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## Study on carbon sequestration potential of grassland protection and construction techniques in key ecological type area from northern China grassland

**Xiangyang Hou, Yuanheng Li and Lei Ji**

Chinese Academy of Agricultural Sciences, China

**S**tatement of the Problem: Under the background of global climate change, the carbon source/sink problem of terrestrial ecosystems has become one of the hot issues in international ecological research. As the largest terrestrial ecosystem, the China's grass land is mostly used for grazing, and unreasonable grazing is considered to be the main incentives lead to last degradation of grassland ecosystem. However, the study on the evaluation of the carbon sequestration potential of the grassland ecosystem in northern China is still relatively less. Therefore, this study is focused on the influence of the conservation and construction techniques (enclosure, clipping and grazing) in main ecological type area from northern China on carbon density, carbon budget and carbon sequestration potential in vegetation-soil ecosystem. Methodology & Theoretical Orientation: Based on random block control experiment, the protection and construction techniques, such as enclosure, clipping and different grazing intensity, were established in different ecological type area, including typical steppe, meadow steppe, desert steppe and sandy steppe, to study the influence on carbon storage in grassland vegetation-soil ecosystem. And the key technical solutions of carbon sequestration potential, carbon increasing potential and enrich carbon sink in different grassland type area are put forward. Findings: The order of carbon sequestration potential in different kinds of grassland is meadow steppe ( $30.57 \text{ kg/m}^2$ ) > typical steppe ( $18.51 \text{ kg/m}^2$ ) > desert steppe ( $15.84 \text{ kg/m}^2$ ) > sandy steppe ( $2.58 \text{ kg/m}^2$ ); the carbon increase amplitude is meadow steppe ( $0-25.31 \text{ kg/m}^2$ ) > typical steppe ( $0-3.87 \text{ kg/m}^2$ ) > sandy steppe ( $0-1.45 \text{ kg/m}^2$ ); and the carbon increasing potential is typical steppe ( $1.26 \text{ kg/m}^2$ ) > desert steppe ( $0.31 \text{ kg/m}^2$ ) > sandy steppe ( $0.20 \text{ kg/m}^2$ ). In addition, years of enclosure in meadow steppe benefits the carbon sequestration system, but moderate grazing and utilization is good for carbon sequestration in typical steppe, desert steppe and sandysteppe.

houxy16@126.com