The Soil Organic Carbon Spatial Distribution of Degraded Grassland with Black Soil Type in the Source Region of Yellow River

Duofeng Pan
Heilongjiang Academy of Agricultural Sciences, China

Y. S. Ma
Qinghai Academy of Animal and Veterinary Sciences, China

Y. X. Zhang
Heilongjiang Academy of Agricultural Sciences, China

The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

The soil organic carbon spatial distribution of degraded grassland with Black Soil Type in the source region of Yellow River

Pan D .F .[1] , Ma Y .S .[2] , Zhang Y .X .[1]
[1] Institute of Pratacultural Sciences , Heilongjiang Academy of Agricultural Sciences , Harbin , 150086 , China , E-mail : nxpanduofeng@ yahoo .com .cn , [2] Qinghai Academy of Animal and Veterinary Science , Xining 8100016 China

Key words : soil organic carbon , spatial distribution , degraded grassland with Black Soil Type , soil degraded degree

Introduction Soil carbon storage and its dynamics influence soil fertility and grassland productivity , they are very important indications which reflect soil quality , grassland health and carbon circulation of grassland ecosystem (Doran et al . 1999) . Currently , studies on the degraded grassland with Black Soil Type play an important role on Tibetan Plateau grassland . It is of great significance to the cause and restoration of degraded grassland with Black Soil Type by studying soil organic carbon storage and its spatial distribution .

Materials and methods Soil samples were collected in 0-10 , 10-20 , 20-30cm layers at a total of 30 soil samples from 6 soil profiles in three types and degraded degrees of degraded grassland with Black Soil Type in September , 2006 (Pan 2006) . The soil samples were air-dried , passed through a 2 mm mesh , and homogenized . Soil organic carbon were analyzed by the method of potassium dichromate capacity .

Results Soil organic carbon spatial distribution showed that : (1) Soil organic carbon storage (0-10 cm soil layer) decreased from 7 .05% in lightly degraded grassland to 4 .66% in heavily degraded degree , soil organic carbon storage in 0-10 cm layer was higher than that of 10-20 cm layer and 20-30cm layer , It was very significance for soil organic carbon between 0-10 cm layer and 10-30 cm layer . (2) Soil organic carbon content in bottom type was 6. 57% , 5. 19% in slow-slope type and 4 .68% in steep-slope type (data was average of three soil layers) . Following with the soil layer increasing soil organic carbon reduced , 0-10 cm layer has largest content of soil organic carbon .

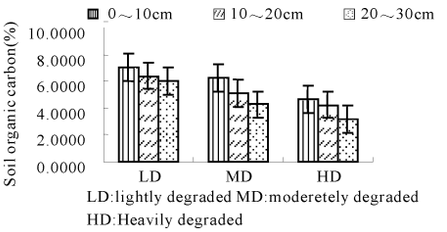

Figure 1 *Soil organic carbon spatial distribution in three degraded degree of black soil type" degraded grassland .*

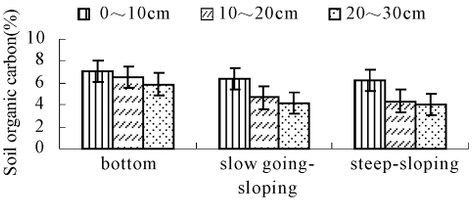

Figure 2 *Soil organic carbon in three types degraded grassland .*

Conclusions Soil organic carbon spatial distribution of degraded grassland with Black Soil Type was that content of soil organic carbon decreased with the increase of soil depth , soil layers and degraded degrees . Bottom type has large carbon and steep-sloping type was least .

References

Doran , J .W . , Jones ,A .J . , Arshad ,M .A . 1999 . Determinants of soil quality and health Soil Quality and Soil Erosion , CRC Press , 17～36 .

Pan D .F . 2006 . Study on the Types and Grade Partition Criterion of Degraded Grassland with Black Soil Type in the Three-River Headwaters Region , Graduate student thesis , Gansu Agriculture University , 20-24 .