

Potential Risk of *Cryptosporidium* and *Giardia* Spp. in Farm Animals in South Vietnam -- Hazard to Area Wide Integration

Corey Watts^a, Hussni O. Mohamed^a, Hien Tran^b, David Ward^c

^aDepartment of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853, USA.

^bNational University Agriculture and Forestry, HCMC, Vietnam

^cFood and Agriculture Organization, Rome, Italy

Cryptosporidium spp. is one of the most significant waterborne pathogens causing enterocolitis in humans judging by the frequency of reported outbreaks, the number of affected people during these episodes, the ubiquitous presence of *Cryptosporidium* oocysts in surface waters and the ineffectiveness of the commonly used water-treatment strategies. *Giardia* spp. is the most common protozoal intestinal parasite of humans isolated worldwide. This amitochondriate diplomonad is often zoonotic and can be found in companion animals, livestock and wildlife. Fecal pathogens affecting both animals and humans are markers of environmental contamination, fecal pollution for food commodities, public health risks and potential reduced livestock productivity.

We carried out a cross-sectional study to determine the prevalence of *Cryptosporidium parvum* and *Giardia* spp. in farm animals in southern Vietnam. This study was conducted as a part of our effort to explore the potential risk to human health in an area wide integration program that incorporate animal and crop production. The risk was perceived from the use of animal manure as fertilizer in crop production operation where the manure might contain these zoonotic protozoa. Fecal samples were collected from dairy animals, swine, and buffalo in four provinces in southern Vietnam and in the district of Ho Chi Minh City. Concentrated fecal samples were examined for the presence of these protozoans using a direct immunofluorescent detection procedure. Data on factors hypothesized to associate with the risk of occurrence of these protozoans were collected and evaluated.

Both *Cryptosporidium parvum* and *Giardia* spp. were prevalent among cattle and swine in the five geographic areas. The overall prevalence of *C. parvum* in the study population was higher than *Giardia* spp. (10% vs. 6.9%, respectively). None of the protozoan was isolated from buffalo. The data suggested that the use of manure from these farm animals in crop production has a potential to put human at risk of cryptosporidiosis and giardiasis.