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Research of Element Exchange in System "Soil - Water" Method of Activating Analysis

M. A. Jumamuratov

Candidate of Engineering Sciences, Associate Professor of Department of General Physics Nukus State Pedagogical Institute, Republic of Uzbekistan

Abstract: ***In the article the results of research of element exchange are presented in the system "soil-water" by the method of activating analysis. Data are got about extraction 15 chemical elements from soils of Karakalpakstan and their persorption by soil. The closeness of physical and chemical properties of the investigated elements is determined accordingly process of extraction and persorption by their water and soil.***

Keywords: Karakalpakstan, chemical elements, activating analysis, system "soil-water", process of extraction

1. Introduction

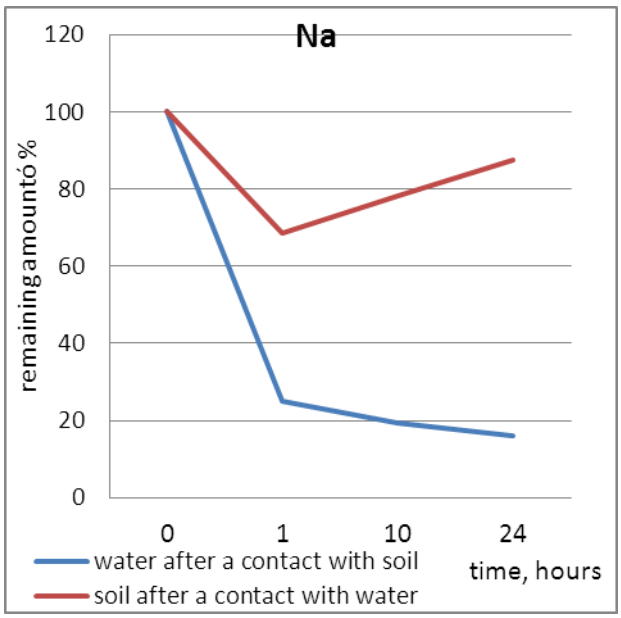
General salting of soils of zone of Aral Sea area (Karakalpakstan), unfavorable reclamative state of the existent irrigators systems strongly effect on quality of watering waters. On the other hand the questions of washing of in salt soils up to a point require the study of dynamics of change of element composition of soils at co -operating with waters. Therefore we studied the dynamics of change more than 15 chemical elements in soils of different degree of salinization (are selected from Karakalpakstan at washing with the distilled water in laboratory terms and in the wild (in the field experiments) at watering of soils aryk (little channel) water for establishment of movable part.

