

EGU22-4227, updated on 10 Aug 2022

<https://doi.org/10.5194/egusphere-egu22-4227>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Research on the interaction between roots and soil of adaptable plants *pyracantha* in the karst region

Huan Guo

Guizhou University, College of Forestry, China (843825862@qq.com)

Abstract: To explore the adaptable plants soil reinforcement effects in the karst region of southwest China. A horizontal pull friction test was performed on the roots and soil by using a three-year-old shrub *Pyracantha*, and the friction characteristics of root-soil interface were analyzed by scanning electron microscopy and interference method. The results indicated that :(1) the root system of *pyracantha* showed two failure modes in the pull-out test: the pull-out friction of root-soil interface increases with the increase of root diameter and vertical load. (2) When gravel content is set at 0, 10%, 30% and 50%, the frictional force between root and soil tends to decrease. (3) There was a positive correlation between root surface roughness and root diameter in diameter range of 1-6mm, with correlation coefficient $R = 0.995$. (4) There is an obvious correlation between root-soil friction and roughness. These results are significant to further explore the mechanical mechanism of plant root-soil interaction, and to strengthen the shallow soil and repair the fragile ecological environment.

Key words: Karst; *Pyracantha*; Root-soil friction; Roughness