

EGU2020



Vegetation restoration technology for Pisha Sandstone Area

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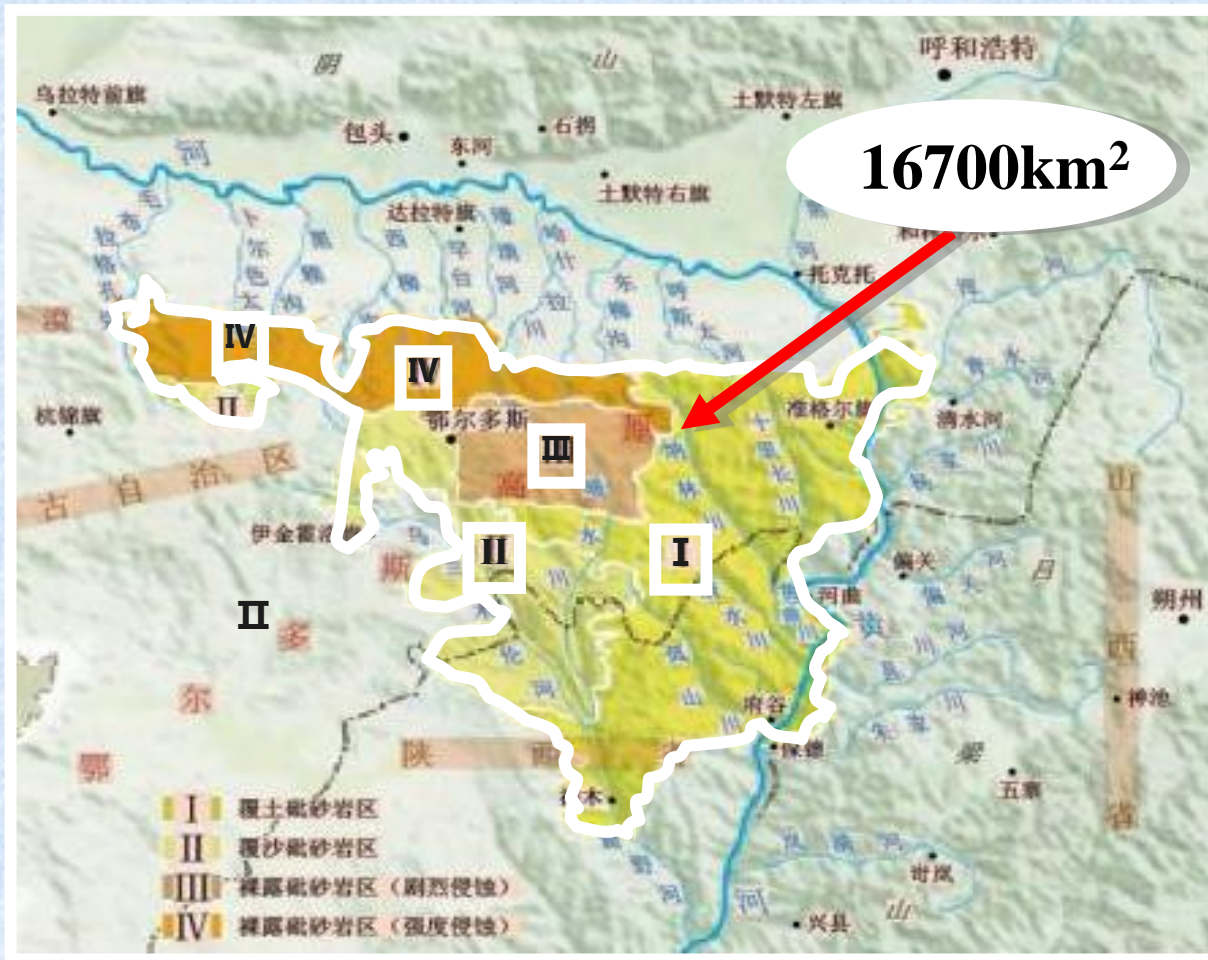
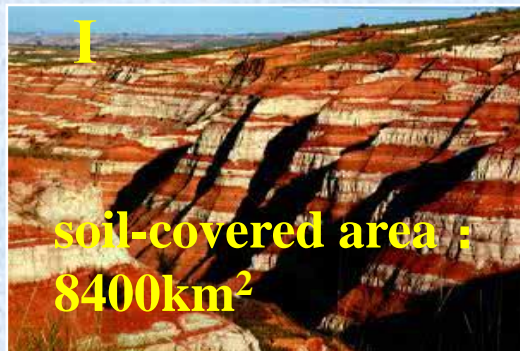
Background



Pisha sandstone (PS) is composed of a thick layer sandstone, arenaceous shale, and mudstone.

