

COOPERS[®]
LICE PROTECTION PLUS

LICE CONTROL

GET EXPERT SUPPORT AND
ADVICE FROM COOPERS[®]



COOPERS® LICE PROTECTION PLUS RANGE

MAVERICK®, COOPERS® GOLD, ASSASSIN®, STRIKE®, BLOWFLY AND LICE, VANQUISH®

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

PERFORMANCE: You work hard to ensure your flock is as healthy and productive as possible. The Coopers® Lice Protection Plus range delivers optimal lice protection to ensure that your animals perform at their peak.

QUALITY: Your stock are valuable. Protect them with Coopers®. Our products are consistently manufactured to high standards.

RANGE: Your flock will require different lice protection and management at different stages. Coopers® offers an extensive lice treatment range, covering a broad spectrum of applications and indications (see our **Sheep Lice Control Chart** on the back cover for a range of control solutions).

SUPPORT: Your stock are your livelihood. The Coopers® team are dedicated to providing you with expert technical, veterinary and sales support. Experienced, practical help is never more than a phone call away.

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 \$81M each year¹. Sheep lice infestations are one of the three most economically important health issues for sheep production within Australia and can:

- Reduce fleece value by up to 60%.
- Reduce greasy fleece weight by 2.8 - 4.2 kg.
- Reduce yield by 5 - 10%.
- 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.

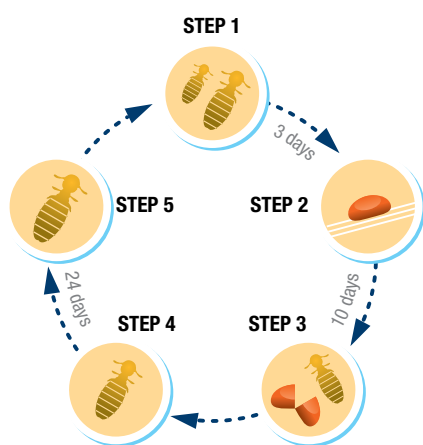
STEP 1: Each female louse lays eggs at a maximum rate of two eggs every three days. It is estimated that each female will lay 15 - 20 eggs in their lifetime.

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.0010_Final_Report_Priority list of endemic diseases for the red meat industries_20 March (v1.0) - Cost of lice [p.128] the annual cost of lice in sheep in Australia at \$81M (Table 5-15).

INTEGRATED PEST MANAGEMENT

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 costs¹.

Preventing infestations

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

- Introduced or agisted sheep.
- Sheep missed at muster.
- 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.

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. The ideal time to look for lice is during the six months before shearing. 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 woolled areas during first 3 months.
- Become fairly evenly distributed in the fleece after 3 months.

Lice can be seen by parting the wool in good light and by doing at least 10 partings per side.

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 infestations². Prevention can only be maintained by vigilance in ensuring the biosecurity of your property and constant monitoring of your flock.

For post-shearing treatments, most advisory recommendations are to treat all sheep if any lice are detected³. Correctly applied post-shearing treatments will reduce lice to non-detectable levels if applied according to label directions. For long wool treatments (>6 weeks after shearing), eradication is not expected and lice control is the aim. A cost-benefit analysis should be performed and there are industry-endorsed tools available at www.liceboss.com.au to assist producers in making this decision.

Eradicating infestations

Should lice be detected in a flock, the only solution available is to eradicate them with a chemical treatment:

- Backliners.
- Plunge dips.
- Shower dips.
- Cage dips.

Backliners such as Maverick® have become the preferred method of treatment. Long wool treatments will control but not eradicate lice. Sheep treated with a long wool treatment should be treated again after shearing.

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 neonicotinoid based products (e.g. imidacloprid and thiacloprid) for a couple of years and then change to macrocyclic lactone based product (e.g. abamectin) to decrease the risk of building resistance.

1. James P Issues and advances in lice control (v1.0) - reduce costs (p.2) Clearly, management to minimise the frequency and expense of applying treatments can significantly reduce costs.

