



# Technical White Paper



## Fly control: An important consideration to standard mastitis management practices for improving udder health and milk quality

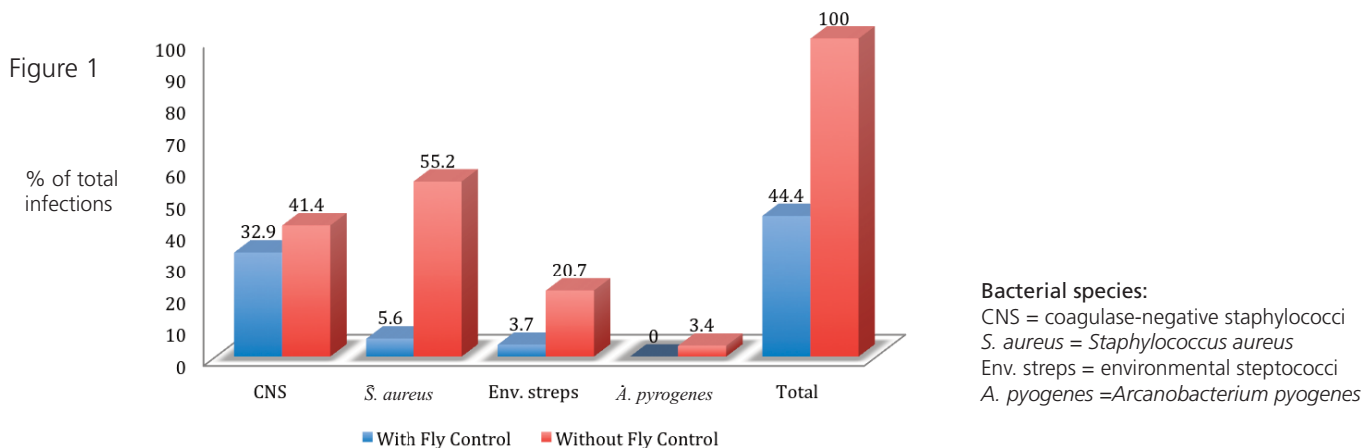
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For the past 50 years, the 5-point plan for mastitis control has served as the framework used by dairymen to prevent and treat intramammary infections in their dairy cows. This plan includes 1) teat dipping, 2) dry cow therapy, 3) adequate milking machine function, 4) proper milking hygiene, and 5) treatment of clinical cases.

Over the years, additions have been added to this basic plan, such as proper nutrition, vaccination, record keeping, breeding, etc. However, one potential mastitis management practice that has been overlooked is fly control, and with the new somatic cell count (SCC) legal limit of 400,000/ml looming in the very near future, every attempt to reduce animal stress and the development of new intramammary infections is warranted, especially during the hot summer months when fly populations are at their peak.

Historically, the major association between flies and intramammary infections has been with the development of summer mastitis, in which biting flies are the proven vector. Summer mastitis is an isolated seasonal problem primarily in July, August, and September in heifers and dry cows in Europe. In the US, fly control is used to reduce these insect pests on farm premises, and subsequently reduce animal stress, but its application as an adjunct management practice for preventing new cases of mastitis and reducing SCC has not really been considered or embraced by producers.

Surprisingly, very little research has been conducted on the relationship between mastitis in adult cows and fly control; most studies in this regard have been carried out in dairy heifers. An initial survey performed at Louisiana State University showed that prevalence of mastitis in bred heifers was significantly lower in dairy herds that used some form of fly control for their lactating cows, dry cows, and heifers compared with herds applying no fly control (Fig. 1). The greatest reductions were in numbers of *Staphylococcus aureus* and the environmental streptococci, both major mastitis pathogens in adult cows associated with elevations in SCC.



Results of this survey also demonstrated that bred heifers having teats with bite lesions and scabs caused by the blood-sucking horn fly (*Haematobia irritans*), exhibited a 70% frequency of intramammary infection compared with a 40% frequency in heifers with normal teats. Such infections are always associated with elevated SCC in excess of 5 million/ml in these young animals. See Fig. 2 below illustrating horn flies and lesions on heifer teats.

Figure 2



Since that first survey, LSU researchers have proven through DNA studies that the horn fly is not only responsible for teat lesions on heifers, but is indeed a vector in the transmission of mastitis-causing bacteria, such as *S. aureus*, from heifer to heifer. Such mastitic heifers serve as sources of intramammary infections for transmission to the entire lactating and dry herd. Once established, other flies such as house and stable flies can act as a vector to transfer the bacteria.

Once it was established that the horn fly was a vector in the transmission of mastitis-causing bacteria, the next step was to develop management practices to reduce flies and lower the prevalence of intramammary infections. Insecticide-impregnated tags placed on the tail switch in close proximity to the udder during the spring and summer months were successful in reducing horn fly populations by 60% as well as the incidence of mastitis during the first 2 mo after placement. In heifers with tail tags, mastitis incidence increased from 8.6 to 15% (1.7-fold increase), while in controls, incidence increased from 17.1 to 52.4% (3.1-fold increase). As observed above, infections were associated with marked elevations in SCC. However, after 2 months, tags fell off and replacing them was impractical from a management standpoint. Lastly, the use of an insecticidal pour-on every 2 wk for 6 wk followed by treatment with insecticidal ear tags reduced fly populations and decreased the incidence of new *S. aureus* by 83% during a 6-mo trial in heifers during the warm season in Louisiana. Mastitis in heifers caused by *S. aureus* was associated with SCC in excess of 10 million/ml. Whether it is ear tags, pour-ons, sprays or insect growth regulators, when combined with a proper integrated pest management program, flies can be controlled and mastitis reduced.

These studies demonstrate that, during the warm and humid months of the year, horn flies do serve as vectors in the transmission of heifer mastitis, which is associated with elevated SCC in these young dairy animals. Although research has not been conducted to show this same association in lactating and dry adult cows, it is assumed that fly populations play some role in the elevation of mastitis and SCC observed in the hot summer months. And, with the proposed reduction in the SCC legal limit to 400,000/ml, and in light of the fact that milk buyers are imposing their own limits, some as low as 250,000/ml, it is imperative that dairymen utilize all possible means to prevent new cases of mastitis and their associated SCC. **A simple fly control program can serve as an important adjunct to the basic 5-point plan of mastitis control and assist dairymen in lowering their bulk tank SCC and earn quality premiums for their product.**