- Low degree of diagenesis
- Poor bonding mechanism
- Low compressive strength



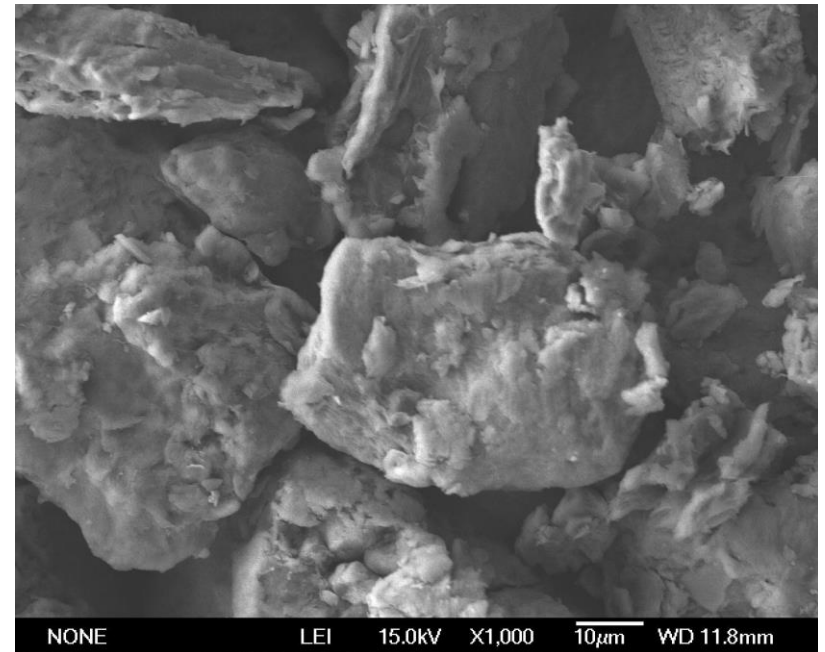
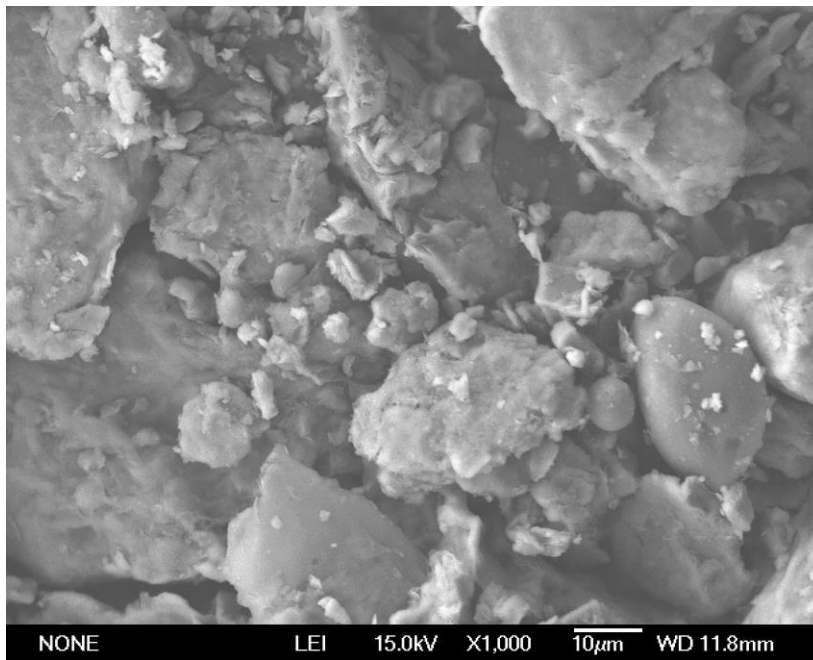


White: $\text{Ca}_{0.6}\text{Na}_{0.19}\text{K}_{0.05}(\text{Si}_{10.4}\text{Al}_{0.42})(\text{Al}_{3.52}\text{Fe}_{0.64})\text{O}_{10}(\text{OH})_2$

Red: $\text{Ca}_{0.8}\text{Na}_{0.07}\text{K}_{0.06}(\text{Si}_{9.3}\text{Al}_{0.31})(\text{Al}_{3.50}\text{Fe}_{3.19}\text{Mg}_{1.20})\text{O}_{10}(\text{OH})_2$