2. James P Issues and advances in lice control (v1.0) - Lice detection (p.3) Detection.

3. James P Population dynamics and production effects of sheep lice (v1.0) - Treat all sheep if any affected (p.2) detected.

COOPERS® LICE PRODUCTS

COOPERS® LICE PROTECTION PLUS

Coopers® provides a wide range of lice control products with different modes of action to control lice. The **SHEEP LICE CONTROL CHART** on the *back cover* provides a range of control solutions.

Throughout this brochure, six icons are used to represent the various methods of application to help guide your product selection. Once you know your requirements, simply look at the top of each page to see if the corresponding icons are there and you will know if you have picked an appropriate product. The six icons represent:



Short Wool –
For off-shears and short wool treatments



Long Wool –
For use in long wool



Plunge –
For use by plunge dip



Shower –
For use by shower dip



Hand Jet –
For use with hand jetting



Backliner –
Pour-on, backline treatments



10 POINT LICE MANAGEMENT PLAN GUIDELINES

1 Shear and treat all sheep at the one time.

- Avoid split-shearing unless the different mobs can be completely separated. This includes rams, lambs, killers, etc.
- Ensure complete musters. After a mob has been mustered and moved into the yards, do a recheck of the paddock to ensure no stragglers have been left.

2 Ensure sheep are cleanly shorn.

- Avoid the use of cover combs, particularly when using backliners.
- Pay attention to neck region to ensure tufts of wool are not left.
- Lice control may be compromised on roughly shorn animals.

3 Always read the label and treat in accordance with label directions.

Determine an accurate live-weight using scales and dose the mob to the heaviest animal in each group (ewes, wethers, rams). Ensure correct dose or mixing rate is used.

4 Treat sheep at the right time.

- Maverick® and Coopers® Gold must be applied within 24 hours of shearing, offering the convenience of off-shears application on the day of shearing. This removes the need to remuster the flock at a later time to treat for lice.
- When using Assassin® and Strike®, all sheep are to be dipped between 14 days and 42 days after shearing.

5 Administer the product with the correct applicator.

- Equipment must be in good working order and used in accordance with the manufacturer's recommendations.

- Ensure the applicator is calibrated to the recommended dose before use.

- Maverick® is applied with a Coopers® 40 mL Backliner Gun or a 60 mL Genesis Power Doser™, fitted with a T-bar nozzle. Coopers® Gold is applied with a Coopers 150 mL Power Doser.

- Assassin® and Strike® can be used as a plunge or shower dip. All sheep must be thoroughly wet to skin level. Refer to the technical manual for advice on dipping practices.

6 Apply the product correctly.

- Staff must be adequately trained and supervised.
- Maverick® should be applied as two adjacent bands either side of the backline from poll to tail.

7 Treatment of ewes and lambs.

Maverick® and Coopers® Gold:

- Ewes lambing 'off-the-board': Do not treat ewes less than 6 weeks before lambing commences, as live lice can persist and infect the lambs.
- Ewes with lambs at foot: should not be used on ewes with lambs at foot at shearing unless both the ewes and lambs will be shorn and treated concurrently⁴.

8 Do not mix treated sheep with untreated sheep.

9 Ensure fencing is stock-proof.

- This includes both boundary and internal fencing.
- Stock proof fences are essential to prevent re-infestation from outside sources.

10 Prevent re-infestation of lice by quarantining introduced sheep until it is certain they are lice free. It is preferable to quarantine introduced sheep until they can be shorn and treated at shearing time.

