly evenly distributed in the fleece after 3 months.

Level of Infestation	Average Number of Lice/Parting	Total Number of Lice
Low	<2	<5,000
Moderate	2 - 5	5,000 - 250,000
Heavy	>5	>250,000

For early infestations it must be remembered that the sensitivity of live sheep inspections for lice counts is low and monitoring for fleece derangement can be a relatively sensitive indicator of new infestations[2]. Prevention can only be maintained by vigilance in ensuring the biosecurity of your property and constant monitoring of your flock.

When inspecting sheep for lice, most advisory recommendations are to treat all sheep if any lice are detected[3].

To inspect a mob for lice:

- Select 10 sheep, focus on sheep which show any sign of wool derangement or rubbing.
- Lay the selected sheep on its side in a well-lit position, part the wool and look for lice.
- If you need glasses to read the telephone book, make sure you use your glasses when looking for lice. A magnifying glass can help.
- Lice can be seen by parting the wool, at least 10 partings that are 10cm in length per side should be done. The more sheep you inspect, the more chance you have of finding lice if they are present.

Identifying Sheep Lice

Check before you treat

For gold standard lice control programs, detection of lice infestations is essential in determining **IF** or **WHEN** a lice treatment is required. All mobs should be inspected regularly when they are in the yards for routine husbandry activities. Mobs should at a minimum be inspected for lice at least twice a year, prior to lambing and prior to shearing.

2. James, P. J. (2010). Issues and advances in the integrated control of sheep lice. Animal Production Science, 50(6), 435-439.
3. James, P. J., Horton, B. J., Campbell, N. J., Evans, D. L., Winkleman, J., & McPhie, R. (2011). Population dynamics and production effects of sheep lice (*Bovicola ovis* Schrank) in extensively grazed flocks. Animal Production Science, 51(8), 753-762.

Eradicating infestations

Due to the economic and welfare impacts of sheep lice within a flock, there is a focus on eradication. Unfortunately, industry feedback shows 70% of properties will fail to eradicate lice in a single lice treatment. Failure to eradicate can come from many sources, not treating 100% of sheep 100% correctly, split shearing, lambs at foot at treatment and biosecurity failures.

Due to the difficulties inherent in lice control when committing to a lice eradication program you must commit to:

- Making changes within flock management and biosecurity.
- A focus on accurate treatment.
- More than one full flock treatment.
- Close monitoring of mobs for lice.

Industry often describes a three-year lice eradication plan. This allows three successive short wool lice treatments at shearing to work towards lice eradication. It also gives properties time to ensure that their biosecurity and quarantine processes are in place to reduce the risk of lice re-introduction after eradication is achieved.

With the introduction of Flexolt there is the potential to condense a 3-year lice eradication program into a 12 to 18-month program. Flexolt allows for the possibility of two to three full flock treatments within a 12 to 18-month period, thus allowing eradication to be achieved quicker and minimising the impact of lice within the flock.

Product rotation

It is very tempting to find a product that works and then to stick with it year in and year out. However, prolonged use of any lice treatment can lead to lice becoming resistant to the active ingredient in that lice treatment. This means that lice survive a dose of the chemical which would previously be considered lethal. Continued use of that chemical allows the resistant lice to breed until they make up the majority of the population and this could impact your wool production profitability.

It is important therefore not only to rotate between different lice treatments, but to rotate between different modes of action of your lice treatments. For example, you may use isoxazoline based products (e.g. Fluralaner) for a couple of years and then change to macrocyclic lactone based product (e.g. abamectin) to decrease the risk of building resistance.

