Desalination and Water Treatment
www.deswater.com
19 (2010) 119–128
July
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doi: 10.5004/dwt.2010.1904

Nutrient impact on the Bocheung watershed by land application of the treated animal waste

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Received 14 October 2009; Accepted 21 February 2010

ABSTRACT

Land application of animal waste is the most common and usually the most desirable method of utilizing manure and wastewater because of the value of the nutrients and organic matter. Land application of animal waste should be planned to ensure that the proper amount of nutrients are applied in a manner which does not adversely impact the environment or endanger public health. This study was conducted to defi ne the optimum amount and concentration of animal waste fertilizer considering the watershed impact and public health. A field test bed has been built to perform several loading conditions of animal waste land application. Fromthe field test, the runoff ratio of nutrients such as TN and TP from DM (dried manual) is 29% of surface runoff and 7.0% of groundwater, whereas the one of LF (liquid fertilizer) is 1.5% of surface and 79% of groundwater. In addition, the nitrogen concentration in surface runoff from LF decreases much faster than DF. Using the runoff ratio of nutrients obtained from the field test, SWAT simulations for a real watershed were carried out to evaluate the impact of land application of animal waste on the water environment with the different loading scenarios. Although the different loading scenarios are simulated, very little change in the water qualities in the channel is observed. Thus, most of the nutrients added by DM and LF into the cultivated area seem to disappear or become consumed in the soil and very limited amount of nutrients reaches to the channel. To explore this situation, further research will be necessary.

Keywords: Land application of animal waste; SWAT; Nutrients Manure

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