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Successes and Failures in Combating Desertification in the Eastern Edge of Eurasian Grassland

X-Y Zhao (1), Gang Huang (2), Ying-Xin Huang (3), Shao-Kun Wang (4), Ya-Yong Luo (5), Hao Qu (6), and Jie Lian (7)

(1) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@yahoo.com.cn), (2) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@cern.comz.cn), (3) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@yahoo.com.cn), (4) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@yahoo.com.cn), (5) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@yahoo.com.cn), (6) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@yahoo.com.cn), (7) Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, China (nmzhaoxy@yahoo.com.cn)

Successes and Failures in Combating Desertification in the Eastern Edge of Eurasian Grassland
-A Case Study in Horqin Sand land in the Northeastern Inner-Mongolia, China
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Xue-Yong Zhao Gang Huang Ying-Xin Huang Shao-Kun Wang Ya-Yong Lou Hao Qu Jie Lian

Naiman Desertification Research Station, Chinese Ecosystems Research Network
nmzhaoxy@yahoo.com.cn

Abstract: Eurasian Grassland is one of the important biomes in the world. However, this biome is severely desertified since the middle of last century, particularly in the northeastern Inner-Mongolia of China.
The Eastern Edge of Eurasian Grassland in Inner Mongolia covers 740.0th km^2 and the desertified grassland is approximately 225.98th km^2 in 2005, about 30.5% desertified.
The desertified land in Horqin Sand Land is 43,200 km^2 in 1959, 56,571 km^2 in 1975, and 61,008 km^2 in 1987, and since then decreased to 50,197 in 2000 and 50,167km^2 in 2005.
Reversion of desertification in Horqin Sand Land is mainly attributed to the successes in combating desertification, including large scale of tree planting, increase of irrigated cropland for reduction of rain-fed cropland to meet the need of growing expectation for capital income and grain production, and later combination of planting bushes and grasses with natural restoration.
Large scale of tree planting is only effective in a short term but more fragile to drought. As a result, about 1.66m trees, equal to 830m hm^2 of planted woodland, died of water depletion. And the grassland productivity is reduced from 520g/m^2 in the middle of 1930 to 360 g/m^2 in 1982 and 220 g/m^2in 2005.
Rapid increase of irrigated cropland resulted in reduction of water availability, which is characterized with drying-up of lakes and wetland, stop-running of rivers, and reduction of underground water table.
Observation found that the averaged reduction of water table is about 2-3m in this area, with a maximum of 16m in last ten years. The Xiliao River, one of the largest river in northeastern China, is dried up in 1999.
These failures still put severe impacts on combating desertification in this region and even in the whole northern China, driven by improper land use, which is identified as one of the immediate causes of desertification in this region.
Concerning these failures, in-depth researches have been launched since 2000 to reveal the mechanism of consistent restoration of desertified grassland in relation to sustainable water use.

Keyword: Horqin Sand Land, Desertification, Water availability, Success, Failure

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