

Tomorrow, the Sahel

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ABSTRACT :

The Sahel is usually referred to as a marginal and fragile area. There, 35 million people live on a surface of 5 million km². Severe drought and overexploitation of natural resources have upset the precarious equilibrium between man and his environment. In some areas the point of no return has been reached, and barren land is expanding.

Is this evolution irreversible ?

The author reminds the factors which have influence on the dynamics of this ecosystem. He discusses the results of experiments showing the conditions for regenerating certain kinds of sahelian vegetation at an average annual rainfall of 400 mm.

He concludes that the research of a new balance between man and his environment is necessary to end the present crisis. For these purposes the sahelian area of Oursi Pond, situated in the north of Burkina Faso is taken as an exemple.

Diaporama, U-Matic, Secam, color (English and French)

RESUME :

Zones marginales, sensibles, fragiles : tels sont les qualificatifs habituellement utilisés pour désigner le Sahel : région de plus de 5 millions de km² où vivent 35 millions d'hommes. Une sévère sécheresse et une surexploitation des ressources naturelles déplacent et rompent l'équilibre précaire qui existait entre l'homme et l'environnement. Des points de non retour sont atteints, les terres stériles s'étendent.

Cette évolution est-elle inéluctable ?

Après avoir rappelé l'ensemble des facteurs qui agissent sur la dynamique de ce système écologique, l'auteur montre les capacités de régénération de divers types de végétation d'une zone sahélienne correspondant à 400 mm de pluie annuelle.

Il apparait que la situation de crise qui prévaut actuellement exige la recherche d'un nouvel équilibre entre l'homme et son milieu. Ce document repose sur les recherches écologiques menées à la Mare d'Oursi, au nord du Burkina Faso.

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Each year, the 35 million inhabitants of the sahel live through the contrast of short rainy season followed by a long, rigourously dry one.

For over twenty years, these people have been faced with the delicate problem of insecure food supplies, and have seen their natural resources deminish.

Even water is difficult to obtain in this dry climate.

The Oursi Pond in Oudalan in the north of Burkina Faso is a typical, semi-arid area. An annual rainfall of 400 mm allows extensive agriculture to be carried on along with nomadic stockbreeding.

The vegetation, principal source of food livestock, is made up of thorn bushes and annual plants, which represent, ecologically, the biological forms the best adapted to the nine months dry season.

The diversity of natural pasture is the result of the geographical location and the nature of the soil. In the rainy season, grasses grow along the river beds, and 3 ha of such pasture can support a cow for a year. However, these pastures make up hardly 10 % of the region. The sandy soils yeild fodder reserses for the dry season : there, a cow needs 6 ha per year. These formations cover 30 % of Oudalan. Sixty percent of the region is covered by glacis pasture - great stretches of compacted, more or less permeable soil. Here, 11 ha per year are needed for each cow.

Today, the people's lifestyle and methods of exploiting their resources no longer seem to correspond to the environmental conditions prevailing. The biological balance between man and his environment has been upset. Vegetation is disappearing. Naked soil with surface water flow and moving

sand-dunes are encroaching. Biological productivity is falling. Scarcity of fodder can produce death among flocks and herds.

In arid regions, water constitutes the main factor in ecological evolution. Rainfall is scanty and uncertain. For the past 20 years, the region has suffered from severe drought. Run off accentuates the effect of insufficient rainfall, and spectacular forms of erosion are to be seen.

Wind stirs up the sand and modifies the landscape.

Rodents, crickets, xylophagic insects, which are other natural factors can have a real effect on vegetation.

The primary, human influence stems from agriculture. To feed the rapidly growing population, peasants extend the areas under cultivation. As a rate of more than 2 % per year, these areas have increased over 50 % in 20 years at the expense of land liable to erosion. Trees must be felled to reduce shadow on the new fields, prevent grain-eating birds from nesting and yield fencing for keeping out herds. The use of thorn branches around out-of-season plots is particularly harmful.

Oudalan accounts for 6 % of Burkina Faso's population and 20 % of its livestock. Sheep and goats are three times as plentiful as cattle. Breeders try to build up their flocks and herds as an insurance against periods of uncommon drought. The overgrazed and overtrampled land can no longer support the livestock. The animals's teeth are less harmful, however, than shepherd's machete.

Gathering is common in this region and concerns mainly substitutionary food items such as cram-cram, Nenuphar rhizomes, and wild Fonio which is collected in baskets made from the roots of trees. Gathering allows food stores to be built up to cover difficult periods. Wood is the main source of energy. Leaves, grasses and various types of wood are regularly collected to be made into mats, rafters and domestic utensils.

The evolution of this ecological system is also a result of History. Here, the human settling began 2000 years ago.

Unfavourable climatic conditions and the overexploitation of resources have worsened the situation in the sahel, and points of no return have already been reached. How would this environment have evolved in the absence of humans and animals ? What is its capacity for regeneration ? Research undertaken near Oursi pond has shown that protection of the vegetation,

for a given soil and climate, modifies and diversifies the flora, and increases production. Straw from the dry season protects the soil against erosion. Trees grow better and produce fruit again. The good condition of partially exploited pasture confirms these results.

In point of fact, the vegetation is adapted for aridity, but, despite its real potential for regeneration, it can no longer resist the combined effects of drought and human interference. Similarly, the agrarian systems are capable of being adapted to deal with aridity and variability of resources. Such adaptation would require an unsaturated milieu, and the regeneration of natural resources, but these conditions can no longer be met. For this crisis situation, a new balance between man and his environment must be found.

Grouzis Michel, Langlois Michel (1986)

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Dakar : ORSTOM, 5 p. multigr.