LAND DEGRADATION AND DESERTIFICATION PROBLEM OF MONGOLIA

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Land degradation and Desertification is a global problem, not only because of the vast areas of drylands, which occupy about one third of the Earth's surface. This process of land degradation initiated in desert can expand like a cancer to bordering areas.

Desertification is defined in the United Nations Convention to Combat Desertification as *"Land degradation in arid or semi-arid in dry sub humid areas as a result of various factors, including climate variation and human activities" /3/.*

Following this definition, researchers and scientists made estimation that 90 per cent of Mongolia is vulnerable to Desertification.

Loss productivity in arid regions creates the major environmental constraints for sustainable development. Hundreds million of people in the countries affected by desertification suffer directly from shortage of food and environmental quality.

Causes of Land degradation and Desertification can be divided into two categories including:

a. **Natural causes**
b. **Anthropogenic causes**

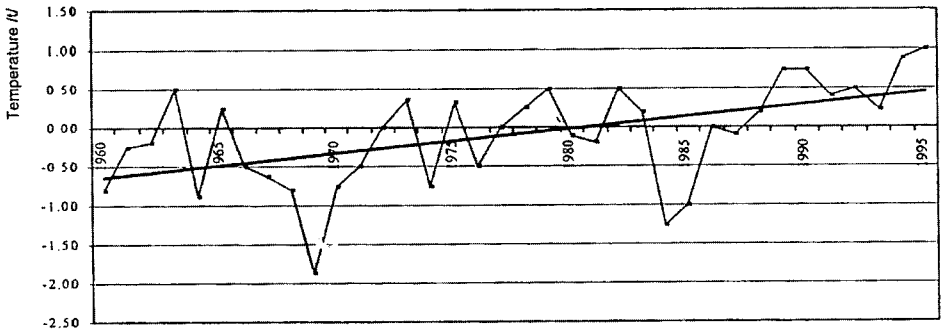
Anthropogenic factors are the main causes for desertification. There are estimates by researchers that desertification caused by natural factors cover only 13% and anthropogenic factors 87% of all causes.

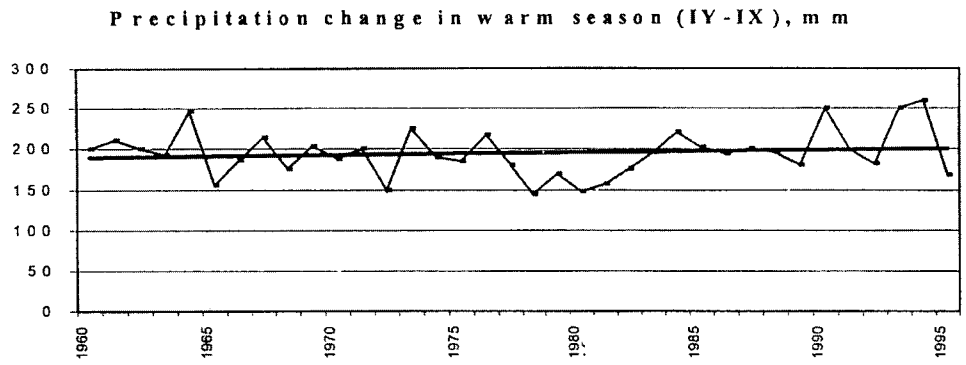
a. Natural causes

There are many natural phenomena which cause land degradation and desrtification such as precipitation, air temperature and wind velocity. These factors are closely related to global and regional climate change.

