Nutrient Dynamics of Dairy Manure Applied to Agricultural Lands in Eastern Washington. (S03-collins111541-Poster)

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Abstract:

Dairy production in Eastern Washington has shown a steady increase (-4 % per year) over the past eight years. This increase has also been accompanied by management challenges associated with the production of large concentrations of dairy animal wastes. The volume of materials and nutrients generated by the growing dairy industry graphically points to the need for long term solutions to effectively manage manure reservoirs. Current practices in Washington State involve fall and spring applications of manure during non-cropping periods, when no crop is present for the uptake of available N, P or K. In 2002, a study was initiated to determine the effects of dairy manure applications under center pivot irrigation on soil microbial activities and N and P dynamics. Analyses include: soil N and P dynamics, microbial biomass, C- , N - and P- mineralization potentials. Applied manure N and P concentrations were 790 kg N/ha and 144 kg P/ha. The surface 30 cm contained 290 kg NO3-N/ha, 114 ppm PO4, and 1478 ppm K following spring manure applications. Laboratory incubations yielded 320 kg NO3-N ha-1 mineralized for the surface 30 cm. Analyses of tile drain effluent show significant N leaching below the root zone.

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