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Commonly used chemicals to treat sheep lice and blowflies

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Wool residues are a major threat to the Australian wool industry. Tougher environmental laws in Europe are forcing wool scourers to reduce pesticide levels in effluent discharging into river systems. The most likely response to solve this problem is to source low pesticide wool. Woolgrowers who act now to reduce reliance on chemicals can avoid future problems and loss of income.

Benefits of producing low pesticide residue wool

- Minimise chemical use to save money and reduce potential health risks.
- Maintain wool markets by meeting customer needs.
- Potential to attract better returns for 'clean' wool.

Chemical groups

There are currently six main types of chemicals available to control lice and blowflies. These are:

- Organophosphates (OP) (e.g. Diazinon, Di-jet, etc.)
- Insect growth regulators (IGR) (e.g. Zapp, Magnum, etc.)
- Magnesium fluorosilicate (MgFl) (e.g. Flockmaster II, etc.)
- Ivermectins (e.g. Paramax, Jetamec)
- Spinosyns (e.g. Extinosad)
- Synthetic pyrethroids (SP) (e.g. Clout S, etc.)

Know the risks

The different chemical groups have various degrees of relative risk relating to operator health, pest resistance and wool residues as shown in the following table. Understanding these risks will help when deciding what, if any, chemical to use.

Group	Human health	Pest resistance	Greasy wool residues
OP	High	High for flies	Medium in LW[1]
SP	Medium	High for lice	High in LW[1]
IGR	Low	DFB fly resistance[2]	Medium in LW[1,3]
Spinosyn	Very low	None reported	Low
Ivermectin	Low	None reported	Low
MgFl	Very low	None reported (not used for flies)	Low

[1] LW – Long Wool is defined as more than six weeks after shearing.
[2] Flies resistant to diflubenzuron (DFB) (e.g. Magnum, Strike, Fleececare, etc.) have been reported in the Eastern States.
[3] Except Clik®, which can be used up to three months before shearing, and Vetrazin® up to two months before shearing.

What you can do

The key to reducing reliance on chemicals is to use an integrated parasite management (IPM) approach to control lice and flies. However, if you need to use chemicals, select those with minimal risk. The four main IPM elements are:

- *Management options* (e.g. reduce susceptibility to flystrike and risk of lice introduction).
- *Genetic improvement* (e.g. increase resistance of the flock especially to flies (e.g. cull for fleece rot)).
- *Biological/environmental control* (e.g. reduce fly populations by using fly traps, etc.).
- *Selective use of chemicals* (e.g. only treat if lice are present).

Further information

Farmnote 30/2002	Wool residues – market, environmental and occupational health issues
Farmnote 50/2003	Sheep lice – cost effective management to minimise residues
Farmnote 30/2001	Sheep lice – using integrated pest management to avoid chemicals
Farmnote 49/2003	Sheep blowflies – cost effective management to minimise residues
Farmnote 46/2001	Sheep blowflies – using integrated pest management to avoid chemicals
Factsheet 10/2001	Mulesing and strike wound treatments
Factsheet 27/2001	Sheep louse control for ewes with lambs
Factsheet 28/2001	Guidelines for producing European eco-label and nil residue wool
Factsheet 30/2001	Sheep louse and blowfly insect growth regulator treatments

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Lice and fly treatment options

The following information is a guide to manage sheep lice and blowflies whilst minimising residues. Wool Withholding Periods (WHPs) or Wool Harvesting Intervals (WHIs) are current at the time of printing but these may change. Wool WHPs are legal and must be observed. Voluntary wool WHPs are advisory and relate to residue sensitive markets. However, they may not be suitable for the most residue sensitive markets. Growers are advised to contact their wool broker regarding market requirements relating to residues. Mulesing and flystrike products have not been included. Products containing active ingredients from chemical groups with reported resistance are indicated. Use of products that have reported resistance may increase the risk of repeat treatments being required, thus increasing the risk of residues. Growers are urged to use an integrated parasite management approach (i.e. stock management, genetic improvement and biological control), to manage lice and flies to reduce the reliance on chemicals.

