

# Sheep plunge dip management

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This Primefact will provide information from the findings of research studies into the design and operation of plunge dips so sheep producers can build and operate plunge dips to eradicate sheep body lice from their flocks. Management and vigilance throughout the year will keep the sheep flock lice free.

Research has shown that wetting of the sheep in a plunge dip was significantly improved by fully immersing the sheep twice during the course of their swim. Swim length was also significant.

To achieve effective wetting of sheep and ensure eradication of lice in plunge dips, mobile or otherwise, there should be a sheep swim length of at least nine metres (9m) and the sheep should be dunked at least twice, not including the 'splash' entry, with a preference towards backward dunking. A large spray nozzle can be used to replace one dunk and would be advantageous in maintaining dip wash circulation.

Hot, tired sheep should be rested prior to dipping, as skin absorption of chemical and drinking of dip wash can result in losses due to poisoning.

Different sized sheep should be drafted off and dipped separately to prevent smothering and drowning. The sheep should be yarded overnight with access to water but not to feed, to allow them to empty out. This reduces contamination of the dip by sheep faeces. Forcing pens and the race leading to the dip entry should have slatted or concrete floors to reduce organic matter contamination of the dip. Draining pens should be cleaned regularly to reduce the amount of organic matter carried into the dip.

Sheep should not be held in the draining pens but encouraged to return to their paddock as soon as possible to dry out. This will reduce the risk of mycotic dermatitis and subsequent flystrike. The flow of sheep through the dip will be encouraged but more water will be required for the dipping process due to reduced return drainage.



*Picture 1: The dip must be thoroughly stirred using a paddle, rake or pump.*

When using a plunge dip, particular attention should be paid to the following points:

- All eligible sheep should be dipped as soon as shearing cuts have healed, preferably within 2-4 weeks and not later than 6 weeks after shearing to avoid infection.
- The volume of the dip should be carefully calculated, but as this is often difficult, it may be better to add water in batches from a 500L container or use a water meter so the volume is known.
- A dip stick should be calibrated by marking each 200-500L as it is added to aid in chemical dose rate calculations.
- When using chemical, the dip should be charged at the correct rate according to the label directions. A premix should be made and poured along the length of the dip and then mixed into the fluid. The dip concentration must be maintained by topping up according to the label directions. Topping up should usually be done when the volume drops by no more than 25% of the initial volume. Replenishment should be done according to the product label which has specific instructions on what must be

done and when to maintain dip concentration.

- The dip must be thoroughly stirred using a paddle, rake or pump.
- The head of each sheep should be pushed under twice with a downward and backward movement to open the fleece. Remember that the back of the neck is the hardest part to wet in plunge dipping.
- Sheep can be checked for wetting by using a water-soluble copying pencil or a scourable dye in the dip wash.
- The dip should not be allowed to become excessively dirty or skin infections and wool staining may occur. To avoid this, the dip should be emptied and cleaned, when one sheep has been dipped for every 2L of the dip's working volume. To minimise the volume of spent dip solution for disposal follow the label directions for 'dipping out'. When dipping out chemical but no water is added to the dip sump as directed on the label to maintain the concentration in the dip. If being held overnight a suitable bacteriostat can be added to the dip solution to help prevent the build-up of bacteria in the dip. A disinfectant can be used when cleaning out the empty dip. The sun is a very good bacteriostat so allow it to dry the dip after cleaning.

Plunge dip operation is costly due to high labour and chemical costs. Plunge dips require people to move sheep into, through and away from the dip. Dipping costs include the construction of the dip, the water supply and the chemical used to charge the high volume of dip wash. A large volume of dip wash containing chemical is required to charge the dip, dip all the sheep, maintain an operating level and will require disposal at the end of dipping. A bunded area with growing pasture is required to contain dip wash disposal and allow for degradation of the chemical by soil bacteria. Stock should not graze this area for at least 3 months. Follow label instructions for dip disposal.

Sheep do not enjoy swimming and remember the experience so previously plunge-dipped sheep may become reluctant to enter the dip and may need to be encouraged into the dip. A range of design features can be used to improve sheep flow. The design of the lead up to the dip can incorporate a V-belt conveyor, hock bars, a curved lead up race and decoy sheep to attract the other sheep onto the dip slide entry after

which it is too late for the sheep to choose an alternative path.

The range of swim speeds attained by sheep in the dip will vary widely but the length of the swim (9m) and the two dunkings after the entry are the factors that are required to achieve sheep wet enough to kill lice. Management of the dipping process in a calm and organised manner will ensure that sheep are not lost through drowning, by inhalation or ingestion of dip wash.

Infection can be managed by ensuring skin is intact with sufficient healing time following shearing (2-4 weeks), yards are free of sharp projections, dogs are muzzled and sheep are free of grass seed infestations as any hole in the skin can provide a site for bacterial infection from dip wash.

