



## **Study on Characters and Formation Mechanism of Soil Quality**

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Jinghe Oasis of Xinjiang belongs to a typical arid inland river Oasis , duing to the increasing demand of rapidly growing oasis populations and irrational land use in arid land, which make land degrade in Jinghe basin of Xinjiang . The paper gathers 125 soil samples selecting different soil types of Jinghe Oasis from September of 2005 to September of 2006.The soil profile is divided into three sections to get samples ,that is 0-20cm, 20&#65374;60cm,60&#65374;80cm. The article analyzes main six indexes of soil PH, available phosphorus, organic matter, available nitrogen , available potassium and electric conduct rate in order to dicuss characters and formation mechanism of soil quality.The conclusions as follows: (1) According to traditional statistical analysis, it is clearly founded that the spatial heterogeneity of the soil quality in the of Jinghe Oasis, and the human activities had seriously impacted on the spatial heterogeneity of soil quality. The order in spatial variation of different soil quality element was: available phosphorus > organic matter > available nitrogen > available potassium > electric conduct rate> pH. (2) The soil quality analysis on Jinghe Oasis proved that GIS-based geostatistics elaborately determined the spatial heterogeneity of soil quality. The theory model of pH well fitted the linear model, the theory models of organic matter, available potassium and electric conduct rate well fitted the index model, and the theory models of the available phosphorus and nitrogen well fitted model. In general, all curves of variance functions changed stably, that showed all kinds of eco-processes in all scales had the same importance. (3) Six soil quality elements in four directions, including North - South, East - West, North East - South West and North West - South East, had the different isotropy. The available nitrogen and

electric conduct rate both demonstrated isotropy in different directions; PH, organic matter and available potassium take the second place; Available phosphorus demonstrated the larger spatial variation degree in different directions. All the changes of isotropy were mainly due to the natural factors differences from the lake bank - Oasis - Desert - mountain. (4) It was found from the analysis of the cultivation measure impact on soil quality that: the change of soil water soluble salt content firstly decreased to the valley value then turned to increase stably with the accumulation of cultivation time, and the other soil elements showed the similar changes trend, especially organic matter changing comparatively obvious among them. These changes had important relationship to continuous cotton cultivation, unreasonable irrigation and exhaustive utilization of farmland, etc.