

Center for Agricultural and Rural Sustainability

Faculty Spotlight

September 2015

Dirk Philipp

Associate Professor, Department of Animal Science

Project Title: Cattle diet effects on nutrient concentrations in runoff from fecal patches

Project Description: High use areas in cattle pastures such as feeding or watering areas are of concern in regards to nutrient runoff. Dr. Dirk Philipp's recently presented results of a project that evaluated the effects of specialized cattle diets on nutrient concentrations in runoff. His project builds upon results of a previous study in which cattle were fed one of four diets including bermudagrass hay, dried distillers grain, soybean hulls, and an iso-energetic mix of both. Fecal matter from this prior study was collected and frozen for use in this study. The fecal matter was applied to plots in a bermudagrass pasture at the North Farm in Fayetteville. Rain was applied until runoff occurred immediately after fecal application, two days after application and then after seven days after application. Runoff at each application was sampled and analyzed for P, N and Total Suspended Solids (TSS). Results of this study indicate that runoff nutrient concentration closely follows those of the corresponding feces and diet, and may provide an indication of runoff nutrient load in heavy-use areas. These nutrient losses are not indicative of possible edge-of-field N and P losses, however. Project results can be used to help minimize negative environmental impacts in livestock agriculture while maximizing production efficiency, manage environmental quality in livestock agriculture, and manage feeding strategies for cattle with imported diets.



Collaborators: Several other scientists were involved with this project including Ken Coffey, Andrew Sharpley, Mary Savin, Robert Rhein, and Tarra Simmons. In other projects Dirk frequently collaborates with Mike Popp, John Jennings, Kenny Simon as well as faculty and staff at UA Monticello including Kelly Bryant, Paul Francis, Greg Montgomery, and Jason Cater.

Project Timeline: This project was conducted over a period of two month last year and was presented at the Arkansas Water Resource conference this past summer.

Tools and Methods: Some of the tools and equipment used in this project include rain shelter and runoff plots lent by Andrew Sharpley, also pumps and barrel samples that were used to calculate run off volume. Water samples were analyzed at the Arkansas Water Resource Center.

Needs for collaborators for future projects: Dirk is always keen to work with collaborators who are interested in an interdisciplinary approach to projects. His projects range from basic to complex issues that contribute to the larger sustainability picture in agriculture. In particular, Dirk is interested in linking agronomic research with economics and ecosystems services such as how a practice can be of benefit to the farm operation as well as the environment and connecting the economic value of those benefits.

For more information: Dirk's departmental webpage, <http://animalscience.uark.edu/1386.php> or dphilipp@uark.edu.

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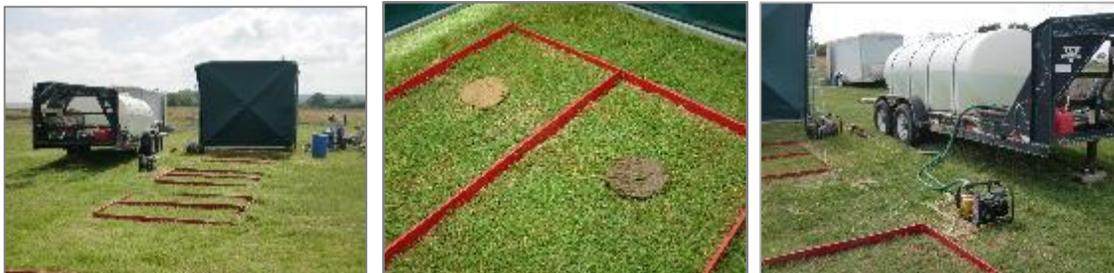


Photo credit: Dirk Philipp. From L-R, runoff plots with rain application shelter, fecal matter in plots and watering tank.