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The influences of coal mining collapse on the saturation conductivity of soil In Maowusu sandy land

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Introduction The saturated conductivity is an important character for soil properties, which is a significant water power parameter for soil water movement to research. The saturated conductivity is a function for texture, weightiness and hole distributing character of soil, the hole distributing character of which has had a great affect on the saturated conductivity.

Materials and methods Three sampling area were selected, which were no-collapse area, one-year area and two-year collapse area. The soil samplings were collected from 3 areas in Maowusu sand land. Twenty-seven soil samplings were sampled from each site in three different depths by the 100ml loop sword. The sampled soil samplings were prepared to measure the saturated conductivity by water-pressure change method. The results were discussed on the change in different depth and different areas. The measured data were compared with the soil hole. The saturated conductivity and hole of soil were analyzed by using SPSS 11.0 to generate correlation coefficient. The variety is analyzed by ANOVA method.

Results There were great correlation in between the saturated conductivity and hole of soil, the correlate coefficient is amount to 0.83 ($P < 0.05$). The saturated conductivity of soil is 0.0082cm/s in no-collapse area, 0.0089cm/s in one-year area, 0.0102cm/s in two-year collapse area. The influence is the greatest in 50 centimeter, the smallest in 10 centimeter. Comparison with no-collapse area, collapse area was added evidently in 50 centimeter and 30 centimeter. Three areas nearly vary in 10 centimeter. In one-year area and two-year collapse area the saturated conductivity were respectively greater 12.0% and 33.9% than that of no-collapse area in 50 centimeter, 10.2% and 32.4% in 30 centimeter.

Table 1 The saturated conductivity of diversity sampling site.

Conductivity	Repeating sampling1	Repeating sampling2	Repeating sampling3	Average
no-collapse area	0.0078	0.0080	0.0087	0.0082
one-year area	0.0088	0.0098	0.0080	0.0089
two-year collapse area	0.0117	0.0083	0.0106	0.0102

Conclusions Coal Mining Subsidence added the ventilate dank hole quantity. Granule substance with rainfall is moved so that soil hole is enlarged. Comparison with no-collapse area, the saturated conductivity of soil in each layer is added in collapse areas, which is greater in deep layer than in shallow layer.

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