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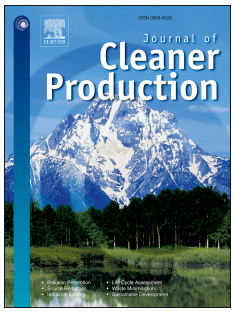

Combating desertification in China: Monitoring, control, management and revegetation

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Review Paper

Combating Desertification in China: Monitoring, Control, Management and Revegetation

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Abstract

The most serious desertification in China occurs in the agro-pastoral ecotone of Northeast China and in the oases in Northwest China. It has resulted in the reduce of land productivity and serious ecological/environmental consequences. In this paper, the authors reviewed the mechanisms of land desertification and the key strategies to monitor, control and mitigate land desertification in China, which will provide unique experiences and schemes to support academics and industrialists in other developing countries to reverse desertification. In aspect of monitoring desertification, satellite remote sensing can detect and characterize large-scale desertification, and *in-situ* field work can measure changes of soil physical & chemical properties induced by desertification. In aspect of desertification control and mitigation, the implementation of sustainable cultivation/grazing practices and wind-shelter forests are the key measures in Northeast China, while water use quotas and sustainable water management are the key measures in Northwest China. Finally, we suggest big-data-based water resource management, regional-climate-model-based agricultural planning, CO_2 storage with deep saline water recovery and desert geoengineering as possible solutions to future, large-scale reversal of deserts and desertification regions in China and other developing countries.

Keywords: Desertification; Monitoring, Management and Alleviation; Big-data-based Water Resource Management; Regional-climate-model-based Agricultural Planning; Desert Geoengineering

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