



Effect of climate change on agriculture sustainability in Jordan

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Jordan is a vulnerable country in terms of climate change impact. In the latest assessment report published by the Intergovernmental Panel on Climate Change. Jordan will suffer from reduced agricultural productivity due to more erratic rainfall patterns, reduced freshwater resources and increased temperatures. The Initial National Communication (INC) to the United Nations Framework Convention to Climate Change (UNFCCC) foresees that over the next three decades, Jordan will witness a rise in temperature, drop in rainfall, reduced ground cover, reduced water availability, heat-waves, and more frequent dust storms.

Coupled with the effect of continuing drought incidents, plant cover removal was greatly accelerated. Climate change can impact agricultural sustainability in Jordan in two interrelated ways: first, by diminishing the long-term ability of agroecosystems to provide food and fiber locally; and second, by inducing shifts in agricultural regions that may encroach upon natural habitats, at the expense of floral and faunal diversity. Global warming may encourage the expansion of agricultural activities into regions now occupied by natural ecosystems such as rangelands in the *Badia* region and forests.

Such encroachment will have adverse effects on the fragile ecosystem in those areas (Badia and steppe areas).

Primary model test results showed that the reduction of rainfall by 10 to 20% had a negative impact while the increase in rainfall by 10 to 20% had a positive impact on grain yield for both barley and wheat at the different temperature regimes. This is due to the fact that water is the main limiting growth factor for wheat and barley under rainfed agriculture on Jordan. The warming (increase in temperature by 1 to 4° C) had negative impact on barley grain yield while it had a positive impact on grain yield of wheat.