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## LAND DEGRADATION IN MEDITERRANEAN REGION

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The soil is considered a so usual component of environment and ecosystems, that often we forget its importance. In fact we have to consider soil degradation as one of the main question marks about earth future. We have to think that also if some futuristic techniques allow us to growth plant without soil, practically almost all the forms of vegetal life on earth are linked to the soil that is the mean able to release water and nutrient to the plant.

With the purpose to afford problems of land degradation, last June an international conference on this topic was organized in Turkey (Adana). From this favorable point of observation, some interesting idea for think about this problems were born.

Soil degradation, and its last step desertification, are so important that since many years the international organization are working on it. The first attempt to do this was held in Stockholm Conference in 1972, when 113 countries established the importance of protection and safeguard of the environment for the future generations. By this conference the UNEP, a United Nations organization, was created; UNEP, established in 1973 in Nairobi (Kenya), organized in the same town, four years later, an international congress on desertification, where some important data were presented: 600.000 ha of productive land lost each year in the world, that mean 25 billion US \$ for productivity lost.

Causes of land degradation have been changed during time; in the past the main problems were linked to erosion due to deforestation, grazing or agriculture; later, with the availability of machinery that facilitate irrigation one of the main problem became salinization at first, then, during the industrial age, soil pollution due to the presence of chemicals in irrigation waters.

There is also a competition between agricultural and urban or industrial use of land, but because the weak economic weight of agriculture, this sector is loosing. We could note this looking the expansion area of urban settlements, that quite often take place on the best agricultural land. This problem afflict not only the country

without experience in land and environmental planning, but also country that have, at least on paper, experience in this activity.

Soil erosion, due to wind or water, generally begins or becomes worst because of human activity. The activity of man, farmer or shepherd, determines destruction of originary vegetation and this strongly exposes soil to erosion risk.

The first step of this process is represented by deforestation, that in Mediterranean region was developed in historical time, but in some area is still active. Deforested area are used for agricultural purposes; in this case the overgrazing or the cultivation of easily erodible soil, could cause the complete disappearance of soil and so the lost of productivity or possibility to grow any kind of plant.

Irrigation of arid and semi-arid region is considerably developed since '50. The use of this technique allow to obtain remarkable increase in yield, but generally after a period of 20-40 years the productivity start to decrease because many different reasons, especially the development of secondary salinization.

A case study about this problem is relative to Yzre'el Valley (Israel), a 20.000 ha area intensively irrigated, where 70 million mc carry 15.000 t of chloride into the soil (Banin, 1996).

Menderes basin, in Turkey, represents another example of land degradation in Mediterranean region: 635.000 ha of eroded soil, 74.000 ha of salt affected land and the main part of irrigated soil show problems of boron phytotoxicity. Boron comes from geothermal spring and is carried with water of river.

Egypt is a country with one of the highest demographic rate and the arable land is only 3.5% of total surface; arable land pro-capita is 0.055 ha and the level of agronomic intensity is 180%. In this kind of scenario, where the increase of population is so high, the competition for land, among agricultural and non-agricultural use, is very strong; 12.600 ha of productive land are lost each year due to urbanization. It is necessary then, begin to cultivate new land, that generally are less fertile and productive than the lost one. The colonized soil usually are sandy, calcareous, salt affected and each of them have special problem for management.

A further cause of fertility decline of Egyptian soil is the construction of dams on the Nile, that reduce or annul floods of river and so the apport of fertility element.

Sometime also agricultural policy can promote land

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degradation; one example is represented by UE measure to sustain some crops, like durum wheat or sunflower. This kind of policy promotes the monosuccession of crop or the cultivation of marginal land, with consequent problem of soil erosion. Sunflower for instance, allows the farmer to receive more than 500 Ecu per hectares and this causes the cultivation of highly slope area, where the productivity are very low and the erosion risk very high, especially in presence of row crops. The papers presented during the conference showed that there are tools to study, evaluate and control soil degradation, but different thing is to adopt practical measure.

It is necessary, first of all, to sensibilize public opinion, consciensous of fact that is easier to interest common people in rare animal or plant, than in soil conservation.

An interesting experience was presented by TEMA that is an organization born in Turkey with the purpose of sensibilize public opinion to land conservation. The TEMA activity come from didactic activity in the school to the meeting of farmer and shepherd in the villages. Many projects, studies, research network on land degradation, promoted by international organization, were presented during the conference.

The World Bank between 1990-94 has financed 27 projects totalling US\$ 1 billion, dealing directly with land degradation; examples of this projects are Loess Plateau Project in China, Marsah Matrou Natural Resource man-

agement Project in Egypt and others in Brazil, Turkey, Pakistan, Mali, etc. For the future the target of World Bank policy will be link natural resources management with country assistance strategies.

European Union was present at the conference with researches dealing with land degradation, realized by different partner inside Medalus and Medimont project, both financially supported by UE.

The MEDCOM, founded in 1993, is the Mediterranean Committee of the International Geosphere Biosphere Programme (IGPB) and its aims is to stimulate Global Change research around the world. In September of this year, MEDCOM will organize in Toledo (Spain) an ENRICH/START Global Change Workshop for the Mediterranean region.

The hopes for the future are to be able to use the soil with more care adopting appropriate plaming policies. When politics decide that sacrifice of a piece of land for urban, industrial, infrastructural purposes is essential, we have, at least, to use all the methodology of land evaluation, well known, but not well applied.

At the end of the conference it was possible to obtain the following conclusion:

- 1) Importance of the holistic approach in land degradation studies;
- 2) Importance of sustainable development for land protection;
- 3) Promote "land evaluation" methods in order to plan the use of land.