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Nitrogen and phosphorus balances on Finnish dairy farms

Keywords dairy farming, nutrient balance, nitrogen, phosphorus,

Abstract

The calculation of whole-farm nutrient balance is an effective and simple method for estimating the potential nutrient loading from dairy farming into the environment. In Finland, however, the published results based on larger number of farms are still lacking. In this study whole-farm nitrogen (N) and phosphorus (P) balances on Finnish dairy farms were studied based on short-cut data for the year 2002. The survey was targeted to 1260 dairy farms, located all over Finland. Of the 386 replies received, 319 were used for subsequent statistical analyses. The association between selected farm variables and nutrient balance was studied using regression analysis and a sensitivity coefficient was calculated for each regression slope. The average (± standard deviation) whole-farm nutrient balance for N and P was 109 (±41.3) and 12 (±7.2) kg ha-1, respectively. The most responsive factors affecting the nutrient balances were total nutrient and fertilizer import per ha, followed by animal density, milk export per ha and concentrate import per ha. The results suggested that nutrient surpluses could be controlled more easily in combined crop and milk than in specialised milk production. It is concluded that nutrient surplus on Finnish dairy farms is markedly lower than that on areas with intensive production in central European countries. However, when nutrient balances were extrapolated to comparable production intensity as in central Europe, the level of the surpluses was equal.

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