

Abstract

Global climate change induced by increased greenhouse gas concentration has been widely accepted. Agriculture and water resources are the most vulnerable to climate change and are expected to be exposed to direct effects of temperature and precipitation change, but still the potential impact of global climate change is one of the least addressed factors in water resources planning in developing countries. Moreover, the potential impacts of climate change have not been quantified at local level yet. Considering this fact, this study aims to evaluate the agricultural water demand under different suggested climate change scenarios for Palestine.

To evaluate the potential impact of climate change on agricultural water demand, Jericho and Al Aghwar district was selected and the crop water requirements, for the irrigated open-field crops in the district, were estimated under different suggested scenarios of changing temperature and precipitation using the CROPWAT computer model.

The results clearly show that crop water requirement (CWR) is very sensitive to temperature increase; CWR increases by an average of 2.7%, 5.4% and 8% as temperature increases by 1°C, 2°C and 3°C, respectively, to compensate the water lost in evapotranspiration.

Changing precipitation doesn't affect the crop water requirements, but it affects the amount of irrigation water requirements (IWR); as the effective rain provides part of the crop water requirement. Scenarios of changing precipitation show an increase in IWR by an average of 1.47 % and 5.53% for a decrease in precipitation by 10% and 20% respectively. The other scenario of increasing precipitation shows a decrease by an average of 1.44% and 2.84% in the IWR for an increase by 10% and 20% in precipitation respectively. The total amount of irrigation water required for the district gets greater when combined the scenario of increasing temperature with the scenario of decreasing precipitation.

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