



## agriculture & environmental affairs

Department:  
Agriculture  
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PROVINCE OF KWAZULU-NATAL

### **A NEW LOOK AT TICK CONTROL IN KWAZULU-NATAL**

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#### **Limitations of chemical tick control**

Dipping of cattle is a routine practice in many parts of South Africa. The objective of dipping is to minimize production losses through ticks and flies, and the diseases associated with these pests. Dips are, however, not without their limitations, as indicated by the following factors:

- After trying for 100 years to eradicate ticks by chemical control, tick numbers remain high and stock losses caused by tick-borne diseases are still common.
- Increasingly, ticks are resistant to dips.
- Many of the chemicals used for tick control are toxic and have the potential to contaminate the environment.
- Chemical tick control is costly.
- The injudicious use of dips has resulted in an increased susceptibility to tick-borne diseases in many of our local cattle populations, including indigenous cattle which were previously renowned for their tolerance of tick-borne diseases.
- Research has shown that walking animals to distant dipping places as well as the dipping process itself and the physical effect of some dips, are stressful and result in animal production losses.

Clearly, dipping is not the ultimate answer and the sustainability of this practice is questionable.

#### **Integrated tick control - underlying principles**

The ability of certain cattle to resist and even repel ticks, is well-known. Indigenous breeds like the Nguni have survived locally for hundreds of years without chemical tick control. Their inbred ability to resist ticks is a part of the reason for their survival. However, associated with, but not always linked to their tick resistance, is a tolerance of tick-borne diseases, mainly gallsickness, red water and heart water.



Recent research indicates that immunity to tick-borne diseases disappears if cattle are not challenged regularly, and once immunity is lost, it is very difficult to regain.

Although the complete elimination of dipping is a desirable objective, practical experience has shown that a certain amount of chemical tick control is necessary. Combining chemical control with the exploitation of natural resistance, is called integrated tick control. In this respect, the greatest challenge facing all beef farmers is to develop a dipping regime which will allow an adequate challenge in livestock so as to maintain a natural immunity against tick-borne diseases, while preventing financial losses associated with tick infestations. The solution to this problem is complicated by the fact that tick-borne diseases are carried by ticks which have different life cycles and which are often all present on the same farm at the same time. Thus red water is carried by the blue tick, a one-host tick whose numbers are quickly reduced by frequent dipping, while heart water is carried by the bont tick, a three-host tick which requires more frequent dipping for effective control. Season is also a consideration because warm weather or rain can create favorable conditions for a tick population to increase, whereas cold can cause a sharp drop in tick activity. A further complicating factor is that ticks are carried from one area to another by birds, rabbits, mice, rats and other game and can be brought onto a farm from some distance away.

### **Integrated tick control - practical considerations**

Implementation of integrated tick control involves, amongst other considerations, a change from high intensity to low intensity dipping. Particular care is necessary to minimize livestock losses during the change-over period and in this respect the use of vaccines to introduce immunity against tick-borne diseases in susceptible cattle populations is useful.

The success of dipping in an integrated tick control programme depends on the dipping regime being flexible. Managers must increase or reduce dipping rates as weather conditions change and tick populations fluctuate, and in this context regular tick counts are most useful. When the count increases above a specified level, the herd is dipped, otherwise no dipping takes place. In the case of blue ticks, once more than eight engorged ticks can be seen on one side of any mature cow in a herd, that whole herd must be dipped. With the bont tick, however, such a counting system will not work, and an approach based on experience, with the objective of minimizing abscess formation, is necessary. With certain ticks, the brown ear tick for example, dipping in early spring or late winter is best to prevent a tick population explosion during the subsequent summer. At times, a farmer must accept a certain amount of tick damage in order to retain immunity against tick-borne diseases and to retain the ability of the relevant cattle to repel ticks. Allowing tick challenge during spring, when nymphs and immature ticks are more common, is advisable, but not in autumn when the presence of a greater proportion of mature ticks results in more severe

tick damage. Another factor which warrants consideration is that in autumn there appears to be a higher incidence of tick-borne diseases.

The following are important steps in an integrated tick management system:

- Choose a breed of cattle adapted to local disease conditions, and select for hardiness against ticks within the cattle on a farm.
- Use strategic dipping. In general, this involves dipping when tick loads are high. However, even when tick loads are relatively low, if weather conditions are favorable for ticks, dipping is necessary to prevent a tick population explosion.
- Limit chemical tick control to a minimum.
- Establish endemic stability for tick diseases common in the area. It is becoming clear that farming with ticks and retaining a tick population which regularly infects (challenges) a herd is safer than living with a susceptible herd of cattle where any breakdown of chemical control results in major production losses.
- More frequent dipping is necessary with livestock in poor condition because the immune response is less effective when nutritional levels are low.
- Refrain from dipping calves as much as possible until they are at least six months old. This is the key to integrated tick control. Once premunity is firmly established, regular tick challenge will ensure that immunity against both ticks and tick-borne diseases is maintained and the high risk associated with keeping susceptible cattle is removed.