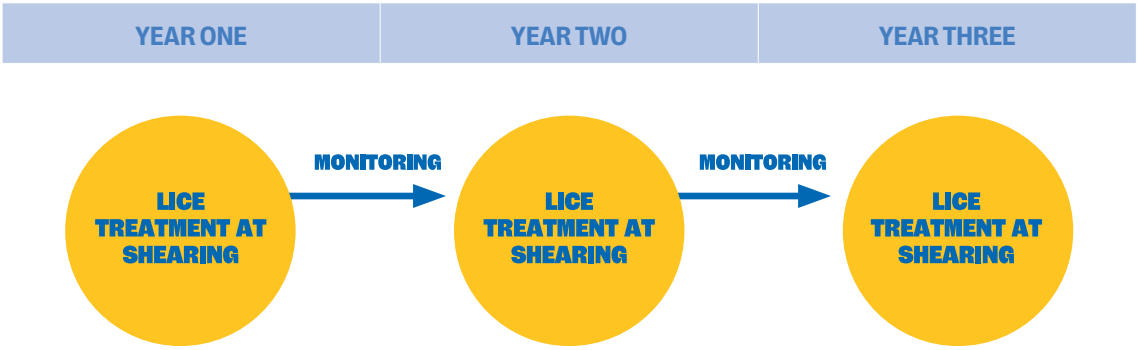
Preventing infestations

Almost all lice infestations are introduced by lousy sheep coming into contact with uninfected sheep. This can be from:

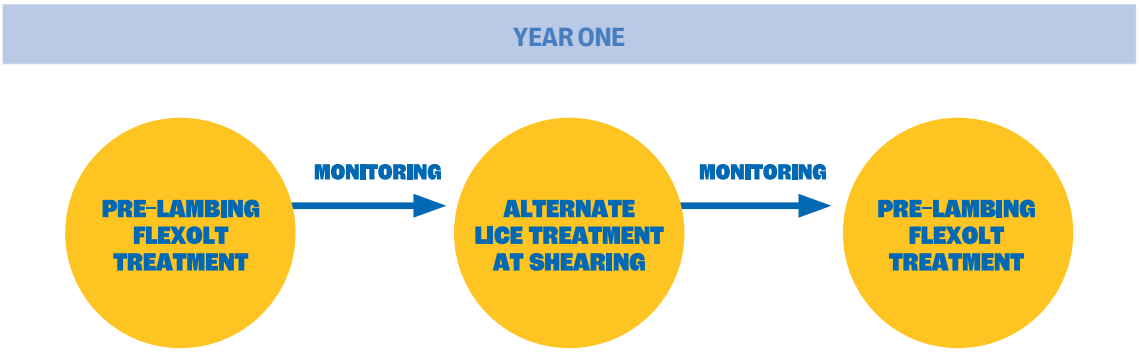
- Bought in or agisted sheep.
- Sheep missed at muster and not treated for lice.
- Strays coming onto a property.
- Sheep straying from the property then coming back lousy.

Prevention can only be maintained by vigilance in ensuring the biosecurity of your property and constant monitoring of your flock.

