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COMPARATIVE ANALYSIS OF DIFFERENT TYPES FERTILISATION SYSTEMS. CASE STUDY APPLIED IN POLAND

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Abstract

In this study, we analysed factors involved in pig manure fertilisation systems for arable lands (30.000 ha) and five Polish pig farms, that produced approximately 240.000 t/year pig manure. Fertilising component demands for N, P, K and Mg on Agrifarm Company farms and liquid manure doses were estimated, based on determination in soils N, P, K. Crops yields obtained were also presented. Finally, pig manure transfer and injection costs were assessed in terms of transport distances and soil demands for nutrients. Calculated manure doses were on average 46 m^3/ha. Natural fertilisers covered on average 70% of the N demand, 77% of the P demand, and 102% of the K demand in tested soils. On average, 122.029 t/year of pig manure (51% of manure produced) was utilised for fertilisation purposes, but only for cases when the distance between fertilised fields and pig farms was up to 10 km. Practically pig manure is stored six months per year, but having sufficiently large areas of arable fields, it is possible to use the whole amount of pig manure produced in whole year and stored six months, but these areas should be located nearby pig farms. The costs of pig manure transfer and injection into lands were assessed in terms of manure transport distances, and soil demands for nutrients. Results showed that manure fertilisation at the transport distance of 29 km pig manure fertilisation costs should be most advantageous and most real to implementation in agricultural practice and 52 km was maximum cut-off pig manure transport distance.

Key words: livestock farming, manure fertilisation, manure transfer, transport costs

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