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The main chemical, rare earth and trace elements and minerals formation of mountain soil as an indicator of source and treatment pedogenetic in the palestinian mountain soil

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The purpose of this study was to explore the pedogenesis processes and to examine the source (parent material) of Mediterranean mountain soil; especially Terra Rossa, Rendzina and other associated soils through chemical (major, trace and Rare Earth Elements (REEs)), grain size and mineralogical compositions. Forty soil samples were collected form 13 pedons from different areas in Palestine that represent different soil types, lithology, elevation and precipitation along a climatic transect to demonstrate variability between south, north sections and west east transects. The north section around Nablus consists of: western and eastern transect. The western one in turn consists of Qusin pedon which was Terra Rossa, and Bait Eba pedon which was Rendzina. While the eastern one in turn consists of Tubas pedon which was Rendzina, and Tayaseer pedon which was Terra Rossa. The south section, which was Bethlehem and Jerusalem mountains, consists of: western and eastern transect, the western one in turn consists of Battir1, Battir2 and AlQbu, which is Karstic, pedons which were Terra Rossa, while Ishwa and Ishwa (the road) pedons which were Rendzina soil. In other hand, the eastern one in turn consists of Teqo'a east and Teqo'a west pedons which were Terra Rossa, While Beit Sahour and Bayth Ta'amar pedons which were Rendzina. Two dust samples from Al-Quds University and seven rock samples from different pedons were collected also. From grain size, chemical compositions (major, trace and REEs), and mineralogical compositions results, dust was found to be the dominant parent material in studied soils. Leaching was dependent on rainfall amount and bedrock and soil permeability. Ca, Sr and U elements leached more than these trace elements Fe, K, Mg, Na, Al, Ba, Co, Cr, Cu, Mn, Ni, Rb, Sb, V, Zn and Zr and REEs. Some Terra Rossa samples were alike Typical Terra Rossa but with relatively high calcite content but mineralogical and chemical characteristics were like Pale Rendzina as in Qusin pedon. On the other hand, Brown Rendzina resembles Typical Terra Rossa as in Beit Sahour and Bayth Ta'amar pedons. The east transects samples leached less than the western, but the difference in leaching was low. Battir 2 profile has two soil layers deep layer, layers were composed of one on top of the other Dust samples were polluted with these trace elements Al, Cu, Pb, Sb and Zn, and this may be due to industrial or construction sources. Vanadium element found to be affected by rain and this is like Aluminum which considered to be well retained in soil. A baseline of grain size, major and trace elements, REEs and minerals was added to soil science in Palestine in general and Mediterranean virgin mountain soil (Terra Rossa and Rendzina).

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