

Hand jetting sheep

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When the decision has been made that sheep must be treated with insecticide to prevent or control flystrike or louse infestations, woolgrowers must also decide which product to use and how to apply that product. The decisions they make will depend on:

- whether the target pest is blowfly or lice,
- whether the pest is resistant to any insecticide group,
- what products are registered for the purpose,
- their cost, availability.

Whichever product is chosen, it is generally considered that thoroughness of application is crucial to getting the most out of the insecticide. Correct hand jetting has been shown to be the most thorough method of application but is relatively slow, hard work requiring good quality, comfortable protective clothing, access to water, a race, and proper jetting equipment.

A consequence of the laborious nature of the work and the frequent problem of badly designed facilities is that many producers do a poor job. Moreover, thoroughness of jetting diminishes as the operator tires.

Poor hand jetting reduces flystrike protection and can make it necessary to re-treat sheep. It is better to choose a product capable of providing long term flystrike protection and applying it properly to maximise the benefit of the treatment. Producers unwilling to hand jet properly – or who waste product by fire hosing yarded sheep – would be better off using an automatic jetting race (AJR), preferably of an improved design, or one of the backline applications.

Occupational health and safety

Producers should protect themselves by wearing the appropriate protective equipment when preparing jetting fluid and jetting sheep. To properly jet sheep

the operator must be in the race with the sheep. They should be wearing waterproof long pants, steel capped gum boots and long sleeve-waterproof gauntlets. Thin, inexpensive cotton inner gloves worn inside the gauntlets make it easier to put on and off the gauntlets.

When preparing the jetting fluid a respirator and face shield should be worn for protection from fumes and splash. At the end of jetting, this equipment should be washed, dried and stored ready for next time. Soap, water and a towel should be available to wash pesticide splashes, and a change of clothes should be ready for the operator to change into if contaminated with insecticide or at the end of jetting.

Equipment

Jetting is best done in a concrete-floored race with adequate drainage to prevent puddles and mud forming. Trees or a roof covering to shade the operator will provide more comfortable conditions. The jetting pump should be located away from the sheep so that its noise during operations does not bother the sheep or inhibit filling the race.

The pump should be checked before use to ensure it is operating efficiently. Adequate fuel should be available. The pump must be capable of delivering 700 kPa (100 psi) at the handpiece while still returning enough jetting fluid via the recirculating hose to provide sufficient mixing in the sump. When the jetting fluid has been mixed, the pump should be started and the handpieces held below the surface of the fluid in the sump in the 'on' position for about five minutes. This will provide thorough mixing and ensure the hoses are full of jetting fluid, not just water. If two operators are jetting in side-by-side races the pump must be able to deliver 700 kPa at each handpiece and still provide recirculation.

Inexpensive pressure gauges fitted in-line at the handpiece provide a convenient way of monitoring pressure at the handpiece.

Fly control

The handpiece selected should be matched to the wool length of the sheep. For wool less than 4–5cm the traditional sickle shaped wand with the five protruding nozzles (Figure 1, right) is a good choice. When it is combed through the fleece it will not snag. In longer wool the nozzles will catch in the wool and make the job difficult.

It is impossible to see a gauge at the pump while jetting sheep in the race and the reading may bear no resemblance to the pressure at the handpiece anyway. There should be sufficient length of hose attached to the jetting wand to comfortably reach from one end of the race to the other.

For protection from body strike three passes of the sickle shaped wand are required. The first is along the backline from the poll to the tail. Further blows are made on either side, but overlapping the first blow. The nozzles must be held in the fleece to ensure penetration to skin level.

In longer wool the wand may be pumped up and down in the fleece to ensure fluid pools in the fleece along the backline. As a rule of thumb, for body strike protection, aim to apply a minimum of 0.5 L of jetting fluid per month of wool growth. Calculate this volume and time how long it takes to jet this volume into a graduated container. This is the minimum time that should be spent treating the backline of each sheep.

For wool longer than 5 cm the Dutjet® wand (Figure 1,) is a better choice. This wand has a metal shroud covering the T-shaped delivery tube. The tube has three big bore jets. The shroud has an angled back edge which opens the staple and the wand is drawn along the back of the sheep. This places the jets directly over the opening in the wool so that fluid is directed onto the skin.

Again, about 700 kPa pressure at the handpiece is required. There is no need to push the Dutjet as firmly into the fleece. Slight downwards pressure is sufficient. A single blow from poll to tail is all that is usually required. The wand must be drawn along the back of the sheep at a rate such that fluid pools at the trailing edge of the shroud. Any faster than this does not provide a thorough treatment. Any slower will result in the excess fluid running over the outside of the wool and being wasted. Again, apply a minimum of 0.5 L/month of fleece growth.

Thorough jetting of the back of sheep, irrespective of which wand is used, should ensure sufficient fluid is held in the fleece to penetrate to skin level.

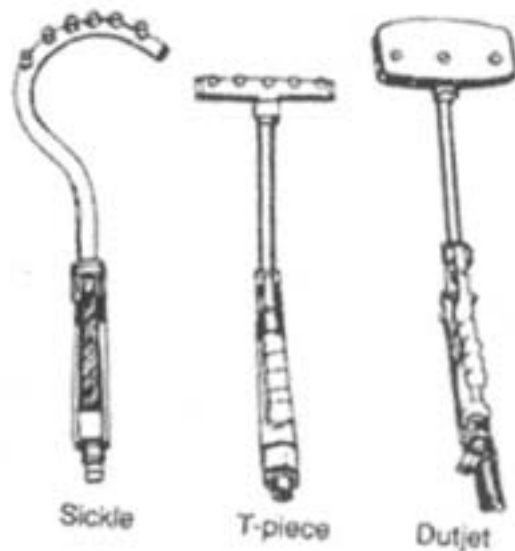


Figure 1

The addition of a scourable food dye such as Permicol Blue®, or the use of an indelible pencil can be used to check wetting.

