



primefacts

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Chemicals registered to treat lice and flystrike on sheep

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NSW sheep producers spend more than \$30 million per annum on chemicals to treat or prevent infestations of body lice (*Bovicola ovis*) and flystrike by the sheep blowfly (*Lucilia cuprina*). Clearly, with this level of investment it is important that they make wise treatment choices and only use products registered for these purposes.

Product choice is likely to be influenced by price, safety to the user, effectiveness of the product and the residue consequences of treatment such as withholding period, export slaughter interval and market access.

Chemical residues in wool can threaten access to some markets e.g. European processors. 'No chemical' or 'low chemical' residue wools may have a market advantage over wool with residue levels above, for example, the EU eco-label residue limit.

Woolgrowers should try to reduce their reliance on chemicals and only apply chemicals to sheep in strict accordance with label directions.

Benefits of producing low or no pesticide residue wool

- Reduced cost of production due to less chemical use.
- Reduced occupational health and safety risks.
- Access to particular wool markets by meeting customer needs.

- Maximised market access for 'clean' wool and perhaps influence wool prices by attracting more competition for clean wool.

Chemical groups

There are currently seven main types of chemical available to control or eradicate sheep lice and blowflies:

- Organophosphates (OP): diazinon – Eureka Gold[®], temephos – Assassin[®], Wham[®]
- Synthetic pyrethroids (SP): cypermethrin – Outflank[®], deltamethrin – Clout-S[®], alpha-cypermethrin – Vanquish[®]
- Insect growth regulators (IGR's): triazines, cyromazine – e.g. Vetrazin[®], dicyclanil – e.g. CliK[®]; Benzoylphenyl ureas, – diflubenzuron – e.g. Magnum[®], triflumuron – e.g. Zapp[®]
- Macrocyclic lactones (ML): ivermectin – e.g. Paramax[®]
- Spinosyns: spinosad – e.g. Extinosad[®]
- Neonicotinoid: imidacloprid e.g. Avenge[®]
- 'Others': principally magnesium fluorosilicate and other compounds – e.g. Flockmaster II[®]

Know the risks

The different chemical groups have various degrees of risk relating to operator health, pest resistance and wool residues as shown in Table 1.

Understanding these risks will help when deciding which (if any) chemical is to be used.

Table 1. Potential risks associated with use of and exposure to insecticides.

Group	Human health ⁴	Pest resistance	Raw wool residues
Organophosphate (OP)	High*	Common in flies & maggots Rare in lice	Medium in LW ¹
Synthetic Pyrethroids (SP)	Medium	None in flies Common & high in lice	High in LW ¹
Insect Growth Regulators (IGR)			
Diflubenzuron/ triflumuron	Low	Common & high in maggots Increasingly common & high in lice	Medium in LW ^{1,3}
Insect Growth Regulators (IGR)			
Dicyclanil/cyromazine	Low	None in maggots or flies; not applicable to lice	Medium in LW ^{1,3}
Spinosyn	Low	None reported	Low
Macrocyclic Lactones (ML)	Low	None reported	Low
Magnesium Fluorosilicate	Low	None reported	Low

Source: Liceboss (www.liceboss.com)

* High human health risk is in relation to diazinon. Some organophosphates pose a low human health risk e.g. temephos.

¹ LW – Long wool is defined as more than 6 weeks after shearing.

² Fly resistance to diflubenzuron (Dfb) has been reported. Diflubenzuron is no longer registered in Australia for the prevention of flystrike on sheep.

³ Except CLIK, this can be used up to 3 months before shearing and cyromazine products up to 2 months before shearing.

⁴ See Special Note: Human health risks

Application method

The tables on pages 5, 6, 7, 8 and 9 have been organised according to the application methods for the lice and fly products. They are intended to be used as a management tool when making decisions about which insecticide or application method to use in a given situation. 'Situation' includes length of wool growth and usual time of shearing, physiological state (e.g. non-pregnant, lactating), facilities and labour available. The 'situation' is usually a principal determinant of application method.

Calibrate and maintain application equipment

Some products must only be used with specified applicators e.g. handguns for pour-on lousicides. All equipment used to apply chemicals to sheep should be maintained and calibrated carefully, to ensure it delivers the appropriate dose. Calibrate by measured volume, or pressure, or a combination as

appropriate. Follow the instructions. Clean-up and storage are particularly important and the manufacturer's instructions for cleaning after using all chemicals should be followed carefully.

Comparing alternative treatments

Registered products containing the same concentration of the same active constituent (chemical) e.g. cyromazine 500 g/L, and registered for the same use, with the same instructions, can be considered as identical and therefore as direct alternatives. You should compare alternatives based on the treated cost per head (\$/hd) after allowing for, for example, appropriate body weight, wool growth and age.

Withholding periods – WHP

The Meat WHP is the minimum period of time which must elapse between the last treatment of an animal with a product and slaughter for human consumption in Australia.

Recently, the Australian Pesticides and Veterinary Medicines Authority (APVMA) which registers all these products has specified that the term WHP will no longer be used in relation to wool. Instead, two new terms are to be used: Wool Rehandling Period and Wool Harvesting Interval.

