

DESERTIFICATION IN ARID LANDS

Causes, Consequenses and Mitigation

EDITORS

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FOREWORD

Desertification has been high on the agenda among the globally important environmental issues since the 1970s. At the present time, it is regarded as a major environmental and social problem expanding rapidly both in extent and severity, as a third of land area and more than one-sixth of the world's population are disastrously affected. The United Nations Conference on Environment and Development described desertification as land degradation in arid, semiarid and dry subhumid areas resulting from various factors, including climatic variations and human activities. In essence, land degradation refers to the reduction (loss) in the ability of the land to sustain production at levels expected by the associated society. Aridlands are fragile ecosystems with scarce freshwater resources, shallow top soils and low biomass productivity that render them vulnerable to overexploitation such as grazing, deforestation, and inappropriate irrigation practices leading to salinization and land degradation.

Kuwait enjoys considerable diversity in biological resources. However, Kuwait's natural resources were used in an unsustainable manner, until recently. The affluence in the post oil discovery era, increase in population, and rapid urbanization and industrialization in the country have brought about greater demand for the limited natural resources and transformation of the traditional lifestyle (nomadic grazing into sedentary forms of livestock production). The ready availability of cheap water has encouraged the adoption of highly intensive crop and livestock production. In the absence of proper land and water management practices, the nation's natural biological resources have been under enormous pressure and have lost their role as the mainstay of the country's economy and heritage. Kuwait is presently faced with catastrophic environmental problems including, widespread desertification of rangeland, lack of conservation areas, industrial and oil pollution of the environment as well as depletion of biodiversity, not to mention the disastrous war impact on the environment.

Although desertification has been in the forefront of important environmental problems since the 1970s, understanding what desertification actually is and how it relates to various ecological, environmental and socio-economic issues is yet vague. There is a gap in our knowledge in identifying the onset and impacts of desertification, as well as measuring the success of antidesertification programs. Recognizing the early indicators of desertification may, thus, prove to be a valuable approach to dealing with the issue not only in the rangelands but in other landuses as well, for example, irrigated lands. Under these circumstances, significant scientific contributions are imperative toward 'develop a predictive understanding of the impact of human actions and climate change on natural resources.

Kuwait Institute for Scientific Research (KISR) has made concerted research efforts to identify the extent and causes of desertification and developing effective measures to control, or arrest desertification. KISR's major contributions comprise rehabilitation of degraded lands including military affected areas, abandoned gravel quarries, degraded rangelands, and remediation of oil-contaminated soils; sustaining range management and development, including development of research facilities and enhancement of manpower capabilities, preservation and mass multiplication of native plants (both conventional and tissue culture methods); establishment of data banks on vegetation, soils, and wildlife, etc; establishment of protected areas such as the Sulaibiya Experimental Station and the Sabah Al Ahmad Nature Reserve