4. When using Maverick® on shorn lambs they must be >6 weeks of age and >10 kg LW.

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
Contains abamectin	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 (15 L)	Dose/Pack (25 L)
10 - 15	2 x 7.5	400	1000	1666
16 - 20	2 x 10	300	750	1250
21 - 30	2 x 15	200	500	833
31 - 40	2 x 20	150	375	625
41 - 50	2 x 25	120	300	500
51 - 60	2 x 30	100	250	416
61 - 70*	2 x 35	85	214	357

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

Recommended applicators

Coopers® Maverick® is recommended to be applied with the following pour-on applicators:

40 mL Coopers® Backliner®
(fitted with a T-bar nozzle)

60 mL Genesis Power Doser™
(fitted with a T-bar nozzle)



COOPERS® MAVERICK®

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
Wool 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

Additional information

DO NOT USE on unshorn sheep or shorn sheep more than 24 hours after shearing.

DO NOT USE in ewes which are due to lamb within 6 weeks of treatment or in ewes with unshorn lambs at foot, as a reduction in lice efficacy is likely to occur.

When using Coopers® Maverick® to treat sheep the required Personal Protective Equipment (PPE) is: Elbow-length chemical resistant gloves and goggles.

This product may irritate the skin of some sheep leading to visible treatment lines and a 'crusting' confined to the staple tip, which may still be evident at the following shearing.

Storage

Store below 30°C (room temperature) in the tightly closed, original container in a cool dry place. Do not store for prolonged periods in direct sunlight.

10 tips for successful lice control using Coopers® Maverick®

1. Shear and treat all sheep at the one time; avoid split-shearing.
2. Ensure sheep are cleanly shorn.
3. Always read the label and treat in accordance with label recommendations.
4. Apply Coopers® Maverick® within 24 hours of shearing.
5. Apply product from poll to tail in two adjacent bands down either side of the backline.
6. Administer with the recommended applicator fitted with a T-bar nozzle.
7. Ewes should be treated a minimum of 6 weeks before lambing to ensure the lambs are not a source of re-infestation for the ewes.
8. Do not mix treated sheep with untreated sheep.
9. Maintain stock-proof boundary and internal fencing.
10. Prevent re-infestation of lice by quarantining introduced sheep.



COOPERS® GOLD



SPRAY-ON OFF-SHEARS SHEEP LICE TREATMENT

Product claims

- Diazinon based off-shears product for sheep lice control in Australia.
- Spray-on backline lice treatment for the control of organophosphate (OP) susceptible and synthetic pyrethroid (SP) resistant strains of the sheep body louse (*Bovicola ovis*).

Features and benefits

Features	Benefits
Rapid lice knockdown	Ability to takedown lice 6 weeks after application
Spray on backline lice treatment	Application is convenient and easy to do with Genesis 150 mL Coopers® GOLD Power Doser™
An excellent addition to a rotational lice control programme	Reduce the likelihood of resistance developing with currently used lice control products and extend the useful life of the product.

Active ingredient

Diazinon 93.3 g/L.

Chemical group

Organophosphate.

Dose rate

Supplied as a concentrate, must be diluted prior to use.

Diluted product – 3 mL/kg bodyweight.

Bodyweight (kg)	Dose Volume (mL)
6 - 10	30
11 - 20	60
21 - 30	90
31 - 40	120
41 - 50	150
51 - 60	180
61 - 70	210
71 - 75	225

Application

Coopers® GOLD can only be applied using the Genesis 150 mL Coopers® GOLD Power Doser™ and must be applied within 24 hours of shearing.

Applicator delivers the high-volume dose required, quickly and accurately, whilst ensuring optimum body coverage. Coopers® GOLD is applied in a band from the poll, along the backline, to the butt of the tail.

Withholding periods

- **Meat:** 21 days.
- **ESI:** 21 days.
- **Wool harvesting interval:** 2 months.
- **Wool re-handling interval:** 2 weeks. If sheep must be rehandled during this interval, cotton overalls buttoned to the neck (or equivalent clothing) should be worn.
- **Milk:** Do not use on ewes producing milk or may in the future produce milk for human consumption.



COOPERS® ASSASSIN®

SHEEP DIP The professionals' choice



Product claims

- Assassin® is an organophosphate dip concentrate.
- For the control of temephos susceptible body lice (*Bovicola ovis*), including synthetic pyrethroid resistant strains.
- For use on wet or dry sheep (14 - 42 days after shearing) by plunge or shower dipping.

