



## **Hand jetting sheep**

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,
- Which products are registered for the purpose,
- Their cost and 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, easy 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 the flystrike protection achieved 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 spray-on applications.

## **Occupational health and safety**

Producers should protect themselves by wearing the appropriate protective equipment when preparing jetting fluid and jetting sheep. To jet sheep properly the operator must be in the race with the sheep. As a minimum they should be wearing

waterproof long pants, steel capped gum boots and long sleeve-waterproof gauntlets over overalls. Refer to product labels for specific directions.

When preparing the jetting fluid a respirator and face shield may be required 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.

Installation of an inexpensive pressure gauge fitted in-line at the handpiece provides a convenient way of monitoring pressure at the handpiece. 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.

There are at least three types of hand jetting wands: a T-bar design, a sickle shaped design and the Dutjet. Each is capable of doing the job but the T-bar and sickle shaped wands have projecting nipples that can snag in the wool. This makes the task more difficult and tires the operator. The T-bar can be manipulated more easily around the horns of merino rams than the other two designs. The sickle-shaped wand can be hung on a fence and the Dutjet is superior for treating long wool sheep. For overall utility the Dutjet is the preferred design.

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. For wool lengths of 3-4 cm this is not a problem but in longer wool the nozzles can snag in the wool. In these situations the wand may be pumped up and down in the fleece to ensure fluid pools in the fleece along the backline but using a Dutjet would be more suitable.

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<sup>®</sup> wand is the best choice. This wand has a metal shroud covering the T-shaped spray head. The head has three big bore jets. The shroud has an angled back edge which opens the staple as 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 but 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 per 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.

The addition of a scourable food dye such as Permicol Blue<sup>®</sup>, or the use of an indelible pencil can be used to check wetting. If the sheep have been properly jetted fluid will run around the body and drip from the belly of thoroughly jetted sheep. Proper jetting for body strike 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. With increasing concern about insecticide residues, producers may consider only jetting flystrike prone sites on 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 to 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.

### **Caution**

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. Adhere to the withholding period's (WHPs) and be aware that the export slaughter interval (ESI) may be longer than the WHPs.