Desertification

Desertification is the degradation of arid land in which this arid land becomes even more drier, losing any fauna and flora in the process.

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Causes and countermeasures

It is caused by a variety of factors, such as human-induced and natural climate change, erosion and human activities (allowing animals to graze the land).

As the desertification takes place, the landscape progresses through different stages and continuously transforms in appearance. The desertification generally creates increasingly larger empty spaces over a large strip of land, a phenomenon known as "tiger fur pattern". A mathematical model has been made of it by Sjors van der Stelt.[1][2] Besides explaining the process of desertification, the model is also useful for developing methods to combat it (see also: Alternative stable state).[3]

Techniques focus on two aspects: provisioning of water, and fixation and hyper-fertilizing soil.

Fixating the soil is often done through the use of shelter belts, woodlots and windbreaks. Windbreaks are made from trees and bushes and are used to reduce soil erosion and evapotranspiration. They were widely encouraged by development agencies from the middle of the 1980s in the Sahel area of Africa.

Some soils (for example, clay), due to lack of water can become consolidated rather than porous (as in the case of sandy soils). Some techniques as zaï or tillage are then used to still allow the planting of crops.[4]

Another technique that is useful is contour trenching. This involves the digging of 150m long, 1m deep trenches in the soil. The trenches are made parallel to the height lines of the landscape, preventing the water of flowing within the trenches and causing erosion. Stone
walls are placed around the trenches to prevent the trenches of closing up again. The method was invented by Peter Westerveld.[5]

Enriching of the soil and restoration of its fertility is often done by plants. Of these, the Leguminous plants which extract nitrogen from the air and fixes it in the soil, and food crops/trees as grains, barley, beans and dates are the most important. Sand fences can also be used to control drifting of soil and sand erosion.[6]

Desertification in China

is causing a crisis in China and neighboring countries. Desert storms from Central Asia are causing destruction across large parts of northern Asia. Every spring, dust from China's northern deserts is blown eastward, into Beijing and other cities, even as far as Korea. A blanket of particles coats buildings, cars, and people, and hospitals are inundated with patients suffering respiratory problems. The dust threatens to shut down the city, getting into machinery, closing airports, and damaging crops. It can carry pollution and even potentially infectious disease.

Overgrazing, deforestation, and drought combine to turn vulnerable arid lands to desert, with a loose topsoil easily transported by wind. The dunes are now around 250 km from Beijing.

The Green Great Wall of China is an attempt to reverse the desertification.

Notes and references

1. Sjors van der Stelt
2. Another scientist working on this is Max Rietkerk
3. Straw squares method: planting with empty spaces in between plants to combat desertification
4. Arid sandy soils becoming consolidated; zai-system
5. Westerveld's Naga Foundation
6. List of plants to halt desertification; some of which may be soil-fixating

See also

- Integrated soil fertility: improving the soil to allow growing of plants in deserts
- Green belt

External links

- Wikipedia: Desertification
- Wikipedia:Sahara Forest Project