Features and benefits

Features	Benefits
Lice knockdown	Control lice and provide relief from lice irritation for sheep
Non-stripping dip	Easier to manage and assurance that correct chemical levels achieved
Proven organophosphate active	Suitable economical rotational alternative to other chemicals for sheep lice control
Plunge or shower dip	Flexible usage options
Competitive WHP and ESI	Trading flexibility
Can apply to wet or dry sheep	Assurance of effective treatment even with wet weather before/after treatment



Active ingredient

350 g/L temephos (an anticholinesterase compound).

Chemical group

Organophosphate.

Dose rate

To treat sheep body louse (*Bovicola ovis*), Assassin® should be applied at the following rates:

	Plunge/Shower Dip
Initial charge	100 mL/100 L of water
Topping up (when dip/sump level falls by no more than 25%)	100 mL/100 L of fresh water
Continuous replenishment – Initial charge	100 mL/100 L of water

For effective control of lice, thorough wetting to skin level is essential.

Withholding periods

- **Meat:** 14 days.
- **ESI:** 42 days.
- **Wool harvesting interval:** 6 months.
- **Wool re-handling interval:** DO NOT re-handle sheep until dry after dipping.
- **Milk:** DO NOT use on ewes which are producing or may in the future produce milk or milk products for human consumption.

Restrictions

- DO NOT plunge or shower dip sheep more than 6 weeks after shearing.
- DO NOT dip sheep within 2 weeks after shearing.

Storage

Store below 30°C (room temperature) in the tightly closed, original container in a cool dry place. Do not store for prolonged periods in direct sunlight.

COOPERS® BLOWFLY AND LICE

JETTING FLUID Blow flies and lice away



Product claims

- Prevents blowfly strike for up to 12 weeks (under low to moderate fly pressure).
- Indicated for the treatment of blowfly strike on sheep – kills maggots.
- Treats lice by jetting in long woolled sheep.

Features and benefits

Features	Benefits
Contains ivermectin	Highly effective with favourable safety profile No known resistance within Australia in either blowfly or sheep biting louse
Knockdown of maggots on struck sheep	Strikes are resolved after treatment
Prevention of flystrike for up to 12 weeks	Peace of mind that sheep are protected with low to moderate fly situations
Controls lice in long wool sheep (when applied as directed by hand jetting)	Lice control that provides relief from lice irritation for sheep
Rainfast	Moderate rainfall does not affect effectiveness of product

Active ingredient

16 g/L ivermectin.

Chemical group

Macrocyclic lactone (ML).

Dose rate

- To **treat sheep body louse** (*Bovicola ovis*), Coopers® Blowfly and Lice Jetting Fluid should be diluted at a rate of 200 mL/100 L water. Use at 0.5 L of solution per month of wool growth.
- To **protect against blowfly strike** use 0.5 L of solution per month of wool growth, however, a minimum of 2.5 L of solution must be applied to the sheep to achieve blowfly control.

For lice treatment – pack treats

Wool Length (Months)	Litres of Hand Jetting Solution	Sheep per 5 L Pack
1.5	0.75	3333
2	1	2500
3	1.5	1667
4	2	1250
5	2.5	1000
6	3	833
7	3.5	714
8	4	625
9	4.5	556
10	5	500
10.5	5.25	476

Withholding periods

- **Meat:** DO NOT use less than 7 days before slaughter for human consumption.
- **ESI:** DO NOT slaughter for export for 7 days after treatment.
- **Wool harvesting interval:** DO NOT use less than 6 weeks before shearing or fibre collection.
- **Wool re-handling interval:** After treatment, wait until sheep are dry before re-handling.
- **Milk:** DO NOT use in lactating sheep or within 28 days of lambing where milk or milk products may be used for human consumption.

Storage

Store below 30°C (room temperature) in the tightly closed, original container in a cool dry place. Protect from light.