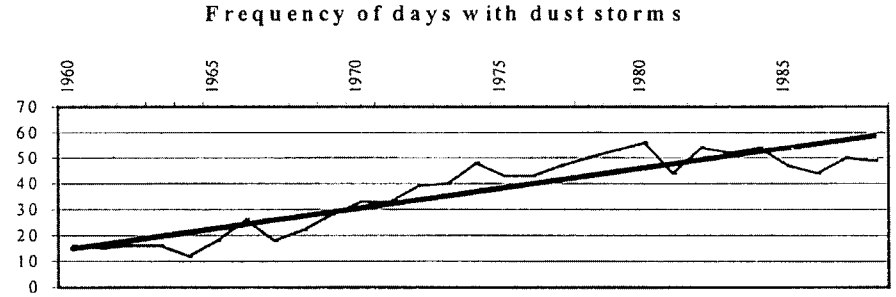
Geographical location of Mongolia has great impact on economic development and climate of this region. Based on weather statistics during the last 40 years it has been estimated that the mean annual air temperature has increased with 0.7 degrees.

Mean annual temperatute change





Total annual precipitation has been estimated to be 50 mm in southern and 400 mm in northern part Mongolia. Most of precipitation's (86-96 %) fall down during the warm season (April-September). Therefore our interest should be directed to precipitation in warm season.



There are several natural tools which can be used in identification of desertification process. The frequency of dust storms can be mentioned as one of these tools. What kind of idea we can get from the increase in the number of stormy days even precipitation in still is normal but increasing.

As a result, degradation of vegetation cover and soil erosion are intensive which both are also examples of desertification.

Natural factors alone can not have a great impact on degradation of vegetation cover and soil erosion and these problems are more strongly connected to human activities as well.

b. Anthropogenic factors

Anthropogenic factors which intensify desertification process are human activities including animal husbandry, soil erosion of arable land, wood cutting, industrialization and mining which all have direct impact on the environment.

But there are several major factors which have serious impact on land degadation and desertification process in Mongolia.

Degradation of the vegetative cover

Overgrazing, cutting trees and shrubs for fuel are the main reasons of this degradation. Small increase in animal populations or changes in land-use patterns may therefore result in localized degradation. Size of pasture land has decreased with 6.9 million hectares during the last 30 years. 30% of total pasture area in Mongolia has degraded due to misuse of

pasture land. The yield from severely degraded pasture has decreased by 5 times and number of plant species has decreased by 4 times.

Climate changes and inappropriate human activities have led 100 species of plants. Pasture land in the vicinity of water bodies, settlements, lakes and along livestock driving roads has severely degraded. Water resource has decreased and rives and springs are drying due to aridity, overgrazing and centralization of settlements.

Forest are cut for commercial and household purposes and saxual and bushes are cut for household purposes as well. The size of area covered by sand in Mongolia has increased with 38000 hectares (8.7%) during the last 40 years. 33600 hectares of it occurs in Gobi (86%) and 4600 hectares in Khangai (12%) /4/.

Soil erosion of arable land

About 82.6 percent of total land resources used for agriculture, in which the arable land occupies very low percent /1/. From the second half of 1960ies, agricultural industry was developed as individual part of the agriculture and has satisfied all vegetable needs by us.

In the past years, since we have moved market-economy social, agricultural industry was fell down. The decrease of crop yields, felt of vegetative industry is primarily relevant to arable land erosion and degradation.

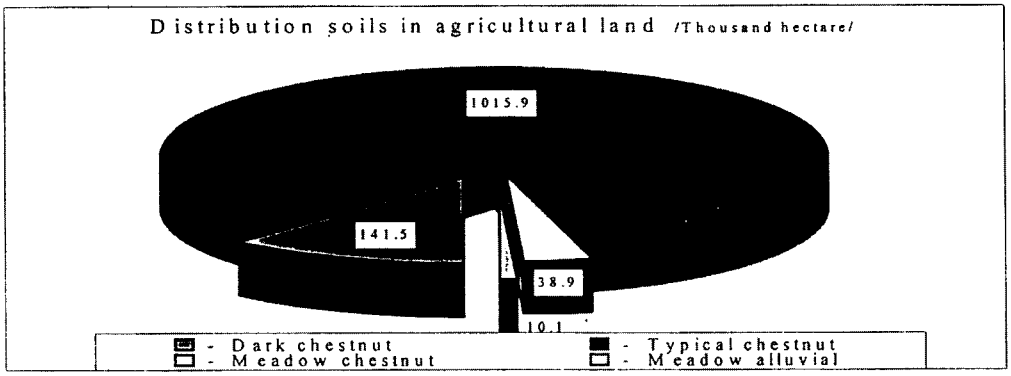
The main natural features, shallow soil, sparse vegetation cover, sharply differentiated condition of the climate were the main reasons what affected in to soil erosion.