Wool Rehandling Period refers to the period between the sheep being treated and when the sheep or wool can be safely handled without the need for protective clothing. This rehandling period is important for the occupational health and safety of shearers and other workers that are handling wool.

Wool Harvesting Interval refers to the period between treatment and when the wool is able to be harvested and satisfy Australian environmental requirements.

Export Slaughter Interval (ESI) is the minimum recommended time interval that should elapse between the last treatment with a product and slaughter for export.

Meat WHPs, wool harvesting intervals and ESIs (as at January 2010) are given in the tables. If any animals are still within a WHP or ESI at the time of sale, the product used and date of application must be specified in Question 4 of the **National Vendor Declaration and Waybill (Sheep & Lambs)**.

Chemicals used and application dates must also be entered in section 4 – Other Health Information on the **National Sheep Health Statement**.

Reducing chemical usage

The key to reducing reliance on chemicals is to use an integrated pest management (IPM) approach to control flystrike or eradicate lice. If you need to use chemicals select those with the minimum risk and apply them strictly as directed to ensure their maximum effectiveness.

The four main IPM elements are:

- Management options: e.g. reduce susceptibility to breech strike by implementing correct tail length at lamb marking; match shearing/crutching time with periods of increased fly activity and reduce the risk of lice introduction.
- Genetic improvement: e.g. increase resistance to body strike and breech strike by selecting for fleece rot resistance and less wrinkle.
- Utilising the blowfly life cycle: e.g. using fly traps to monitor blowfly population and treating struck sheep to steady the increase in population.
- Selective and effective use of chemicals: e.g. only treat lice if present and apply chemical to **every** sheep correctly.

Availability of the products

Some products listed in the tables may not be available at your agricultural chemical supplier. This may be because:

- Your supplier does not stock that manufacturer's brand.
- The manufacturer has recently or temporarily stopped supplying the product.
- The product may not be readily available in NSW, despite being registered for all States.

Further information

The list of registered veterinary chemicals changes every year. Users can check the current registration details for any chemical from the APVMA PUBCRIS database at www.apvma.gov.au, or <http://services.apvma.gov.au/PubcrisWebClient/welcome.do>

Other information on the Industry & Investment NSW website:

Primefact 843 – *Hand jetting sheep*

Primefact 844 – *Spray-on flystrike prevention*

Primefact 845 – *Treating flystruck sheep*

Primefact 485 – *Sheep blowflies*

Primefact 848 – *Triggers leading to blowfly strike*

Primefact 918 – *Breeding merinos for less breech strike*

Primefact 483 – *Sheep lice*

Contacts for enquiries

- Your local Industry & Investment NSW Sheep & Wool Officer
- LHPA Veterinarians and Rangers
- Gemma Junk: (02) 6872 2077 or email gemma.junk@industry.nsw.gov.au

Special note

Definitions

The labels of registered lice products usually refer to the product either 'controlling' or 'treating' lice. No label claims to 'eradicate' lice are made, however eradication is possible following the correct use of an immersion dipping system. 'Control' means to reduce lice in short wool sheep to non-detectable levels 20 weeks after treatment. 'Treat' means to reduce lice in long wool sheep 90 days after treatment by more than 95%.

Human health risks

Users who follow the directions for use will always have a lower risk of exposure to chemicals. This is because the use of the correct protective equipment and correct application technique will protect against significant exposure to chemicals.

The 'pure' or molecular form of many chemicals is highly hazardous to human health. However, because of dilution with 'carriers' which may assist with mixing and/or spread over the animal, the product you purchase may or may not be less hazardous. If further diluted with water for application, the chemical 'as applied' is likely to be less hazardous again.

There is some variation between chemicals within the broad groups e.g. OP, SP, IGR. In addition, some chemicals exhibit markedly different degrees of hazard between oral/inhaled and body (skin) contact. Refer to the product's Material Safety Data Sheet (MSDS) for toxicological information. Your chemical reseller is required to provide MSDSs to you on request. For safety reasons treat all chemicals with respect and handle them according to the manufacturer's recommendations.

This Primefact contains the registered label claims for sheep ectoparasiticides. The list is comprehensive at the time of printing (January 2010). The tables are grouped according to the method of application. This information should be read in conjunction with the material referred to above so that recommendations from Industry & Investment NSW for the use of these registered chemicals can be followed.

Always read the label

Users of agricultural or veterinary chemical products must always read the label and any permit before using the product. Users must comply strictly with the directions on the label and the conditions of any permit. Users are not absolved from compliance with the directions on the label or the conditions of the permit by reason of any statement made or not made in this publication.

Labels specify appropriate application technique and recommend minimum standards for protective equipment to be used. You should request a Material Safety Data Sheet (MSDS) when the chemical is purchased as this document gives further information on the chemical and what to do in cases of spillage or poisoning.

Occupational health and safety (OH&S)

OH&S regulations require that employees applying chemicals are appropriately trained and supervised in their use. The *Pesticides Act (1999)* also requires all users to be trained to use chemicals. Since July 2002 the same regulation has also required you to keep records of all pesticide applications. You will also need these records to complete National Vendor Declarations and Sheep Health Statements. Storage and handling recommendations on the label should be strictly adhered to for two reasons:

- to comply with OH&S regulations
- to ensure that the shelf life of any remaining product is not compromised.

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