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## THE HYDRAULIC CONDUCTIVITY OF DRAINAGE DITCH BACKFILL WITH A LIME ADDITIVE IN CLAY SOILS

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### Abstract

The efficiency of drainage installed in clay soils using ditch backfill of soil mixed with lime is presented in this paper. The drainage ditch backfill was mixed with lime where 0.6% of soil matter consists of active CaO. The paper proposes a methodology that determines an optimal amount of lime. The experimental site was set in Kalnujai, Raseiniai district, Lithuania. The measurement of filtration in drainage trench, the arable layer and the soil between drains was performed using a double ring infiltrometer. The mean values of the hydraulic conductivity of the arable layer, the soil between drains and the pilot backfill of drainage ditches were respectively  $1.66 \pm 0.24$ ,  $0.65 \pm 0.09$  and  $0.94 \pm 0.13$  m/d under reliability of 95%. The confidence interval of the hydraulic conductivity of drainage ditch backfill with a lime additive, under a reliability of 95%, was  $2.47 \pm 0.12$  m/d. Dispersion analysis on pilot drainage backfill and drainage ditch backfill with lime additive under ditch backfill containing 0.6 % of CaO in soil matter showed that they significantly differ at a reliability of 95%. Thus, the effect of lime on the conductivity of the backfill of the drainage ditch for the following 30-year period of drainage operation in clay soils has remained critical.

*Key words:* backfill liming, drainage backfill, hydraulic conductivity

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