DEVELOPMENT OF MEASUREMENT PROTOCOLS FOR IDENTIFYING AMMONIA VOLATILIZATION LOSSES FROM THE HYBRID GRAZING/STANDOFF SYSTEMS BEING DEVELOPED IN NEW ZEALAND

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Dairy industry intensification in some areas of NZ has led to increased N loss to water. Practising duration controlled grazing, using hybrid grazing- temporary housing systems, is capable of reducing urinary load to paddocks and N loss to water. There is concern that ammonium-N losses to atmosphere during housing, manure storage and re-application to pasture simply results in pollution swapping i.e. increasing the greenhouse gas emission footprint of dairying. Methods that are appropriate for measuring ammonia losses in the hybrid grazing (housing) systems have been developed and are discussed with respect to the characteristics of the source and emission surface, namely: i) deposition of urine and dung on the floor ii) transfer to the collection channel iii) storage pond and finally iv) the reapplication of the manure to the land. The respective methods involve i) in situ chambers (Static with acidified filter paper trap or 7L dynamic chambers connected to compressed air and 0.05M H_2SO_4 acid traps) ii) 8 L ammonia sampling bag technique iii) and (iv) combination of Sonic anemometers (to measure wind speed and direction in the barn and field) and acid scrubbers (by using aquarium pumps and 0.5 M H_2SO_4 acid traps) positioned on masts. The efficiency of ammonia recovery or measurement is reported for all methods.

Editor's Note: A manuscript has not yet been submitted for this presentation.