Example 3-year lice eradication plan

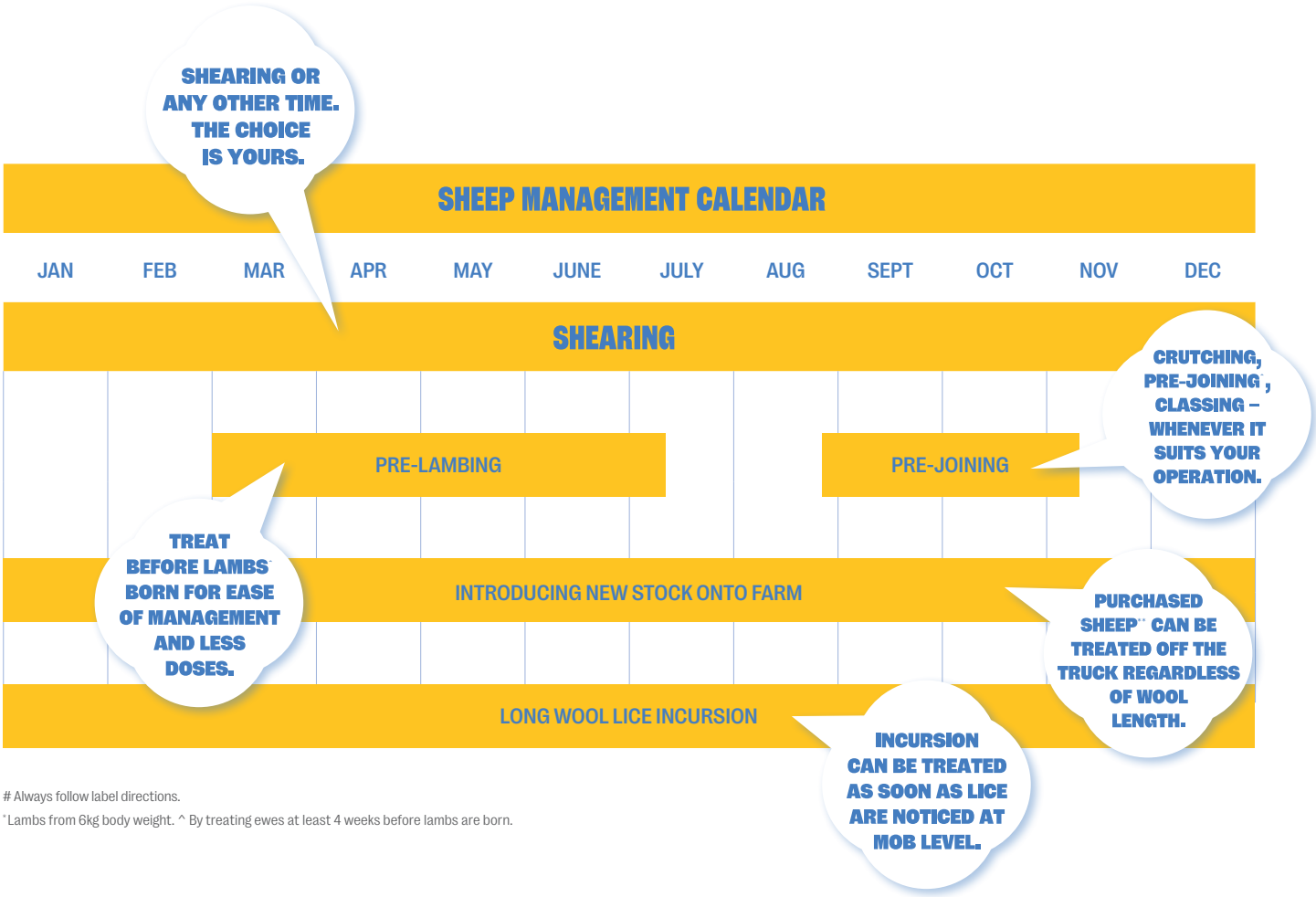


Example 12-month eradication plan with Flexolt



LICE MANAGEMENT PLANS

With the development of Flexolt, the only product which when applied correctly will be fully effective against lice in any length of wool. Flexolt allows producers to untie effective lice control away from shearing and only treat when a lice infestation is detected or at a point in the farm management calendar that is better suited due to sheep numbers, labour availability and the weather.



Always follow label directions.

*Lambs from 6kg body weight. ^ By treating ewes at least 4 weeks before lambs are born.

5 POINT LICE MANAGEMENT PLAN GUIDELINES

1 Treat all sheep at the one time.

All sheep must be treated at the same time. This includes lambs, rams, killers, ewes, wethers, and shedding sheep.

If ewes have lambs at foot at treatment both ewes and lambs must be treated.

If treating sheep pre-lambing ensure the selected product is applied early enough (follow label instructions) to allow all lice to die before lambing commences, or live lice can persist and infest lambs.

Flexolt gives you the option to treat all sheep at the same time if split-shearing occurs on farm.

2 Sheep are weighed to ensure accurate dosing.

Determine accurate body weights using scales.

