



An Italian project on “Evolution of cropping systems as affected by climate change” (CLIMESCO)

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The climatic change induced by the global warming is expected to modify the agricultural activity and consequently the other social and economical sectors. In this context, an efficient management of the water resources is considered very important for Italy and in particular for Southern areas characterized by a typical Mediterranean climate in order to improve the economical and environmental sustainability of the agricultural activity. Climate warming could have a substantial impact on some agronomical practices as the choice of the crops to be included in the rotations, the sowing time and the irrigation scheduling. For a particular zone, the impact of climatic change on agricultural activity will depend also on the continuum “soil-plant-climate” and this continuum has to be included in the analysis for forecasting purposes. In this paper, a three-year Project, funded by three Italian Ministries (University, Agriculture and Environment) and involving Italian Research Institutions of Agricultural National Council, Research National Council and Universities is illustrated. The Project is structured in four workpackages (WP): (1) Identification of homogeneous areas, (2) Climatic change, (3) Optimization of water resources and (4) Scenarios analysis. Starting from informations deriving from WP1 concerning two area located in Southern Italy (Apulia and Sicily regions), WP2 will provide temperature, precipitation and radiation scenarios according to several forecasted of greenhouse-gases emission by using the General Circulation Models (GCM) and to estimating local weather forecast for several decades at daily scale comparing two method of downscaling. Within the WP3, several researches at field scale will be carried out to investigate for the optimization of several irrigation variables using water resources of different salinity and quality. An other important issue of this WP will be to parameterize the simulation models about crop growth and photosynthesis translocation, soil water fluxes

and solute transport. With the conclusive WP4, using the information deriving from previous WPs, simulations will be effectuated at field and regional scale by using numerical models for simulating crops and cropping systems in order to evaluate the effects that the future climatic scenarios will have on crop yields and to individuate the best agronomical strategy to optimize the use of water resources.