The Contribution of Spring Water Collector to the Water Needs of the University of Coimbra Botanical Garden

H. Simão*; J. A. Sá Marques**; H. Freitas***

* Engineering and Technology Unity, Polytechnic Institute of Guarda, Portugal
(E-mail: hsimao@ipg.pt)
** Department of Civil Engineering, University of Coimbra, Portugal
(E-mail: jasm@dec.uc.pt)
*** Department of Life Sciences, University of Coimbra, Portugal
(E-mail: hfreitas@ci.uc.pt)

Abstract

In general cities appeared, expanded and developed in places where natural and environmental conditions were the most favorable and can only continue to prosper by conserving the natural resources that are the drivers of their wealth and quality of life.

Four in five European citizens live in urban areas and their quality of life is directly influenced by the urban environment.

Gardens, parks and green open spaces contribute to improving air quality by reducing the impact of storms water, by reducing temperatures in the hot urban islands, and offering habitats for biodiversity, which plays a significant role in improving life in urban communities. The gardens of many cities, as our case study, were initially build for decorative, architectonic, and leisure or pharmaceutical and medicinal purposes, but due to their size or relevance, often became significant players in the city balance.

Sustainable water management involves identifying strategic reserves to deal with drought as well as promoting control and rational water use.

Estimation of garden water needs, beginning with determining levels of evapotranspiration water (ET_0) in plants, should reflect the differences between garden areas and agricultural cultivation. The value of evapotranspiration previously determing should be adjusted to best meet the water needs of a given assemblage of plant species.

In this paper, we present the study of the Botanical Garden of the University of Coimbra (BGUC). Monthly and annual levels of precipitation will be evaluated along with those for air temperature and evapotranspiration, to determine the climatologic water balance through water deficiencies and surplus, comparing the results with the levels of water consumptions (public water supply and spring water collector) giving an assessment of the efficiency of irrigation, adjusted for plant type, identifying procedures and opportunities to maximize efficient use and sustainable management of water.

Keywords
Coimbra Botanical Garden; Urban parks; Sustainable water management; Urban environment.

INTRODUCTION

Cities appeared, expanded and developed in places where natural and environmental conditions were favorable and can only continue to thrive while safeguarding the natural resources that are the drivers of wealth and quality of life for its citizens.
Four out of five Europeans live in urban areas and their well-being and quality of life are directly influenced by the state of urban environment; a good urban environment is a prerequisite for good quality of life.