COOPERS® VANQUISH®

LONG WOOL Knock lice out of long wool



Product claims

- A spray-on lice treatment and body strike preventative.
- For long woolled sheep and unshorn lambs.

Features and benefits

Features	Benefits
Effective lice control on unshorn sheep and lambs with up to 10 months wool	Lice reduction and halts fleece derangement through to shearing
Long wool back liner	Convenient and easy to apply, reduces required labour
Prevention of body strike for up to 10 weeks	Peace of mind that sheep are protected with low to moderate fly situations
Can be applied to wet sheep	Moderate rainfall does not affect effectiveness of product

Active ingredient

50 g/L alpha-cypermethrin.

Chemical group

Synthetic pyrethroid.

Dose rate

Animal Pest	Class of Sheep	Wool Length (months)	Dose Volume (mL)
Sheep body louse (<i>Bovicola ovis</i>)	Adult sheep	<4	10
		4 - 10	20
	Unshorn lambs	<2	5
		2 - 6	10
		6 - 10	20
Blowfly strike prevention (<i>Lucilia cuprina</i>)	All sheep	2 - 10	20

* Protection is only provided against body strike.

Withholding periods

- **Meat:** Nil.
- **ESI:** 7 days.
- **Wool harvesting interval:** DO NOT use less than 2 months before shearing or fibre collection.
- **Sheep re-handling interval:** 2 weeks. If sheep must be handled during this interval, cotton overalls or equivalent clothing (buttoned to the neck) should be worn.

Restrictions

- DO NOT use on sheep with skin or fleece abnormalities such as those caused by mycotic dermatitis or fleece rot.
- DO NOT use on female sheep which are producing or may in the future produce milk or milk products for human consumption.

Storage

Store below 30°C (room temperature).





HAND JET, PLUNGE OR SHOWER DIP *Flexible lice control*

Product claims

- Strike® is an Insect Growth Regulator (IGR).
- For the control and treatment of diflubenzuron susceptible lice (*Bovicola ovis*) on sheep, including lice resistant to synthetic pyrethroids.

Features and benefits

Features	Benefits
Can be applied using plunge dips, shower dips, or via jetting equipment	Flexible application methods for a wide variety of situations
Can be used on short or long woolled sheep (with up to 6 months wool)	Ability to control infestations when they occur
Nil Meat Withholding Period and Nil ESI following treatment	Trading flexibility
Non-stripping when used as a dip	Easier to manage and assurance that correct chemical levels achieved

Active ingredient

250 g/L diflubenzuron.

Chemical group

Benzoylurea.

Dose rate

To treat sheep body louse (*Bovicola ovis*) via plunge dip, shower dip or hand jetting; Strike® should be diluted at the rate of 150 mL/100 L (see label).

Dip sheep with short wool (14 - 42 days after shearing). For treatment of lice in long wool (43 days - 6 months after shearing), hand-jet sheep when the lice problem becomes obvious to prevent any further fleece damage. After shearing, sheep should be retreated with an effective off-shears or short wool product.

Withholding periods

- **Meat:** Nil.
- **ESI:** Nil.
- **Wool harvesting interval:** DO NOT use less than 6 months before shearing or fibre collection.
- **Wool re-handling interval:** DO NOT re-handle sheep until dry after treatment.
- **Milk:** Nil.

