

Improve crop yield by removing manure solids

29 March 2011

Manure has long been used as a crop fertilizer, but the challenge of finding an efficient use of the nutrients found in manure is ever present. The ratio of nitrogen to phosphorus in manure is low in relation to the nutrient needs of most crops. Therefore, crops tend to be overloaded with manure to meet the nitrogen requirement of agricultural crops, but the excess phosphorus from the process can damage the environment.

More information: The full study is published in the January/February 2011 issue of the *Journal of Environmental Quality*.

Provided by American Society of Agronomy

In a study funded by agriculture and Agri-Food Canada, scientists at the Pacific Agri-Food Research Centre in Agassiz, British Columbia, with collaborators in Quebec City, Quebec, and Brandon, Manitoba tested the effectiveness of removing solids from dairy manure to improve yield by increasing the [nitrogen](#) to phosphorus ratio and reducing the loss of nitrogen by hastening soil [infiltration](#).

Solids were removed from the manure slurry in a passive two stage lagoon system, which resulted in the liquid fraction containing less dry matter and a higher nitrogen to phosphorus ratio than whole manure.

The results from the six-year study indicated that the liquid fraction allowed for a higher crop yield and 63% more nitrogen recovery than whole manure at equal application rates. These benefits were the most apparent in the mid-season harvests when dry summer weather conditions accelerate nitrogen loss through ammonia volatilization. The slurry's higher nitrogen to phosphorus ratio prevented the soil from becoming overloaded with phosphorus.

Shabtai Bittman, the principal author of the study, said, "The efficacy of the dairy slurry nitrogen was greatly improved by low-cost removal of slurry solids even when using a low-emission application technique. This significantly advances the cause of efficient use of manure nutrient by crops."

APA citation: Improve crop yield by removing manure solids (2011, March 29) retrieved 25 September 2021 from <https://phys.org/news/2011-03-crop-yield-manure-solids.html>

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