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Energy inputs for different liquid manure land application systems

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ABSTRACT Liquid manure systems are easily mechanized and have gained popularity in swine production in Canada. Land application of liquid manure is done by liquid manure tank spreaders, or drag hose systems, either fitted either with splash plates for surface spread, or tillage tools for subsurface injection. Pre-tillage is often recommended to enhance penetration of surface spread liquid manure into the soil profile. Data on machine draught and energy inputs for liquid manure applicators and are required for tractor implement matching, and for economic analysis. The Agriculture and Agri-Food Canada instrumented research tractor was used to measure machine draught and energy inputs for different liquid manure applicator systems in a replicated field experiment on wheat stubble on a loam soil. Pre tillage systems included two different fluted coulter tillage systems, a combination chisel sweep, an Aerway rolling tine, and two disk rippers. Injectors fitted on the rear of a liquid manure spreader included a rolling tine, a cultivator sweep fitted on a Kongskilde vibra shank, a coulter, and splash plates for surface spread. The field experiments have been completed, and data summarized for posters at producer meetings. Comprehensive statistical analysis will be completed in time for presentation at the CSBE conference. Relative ammonia emissions measurements were taken using drager tubes mounted on a stake and covered by a small plastic tent. These emissions data will be evaluated and if deemed credible, will be presented.

Keywords: draught, liquid manure, subsurface injection, surface spread

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