

FIELD ESTIMATE OF DAIRY MANURE NITROGEN AVAILABILITY TO POTATOES

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Abstract

Within Wisconsin, there is a distinct movement toward dairy herd expansion and consolidation of small farms. With the increase in manure production, these large dairies are considering various land and manure management arrangements with non-livestock farmers, such as potato producers. The purpose of this study is to evaluate several potato production issues resulting from such partnerships including the availability of dairy manure nutrients to potatoes. Nitrogen and phosphorus availability were evaluated in field experiments conducted in northeast Wisconsin using a moderate and a high liquid dairy manure rate (10,000 and 20,000 gal/acre) compared with results obtained from nitrogen or phosphate fertilizer applied at five rates (0 to 240 lbs/acre). Tuber yield and nitrogen uptake responses from the low rate of manure showed availability of about 20% of the applied manure N. Phosphorus availability was not measurable as P responses were minimal. The responses at the high rate of manure exceeded any obtained with the applied fertilizers. A companion study showed that the potatoes tended to yield better when all of the nutrients were supplied from manure than when an estimated equivalent amount was applied as fertilizer. Our preliminary data show yield, grade, and size advantages when manure was included in the system, and few other production problems were evident.

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