RISK	REMEDY
Drowning/ smothering	Draft in sizes; calm organised work pattern
Ingestion/intoxication	Yard sheep on water and off feed prior to dipping
Shearing cuts/grassed	Delay dipping for 2-4 weeks following shearing
Clostridial diseases	Vaccination program ; good dip hygiene
Mycotic dermatitis	good dip hygiene; a Bacteriostat
Cheesy gland	Vaccination; good dip hygiene

## References:

Improved Design and Use of Shower and Plunge Dipping Equipment for the Eradication of Sheep Body Lice (*Bovicola ovis*) R.D. Lund, P.W. Johnson, N.S. Gould<sup>1</sup> and R.J. van de Ven

## Further reading:

Primefact 483 SHEEP LICE

<http://www.dpi.nsw.gov.au/agriculture/livestock/sheep/health/sheep-lice>

For further information consult your Livestock Health and Pest Authority veterinarian or ranger or NSW Primary Industries Sheep & Wool Officer.

LICEBOSS™ – a decision support resource for sheep producers available from Australian Wool Innovation – [www.liceboss.com.au](http://www.liceboss.com.au)

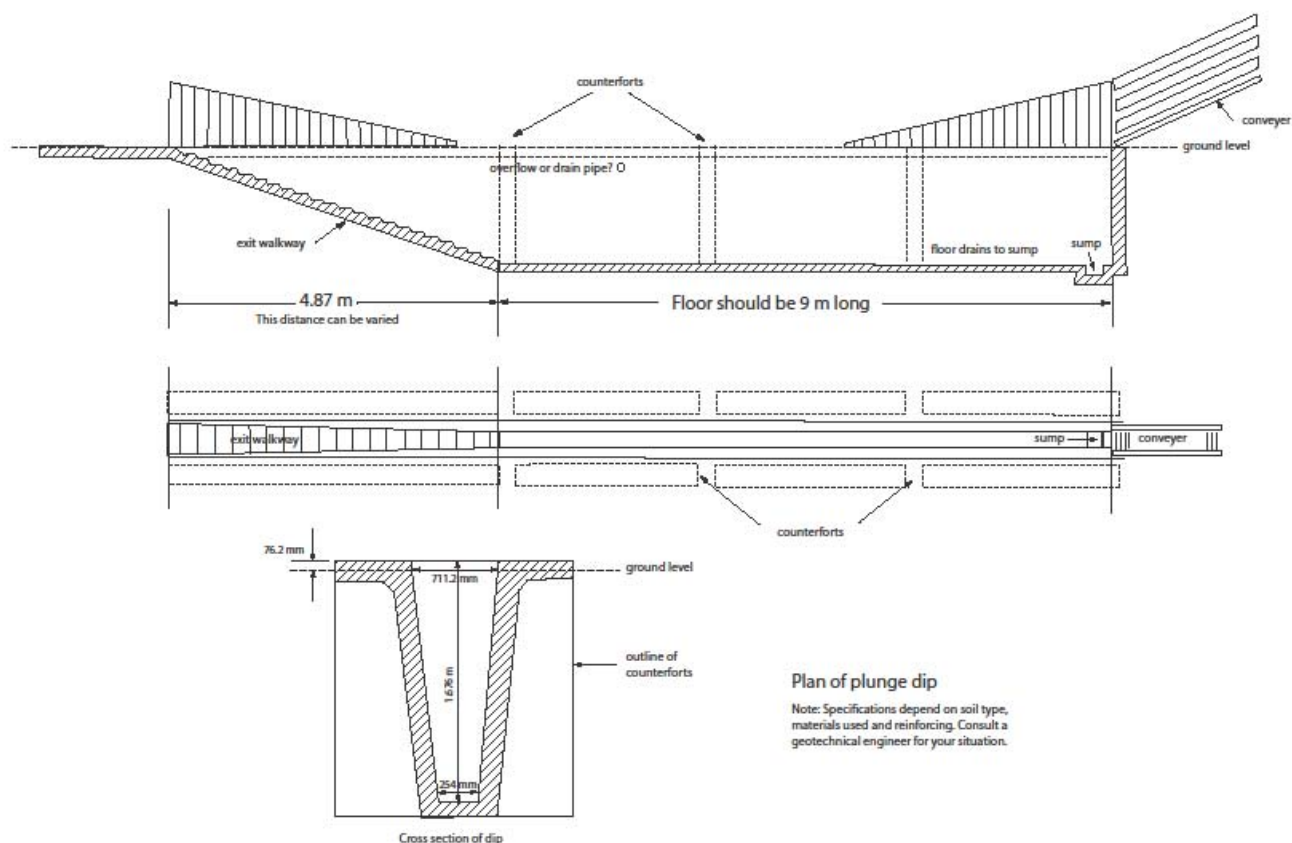


Figure 1: Plunge Dip Design

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