

Helping re-vegetate China's Loess Plateau

ACIAR (Australian Centre for International Agricultural Research), CSIRO Land and Water, and the Chinese Academy of Sciences, Institute of Soil and Water Conservation, have developed a joint collaborative project and special Decision Support Tool to raise awareness amongst China's many land and water managers about re-vegetation techniques and the impact that national environmental policy will have on their limited water resources.

In addition to building both Australia's and China's understanding of the impacts of

large-scale re-vegetation on broad scale hydrology, the international project is helping to restore the quality of flows to China's Yellow River and improve the sustainable management of the region.

The Yellow River Basin is an area compatible in size to Australia's Murray-Darling Basin, but with 400 million people partly relying on its water assets it faces far greater demands on its resources.

Deforestation over thousands of years, steep slopes, and highly erodible soils combined with intense summer monsoon

rainfall has seen an incredible amount of soil erosion from the Loess Plateau, located on the middle reaches of the Yellow River. Scientific research has revealed that replanting programs under the Chinese Government's 'Clean River: Green Hills' policy reduces the amount of water available to the community.

This, coupled with increasing water extractions from the lower reaches of the Yellow River to support the North China Plain's rapidly growing economy, means the Yellow River is increasingly not reaching the Bohai Sea.

The project's Decision Support Tool, called ReVegIH (Re-Vegetation Impacts on Hydrology), provides land managers and policy makers with advice on three aspects:

the best places to re-plant to minimise sediment loss; suitability maps for 38 tree and shrub species; and the ability to determine the impacts on water yields at the same time.

In addition to being available on the internet, the ReVegIH application is being distributed throughout the study site on CD to 500 county-level managers from the Yellow River Conservation Commission and policy makers in Beijing.

CSIRO Land and Water scientists and software engineers are training local project partners to further develop and adapt the system for future needs and different regional uses. The ReVegIH application is provided for free from www.clw.csiro.au/ReVegIH, where additional project information can be found.



Typical landscape of the coarse, sandy, hilly catchments of the Loess Plateau, China. Severe gullying can be seen (foreground), some of which almost reaches the ridges. In efforts to reduce erosion rates large areas have been re-vegetated, as the photo shows, although this has also reduced the runoff. Summer cropping is conducted on the terraces and extensive grazing of sheep takes place over all parts of the landscape.

Courtesy of Chinese Academy of Sciences, Institute of Soil and Water Conservation