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## The characteristic of Mg Alkali soil developed in Tu Mo Chuan Plain

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Keywords magnesium soloneization ,soda salinization , alkali soil development stage , Tu Mo Chuan Plain , cation exchange consequent succession

**Introduction** Tu Mo Chuan Plain is one of the saline soil areas in Inner Mongolia . With the area enlarged continuously by unreasonable irrigation saline soil ,the sodic solonetz's formation , occurrence and distribution has been systematically researched by the predecessors (Yu Renpei ,1964 ;Hao Zhenxiang ,1993) ,but the issues of magnesium soil have not been published .

**Materials and methods** Three profile are selected . Profile 1 is located in DaHeiHe cattle farm . The parent material is alluvial deposit . It belongs to the type of salic profile . The plant cover is of the type of halophytic meadow . Profile 2 is located 500m south of San Qingying village in Tuo Ke Tuo . Profile 3 is located in the southeast of Genbao Village of Ba Bai Xiang about 500m . It belongs to the type of desalting profile . The plant cover is the type of steppe . Research methods : (1) determination of Exchangeable base Salt-leaching : First , Salt-leaching : weigh the particle of desiccated soil 5 .0000g (<0 .25mm) , then use 85% ethanol for centrifugation washing once , and then use 95% ethanol to wash by several times until there is no Cl<sup>-</sup> . Second , extract : wash water-soluble salt , then use 1N NH<sub>4</sub> OAc of pH9 .3 . Extract Ca and Mg with EDTA complexing titrimetric method ; Measure K and Na with flame photometry . (6400A) (2) The measure of soluble salt : make the soil : water of 1 : 1 . Titrate CO<sub>3</sub><sup>2-</sup> , HCO<sub>3</sub><sup>-</sup> with double indicator ; Titrate Cl<sup>-</sup> with AgNO<sub>3</sub> ; Titrate SO<sub>4</sub><sup>2-</sup> with EDTA complexing titrimetric ; Titrate K<sup>+</sup> , Na<sup>+</sup> with flame photometry ; Titrate Ca<sup>2+</sup> , Mg<sup>2+</sup> with EDTA complexing titrimetric . (3) Determination of the pH with the acidimeter . (PHS-3D) .

**Results** From the Profile1 it shows that the soluble salt aggregates in the epipedon and the subsurface horizon . In the epipedon , Na<sup>+</sup> takes more than 95% of the whole soluble salt . The content of Mg is the highest in the subsoil and the content of Ca is the highest in the substratum . pH is very high in the epipedon . In the epipedon and subsurface horizon , the degree of alkalization is very high . With the depth increasing , exchangeable magnesium aggregates obviously . From the Profile2 , it shows that the content of water-soluble salt is a little in the surface , but it increases in the subsoil and substratum . In the subsurface horizon , sodium salt takes absolute advantage in the whole profile . The contents of exchangeable calcium and magnesium are high in the epipedon . With the depth increasing , Na increases . From the Profile3 , it shows that in the epipedon of the profile , the content of Mg is high . In the subsoil , Na is very much . The content of exchangeable magnesium is also very much in this profile . The horizon of high Na percent saturation appear under the Mg accumulation horizon .

**Conclusions** Magnesium alkali-affected soil appears both in the process of salification and desalting , In the process of salification , sodic soloneization accompanied with magnesium soloneization . In the surface of the profile the content of Na is high . Mg take the advantage under the horizon of Na . In the process of desalting , The horizon of Mg aggregates upon the horizon of Na . With gradually desalting , Mg is instead by Ca , then form the normal soil .

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