Lice

TIME OF APPLICATION	APPLICATION METHOD	CHEMICAL GROUP	REGISTERED PRODUCTS	WOOL WHP/WHI	MEAT WHP	RESISTANCE REPORTED
Off-shears[1]	**Backline**	IGR	Magnum IGR Pour-On Zapp, Epic, Virbac IGR, Clipguard	6 months 2 months[3]	Nil 14 days	None None
		SP	Clout S, Cypercare, Outflank, Spurt, Duracide	None specified[2] None specified[2]	3 days Nil	YES YES
Short wool (up to 6 wks wool)	**Dip**	OP IGR Spinosyn Magnesium fluorosilicate	Coopers 4in1, Diazinon, Di-jet, Jetdip Diprite Fleececare, Strike, Duodip, Crusader Extinosad Flockmaster, Splash, X-Lice Washdown	2 months 7–13 weeks 6 months Nil None specified[2]	14 days 21 days Nil Nil 1 day	None None None None None
Long wool[4] (6 wks to 6 mths wool)	**Hand-jet** **Backline**	IGR ML IGR	Fleececare, Strike, Duodip Paramax Multipurpose Concentrate Jetamec Magnum	6 months 6 weeks 3 months 6 months	Nil 7 days 7 days 42 days	None None None None
LWl[4] (6–9 mths) (6–10 mths wool)	**Hand-jet** **Hand-jet** **Spray-on**	ML Spinosyn ML SP	Jetamec Extinosad Paramax MCS Vanquish **VOLUNTARY WOOL WHP OF 6 MTHS FOR RESIDUE SENSITIVE MARKETS**	3 months Nil 6 weeks 2 months	7 days Nil 7 days Nil	None None None YES
Long wool (10–10½ mths)	**Hand-jet**	Spinosyn ML	Extinosad Paramax MCS	Nil 6 weeks	Nil 7 days	None None
(after 10½ mths)		Spinosyn	Extinosad	Nil	Nil	None

[1] *Most off-shears treatments do not have a wool withholding period because they must only be used within 24 hours after shearing, unless otherwise specified on the label.* [2] *Contact the manufacturer for residue information.* [3] *An agreement for a 2-month wool WHP has been made with the National Registration Authority but this may not be on the label.*

[4] ***OPs (diazinon) are not registered as a long wool lice treatment.***

OP – Organophosphate SP – Synthetic Pyrethroid IGR – Insect Growth Regulator ML – Macrocyclic Lactone

Blowflies

TIME OF APPLICATION	APPLICATION METHOD	CHEMICAL GROUP	REGISTERED PRODUCTS	WOOL WHP/WHI	MEAT WHP	RESISTANCE REPORTED
Off-shears	**Spray-on**	IGR	Clik	3 months	28 days	None
Short wool (up to 6 wks wool)	**Spray-on**	IGR	Clik	3 months	28 days	None
	Dip	IGR	Fleececare, Strike, Duodip	6 months	Nil	YES (in Eastern States)
		OP[1, 3]	Coopers 4 in 1, Diazinon, Di-jet, Jetdip	2 months 2 months	14 days 14 days	YES YES
	Jet	ML	Paramax MCS	6 weeks	7 days	None
Long wool[2] (6 wks to 6 mths wool)	**Jet/Dip**	IGR	Vetrazin, Venus, Virbazine	2 months	7 days	None
	Spray-on	IGR	Cyrazin Spray-on, Vetrazin Spray-on, Clik, Virbazine SO	2 months 3 months	7 days 28 days	None None
	Backline	IGR	Magnum IGR Pour-On	6 months	42 days	YES (in ES)
	Jet only	IGR	Fleececare, Strike, Duodip	6 months	Nil	YES (in ES)
		OP[3]	Coopers 4 in 1, Diazinon, Di-jet, Jetdip **VOLUNTARY WOOL WHP OF 6 MTHS FOR OP RESIDUE SENSITIVE MARKETS #**	2 months 2 months	14 days 14 days	YES YES
		ML ML Spinosyn	Paramax MCS Jetamec Extinosad	6 weeks 3 months Nil	7 days 7 days Nil	None None None
LW[2] (6–9 mths)	**Spray-on** **Jet**	IGR ML	Clik Jetamec	3 months 3 months	28 days 7 days	None None
(6–10 mths)	**Spray-on (SO)** **Jet**	IGR IGR	Vetrazin SO, Cyrazin SO, Virbazine SO Vetrazin, Venus, Virbazine	2 months 2 months	7 days 7 days	None None
		OP[3]	Diazinon, Di-jet, etc. **# see above**	2 months	14 days	YES
		Spinosyn ML	Extinosad Paramax MCS	Nil 6 weeks	Nil 7 days	None None
(10–10½ mths)	**Jet**	Spinosyn ML	Extinosad Paramax MCS	Nil 6 weeks	Nil 7 days	None None
(after 10½ mths)	**Jet**	Spinosyn	Extinosad	Nil	Nil	None

[1] *Be aware that the fly protection period for OPs is declining due to resistance.* [2] *Any long wool treatment will greatly increase residues at shearing, unless the product has a nil WHP.* [3] *OPs are currently under review due to human health concerns associated with their use.*

OP – Organophosphate IGR – Insect Growth Regulator ML – Macrocyclic Lactone