Fluid will run around the body and drip from the belly of thoroughly treated sheep. Proper jetting for bodystrike protection should provide coverage for the belly, but rams and wethers may require direct treatment of the pizzle area.

Similarly, the poll of horned rams may need to be treated. If protection of the crutch is required, extra blows up the inside of each leg from the hock up to, and over the tail, are necessary (Figure 2). With increasing concern about insecticide residues, producers may consider only jetting flystrike prone sites on their susceptible sheep.

Woolgrowers should aim to use a number of different strategies to control flystrike. Insecticides should not be used where another management strategy can be just as effective. For example, jetting the crutch should not be considered a substitute for proper worm control and crutching. The objective with hand jetting is, saturate the whole staple so that jetting fluid reaches skin level where maggots feed. Although not all chemicals behave in the same way, the fleece and the skin act as reservoirs of insecticide that meter out insecticide into new wool growth. Water soluble compounds like cyromazine are washed down the staple during rain.

Hand jetting verses automatic jetting races

With greater emphasis now being placed on residues in wool, research has compared the performances of hand jetting and two automatic jetting race configurations. On average, hand jetting applied 3.1 L of jetting fluid per sheep, the standard Harrington® AJR 1.7 L/sheep and a modified AJR 4.5 L/sheep. Sheep in that trial carried eight months' wool growth. Importantly, results indicated that hand jetting left

If protection of the crutch is required, extra blows up the inside of each leg from the hock up to, and over the tail, are necessary (Figure 2 at right).



Figure 2

significantly higher insecticide residues than the standard AJR and residues at least as high as the modified AJR.

The same trial showed that hand jetting sheep with eight months' wool using diazinon or cyromazine left residues at shearing 4-5 times higher than the present industry target level of 10 mg/kg.

Lice treatment

Jetting long wool sheep to reduce louse infestations is only a stop gap measure to minimise wool damage before shearing. A thorough off-shears, or short wool treatment must be applied post-shearing to achieve eradication. Moreover, jetting woolly sheep will cause high insecticide residues in the wool at shearing.

Depending on the time of year, early shearing may be a more economic and more practical option. Nevertheless, because lice are more likely to be present all over the sheep, treatment must target more areas than simply the back. Jetting fluid needs to penetrate to skin level around the neck and sides of infested sheep. Lice numbers will be reduced but the infestation will not be eradicated.

At the present time only nine products are registered and can be used for long wool lice treatment. (See Agnote DAI-78 - *Chemicals registered to treat lice and flystrike on sheep* – June 2004.)

Spray-on alternatives to Hand Jetting

Ten products comprising one of four chemical compounds are registered (June 2004) for long wool spray-on application for blowfly and/or lice control. (See Agnote DAI-78: *Chemicals registered for lice and flystrike on sheep* – June 2004.)

The chemicals are the synthetic pyrethroid (SP) alpha-cypermethrin, and the insect growth regulators (IGRs) cyromazine, dicyclanil and diflubenzuron.

These products are usually applied undiluted along the topline of the sheep. In some cases, additional bands are sprayed around the breech area. (Always read the label and refer to the specific application instructions for each product.)

The principal advantage of the spray-on products is their ease of application as no additional water is required. This is a particular advantage in the drier and more isolated areas where large volumes of water may have to be carted long distances for wet applications.

Many of these products can be applied using power assisted (compressed air or LPG gas cylinder) applicators. This assists with consistent delivery of the selected dose and reduces operator fatigue. For smaller flocks the simple manual squeeze type applicators available offer a cheap and easily portable means of application.

It is essential to follow the label instructions with regard to dose rate and target area on the sheep, for the application.

Always treat for the heaviest measured bodyweight in the mob, where dose rate is determined by bodyweight. Where dose rate is determined by length of wool growth, always treat for the longest wool growth in mobs with mixed shearings, or where there is significant variation say, more than two months in ages of unshorn young sheep.

Sheep that are very heavy wool cutters, or which carry large amounts of neck and/or body wrinkle may require higher dose rates. If in doubt, seek further advice from the product manufacturer through your merchandise supplier.

It is very important to consistently apply these products over the full body length, i.e. poll to tail; and in the dorsal position, i.e. equally along each side of the spine of the sheep exactly as specified on the label. Failure to hit the specified target may lead to poor or incomplete movement of the product around the body and fleece of the sheep. This in turn may lead to reduced or incomplete protection and/or control.

Caution

Irrespective of what pest you are targeting and which product you are using, always read the label thoroughly

and make sure you understand it. If in doubt, ask the reseller, company representative, Rural Lands Protection Board Ranger or Veterinarian, NSW Agriculture officer or consultant for advice. Adhere to the withholding period's (WHPs) and be aware that the export slaughter interval (ESI) may be longer than the WHPs.

Further Reading

Sheep blowflies - Agnote DAI-70

Dressing for Flystrike and wounds - Agnote DAI-71

Chemicals registered to treat Lice and Flystrike on sheep - June 2004 - Agnote DAI-78

Mulesing: accredited contractors - January 2004 - Agnote DAI-262

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing, June 2004. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Agriculture or the user's independent adviser.

Always read the label

Users of agricultural or veterinary chemical products must always read the label and any permit, before using the product, and strictly comply 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.