

Epidemiology and treatment of spinose ear ticks on a California dairy

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Introduction

While not widely reported on dairies, spinose ear ticks may be more prevalent in the Southwest US dairy industry than previously thought. The dairy where this research was conducted had a serious infestation and the owner was looking for guidance in the control or eradication of this parasite due to the irritation the ticks were causing the cows. The dairy owner felt that the ticks were causing a decrease in milk production and an increased culling risk.

The objective of this research was to analyze various treatment options to determine the most effective method to control spinose ear ticks through 4 studies. Study 1 examined the efficacy of acaricides to determine the most effective treatment option. Study 2 focused on locating where the adult ticks were living and reproducing within the freestall bedding. Study 3 analyzed how soon cows became infested after being moved to the freestall barn from the dry lots. Study 4 looked at the efficacy of the CyLence Ultra® ear tags in relation to infestation severity.

Materials and Methods

Four separate experiments were conducted:

1) Nymph stage ticks harvested from the ears of cows were subjected to 1 of 3 treatments (control, mineral oil, and CyLence Ultra ear tag piece). The ticks were observed periodically and recorded as dead or alive.

2) In order to determine where adult ticks are living, and thus laying eggs and supplying the next generation of ticks, 1-liter bedding samples from 4 locations in 30 freestalls were sifted through a 4.75 mm screen.

3) In order to describe the pattern of infestation, primiparous animals in the fresh pen were examined for ticks. Infestation was recorded on a 0-2 scale.

4) CyLence Ultra ear tags were inserted in the ears of 5- primiparous animals before calving. Cows were examined at 28-54 days after calving and recorded on a 0-2 scale.

Results

1) All oil treated ticks, 74% of ear-tag treated ticks, and 8% of control ticks were dead by 24 hours. The ear tag treatment incapacitated the ticks immediately. The time-to-

death rate was different between all groups ($P < 0.0001$). The ticks treated with mineral oil or ear tags had an 87.4 or 7.1 RR, respectively, for time-to-death relative to control ticks ($P < 0.0001$).

2) Adult ticks were found in 20% of the samples in the undisturbed area in the front of the stall. No ticks were found in the other 3 freestall areas ($P < 0.001$).

3) Animals on this dairy freshen with no ticks, but by several weeks fresh are close to 100% infested. This information implies that the reservoir for adults/eggs/larvae is in the freestalls. The proportion of cows infested was positively associated with days in lactation ($P < 0.0001$). Infestation during the first week after calving was 12%, 63% in the second week, and by the fifth week 100% of the cows are infested.

4) The treated cows had no ticks and 25% of the control cows had ticks ($P = 0.0114$).

Significance

Three conclusions can be made from these experiments. First, mineral oil and CyLence Ultra ear tags are both effective in-vitro methods for controlling spinose ear ticks. The mineral oil killed the ticks the fastest; however, it may not be the best long term treatment option as it may fall out of the ear and stop working more quickly. Thus, CyLence Ultra ear tags may be a more effective, long-term control method. Second, the area in which the adult ticks are reproducing is in the protected area of the freestall that does not get raked; consequently, our recommendation was for the dairyman to modify his raking method to include this area of the freestall and modify the design of the freestall to eliminate the undisturbed area. Third, cows became infested with ticks after moving to the freestall barn, leading to the conclusion that the ticks are living in the freestall bedding and not the dry lots. The identification of this pattern has led to the conclusion that control efforts can be focused within the freestalls.