◆ Microstructure of PS

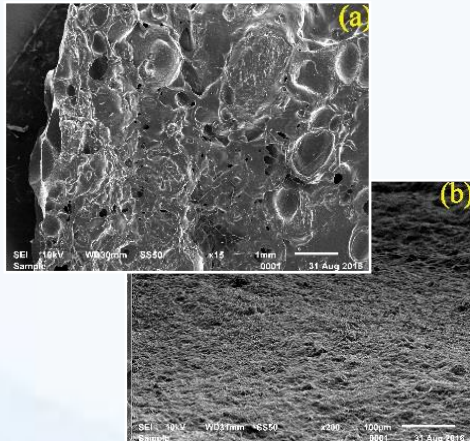
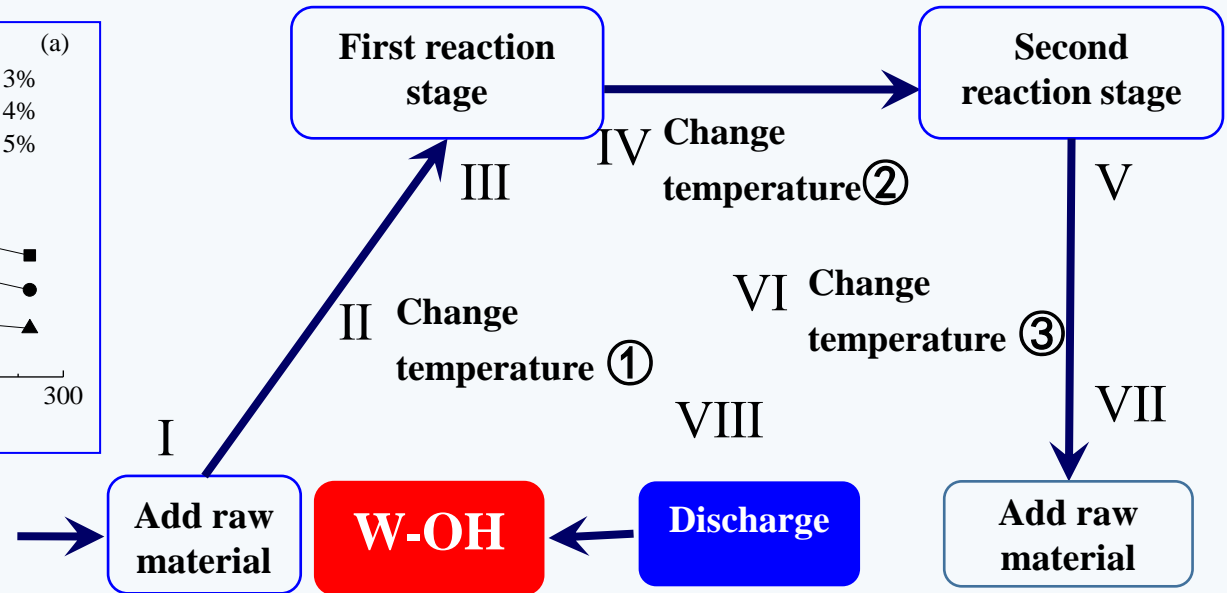
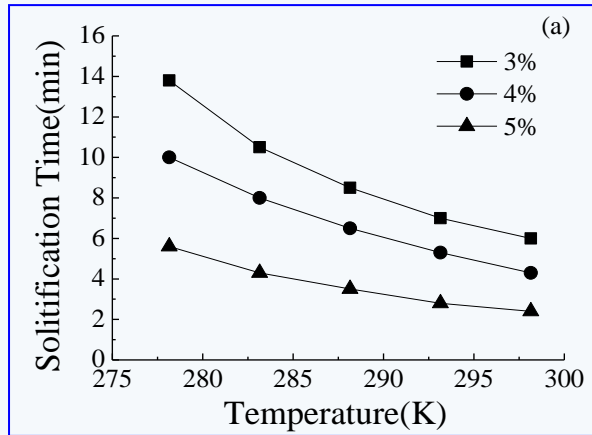
- Sediment particles are coarse, more than 80% of particles larger than 0.05mm.
- Obvious boundaries, few bonding substances and most of them are carbonates and clays.
- Porous cementation, strong friction and meshing force without water.



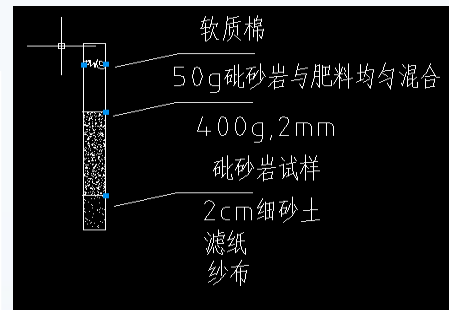
SEM images in 1000 times magnification

A type of consolidation plant-growing material is synthesized.

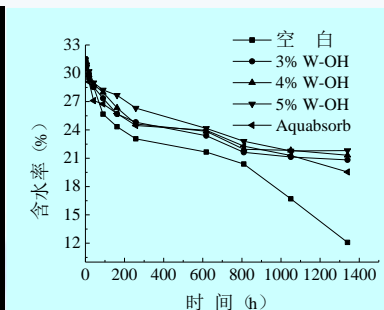
◆ Water-retention test



◆ Consolidation test



◆ Fertilizer-retention test



◆ Germination test

- **Comprehensive governance effect in small watershed**



**Before governance
in 2013**



**After governance
in 2016**



Before governance



After governance

The vegetation coverage increased from 25% to more than 75% after extensive promotion.

The method has been widely accepted by the local community and soil conservation bureau



Thanks!