The main criteria for erosion cultivated land is considered as soil genesis, thick of humus layer, humus content, soil texture and soil erosion.

At the start period of agricultural industry had not paid any attention in to the soil conservation, only paid an attention into rehabilitation of the natural resources and has been used for short circle system. By the our research results, we had identified that about 46.5 percent of total arable land was eroded, of which 41.1 percent land has eroded moderate to severe /2/.

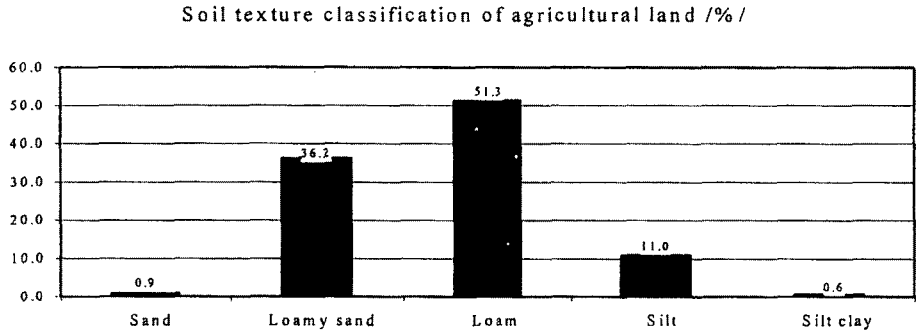
Then, during two year arable land has cultivated plants only in 90-120 days and in other time it has being bare.

When the arable land was in natural condition, it has had neutrilizable value in nature ecosystem. And because of soil erosion of agricultural land, it has a real accident to destroy the hearth of territory.



Dark chestnut and meadow chestnut soils with relatively good quality of water and fertility substance regime are occupying only 15 percent and steppe chestnut soil occupying about 80 percent. While in natural condition, soil texture is a very importance factor into growth and yields of vegetables.

About 88.4 percent of total agricultural land soil of Mongolia are slight texture, of which 37.1 percent for sand and loamy sand soil texture. Figure. 4 summarizes the soil texture research results of agricultural land.



The humus content is a one of the main criteria of soil fertility and it strongly belongs to soil texture.

Mongolia has been followed a short rotation system in agriculture, which has named fallow-crop, fallow-crop-crop and it concerned to be the main cause of soil deterioration.

While in natural condition the agricultural land has vegetation cover, and from this fertility substances have been accumulated into the soil. But we have had used this deposition for agriculture by large force, have not giving any additional forage into the soil, and because of regularly using, the negative results are became to light in agricultural land.

Soil humus content in non eroded area was 2.64 percent, then in slight eroded area comparing with abandonment soil humus content was decreased by 7.2 percent, 21.3 percent for moderate, 39.4 percent for severe. These decreases are endorsed that loss of soil fertility has increased. Because of decreasing the humus content, loss of soil fertility and decrease of infiltration of precipitation water into the soil, soil texture could not discharge its role into the environment and its destruction can be affect in range of biosphere.

Physical clay content of loam chestnut soil comparing with abandonment soil has decreased 6.07 percent for slight, 11.7 percent for moderate, 27.5 percent for severe. In natural condition of our country, abandonment of agricultural land is directly relevant to soil erosion.

In the past 40 years, because of changing the traditional method, which has been used land only for pastoral rangeland; agricultural land has been lost its ecological condition.

90% of the territory of Mongolia can be a subject to desertification. A recent Mongolian report estimates that 1% of desertificated area is affected very severely, 3% severely, 21% moderately and 75% slightly by land degradation and desertification.

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