



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs”

Valuation of Fragile Agroecosystem Services in Loess Hilly-Gully Region - A Case Study of Ansai County in China

XIAOBIN DONG¹, WANGSHENG GAO², YUANQUAN CHEN²

¹*Beijing Normal University, College of Resources Science and Technology, China*

²*China Agriculture University, College of Agronomy and Biotechnology, China*

Abstract

Many works have been done since the conception of ecosystem service was put forward. However, most of them focused on large (global or national) scale and have hardly cared about the fragile agro-ecosystem disturbed by human being, such as that in Loess Plateau where aggravating ecological environment exists because of the severe soil erosion and harsh natural condition. Using different methods such as market value, substitution engineering, shadow price and opportunity cost, the value of agriculture ecosystem services including conserving soil (Es) and water (Ew), fixing CO₂ and releasing O₂(Ea), maintaining nutriment circling (En) and decontaminating environment (Ee) in Ansai county in Loess hilly-gully region are calculated in this article. The results show that the gross value of ecosystem service is 31698.70 million Yuan which is 170 times of production value (Ep) implying that even the fragile ecosystem plays an important service function though it has been disregarded for a long time. In Ansai county, agro-ecosystem provides great ecology services for economic productivity. The various services value respectively is En 28481.42 million Yuan (RMB)(89.85 percent), Ew 1391.36 million Yuan (RMB)(4.39 percent), Ea 1325.11 million Yuan (RMB)(4.18 percent), Vp 185.06 million Yuan (RMB) (0.58 percent), Es 258.25 million Yuan (RMB)(0.81 percent), Ee 57.51 million Yuan (RMB)(0.18 percent). Moreover, the results also show that there is an imbalance between ecological productivity and economic productivity in this area, which is a general problem in all the Loess Plateau. The most prioritised key important approach for restoring the ecological environment is to extend the areas of grassland and forest in order to improve conservation of soil and water.

Keywords: Agro-ecosystem service, loess Plateau, valuation