Bovine enteric viruses can be used as indicators for animal fecal contamination; however, no quantitative real time PCR (qPCR) assay has been reported for detecting bovine adenoviruses (BAdV). In this study, we developed a duplex FRET assay targeting BAdV serotypes 1, 2 and a taqman assay targeting BAdV serotypes 4 to 8. The detection limit of the duplex FRET assay is 25 and 10 genomic equivalent copies (GEC) of BAdV-1 and 2, respectively, and the detection limit of the taqman assay is 10 GEC of BAdV-4. The specificity testing showed neither of these assays can detect human adenoviruses (HuAdV) nor other animal adenoviruses. By using these two assays, BAdVs were successfully identified in dairy manure and farm tile drainage water. The concentrations of BAdV and coliphage in manure samples were comparable. The sequencing results confirmed the presence of BAdV in the tested environmental samples and phylogenetic analysis indicated that BAdV 2 and 4 were the most prevalent serotypes in all manure samples tested in this study.

The qPCR assays developed in this study could be used to detect and quantify BAdV in environmental samples. The high levels of BAdV in manure indicates the potential of using BAdVs as indicators of animal fecal pollution.

### References