Dairy Wastewater Constituent Changes Following Alum and PAM Treatment. (S11-jones151146-Poster)

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Abstract:

Dairy wastewater is often field-applied from lagoons, but with time may cause excess soil test P. Thus, reduction of soluble reactive P (SRP) before field application is desirable. Improved solids separation prior to lagoon storage would prolong effective lagoon life and delay costly lagoon clean-out. Chemical treatment may meet both of these goals. Alum (aluminum sulfate) and cationic polyacrylamide (PAM) were applied in the laboratory to three replications of prepared dairy wastewater containing 8, 233, 402, 627, and 750 mg/l settleable solids (SS); 0.102, 10 855, 28 206, 56 289, and 68 285 mg/l total solids (TS); and 6, 43, 59, 109, and 152 mg/l SRP. Alum containing 58.75mg Al/ml was applied to each of the SS levels at rates of 0, 0.5, 1, 2, and 4 ml liquid alum/l wastewater. PAM was added by titration to a predetermined turbidity level of 50 NTU to a second set of samples that was first treated with alum. Change in concentrations of common wastewater quality parameters was measured. SRP was reduced from 59 to 1.3 mg/l (98%) by alum treatment at 4 ml/l. Chemical cost was estimated at 1.16/100gSRP removed. Concurrently, TS was reduced 76%. PAM at this alum rate further significantly reduced TS to 5802 mg/l, but increased cost to 1.84/100gSRP.

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