Impact of Poultry Litter Application on Yield and Quality of Alfalfa Grown in Mississippi

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Demand for high quality forages has increased in the southeastern U.S. due to the desire to improve livestock productivity and grazing efficiency. Alfalfa (*Medicago sativa* L.) is an ideal species that can be inserted into traditional haying and grazing systems to enhance forage quality. Furthermore, in an era of high-priced protein and energy supplements, the higher quality of alfalfa and alfalfa-grass mixtures is of significant value to the beef and dairy industry, along with other forage-based livestock producers. Poultry production was the top agricultural commodity in Mississippi for 2016, grossing nearly $2.3 billion in sales and ranking 5th in the nation. Poultry has been the leading commodity in Mississippi for 20 subsequent years, employing 28,000 workers, and generating $2.1 billion in wages and salaries. Poultry litter (a mixture of manure, feathers, and bedding material) is a valuable source of plant nutrients and organic matter that is of great interest to many livestock and row crop farm managers across Mississippi and remains the most sustainable option for disposal. Often times, poultry litter is the most economical, and most available source of fertilizer in Mississippi. As alfalfa acreage across Mississippi and the Deep South increases, information regarding fertility management in this crop will be crucial in helping new farmers produce an economically sustainable forage. This project seeks to bridge this knowledge gap by evaluating the impacts of poultry litter on alfalfa production in Mississippi. This project has the following two goals: 1) Determine the impact of poultry litter fertilization on forage yield, plant persistence, forage quality, yield components, and economic analysis in Mississippi; and 2) Implement an Extension and Outreach program to educate beef cattle producers and small and medium-sized dairies about the use of alfalfa in their production systems with a sustainable poultry litter nutrient management program.

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