Forage Research Updates *Compiled and edited by Paul Peterson, University of Minnesota*

Wisconsin - Orchardgrass in Dairy Crop Rotation for Improved Manure Management

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Spreading dairy manure in short growing-season areas dominated by corn and alfalfa is a challenge. A longer crop rotation including grass forage ('ley', short-term crop) may provide an ecological/economical way to deal with manure throughout the growing season on some dairy farms while producing high-quality forage. Previous research has shown grasses to be very efficient capturing soil N, increasing P and K uptake and improving soil structure/organic matter levels.

The effects of including such a grass ley in the crop rotation was examined in a 3-year trial comparing orchardgrass and corn silage with either manure or fertilizer at two WI locations. In the 4th and 5th year, a test crop of corn silage was grown following both crops. During the first 3 years, manured corn nearly doubled the yield of manured orchardgrass (7.1 vs. 3.8 ton DM/ac/year); but much of this difference came in the seeding year of orchardgrass, which only yielded 2.3 vs. 4.2 ton DM/ac in subsequent years. Manure out-yielded commercial fertilizer by ~14% for both crops but unlike manured corn, manured orchardgrass yields continued to increase each year from the cumulative effect of the manuring. In the 4th and 5th year's test crop, corn following orchardgrass ley system was almost 40% more productive than when following corn (9.2 vs. 6.6 ton DM/ac). Variable costs per ton of forage DM were ~59% greater in the manured orchardgrass ley vs. the manured continuous corn silage system. However, this is an inflated scenario due to the frequent manuring in the grass ley system and its relatively short established stand life defined by this study's protocol. It is difficult to quantify the managerial and economic advantages of having adequate summer manure spreading locations. Although not as productive as corn silage, orchardgrass is productive once established, and offers several summer windows for spreading manure. Orchardgrass ley can then be rotated around the farm to prevent nutrient buildup.