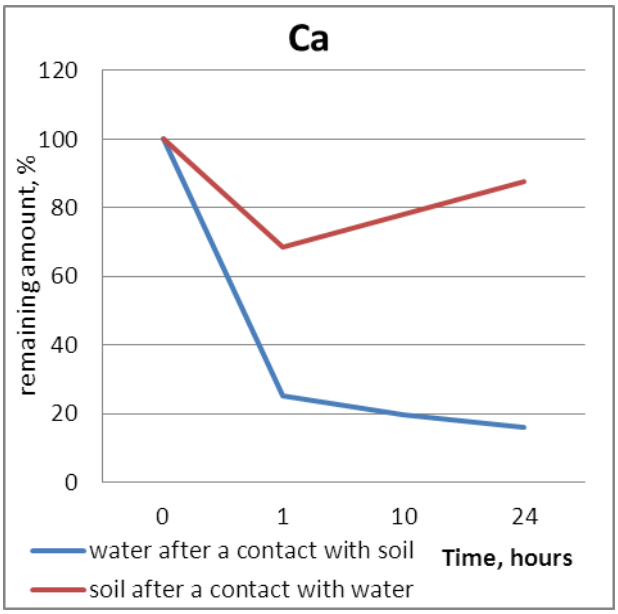
2. Materials and Methods

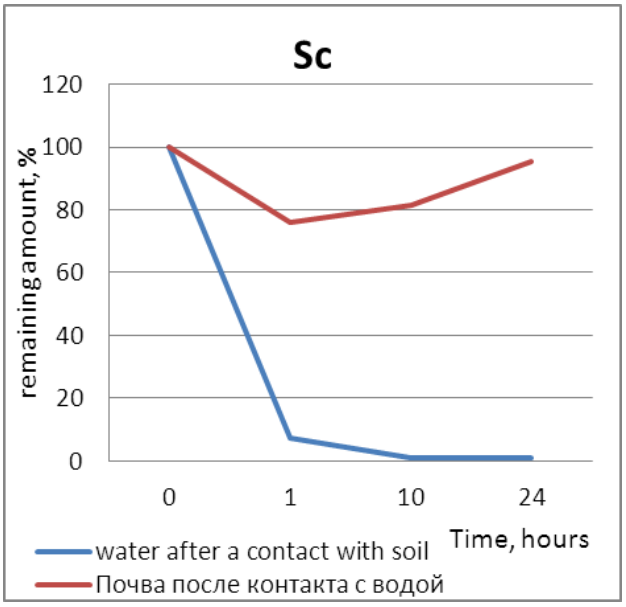
For establishment of cut-in part of chemical elements in soils prepared the series of parallel hinge-plates for 500 g (2-3 repeated). Then 2-3 parallel hinge-plates were mixed up with the distilled water by volume of 500 ml. The mixture got at stated intervals was filtered on filtration to the paper. As an example around to a picture the dynamics of change of Na, Ca, Ba in soil and distilled water, is brought. It is shown that in the first clock of contact of soils with water to 20%, 20-22% Ca, and 40% Ba passes to water. In future a persorption of elements is soil, and the process of washing of elements идет in retrograde.

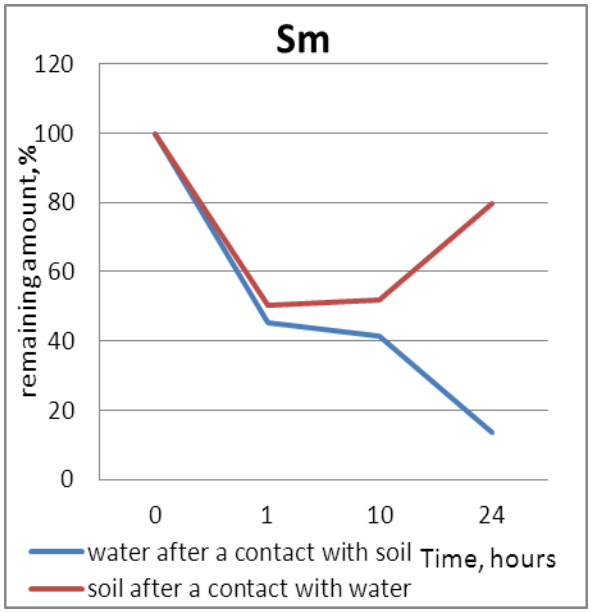
3. Result and Discussion

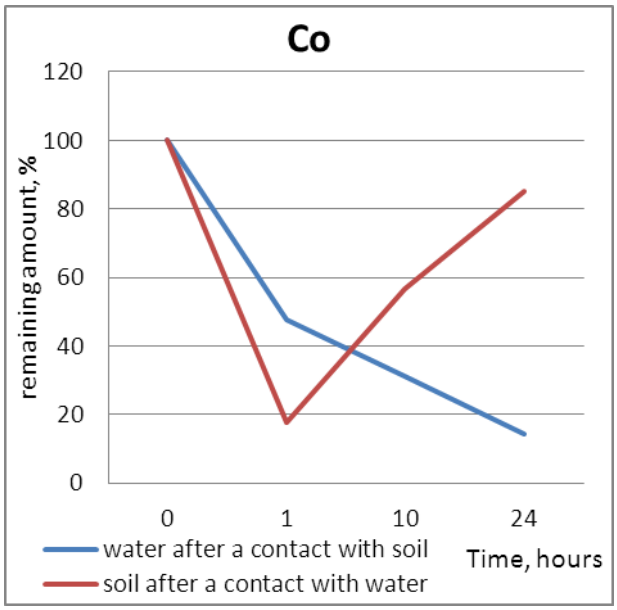
Extraction of the alkaline-landed elements identical with each other. Process of persorption of Na, Ca, Cs, Ba and Rb, (picture 1) by soil after 1-2 o'clock of contact on an identical chart, provisible it is related to the closeness of their physical and chemical properties, especially by the closeness of their ionic radius.

