

Reduction of *E. Coli* O157:H7 contamination in manure using bacteriophages

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Manure produced from dairy cattle makes an excellent fertilizer and is a valuable commodity to the farmer. However, if pathogens such as *E. coli* O157:H7 or *Salmonella* are present in this manure, its use can have significant negative impact on health and the environment in the surrounding community. When spread onto the fields, the pathogens can contaminate the crop (especially uncooked vegetables used in salads) causing food borne illnesses and the pathogens can get into our source waters by percolation through the soil or due to run offs during heavy rains. In the program



presented in this proposal, we plan to reduce these pathogens in manure by treating it with bacteriophages before being spread on soil.

Bacteriophages are naturally occurring bacterial viruses that infect and kill bacteria. They are highly specific to the bacterial species that they target and do not infect other organisms.

Many of the key pathogens are bacteria and are themselves subject to infection with specialized viruses (bacteriophages), which lyse the bacterial cell. The phage are host-specific and could be fed to animals carrying specific pathogens in the gut or be used to treat bulk manure

in storage. The treatment of dairy cattle and liquid dairy manure with phage successfully eliminated *E. coli* O157:H7 from fresh and stored manure respectively. Two weeks were required to eliminate the pathogen from 7 t of manure. The phage treatment had no effect on the quality of either milk or meat from treated animals. Current studies are examining the fate of phage from treated manure after land application.