

### **Whole-farm nutrient budgets of organic dairy farms.**

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The sustainability of organic dairying in Canada, with respect to nutrients, remains unexamined. To assess how management affects nutrient status, we documented whole-farm nutrient (NPK) budgets over 2 yrs (2003 to 2005) and soil (0 to 15 cm) P and K status on 15 long-term Ontario organic dairy farms. Farm size, livestock density and herd productivity averaged 110 ha, 1.00 livestock units ha<sup>-1</sup> and 5656 kg milk cow<sup>-1</sup> yr<sup>-1</sup>, respectively. Annual farm nutrient surpluses of 75 (N), 1 (P) and 11 (K) kg ha<sup>-1</sup> yr<sup>-1</sup> were lower than those reported for confinement-based dairy farms in the United States of America, pointing to possible environmental benefits from reduced off-farm impacts on air and water quality. Weighted average soil test P levels were low (<10 mg kg<sup>-1</sup>) on approximately 50% of farms, whereas exchangeable K levels were moderate to high (76 to 160 mg kg<sup>-1</sup>) on all farms. Four farms adopting a "self-sufficient" approach, producing most feed on-farm, imported little P as feed (1.37 to 1.90 kg P ha<sup>-1</sup> yr<sup>-1</sup>) and had negative average farm P balances (avg. -1.54 kg P ha<sup>-1</sup> yr<sup>-1</sup>). An integrated nutrient management approach, along with a flexible feed import strategy, fosters the sustainability of organic dairying systems.