Guideline for the use of chemical treatments on cattle tick carriers

This guideline supports the *'Procedure for the use of chemical treatments on cattle tick carriers'* and describes techniques for the appropriate chemical use and treatment of carriers.

Biosecurity certificate endorsement

There may be situations where different accredited certifiers/authorised signatories complete the inspection and chemical treatment risk minimisation requirement (RMR). For example:

- the inspection may take place on property and then the consignment moved to a dip facility for the chemical treatment.
- pre-sale inspections may be undertaken prior to a sale and then chemically treated after the sale the next day. Saleyard operational activities may see different accredited certifier/authorised signatories complete the inspection and chemical treatment RMRs.

The accredited certifier/authorised signatory completing the inspection RMR may complete a biosecurity certificate to declare they have completed the inspection phase, or they may choose to keep alternative records.

Alternative records should capture:

- details sufficient to identify the livestock inspected e.g. NVD number
- the place the inspection was undertaken
- the date and time the inspection was undertaken
- the result of the inspection
- a record of the owner/person responsible for the risk minimisation declaration (see *Procedure for tick free manual inspection of high-risk tick carriers).*

The accredited certifier/authorised signatory that completes the chemical treatment RMR but not the inspection RMR should keep records of consignments they haven't inspected sufficient to ensure that an accredited certifier/authorised signatory has completed the inspection RMR to the required standard in the *Procedure for tick free manual inspection of high-risk tick carriers.*

Plunge dip

1. The acaricide concentration needs to be maintained at the recommended concentration to ensure the treatment is effective.

   To achieve this:

   - The capacity of the dip should be accurately calibrated. This ensures the correct ratio of acaricide and water are added when replenishing the solution.
   - The dip volume should be monitored on a regular basis during a dipping session and throughout the tick season.

- The dip should be replenished as required to minimise the effect of stripping. Most chemical labels have recommendations for topping up intervals and these recommendations should be followed.

- When dipping large numbers of cattle these recommendations may be difficult to achieve however a dip should not be allowed to drop by more than 20% of maximum working level, unless indicated by the product label before being replenished.

- The amount of chemical added will be calculated based on the volume of water added.

- Water should be added to offset the loss of water through evaporation.

- In the event of flooding, excess water should be pumped out to the last known finishing level and a sample for analysis should be taken immediately.

- Dip samples should be taken on a regular basis depending on circumstances. Factors to consider:

    - Dips in regular use during the tick season should be sampled every 30 days.

    - A dip sample should be taken during the last use if it is known the dip will be out of use for a period of time. This will enable appropriate levels of chemical and stabilisers to be maintained during periods of non-use.

    - Dips that have not been in recent use should submit a sample for analysis within 30 days prior to use for complying with the RMR.

- Dip sample results are expressed as a percentage. These calculations have been made after considering the active constituent and the recommended rates of use (e.g. if you mix the Active constituent Amitraz 500g/kg at the charging rate of 500g of product to 1000 litres of water you will achieve a recommended concentration of 0.025%).

- Results within 10% under or above the recommended concentrations are considered satisfactory and no corrections are necessary. Any topping up should be at the recommended rate.

- The chemical concentration of the dip should be adjusted as soon as possible after receiving an analysis result. Results that differ by +/- 30% from recommended concentration should be treated cautiously - partial adjustment is recommended pending results of a further sample.

- The volume of the dip should be recorded before and after each day of dipping and should always be measured at the same point.

- The dip, sump, crush, draining pen and surrounding area should be kept clean to prevent pollution of the dip.

- The acaricide should be measured accurately and premixed in water before adding to the dip. Newly added chemical should be stirred as thoroughly as possible by mechanical methods prior to dipping cattle. This will avoid the first few stirrers being heavily coated in highly concentrated chemical.

2. The following records should be kept to demonstrate best practise dip management:

- date of activity

- number and species of carriers dipped

- volume of dipping fluid at beginning of day

    - prior to any topping up, replenishment or dipping activities are undertaken

- volume of dipping fluid at completion of dipping

- loss of water through evaporation or excess water entering the dip through flooding
- volume of water added for evaporation loss (if any)
- volume of water removed to compensate for flooding (if any)
- volume of water and acaricide added for topping up
- chemical used
    - batch number
    - expiry dates
- The MSDS for the chemical being used should be readily available
- laboratory results of samples submitted.

