



Consumptive use of green and blue water for wheat and tomato cultivated in Southern Italy as affected by climate change

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In this study at regional scale, DSSAT model was applied in order to simulate the cultivation of winter durum wheat and tomato to estimate the green water (GW) and the blue water (BW) through a dual-step approach (with and without supplemental irrigation). The model simulation covered a period of 30 years in three scenario including a reference period and two future scenarios based on forecasted global average temperature increase of 2 and 5°C. In this paper GW e BW contribution for evapotranspiration requirement is presented and analyzed on a distributed scale related to Puglia region (Southern Italy) characterized by high evaporative demand of the atmosphere. For wheat the GW component was predominant compared to BW, covering almost 90% of the ETc of WW. Under Baseline scenario the weight of BW was of 11%, slightly increasing in the future scenarios.

At contrary, for tomato the irrigation and then the BW component was predominant and the water availability was the main limiting factor for yield tomato and this was confirmed in future scenarios affected by climate change. GW and BW appeared dependent on the spatial and temporal distribution of rainfall during the crop cycle, but also to the hydraulic characteristics of soils corresponding to each calculation unit.