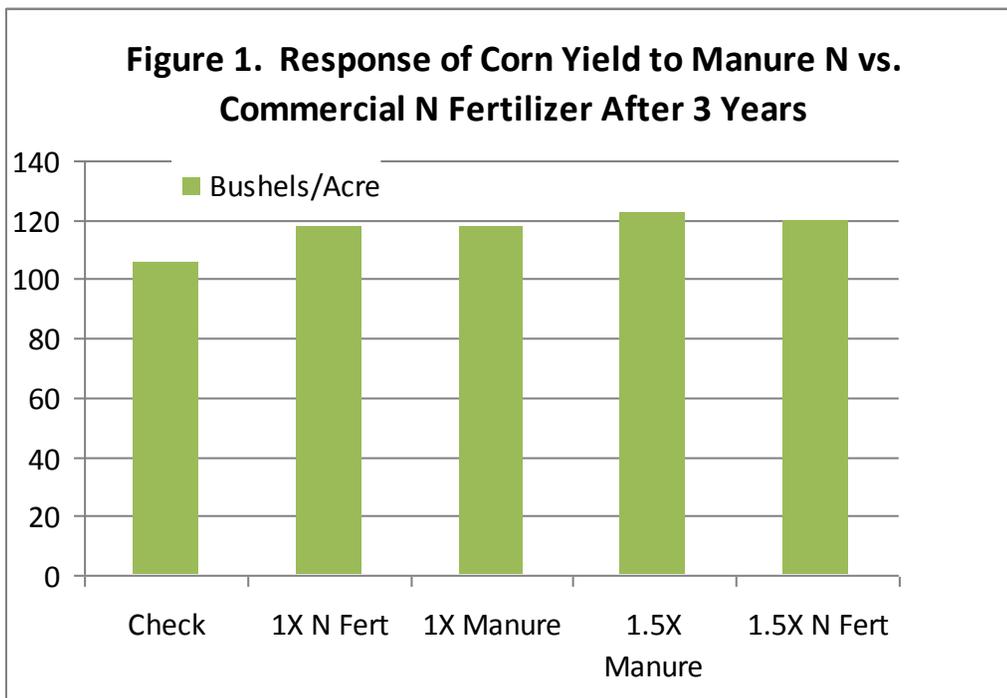


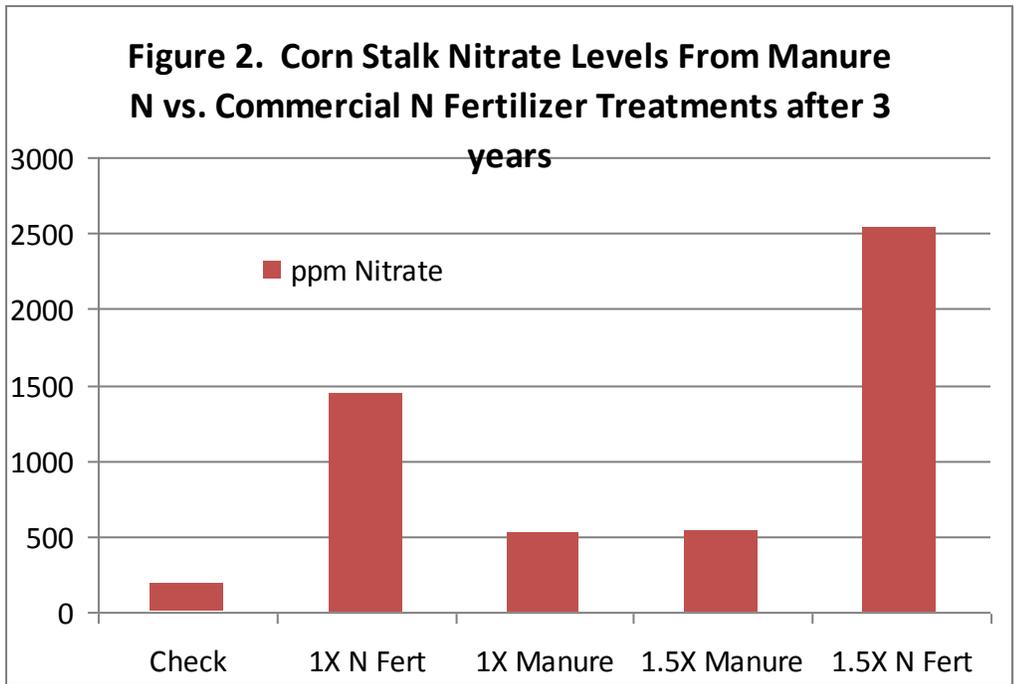
Corn Response to Manure and Commercial N Fertilizer

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Introduction and Response A major concern of crop producers is the lack of a consistent recommendation for the amount of N available in manure for crop uptake. To address this concern, a trial comparing corn yield response to manure nitrogen (N) and commercial N was initiated in 2005 and repeated for two years for a total of three years. The level of manure application treatments were calculated assuming a 60% release of the manure N for crop uptake. To test this release rate, a second manure treatment was applied assuming only 30% release of the manure N or an N rate at 1.5 times higher than the base rate. These manure rates were compared to commercial N at respective levels. To account for the added phosphorous (P) in manure, a commercial N treatment was applied with P equal to the manure P levels. Corn yields were determined as well as corn stalk nitrate tests for each fertility treatment.

Results The commercial N fertilizer treatment with added P was not different than the other treatments, therefore, the data is not shown. Figure 1 shows that corn yields among the treatments did not vary significantly except for the check treatment that received no fertilizer. Therefore, the 60% release of manure N recommendation was valid under the growing conditions of 2005, 2006 and 2007. However, the results presented in Figure 2 show that commercial N fertilizer is not used as efficiently as manure N leading to significantly higher levels of corn stalk nitrates. Corn stalk nitrate tests are a proven indicator of nitrogen use efficiency and determine if N was a yield limiting factor. The corn stalk nitrate levels shown in Figure 2 are not seen as limiting to corn yield except for the level of the check treatment. The level of corn stalk nitrate for the 1.5X commercial fertilizer N is at an excess level and is indicative of an over-application.





Conclusion Manure is a viable substitute for commercial N fertilizer and a 60% release rate of manure N is a correct recommendation. Manure N is utilized more efficiently by crops than commercial N fertilizer.