

# Prevalence of Antimicrobial Resistance and Associated Risk Factors on Ontario Sheep Farms

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Antimicrobial resistance (AMR) is a large concern for both sheep health and from a public health standpoint. Forty-nine Ontario sheep flocks (including one feedlot) maintained treatment records for a 12 month study period between 2006 and 2008. At the initial and final visits, pooled fecal samples were collected from lambs (nursing, replacement and market) and adult ewes. The samples were cultured for *E. coli*, *Salmonella*, and *Campylobacter* spp. and positive isolates were tested for evidence of AMR. Statistical analyses were run to assess potential associations between antimicrobial use or management risk factors and tetracycline resistance.

All fecal samples collected from 48 flocks were positive for *E. coli* and overall a low prevalence of resistance was seen. The prevalence of *Salmonella* was very low and no resistance was detected. *Campylobacter* was isolated from more than half of the fecal samples collected. Majority were *Campylobacter jejuni* while a few were *C. coli*, and *C. lari*. The *Campylobacter* displayed a low prevalence of resistance to the antimicrobials tested. In both *E. coli* and *Campylobacter*, tetracycline resistance was the most prevalent.

Statistical results indicated using sulfonamides (or sulfonamide combinations) and / or tetracycline in the feed/water was associated with increased tetracycline resistance in the *E. coli*. Overall the findings are important to the sheep industry as resistance found in this study is lower than that seen in other livestock industries. We recommend using antimicrobials only when necessary and to work with flock veterinarians to ensure antimicrobial overuse does not result in increased AMR.