Dose to the heaviest animal in each group (ewes, lambs, weaners, wethers & rams).

Incorrect dosing can have a significant impact on the efficacy of treatments. If weigh scales are not used an accurate assessment of body weight is required.

3 Correct application of lice control products.

Follow label instructions on the correct application of products i.e. placement of backliners.

If using backliners or dips, ensure all sheep are cleanly shorn. Poorly shorn sheep or sheep with cotted wool or dermo can reduce the efficacy of backliners and dip. **The efficacy of Flexolt is not affected by poorly shorn sheep or cotted wool.**

Use the correct applicator for the product being used.

Ensure all applicators are serviced and calibrated before treatment and regularly during use.

During treatment ensure that each sheep is clearly identified as being treated. For Flexolt this means using a crayon, marker, or spray to identify treated sheep while working. One missed sheep can mean the failure of a lice eradication program.

4 Do not mix treated and untreated sheep.

Some lice products claim a period of protection against reinfestation. Despite these claims it is unwise to rely on chemical treatments to protect sheep from becoming infested. It is best practice to manage mobs so that treated and untreated sheep do not contact each other.

5 Quarantine and biosecurity.

A good biosecurity plan must assume that introduced sheep are infested with lice regardless of their history or whether there are no lice or signs of lice.

Ensure fencing is stock proof. This includes boundary and internal fencing. Stray sheep and sheep straying between mobs present a high risk for lice introduction and spread.

All brought in or agisted sheep should be treated and quarantined for lice.

Understand all introductions present a risk for introducing lice, this includes rams. Rams should be treated and quarantined for lice on introduction.

Remember a new lice infestation may take 3-6 months before signs of lice are evident. If stock are not treated for lice on introduction, they must be quarantined long enough for an infestation to become evident, or until all sheep on the property are being treated for lice.

Preventing infestations & reinfestation

Prevention can only be maintained by vigilance in ensuring the biosecurity of your property and constant monitoring of your flock.

Almost all lice infestations are introduced by lousy sheep coming into contact with uninfected sheep.

This can be from:

- Sheep not effectively treated at the last lice treatment.
- Sheep missed at muster and not treated for lice.
- Bought in or agisted sheep.
- Strays coming onto a property.
- Sheep straying from the property then coming back lousy.

For further information in assessing farm risk and developing a lice quarantine or biosecurity plan call MSD Animal Health.

FLEXOLT®

ORAL LICE TREATMENT FOR SHEEP WITH ANY LENGTH OF WOOL.

Product claims

- Oral lice treatment for sheep and lambs*
- Treat lice in any length of wool
- Flexible lice control when it suits you

Timepoint Benefits

Shearing time
- Can treat before shearing starts to reduce time and labour pressures during shearing. *(Zero Wool withholding period).*
- Effective lice control in lambs regardless of age or wool length*.
- Not affected by poor shearing that can impact topical application.

Quarantine of newly purchased stock# or long wool lice outbreaks**
- Treat for lice – no shearing required.
- Mobs can be treated separately and with confidence of effective lice control.

Weaning / Pre-Joining / Crutching when sheep are in the yards
- Gives choice by moving lice control away from a busy time (shearing).
- Flexibility to treat for lice when sheep are in the yards.

Split shearing times
- Treat different mobs in any length of wool (ewes, lambs, rams etc) at the same time.

Pre-lambing^
- No lambs at foot - less doses needed.
- Avoid the challenge of managing lice control with woolly lambs.

Flexolt offers convenience, flexibility, and ease of application of an oral drench but does not leave any visible indication of treatment like traditional lice control products. It is important that all sheep are marked with a crayon or spray at treatment to ensure that no sheep are missed during application.

