Matching N and P_2O_5 crop requirements using separation products of cattle slurry

Koos Verloop, Gerjan Hilhorst

Dairy farmers commonly use artificial fertilizers in addition to farm slurry to meet crop nitrogen (N) and phosphorus (P) requirements. The N and P requirements depend of the crops used and soil P-status. Hence, the ratio of N/P required is variable. It is hard to meet these requirements with only farm slurry because its N/P ratio is more or less fixed. Mineral fertilizers are used to correct for this. The question is to what extend the use of mineral fertilizers can be reduced by separating farm slurry in a liquid fraction high in N/P-ratio and a solid fraction low in N/P-ratio.

On experimental dairy farm De Marke we quantified the N and P requirements for each of the fields of the farm. Next, we calculated the optimal distribution of slurry, liquid fraction and solid fraction over the fields. The result was tested in practice on feasibility.

The mismatch between the needs of the fields and the applied fertilizers by slurry could roughly be halved by separating part of the slurry. The N/P-ratio of the liquid fraction was too low to meet the requirements in permanent grassland completely.