Restraints

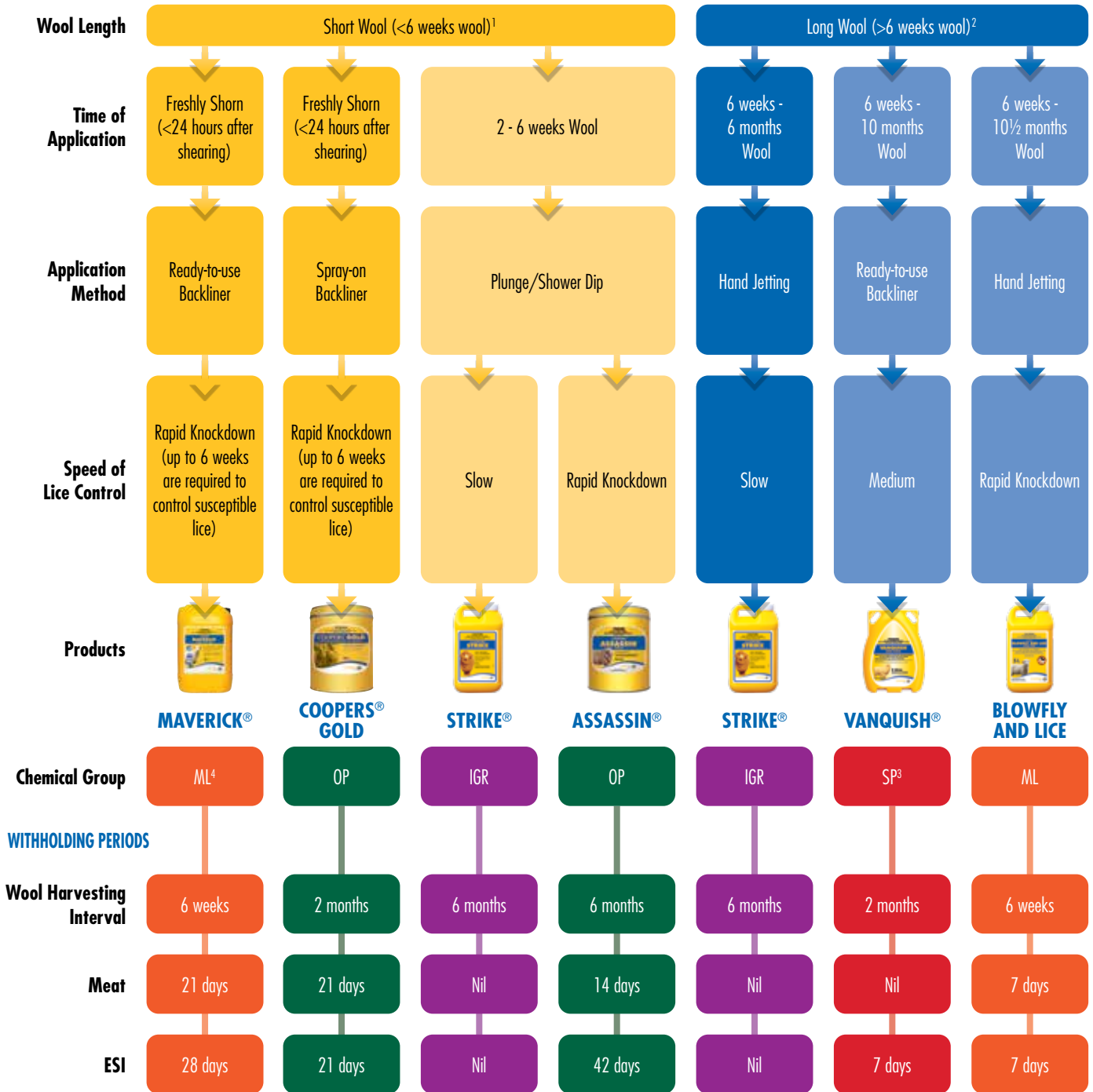
- DO NOT dip sheep more than 6 weeks after shearing.
- DO NOT dip sheep within 2 weeks off-shears to allow shearing cuts and other injuries to heal.
- DO NOT dip ewes heavy in lamb.
- DO NOT add wetting agents to the dip solution, as they may adversely affect the product. Strike® contains an appropriate wetting agent. For effective control of lice, thorough wetting to skin level is essential.

Storage

Store below 30°C (room temperature) in the tightly closed, original container in a cool dry place. Do not store for prolonged periods in direct sunlight.



SHEEP LICE CONTROL CHART



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. Macrocytic Lactone.

For further information, call your local Coopers® Territory Sales Manager on Toll Free **1800 885 576**