Active ingredient

Fluralaner 10g/L

Chemical group

Isoxazoline

Dose rate

DOSE RATE IS THE SAME NO MATTER THE LENGTH OF WOOL.	
Body Weight (kg)	Dose Rate (mL)
6 - 10	1.5
11 - 16	2.5
17 - 20	3.0
21 - 30	4.5
31 - 40	6
41 - 50	7.5
51 - 60	9.0
61 - 70	11
71 - 80	12
81 - 90	14
91 - 100	15

Withholding periods

- **Meat**: DO NOT use less than 14 days before slaughter for human consumption.
- **Export Slaughter Interval (ESI)**: DO NOT use less than 54 days before slaughter for export.
- **Wool Harvesting Interval**: Zero (0) days.
- **Sheep Re-handling Period**: Zero (0) days.

Restraints

- DO NOT use in lambs less than 6 kg body weight.
- Milk - DO NOT use in ewes which are producing or may in the future produce milk that may be used or processed for human consumption
- DO NOT re-treat animals for 54 days after last treatment.

Always follow label directions.
* Lambs from 6kg body weight. ^ By treating ewes at least 4 weeks before lambs are born.
** Rehydrate sheep after transport before treatment.
Sheep will need to be quarantined for a period following treatment.

COOPERS®
MAVERICK®

POUR-ON FOR SHEEP
Dual knock-down of lice AND worms

Product claims

- For the **control of sheep body lice** (*Bovicola ovis*), including lice resistant to synthetic pyrethroids.
- And for the **treatment and control of abamectin sensitive strains of gastrointestinal worms** (including levamisole resistant strains).
- Water-based, off shears pour-on for sheep.
- **Rainfast** – the efficacy of Maverick® is not adversely affected if applied when the skin is wet or if moderate rainfall occurs shortly after treatment.

Features and benefits

Features	Benefits
Unique active for lice treatment	Allows for rotational lice control strategy to minimise risk of resistance developing
Rapid dual knock-down of lice AND worms	Just one trip up the race after shearing – minimises labour required
Water-based formulation	Applicator friendly and easy clean-up
Odourless during application process	Easy to use

Active ingredient

6 g/L abamectin.

Chemical group

Macrocyclic lactone (ML).

Dose rate

Coopers® Maverick® is intended for off-shears use (within 24 hours of shearing) on all classes of sheep over 6 weeks of age and greater than 10 kg liveweight.

Coopers® Maverick® is applied along the topline in two adjacent bands, either side of the backline, from the poll (bands may overlap along neck) to the tail of each sheep using the recommended applicator.

DOSE RATE = 10 mL/10 kg LIVEWEIGHT			
Liveweight (kg)	Dose Volume (mL)	Dose/Pack (6 L)	Dose/Pack (25 L)
10 - 15	2 x 7.5	400	1666
16 - 20	2 x 10	300	1250
21 - 30	2 x 15	200	833
31 - 40	2 x 20	150	625
41 - 50	2 x 25	120	500
51 - 60	2 x 30	100	416
61 - 70*	2 x 35	85	357

* Animals >70 kg = additional 10 mL/10 kg Liveweight.

Withholding periods

- **Meat Withholding Period**: DO NOT use less than 21 days before slaughter for human consumption.
- **Export Slaughter Interval (ESI)**: DO NOT use less than 28 days before slaughter for export.
- **Wool Harvesting Interval**: DO NOT use less than 6 weeks before shearing or fibre collection.
- **Sheep Re-handling Interval**: DO NOT re-handle treated sheep for 7 days unless wearing cotton overalls or equivalent clothing and chemical resistant gloves.
- **Milk Withholding Period**: DO NOT use in ewes which are producing or may in the future produce milk or milk products for human consumption or processing

VANQUISH® LONG WOOL SPRAY-ON
KNOCK LICE OUT OF LONG WOOL – 10 WEEKS BODY STRIKE PREVENTION

Product claims

- Spray-on lice treatment and body strike preventative – easy to apply
- Lice control on unshorn sheep and lambs with up to 10 months wool
- 10 weeks body strike prevention
- Can be applied when wet

Active ingredient

Alpha-cypermethrin 50 g/L.

