

# Identifying and analyzing patterns of Phosphorus fertilization

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Phosphorus (P) is an essential nutrient in agricultural crop production. However, in aquatic ecosystems P can lead to environmental damages through eutrophication. Beside local surpluses of P, global recourses of rock phosphate are limited. Although agriculture is the main consumer of P, information about on-farm fertilisation use is scarce.

Within the joint project InnoSoilPhos<sup>1</sup>, we will examine fertilisation strategies of approximately 50 farms in five regions in northern Germany. The regions correspond to administrative districts located on gradients of climatic, soil and structural production conditions. We collect fertilisation and other crop production data at the field-scale for the period 2010-2018. In addition, general production features of these farms are surveyed at the farm-scale.

The first objective of this work is to characterise how farms fertilize regarding

quantities, types, allocation to crops and frequencies. We are interested in whether and how strategies can be classified depending on region, site and other farm(er) characteristics. We target at investigating fertilisation patterns by explorative methods such as cluster analysis, ANOVA but also mixed models. Second, our objective is to analyse potential relationships between P fertilisation and other cultivation factors, like crop protection or crop rotation. We plan to apply multivariate methods here.

The results will help to identify and understand factors influencing fertilisation strategies at the farm level and thereby will help to find reduction potentials.

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<sup>1</sup> Website: [www.innosoilphos.de](http://www.innosoilphos.de)