

A COMPARATIVE STUDY OF CALCIUM MIGRATION INTENSITY IN DIFFERENT PARTS OF THE FIELD AT UNEVEN APPLICATION OF MELIORANT (MODEL EXPERIMENT)O. Yu. Pavlova¹, A. V. Litvinovich^{1,2}, A. V. Lavrishev², V. M. Bure^{1,3}¹*Agrophysical Research Institute**14, Grazhdanskiy pr., Saint-Petersburg, 195220, Russia;*²*Saint-Petersburg State Agrarian University**2, Peterburgskoye highway, Saint-Petersburg – Pushkin, 196601, Russia;*³*Saint-Petersburg State University**7-9, Universitetskaya quay, Saint-Petersburg, 199034, Russia**E-mail: pou1953@rambler.ru*

The migration mobility of Ca in freshly-limed (with a wide range of rates) soil was studied in the model experiment in columns. The experiment imitated the uneven placement of ameliorant in different parts of a field. It was found that repeated washing of the soil (12 washes), imitating the annual volume of precipitation seeping through the cultivated layer, contributed to the leaching of calcium from the soil. Calcium was found in all portions of the filtrate. During 12 washes, 10.44 mg of calcium was removed from the unlimed soil. In different liming treatments, migration losses increased with an increase of the ameliorant rate. With a 2–4-time increase in the lime rate, the amount of leached calcium increased 1.1–1.36 times. The absolute losses (mg) of calcium in all the different treatments were: 0.5 dose of lime – 16.46 mg; 0.75 doses – 14.67 mg; full dose – 22.87 mg; 1.5 doses – 23.57 mg; two doses – 31.09 mg; three doses – 26.55 mg; four doses – 31.1 mg. The dynamics of calcium leaching in all the studied treatments was similar. Regardless of the rate of lime, the filtrates of the first wash were characterized by the maximum calcium content, in the second portion of the filtrate calcium concentration decreased sharply, in solutions of 3rd to 12 washings – decreased gradually. Complete removal of calcium from the soil was not achieved in any of the experimental treatments. The paper presents empirical models that adequately describe the process of Ca migration during the repeated washings of the soil limed in a wide range of rates. The clustering of models was carried out based on the amount (volume) of leached Ca in individual experimental treatments.

Key words: liming, calcium, eluvial losses, empirical models.