ON-FARM RESEARCH DEVELOPS NOVEL METHOD FOR CHARACTERIZING THE IMPACT OF EQUINE MANURE MANAGEMENT PRACTICES ON WATER QUALITY

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Background and Objectives: Eutrophication of waterways from nitrogen and phosphorus inputs result in impairments to Florida's water resources. Mitigating nutrient loading to ground and surface waters through proper management of horse manure and stall waste can help protect water quality. One way to mitigate nutrient loading is through effective composting of waste material. Unfortunately, research characterizing the relationship between on-farm equine manure management practices, specifically composting versus stockpiling of stall waste, and water quality is limited. The objective of the current study was to develop methodologies for in-situ characterization of the nutrient profile of ground and surface water runoff from stockpiled equine waste compared to waste that has been effectively composted. Three cooperators were established for this project, one small equine farm that constructed a 3-bin compost system, a commercial equine facility that built a large-scale covered structure to compost material under, and a small horse farm who constructed a one-bin system to stockpile manure with no compost management.

Methods: Researchers partnered with three equine facilities in Marion County, Florida to install collection equipment at manure handling sites. One small equine farm that constructed a 3-bin compost system, a commercial equine facility that built a large-scale covered structure to compost material under, and a small horse farm who constructed a one-bin system to stockpile manure with no compost management.

#-bin compost system is being actively managed and water quality data is being obtained via lysimeters placed upstream and downstream of the structure as well as collection trenches in front of each bin.

Commercial, prefabricated compost structure that is managed by windrowing manure. A retention pond was dug to the east of the structure to catch any possible runoff.

Water samples are obtained from each site with below ground lysimeters, then the samples are analyzed to characterize nutrients.

Results: Through the innovative use of lysimeters and water runoff collection trenches, researchers were able to develop a cost-effective, easily deployable, and readily adaptable method for characterizing on-farm nutrient losses in leachate and surface runoff from manure storage sites. The methods employed in this study will facilitate data collection in the field that will help guide Best Management Practices for both producers and decision makers. By quantifying the impact that different manure management practices have on freshwater systems, Extension agents will be better able to make science-based recommendations for proper manure handling.