

عنوان مقاله:

Effect of crop rotation on the changes of potassium forms and clay minerals under Mediterranean climatic condition

محل انتشار:

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نویسندگان:

S. Rezapour - *Department of Soil Science, College of Agriculture, Urmia University, Urmia, I. R. Iran*

F. Fallahi - *Department of Soil Science, College of Agriculture, Urmia University, Urmia, I. R. Iran*

خلاصه مقاله:

ABSTRACT-The influence of intensive crop rotation on the distribution of potassium forms and clay mineralogy was assessed under a Mediterranean condition in the Piranshar region, northwest of Iran. For this purpose, surface soil samples in relation to six soil sub-groups from crop rotation filed (sugar beet, wheat, pea, and barley) over five decades and the adjacent uncultivated lands were described and sampled. Soil analyses were concerned with the determination of physicochemical characteristics, clay mineralogy, the forms and adsorption properties of K. XRD-patterns revealed that soils were similar in clay mineral compositions, including illite, smectite, chlorite, and kaolinite for both cultivated and uncultivated soils, but some changes occurred in the peak intensity and position of the minerals mainly chlorite with cropping. Consistent with this, the sharp peak of chlorite (d_{001} , 14.2 \AA) with the intensity of 1700 to 1800 Cps in the uncultivated lands shifted toward peaks with intensity of about 1000 Cps in the adjacent cultivated soils along with the appearance of a disordered chlorite-vermiculite mineral. A pronounced decline in the soluble K from 0.001 to 0.53 mmol l^{-1} (a drop from 17 to 87%), exchangeable K from 6 to 115 mg kg^{-1} (a drop from 5 to 53%), and non-exchangeable K from 9 to 244 mg kg^{-1} (a drop from 1.5 to 29%) were observed for the majority of the studied soils as a result of crop rotation. Under cultivation, K adsorption effectively increased in the Chromic Calcixererts, Typic Calcixerolls, Typic Calcixererts, and Typic Haploxerepts where exchangeable and available K decreased.

کلمات کلیدی:

Keywords: Crop rotation, Clay minerals, Soil sub-groups, exchangeable K, non-exchangeable K

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