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## IMPACT MECHANISM OF VEGETATION SLOPE SURFACE ON THE RUNOFF AND SEDIMENT PRODUCING PROCEDURE OF JINYANG ANCIENT CITY IN DIFFERENT PERIODS

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### Abstract

Primary vegetation covering was a rising technology for restoring surface diseases of earthen sites. However, the mechanism of herbs on the infiltration, runoff and sediment producing were unclear. In the in-situ artificial rainfall experiments in Jinyang Ancient City, the effects of different plant growth conditions in different periods on earthen sites slopes were compared with. The conclusions were as follows. The rainfall of 13.4mm was the threshold for changes in soil volume moisture content at depth in 0.5m. The fluctuation amplitude and the peak migration rate of soil moisture were positively correlated with soil porosity. The time of initial peak of soil surface volume moisture content was negatively correlated with its initial value before rainfall and rainfall intensity. The rainfall intercepted by plants was in a dynamic equilibrium state. Root splitting fissures and unstable water storage spaces not only had the function of water storage, but also had the one of reducing runoff velocity. For fresh herbs and withered herbs, interception yield before runoff producing  $Q_0$  was negatively correlated with runoff starting time  $T_0$ , and the interception effect of withered herbs was better than fresh ones. The impact of rainfall intensity on the percentage of runoff production  $C_{r0}$  of fresh herbs decreased over time, and the impact of rainfall intensity on the percentage of sediment production  $C_{sy}$  of fresh herbs increased over time. Fresh herbs and withered herbs enhanced the erosion resistance by intercepting and increasing the infiltration rate of rainfall and reducing the kinetic energy of rainwater. The stems and leaves blocked sunlight, regulating and creating a relatively stable microclimate environment to reduce evaporation of primary vegetation covering. It confirmed that fresh herbs and withered herbs had regulatory effects on conservation of earthen sites in Jinyang Ancient City. It would provide data support for the protection of earthen sites in large scales.

**Key words:** Jinyang Ancient City, primary vegetation, rainfall experiment, runoff producing, sediment producing

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