

Title: Swine Manure Nutrient Fate and Pathogen Reduction for Midwestern Corn Production with Cover Crop Utilization - **NPB#15-095**

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Scientific Abstract

Cover crops are effective at reducing nitrogen and phosphorus loads in waters leaving agricultural fields. One concern with cover crops is the availability of nutrients to the cash crop because cover crops which scavenge nutrients tend to tie nutrients into organic forms, which are not immediately plant available. Most studies have looked at how cover crops interact commercial fertilizers in terms of performance, but limited data is available for how cover crops and manure interact and since manure tends to be higher in carbon it is more likely to have a slower transition from organic to plant available nutrient forms. This study found that a common cover crop, cereal rye was similarly effective at reducing nitrogen and nitrate in water drained from undisturbed soil columns treated with manure as it was from columns treated with urea. The cereal rye was also an effective scavenger of both nitrogen (~80 lb/acre) and phosphorous (~10 lb/acre). No significant differences were noted with the soil's nitrogen, phosphorous or organic carbon levels. Also, no significant differences were noted in chlorophyll meter readings or corn tissue nutrient levels. The cereal rye did not significantly influence corn yield in the soil columns, however yields were nominally lower (54, 56, 73 bushels/acre for cereal rye with manure, cereal rye with urea and manure without a cover crop, respectively).

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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