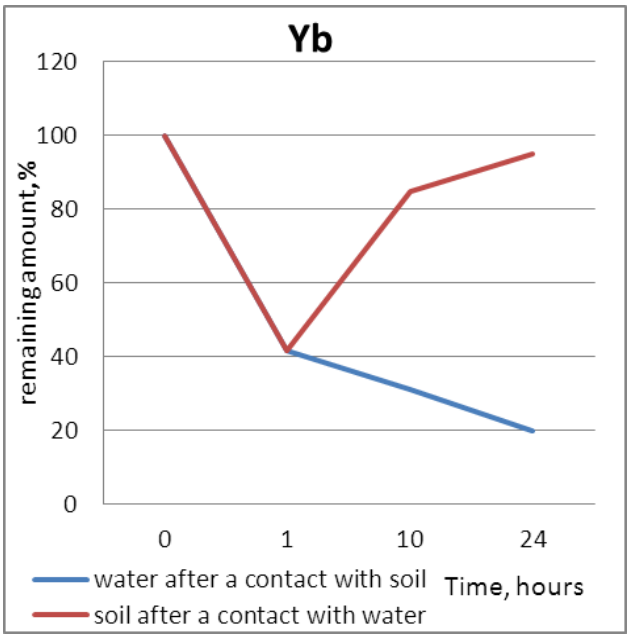


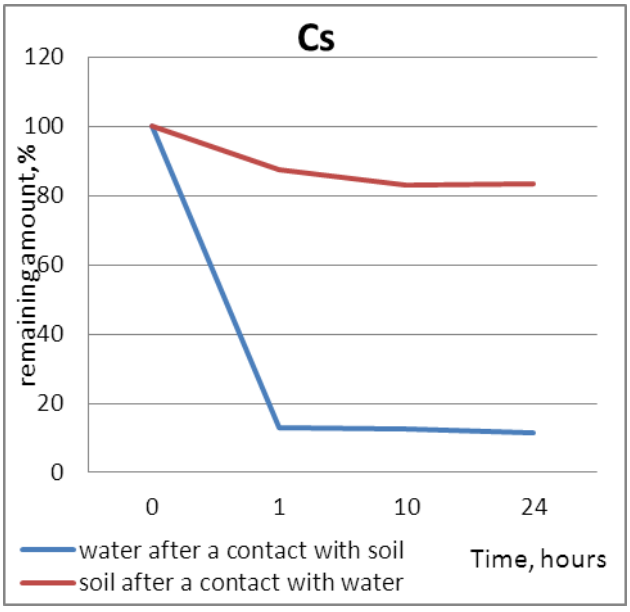


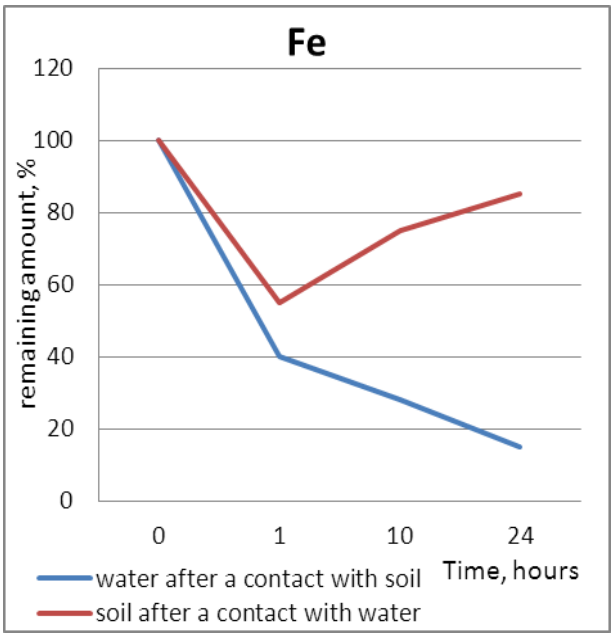


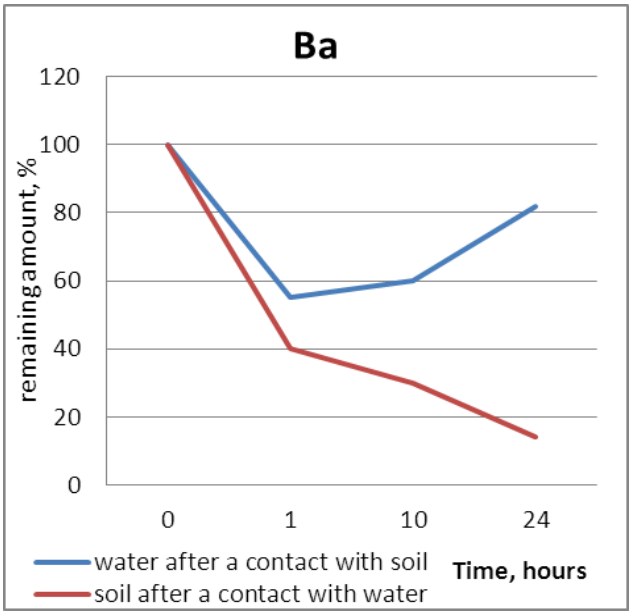


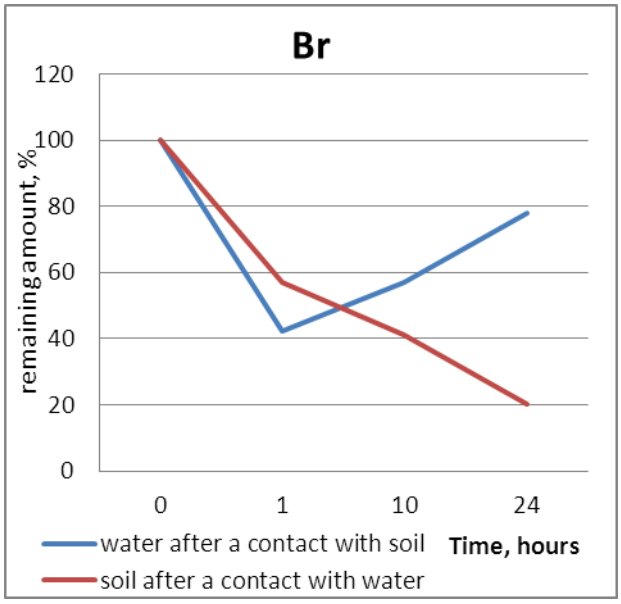


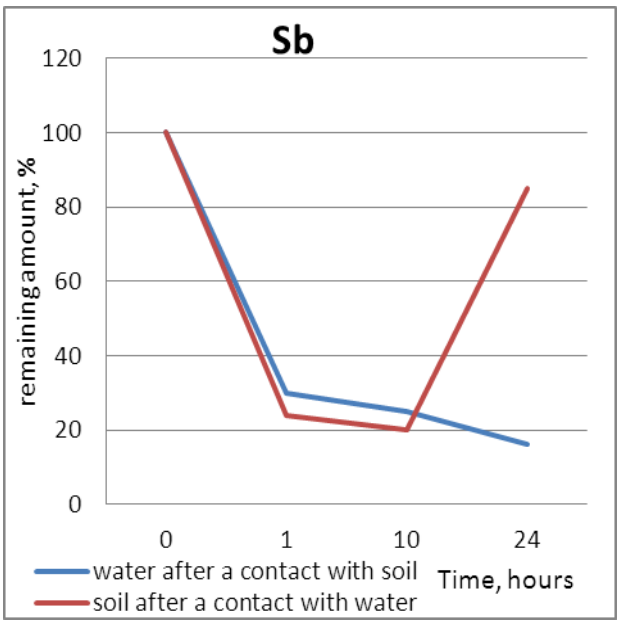


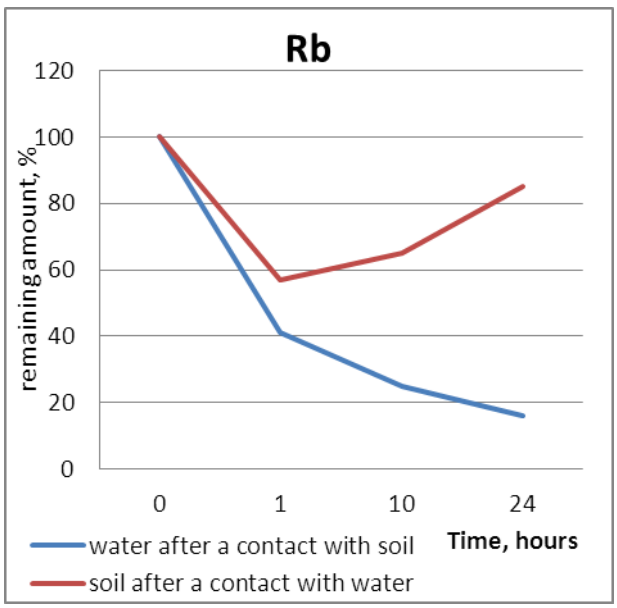












Picture 1: Dynamics of change of chemical elements after a contact soil with water

For the elements of group of iron (Fe and Co) process of extraction by water and reverse persorption soil it is some differed in. We see in this case, that reverse persorption of Co and Fe it is begun soil after a 10 sentinel contact. This process is maybe related to the form of migration of these elements, consequently and by ionic radiuses. The process of extraction and persorption of Br is analogical water and soil with the elements of group of iron. Conformities to law of extraction of Sm and Yb with water and persorption interesting