Column 8

Analysis of Measures for Preventing Desertification in Inner Mongolia in China

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Since the early 1990s, with the economic development and population growth, desertification has increasingly attracted the attention of governments, international organizations, and scientists around the world. The evaluation of desertification has become a new interest in land science research. Inner Mongolia is a largely deserted province in China, with the deserted land covering 640,000 km²; 91.16%, 41.4%, and 41.0% of the desertification was caused by wind erosion, water erosion, and saline desertification, respectively. Desertification is so disastrous that it can cause additional ecological problems (Liu and Wang 2006; Ye 2008). The causes of desertification in Inner Mongolia can be classified into human and natural causes. Regarding human causes, irrational irrigation methods are the main causes, mainly due to the pressure of population growth, overgrazing (Fig. C8.1), the expansion of dry land reclamation (Fig. C8.2), woodcutting, and the harvesting of Chinese herbal medicine (Fig. C8.3). Regarding natural causes, climate change and the geographical environment are the main issues. Within Inner Mongolia, the arid, semi-arid, and sub-humid arid regions deep in the hinterland of the continent and far away from the ocean comprise the most arid and fragile environmental zone, which lies in the same latitude as areas with the lowest precipitation and highest evaporation. In the past 40 years, precipitation has shown a decreasing trend in parts of the arid, semi-arid, and sub-humid arid regions of Inner Mongolia, whereas the temperature in other areas has shown an increasing trend. These changes in the climate have led to an increase in evaporative power and contributed to soil salinization, which have exacerbated desertification to a certain extent.

To avoid desertification, several measures can be taken, including planting new vegetation, practicing reasonable water use, and strengthening ecological agriculture construction. The favorable conditions of light and heat in the arid and

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Fig. C8.1 Overgrazing

Fig. C8.2 Over-reclamation

semi-arid areas provide sufficient light for the growth of forests. However, the healthy growth of forests is greatly hindered because of droughts, water shortages, and the dry climate. Therefore, technical measures of sand control and afforestation, seedling cultivation, water-saving, and drought resistance should be developed to create a favorable environment for the growth of forests. Energy should be devoted to evoke the positive impacts of such measures and promote the healthy growth of

Fig. C8.3 Harvesting of Chinese herbal medicine

forests. Therefore, the advancement of technologies for vegetation and afforestation should be promoted in arid and semi-arid areas to improve the growth of forests (Bao 2002). Water is the key factor in the prevention of desertification. However, the prevention of desertification will be hindered because of the lack of adequate water. We should therefore improve farming and irrigation techniques and advocate for water-saving agriculture to avoid soil salinization in farming areas. The number of wells should be reduced to avoid the uncontrolled growth of livestock on pastoral grasslands. As for the arid inland, water resources, including the water upstream and downstream the river should be rationally allocated, and water-saving projects should be carried out. The cultivated land subjected to heavy wind erosion and desertification, consisting of low levels of organic matter and limited groundwater resources and characterized by unsuitable farming conditions, should be converted into grassland, where the restoration of vegetation should be sped up through a combination of engineering and natural restoration to recover the ecological functions of this area.

The increasing population is also one of the main factors explaining the desertification of this area because the demand for food and firewood has also increased accordingly. Therefore, the large degree of reclamation and the expansion of arable land have caused the increasing destruction of land resources and accelerated the development of desertification. The lesson in regard to exceeding the supportive capacity of the land for the population is profound. Evidence has shown that humans cannot demand from nature without limits. Based on this understanding, controlling the population and implementing family planning have become part of basic national policy (Yu 2003; Ye 2008).

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