The article deals with the impact of growing alfalfa (Medicago sativa) and sainfoin (Onobrychis viciaefolia), as phytomelioration crops, on the physical-chemical properties of chernozem podzolized, which lies on the loess loams. It was revealed that the cultivation of perennial grasses contributes to optimizing the acid-base balance and calcium regime of the chernozem podzolized by physiological characteristics of it's own root systems, that are able to pull calcium compounds through the profile and accumulate them in their roots. Found that the cultivation of lucerne and sainfoin at chernozem podzolized during 3 years there is increased activity of calcium from 1.3 mEq / L to 21.9 and 16.6 mEq / L respectively in the 0-20 cm layer compared to version control. Proved that came increased activity of calcium is a buffer mechanism against soil acidification.

**Keywords:** perennial grasses, pH-buffer, phytomelioration, chernozem podzolized, physical-chemical properties.

**References**