their soil. In this case to 40% Sm and Yb from soil extracted by water, further a persorption is their soil. Practically these elements of 80-100% back sorbing the clay substances of soil. The closeness of physical and chemical properties of Sm and Yb is determined accordingly process of extraction and persorption by their water and soil.

Process of extraction and persorption of scandium that on physical and chemical to properties Sm and Yb is near considerably differs from them. From a picture evidently, that scandium practically is not extracted by water. In water goes across no more than 10-15% Sc, that in course of time back (to 100%) сорбируется soil. Such behavior of Sc as strongly forming complex provisible is related to the organic substances. These suppositions liable in works published some before by other authors [1].
Got by us data about extraction 15 chemical elements from soils of Karakalpak and their persorption soil (back) are too important in a research and practice aspect in agricultural chemistry and hydrochemistry, as will ground on the revision of washings salts from soils.

In works [2, 3] it was shown that in transition of river and channel waters there is to time contamination of aryk waters practically all chemical elements. Conducted by us researches on extraction of chemical elements by water and their reverse to the persorption of soils proves superfluous time, that in the conditions of strong salinity of soils many chemical elements are not only in the difficult soluble state but also soluble.

For lack of data on other elements we were not able to overcome all spectrums of chemical elements. In future this question will be studied by us and given it a shoot to link behavior each or groups of chemical elements with their physical and chemical properties.

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