

Nutrient cycling in organic farms: stable balance of a suckler cow herd and beef bulls

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Key words: nutrient, balance, budget, cycling, stable balance, nutrient management, suckler cow, beef bull,

ABSTRACT

In organic agriculture, the internal farm nutrient cycle must be quantified to ensure high system productivity along with environmentally sound production processes. In contrast to common farmgate and field balances, budgeting at the stable level is seldom undertaken. When budgeting mixed farming systems, a substantial lack of nutrients can be detected in the nutrient flow chain "forage and straw input - stable - manure output". Therefore, stable balances focus on a central component of whole farm nutrient budgets for developing efficient nutrient management strategies.

At the experimental farm for organic agriculture Wiesengut in Hennef, Germany, all solid mass flows for a suckler herd and a herd of beef bulls were measured. Relative balance values obtained for dry matter and C (45 to 56%), N (16 to 36%), P (-7 to 22.5%), K (0 to 13%) and ash (-4 to 7%) showed a wide range.

Balances are very sensitive to variations in mass flow and nutrient content for components with high nutrient contents and/or a large contribution to total mass flow (e.g. manure, silage).

In developing strategies to minimize N losses, by reducing N surplus in the ration, it has to be considered, that in contrast to dairy farms, a suckler herd for beef production integrated in a mixed organic farm has to adapt to crop production demands.

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