Climate uncertainty, particularly in climate change context, nowadays is acknowledged as an essential issue to be taken into account in agricultural water management. The concept originates from spatial and temporal variability and measurement errors of climatic factors, among which the rainfall variability is one of the most important ones both at growing-season and multi-year temporal levels. This research employs an ecohydrological stochastic-analysis-based model, building upon the stochastic differential equation of soil moisture dynamics, as a basis for deriving analytical expressions for statistics (probability density function) of micro irrigation’s water requirement considering temporal stochasticity of rainfall. The methodology deals with estimation of statistical properties of the total water requirement in a growing season that could be used in shorter time-horizon applications under special circumstances. Also a wide range of irrigation management policies from stress-avoidance to rainfed, including deficit irrigation, could be addressed. The sensitivity analysis on the most prominent parameters of the model has been performed. Results show that while increase in rainfall parameters (leading to increase of total seasonal rainfall) reduces irrigation water requirement, they have contrasting effects on uncertainty of irrigation requirement. Also the effects of soil and crop features and also irrigation policies on p.d.f. of irrigation requirement could be observed.