

Alternatives to Diazinon

This fact sheet provides information for wool and sheep producers about options for the control of sheep lice

In May 2007, the Australian Pesticides and Veterinary Medicines Authority (APVMA) discontinued the use of chemicals containing diazinon to control lice in sheep using plunge and shower dipping, or jetting.

This means it will be illegal to use any diazinon-based products manufactured after 4 May 2007 for these purposes. Those made before this date can still be used for the next two years — as long as they have not reached their expiry date.

APVMA took the decision following extensive consultation, and because of concerns about the health and safety of farmers and their employees. It was agreed; however, that diazinon-based products could still be used in 'backlining'. APVMA is still considering whether it is safe for recognised contractors to use it with specialised plunge dip equipment.

APVMA also looked at the implications of chemical residues on trade. The European Union, for example, has set strict guidelines for residue levels, meaning our sheep producers need to be even more aware of their chemical use.

And while this means they will need to employ new products and management practices, there will be opportunities for potential savings from less chemical use, and a reduced chance of the lice becoming resistant because of incorrect use of treatments.



Controlling lice

There are a number of factors producers need to take into account when managing lice in their flock, including, whether their flock is lousy and, if so, why, and, importantly, should it be treated before the next shearing?

Is the flock lousy?

Surveys indicate that, on average, 20 per cent of flocks in Australia are infested with lice; yet, each year, around 80 per cent are treated. That clearly indicates many growers are over-applying treatments and, in the process, increasing their costs, the possibility of resistance and the residue risks.

There are many common symptoms of lice infestation. But to ensure we have a more accurate diagnosis, Australian Wool Innovation is using grower levies to develop a new test. It's expected to be available as a laboratory test by the end of 2007 and, after that, as an on-farm kit. This will enable producers to test their flocks at shearing and apply treatments in a much more targeted manner.

If so, why is it lousy?

Before making any decision on how to treat a lousy flock, either before or after the next shearing, it is essential to determine the cause of the infestation. If it is ongoing, growers need to reassess their management practices—particularly mustering—as well as their equipment and chemical use. There is no point applying the same treatment, and using the same equipment, if there are wider problems, such as not all the sheep being treated, stray sheep getting into the mob, poor chemical application or chemical resistance.

If lice are present in a number of mobs, the cause is more likely to be a treatment failure rather than from new sheep or strays from neighbouring properties. The reason for the treatment failure should first be determined before a particular chemical and application method is selected.

Another way growers can reduce the risk of lice infestations is by following the recommendations in the National Wool and Sheep Industry Biosecurity Plan (these can be downloaded from the internet at www.woolproducers.com.au/bio_plan.pdf), including maintaining good fences, quarantining any new stock and always insisting on a Sheep Health Statement when buying stock.

If the flock is lousy, should it be treated before shearing?

Growers need to be aware that treating sheep immediately a lice infestation is diagnosed may not always be the best approach.

If they wait until shearing time; however, the treatment costs need to be weighed against the projected losses in wool production. And this will depend on the amount of time between diagnosis and shearing, and the level of infestation. The flock's welfare should also influence any decision-making, given the possible negative consequences of treating sheep in long wool.

A grower-funded computer program called 'Liceboss' is being developed, and will help producers choose the best course of action.



Treatment options

Up to six weeks off-shears

The two most common ways of applying treatments are backlining and wet dipping. Recent research has shown that it is difficult to thoroughly wet sheep to the skin using a shower dipping system, and is therefore not generally recommended for use in controlling or eradicating lice.

Backline treatments:

- **Diazinon** (applied within 24 hours of shearing). Backlining treatments using diazinon were re-introduced in 2005, and may help counter resistance problems with other backlining treatments.
- **Synthetic pyrethroids** (applied within 24 hours of shearing). There is widespread resistance to this group of chemicals, and they should not be used on sheep where there have been previous treatment failures.
- **Diflubenzuron or triflumuron** (applied within 24 hours of shearing, or up to seven days after shearing). They have been widely used with good effect throughout Australia, but there is evidence that resistance to them is growing. If there have been problems controlling lice in a particular flock, the specific reason should be determined before diflubenzuron or triflumuron are used again. Some of the non-resistance related reasons for control problems include poor management and application practices, and failing to treat all of the flock.

Plunge dipping (applied two to six weeks after shearing):

- **Diazinon as a wet dip using a cage immersion dip**. APVMA is considering a permit application that could be accessed via contractors. Assessments will need to be made on any other systems to ensure they meet APVMA safety requirements. Due to the high cost of the equipment and safety requirements, these systems will most likely only be used by contractors.
- **Spinosad**. Safe to use and effective if applied correctly in the dip, and at the right time after shearing.
- **Magnesium fluorosilicate**. Sold as a powder, which means there are problems with it settling out quickly, making it difficult to ensure all of the flock is thoroughly treated.
- **Diflubenzuron**. Safe to use and effective if applied correctly in a plunge dip, and at the right time after shearing. Care must be taken; however, when disposing of unused wash, as it will remain active in the soil for several months.
- **Temephos**. An organophosphate that does not have the same health and safety concerns as diazinon, and may be a viable alternative, particularly if resistance is a problem. Its registration is currently suspended, although a submission has been made to APVMA to re-register it. But supply is unlikely to happen for some months.

Over six weeks off-shears

There are a limited number of chemicals available to treat lice detected in sheep more than six weeks after shearing. They are not going to eradicate the lice, as they don't completely saturate the growing fleece, and further treatment will be needed shortly after the next shearing.

The chemicals available include:

- **Spinosad** (hand jetting).
- **Diflubenzuron** (hand-jetting or backlining).
- **Synthetic pyrethroid** (backlining).
- **Ivermectin** (hand-jetting).

Further Information

The information provided in this fact sheet is a guide only, and growers should seek further support from professional advisers, their relevant State departments of agriculture and/or chemical manufacturers. Chemicals should always be used in accordance with manufacturer's instructions.

Quick Reference table of lousicides on the Australian market

Time of application	Application method	Chemical group	Products
Off-shears	Backliner	Insect Growth Regulator	Magnum; Magik; Stampede; Zapp; Clipguard; Virbac IGR Pour-On; Epic; 4Farmers Triflumuron 25; WSD Command Pour-On; Triffik; Exilice; Exit; Cannon
		Synthetic Pyrethroid	Clout-S; Cypercare; Spurt; 4Farmers Cypermethrin 25
	Spray-on	Organophosphate	Eureka Gold
Short Wool (up to six weeks)	Wet dip	Insect Growth Regulator	Strike; Fleececare; Crusader; Duodip;
		Spinosyn	Extinosad
		Magnesium Fluorosilicate	Flockmaster MK II; X-Lice Washdown
Long wool (six weeks to six months wool)	Hand jetting	Insect Growth Regulator	Strike; Fleececare; Duodip
	Spray-on	Insect Growth Regulator	Magnum
Long wool (six weeks to 10 months wool)	Spray-on	Synthetic Pyrethroid	Vanquish
Long wool (six weeks to 10½ months wool)	Hand jetting	Macrocyclic Lactone	Coopers Blowfly and Lice Jetting Fluid; Paramax Multi-Purpose Concentrate for Sheep
Long wool (six weeks – 12 months wool)	Hand jetting	Spinosyn	Extinosad

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