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Phosphorus Fractionation in Some Calcareous Soils in Sulaimani Gogveronrat, Kurdistan, Iraq

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Abstract: Information of phosphorus (P) fractions are important for evaluation of their status in soil and understanding of soil chemistry that influence soil fertility. To obtain such information, forms, amounts and distribution of P in different fractions of 30 calcareous soil samples from Sulaimani province, Iraq were determined by sequential extraction method and their relationships with each other and with soil characteristics were investigated. Phosphorous were separated into 5 pools: loosely bound (and pore water, L- P) P, redox-sensitive P (bound to iron and manganese), P bound to oxides of aluminum and non-reducible Fe, calcium-bound P, and mobile and immobile pools of organic P. The active CaCO₃ in soils ranged between the 28g ¹and 58 g kg⁻¹ and the clay content ranged from 33 to 591 g kg⁻¹. The content of free iron oxides were low (6.54 g kg⁻¹). The average amount of total P was 2204 mg kg⁻¹ soil. The amount of available P extracted by Olsen's method varied between 2.44 and 7.24 mg L⁻¹, while the labile P (L-P) from 130 to 897 mg kg⁻¹. The results showed that these calcareous soils were dominated by calcium P phases. The order of average extracted P was in the order NaOH-P (462.5 mg kg⁻¹) > Fe-P (422.6 mg kg⁻¹) > L-P (348.4 mg kg⁻¹) > Ca-P (335.2 mg kg⁻¹) > HCl-P (284.3 mg kg⁻¹).

Keywords: Total phosphorus (P), Organic P, Available P, Calcium P, iron P. Sequential