The following dip management processes should be followed to demonstrate best practise methods are being achieved, and label requirements and RMRs are being met:

- The plug between the dip and the sump or draining pen should be removed prior to dipping and replaced after dipping to prevent flooding.
- Adequate stirring should be undertaken prior to dipping carriers. Stirring can be done either mechanically by a pump, or by dipping a number of carriers (20 to 50 adult animals or equivalent number of younger animals, see label recommendations). Any carriers used as stirrers must be re-dipped.
- Mechanical stirrers should be calibrated regularly to ensure dip is stirred correctly.
- Over-heated or stressed carriers should not be dipped.
- Large animals such as bulls should be dipped separately to avoid them jumping onto smaller animals.
- Calves should be managed carefully. If dipping them with adults, ensure they enter the dip vat after the larger animal and not immediately prior to the larger animals. This allows them to swim behind the large animals.
- Speed and frequency of carriers entering the dip should be monitored and regulated to prevent accidents and ensure the entire beast, including the head and ears are wet.

Hand spraying

While spraying of livestock is acceptable it should be recognised that there are certain limitations on this method.

Hand spraying may only be used to treat a high-risk tick carrier if one of the following conditions are met.

- The carrier is able to be led and can be tied up during treatment.
- Small numbers of carriers require treatment when a plunge dip cannot be adequately stirred.
- Small numbers of carriers with wide sets of horns (e.g. longhorn or buffalo) are presented, and safe entry into a plunge dip cannot be ensured.

Complete coverage of all skin surfaces of the animals is usually best achieved in a small yard. This allows the animals to move around and makes access to hard to get at areas (e.g. behind point of elbow) much more achievable.

If spraying in the crush you should allow sufficient room for the animal to move backwards and forwards in the crush to allow it to expose hard to access areas.

It is very difficult to spray large numbers of livestock effectively and safely. Spraying mob sizes larger than 11 head should be avoided.

If these conditions cannot be met the owner will need to seek access to alternative treatment options which may include travelling to a clearing facility.

1. Prepare and maintain the recommended concentration of acaricide in the spray unit by ensuring:

    - the total capacity of the spray tank will need to be accurately measured so that the correct ratio by volume of acaricide and water are added.

    - the spray tank will need to be calibrated so that the amount of acaricide and water prepared is correct to complete the treatment.

    - the acaricide is measured accurately before being added to the water in the spray tank.

2. Spray units should be maintained as follows:

    - Spray tank, hoses and hand piece should be kept in good working order. There should be no leaks from the hand piece, hoses or tank.

    - The spray unit should deliver a low-pressure high-volume output capable of delivering a coarse spray. The hand piece should be able to be adjusted to control the required flow dependant on the situation.

    - The acaricide solution should be stirred prior to spraying cattle tick carriers. Stirring can be done mechanically by using the hand piece to recirculate the acaricide back into the spray tank.

3. The following records should be kept to demonstrate best practise spray methods:

    - date of activity

    - volume of water and acaricide added

    - volume of spraying fluid at start of spraying

    - volume of spraying fluid at end of spraying

    - number and species of carriers sprayed.

The following spraying processes should be followed to demonstrate best practise methods are being achieved, and label requirements and RMRs are being met:

- Start by aiming the nozzle at the animal's feet and bring the spray on as a fine spray at first, gradually increasing the volume output.

- Move up the front leg to the top line of the animal. Work the acaricide into the coat of the animal by directing the spray horizontally across the body, leaving the head dry, until the underline is reached.

- Inspect the animal to ensure that the rump and tail have been thoroughly sprayed.

- Inspect under the front shoulder, the udder and the flank to ensure these areas have been thoroughly sprayed.
- Ensure the mane of equines has been thoroughly sprayed.
- Repeat the above steps on the opposite side of the animal.
- Commence spraying the head by standing either directly in front or slightly to the side of the animal. This should be first done as a fine spray, gradually increasing the volume output to thoroughly wet the area.
- Inspect the ears and under the jaw to ensure these areas have been thoroughly sprayed.
- Complete a thorough visual inspection of the whole animal to ensure no areas have been left untreated. Watch as the animal moves to ensure all hard to access areas have been treated.

Injectable or pour-on products (high-risk carriers only)

1. Ensure that the weight of the cattle tick carrier can be accurately measured as follows:
    - The weight of the carrier receiving the treatment will need to be accurately measured using digital livestock scales.
    - For large mobs it is acceptable to visually assess the heaviest carrier in the mob and only weigh that animal. If this method is used, the dose rate must be for the heaviest carrier in the mob; or
    - Draft the carriers into mobs that reflect different weight classes. The dose rate is then determined for the heaviest carrier in each class.
2. Maintain application equipment in the following way:
    - The applicator should be an automatic applicator that is able to be accurately calibrated.
    - Hoses should be maintained in good working order. There should be no leaks from the applicator or hoses.
    - The applicator and the application method must comply with the label directions – this is particularly important when using pour-ons, as some endectocides must be applied in a specific way. For example, in narrow strips or fanned.
    - The applicator needs to be calibrated prior to every use to ensure the required dose is being dispensed. To calibrate, a minimum of two doses are to be dispensed into a measuring container to verify the correct dose (by volume) is being administered.
    - The barrel of the applicator should be inspected regularly to ensure it is filling completely between each dose dispensed.
3. Apply the chemical as follows:
    - If using an injectable endectocide:
        - Follow the manufacturer's recommendation of applying the treatment subcutaneously.
        - Needles should be either 16 gauge or 18 gauge and no longer than 15mm and must be replaced regularly when administering injectables.
    - If using a pour-on endectocide:
        - Apply steady pressure to the trigger of the applicator to minimise excessive splashing of chemical off the animal's back during treatment.
        - Follow the manufacturer recommendation and apply the pour-on topically along the mid-line of the back from the withers to the tail head of the carrier.

