

Generating of ecologically optimal crop sequences using network flows

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Projektpräsentation

Alleviation of nitrogen losses and achievement of nutrient (N, P, K) use efficiency and carbon sequestration are significant challenges faced by agroecological planners worldwide. Improving many agronomic strategies, which have lasting effects on nitrogen and carbon reserves, is urgently needed to report this aim. Recently, several investigators reported that a reasonable crop rotation is a long-standing agricultural practice and its agronomic benefits are well known. However, the crop rotation decision at the farm level is very complex with a bunch of factors which can eventually affect humus and nutrients balances. Techniques from network modelling can be used to this decision problem in a logically consistent framework, which can offer three choices to optimize the crop sequences (N-balance, Humus balance or Yield). The aspect of this problem considered in this paper is that finding not only an optimal crop rotation for a given selection of crops, but also the implication opportunity of cover crops. A network transportation model with supply sets and demand sets has been applied to satisfy a given set of rules (for example corresponding N-supply of precrop and N-demand of crop). The model can help the decision maker to select optimal crop rotation sequence sets based upon one of three choices N-balance, Humus balance or Yield.

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