Withholding periods

- **Meat**: 0 days; Do not use on ewes that are or will in the future produce milk or milk products for human consumption.
- **Wool Withhold**: 2 months
- **Sheep Re-handling**: 2 weeks

Export Slaughter Interval

7 days

Presentation:

Available in 5 L and 20 L containers.

STRIKE®
IGR FOR SHEEP DIPPING AND JETTING

Product claims

- For the control and treatment of diflubenzuron-susceptible lice (Bovicola ovis), including lice resistant to synthetic pyrethroids
- Control lice by hand jet, plunge or shower dip – useful in a variety of situations
- Can be used on short or long wooled sheep – control infestations when they occur
- Nil Meat Witholding Period and ESI – offers trading flexibility

Active ingredient

Diflubenzuron 250 g/L.

Withholding periods

- **Meat**: Nil.
- **Wool withhold**: 6 months before shearing or fibre collection
- **Re-handling**: When dry

Export Slaughter Interval

Nil.

Presentation:

Available in 5 L and 20 L containers.

COOPERS BLOWFLY AND LICE
JETTING FLUID

Product claims

- Prevents blowfly strike for up to 12 weeks (under low to moderate fly pressure)
- Knockdown of maggots on struck sheep
- Contains ivermectin – highly effective with a favourable safety profile
- Rainfast – effective after moderate rainfall

Active ingredient

Ivermectin 16 g/L.

Withholding periods

- **Meat**: 7 days.
- **Wool Harvesting**: 6 weeks
- **Wool Re-Handling**: Wait until sheep are dry before re-handling; Do not use in lactating sheep or within 28 days of lambing where milk or milk products may be used for human consumption.

Export Slaughter Interval

7 days.

Presentation:

Available in 5 L container.

COOPERS SHEEP LICE CONTROL RANGE

	FLEXOLT®	MAVERICK®	STRIKE®	STRIKE®	VANQUISH®	BLOWFLY AND LICE
Wool Length	Any length of wool (off-shears, short, long wool)	Short Wool (<6 weeks wool)[1]	Short Wool (<6 weeks wool)[1]	Long Wool (>6 weeks wool)[2]	Long Wool (>6 weeks wool)[2]	Long Wool (>6 weeks wool)[2]
Time of Application	Treat in any length	Freshly Shorn (<24 hours after shearing)	2 - 6 weeks Wool	6 weeks - 6 months Wool	6 weeks - 10 months Wool	6 weeks - 10½ months Wool
Application Method	Oral treatment	Ready-to-use Backliner	Plunge/ Shower Dip	Hand Jetting	Ready-to-use Backliner	Hand Jetting
Speed of Lice Control	Rapid Knockdown	Rapid Knockdown (up to 6 weeks are required to control susceptible lice)	Slow	Slow	Medium	Rapid Knockdown
Products						
Chemical Group	Isoxazoline	ML[4]	IGR	IGR	SP[3]	ML
WITHHOLDING PERIODS						
Wool Harvesting Interval	Zero (0) days	6 weeks	6 months	6 months	2 months	6 weeks
Meat	14 days	21 days	Nil	Nil	Nil	7 days
ESI	54 days	28 days	Nil	Nil	7 days	7 days

1. Products registered for lice control in short wool sheep are capable of achieving lice eradication if administered correctly to susceptible lice strains. However, to obtain their lice control claim, trials had to demonstrate no detectable lice at 20 weeks after treatment.
2. To obtain a long wool lice control claim, trials had to demonstrate >95% reduction in lice numbers following treatment. If these products are used the farmer will need to follow up following shearing with either an off-shears backliner or short wool dip.
3. Synthetic Pyrethroid.
4. Macrocyclic Lactone.

For more information on Flexolt and Coopers brands, contact MSD Animal Health on **1800 226 511.**

MSD Animal Health