



Farmnote

Wool residues – market, environmental and occupational health issues

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In the past, woolgrowers have relied heavily on chemical application to manage sheep lice and blowflies. However, with increasing resistance to some of these chemicals and concerns relating to residues on wool, there is an urgent need to manage these pests while minimising reliance on chemicals.

Major issues

The major issues relating to pesticide usage in sheep husbandry include:

- customer preference for products that are produced in a sustainable and environmentally friendly manner
- processor liabilities resulting from the environmental impact of pesticides remaining in scour effluent
- potential health risks to workers handling wool containing pesticide residues.

Marketing

Wool has several valuable marketing advantages compared to synthetic fibres. It is a natural product that can be produced from a renewable resource in an environmentally sustainable way. Although the final woollen article is essentially free of pesticides, there are concerns that pesticide residues on greasy wool could potentially harm the 'clean and green' image of wool. In February 1999, the European Union (EU) included textile products as part of its eco-label requirements. The European Eco-label for Textiles enables consumers to recognise garments that are made from clean, low-residue wools that have been processed using clean production methods.

Eco-label wool does not mean nil residue wool and the limits for pesticide levels can be achieved fairly easily using standard production systems. The pesticide limits for greasy wool are:

Total synthetic pyrethroids	less than 0.5 mg/kg
Total organophosphates	less than 2 mg/kg
Total insect growth regulators*	less than 2 mg/kg
* diflubenzuron (Magnum etc.) and triflumuron (Zapp etc.)	

Currently, some brokers are obtaining a 15 per cent premium for wool meeting eco-label standards.

Environmental impact

Most chemicals used to treat external parasites bind to the wool grease rather than the fibre itself. The scouring process removes wool grease and most contaminants at the same time, resulting in contaminated scour effluent. Scour effluent comprises lanolin, sludge and water. It is imperative that lanolin used for personal use is not contaminated. Most of the pesticides can be extracted from the lanolin but this is an expensive process.

In Australia, many scour plants use sludge as landfill and the liquid effluent goes into ocean outlets, sewerage systems or evaporation ponds. Most overseas scour plants, particularly in Europe, discharge effluent into inland waterways. Environmental standards for scour effluent are becoming stricter, particularly in Europe but also in Australia and other countries. China has also started a testing program for pesticide residues in wool.

From October 2007, new environmental legislation will compel all member countries of the EU to ensure that wool dye-houses and scouring plants demonstrate on a daily basis that they have not contaminated the environment. The processing plants will need to report all of their inputs and emissions to public domain textile databases that have been established. This will require knowledge of the pesticide residues on greasy and scoured wool through the supply chain. To meet these standards, it is expected that processors will seek to buy only low pesticide residue wool. Another option is for more wool to be scoured in Australia.

Occupational health and safety

In 1996 in Wagga, New South Wales, a team of shearers successfully sued a woolgrower for allegedly endangering their health by improperly using chemicals. Shearers are becoming more aware of the potential risks associated with exposure to chemicals, particularly the organophosphate group which can cause a serious nervous disorder. In May 2007, the Australian Pesticides and Veterinary Medicines Authority (APVMA) announced a suspension of the registered claim for diazinon to be used as a short wool dip for sheep lice and long wool

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jetting for blowflies. Products manufactured before May 2007, which display the registered label claim, can still be used according to label directions but new product will no longer include this claim and must not be used for dipping or jetting. Most of the 'older' products will expire by mid-2009.

Chemical groups

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

- Organophosphates (OP), (WSD Diazinon, Di-jet etc.)
- Synthetic pyrethroids (SP), (Clout S, Vanquish etc.)
- Insect growth regulators (IGR), (Zapp, Magnum etc.)
- Spinosyns (Extinosad)
- Ivermectins (Coopers Blowfly and Lice Jetting Fluid, Paramax etc.)
- Magnesium fluorosilicate (Mg Fl), (Flockmaster II etc).

The different groups have various degrees of relative risk relating to operator health, pest resistance and wool residues.

Withholding periods

The APVMA (formerly known as the National Registration Authority) is responsible for registering commercial products. It has set a default wool withholding period of two months for all long wool fly and lice products that do not state the withholding period on the label. This effectively means that woolgrowers must not jet sheep for fly prevention within two months of shearing or treat for lice at this time unless otherwise stated on the label. This default period does not apply to the treatment of individual sheep that are flystruck.

In recent years, the APVMA has adopted new terms relating to withholding periods which will appear on all new registered products. Withholding period will not be used in relation to wool. Instead the following re-handling period and harvesting interval have been adopted to more accurately reflect the treatment intervals that will meet specific requirements.

- **Wool Re-handling Period**—the period between treatment and when wool/sheep can be safely handled without the need for protective clothing.
- **Wool Harvesting Interval**—the period between treatment and when wool can be harvested to satisfy Australian environmental requirements.
- **Meat Withholding Period (meat WHP)**—the time from chemical application to when an animal is slaughtered for domestic market.
- **Export Slaughter Interval (ESI)**—the time from chemical application to when an animal is slaughtered for export.

Some producers have had sheep rejected at abattoirs due to insufficient time being allowed between treatment and slaughter. The meat WHP appears on the label but the ESI does not appear on labels of older products.

All new products now include the ESI. Abattoirs require the ESI to be complied with—as well as the meat WHP, which relates to the domestic meat market and is generally shorter than the ESI. Where the ESI is not on the product label, they can be found on the current version of the National Sheep Vendor Declaration or the APVMA website (www.apvma.gov.au).

National wool residue survey

This program began in 1992 and is funded by Australian Wool Innovation Ltd. About 600 clips from across Australia are tested annually by CSIRO in Geelong, Victoria, for over 20 lice and fly chemicals that are assessed against the European Eco-label standard.

WA producer wool residue feedback program

The residue feedback program is coordinated by the Department of Agriculture and Food, Western Australia. About 140 randomly selected clips from the State are tested. Individual growers who have had their clip tested may receive a fax containing their results from their wool broker. Participating wool brokers include Elders, Primaries, Landmark and Wool Agency. Some growers may receive a fax containing residue results detailing the amount of chemical detected and a comment relating to compliance with the voluntary EU Eco-label standard as well as the level expected after registered use of the particular chemical.

Residue testing

Testing for pesticide residues on wool can be requested through the Australian Wool Testing Authority. CSIRO in Geelong offers a comprehensive test that includes over 20 chemicals at a cost of about \$154.

Combating lice and flies while minimising residues

Reducing reliance on, and therefore use of, chemicals gives many benefits including a reduction in costs of production, long-term increased flexibility in flock management, reduced health risks associated with exposure to chemicals and likely future increased market access due to reduced residues on wool.

Effective lice and fly control programs can be achieved through using an integrated parasite management (IPM) approach. Individual farmers have eradicated lice through effective chemical treatment, preventing lice being reintroduced and monitoring for early signs of lice infestation. Also, many woolgrowers have eliminated the need to routinely jet the whole flock for fly prevention through effective breeding and selection.

Further information

Note: 274 Sheep lice – selective chemical treatments
FN 49/2003 Sheep blowflies – cost effective management to minimise wool residues

Note: 269 Commonly used chemicals to treat sheep lice and blowflies

Note: 265 Guidelines for producing European Eco-label, nil or low residue wool