- Do not apply the pour-on to wet carriers.
- Do not treat if heavy rain is threatening nor expose livestock to yard sprinklers in use.

4. The following records should be kept to demonstrate best practise:

- endectocide name
- endectocide application method
- expiry date of endectocide
- batch number of endectocide
- weight range of cattle tick carriers being treated
- dosage rate applied to the cattle tick carrier.

Treatment and re-treatment intervals

If a carrier has been found tick infested, the owner may choose to treat the animal with further chemical treatments to enable the RMRs to be met on the next inspection.

It is important to note that all chemicals have a label requirement for retreatment intervals. Failure to comply with these label requirements could result in a breach of the *Chemical Usage (Agricultural and Veterinary) Control Act 1988.*

The Australian Pesticides and Veterinary Medicines Authority permits the use of the following chemicals at intervals less than label requirements only when used for the purpose of complying with RMRs as required in the Queensland Biosecurity Manual:

- Registered wettable powder products containing 500g/kg Amitraz as the active constituent.
- Registered emulsifiable concentrate products containing 125g/L Amitraz as the active constituent.
- Bayticol Cattle Dip and Spray, containing 75.00 g/L Flumethrin as the only active constituent.

This means these chemicals may be used at 4-7 day intervals if being used for the chemical treatments required to comply with a risk minimisation requirement.

All other chemicals including pour-ons and injectables must only be used at the recommended label requirement.

It will be important for the accredited certifier to know what chemical the owner/person in charge may have used on their animals. The owner declaration will assist the accredited certifier.

Chemicals have different modes of actions and different times to reach maximum efficacy and before they deplete to levels that will not be affecting the tick.

- Animals treated with a dip or spray should not be presented any earlier than 4 days after their final treatment.
- Animals treated with pour-on or injectables should not be presented any earlier than 6 days after their final treatment.

The following timeframes are considered best practice timeframes for the time from the chemical treatment to being presented for inspection:

- between 4 days (96 hours) and 7 days (168 hours) following treatment with an acaricide; or
- between 6 days (144 hours) and 9 days (216 hours) following treatment with an endectocide.

Multiple treatments at intervals shorter than 4 days can affect the ability of the chemical to kill the tick and can result in ticks continuing to be found.

Definitions

acaricide – an externally applied chemical with a label claim that effectively controls all life cycle stages of the cattle tick.

chemicals – acaricides or endectocides used for treatment of cattle tick carriers by plunge dipping, spraying, pour-on or injectable application that include a label claim for the control of cattle ticks.

dip or dipping – means to completely immerse a cattle tick carrier in an acaricide in a vat, bath or apparatus of any kind used in connection with the dipping of animals.

endectocide - an anti-parasitic chemical that is effective against internal and external parasites.

hand-spray or **spray** – means to thoroughly wet the entire skin of a cattle tick carrier with an effective acaricide using spray equipment that delivers a low-pressure high-volume output, either through a 12V or petrol/diesel driven motor.

injectable – means an effective external-parasite destroying endectocide which is applied to a cattle tick carrier subcutaneously (by injecting under the skin).

owner treatment – a treatment using one of the methods specified in this procedure, applied by a person moving a cattle tick carrier, to meet the risk minimisation requirements of the Queensland Biosecurity Manual.

pour-on – means an effective external-parasite destroying endectocide which is applied to a cattle tick carrier topically along the mid-line of the back, in a narrow strip between the withers and butt of the tail or as per manufacturer's recommendations.

resistance – means a chemical treatment is no longer effective in killing cattle tick.

dip sample – sample of the dip sent for laboratory analysis to determine the acaricide concentration.

Author	Name:	Malcolm MacLeod
	Title:	Principal Policy Officer
Contributing author/s	Name:	David McNab
	Title:	A/Principal Policy Officer
Endorsed By		Rowan Lambourne
		Operations Manager – Animal Biosecurity and Welfare
Approved by	Name:	Allison Crook
	Title:	General Manager - Animal Biosecurity and Welfare

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