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Rainfall interception by the vegetation in a Mediterranean type climate

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The study of rainfall interception by the canopy of the vegetation is of great importance in the basin water balance, because a large part returns to the atmosphere as evaporation. The presence or absence of vegetation not only affects the amount of rainfall that reaches the ground level also affects the moisture content in soil and surface runoff. In arid or semiarid regions there are few studies related to the Mediterranean vegetation and its relationship to hydrological processes. Furthermore, most studies have characterized the interception by rainfall simulators in the laboratory.

The aim of this study was to evaluate in situ the amount and distribution of rainfall through the process of interception by the canopy of trees and shrubs present in the hydrologic watershed of "The Cabril" (Córdoba, southern Spain). The predominant vegetation is scrub, composed mostly of rockrose (Cistus ladanifer), and arboreal formations of tree pines (Pinus pinea).

The record of precipitation was performed using a rain gauge tipping bowl Eijkelkamp mark during periods of rain occurred in 2010 and 2011. The amount of precipitation intercepted by the canopy has been determined indirectly from the difference between incident precipitation and rain that passes through the canopy of vegetation, which is divided into the flow of throughfall and cortical flow. To measure the throughfall the soil surface was waterproofed. Throughfall volume that is generated after each rain event is collected in four tanks of 200 liters capacity interconnected. For measurement of cortical flow a spiral hose previously cut lengthwise was placed around the trunk in the case of tree pines. In rockrose, a container was installed around it at its base. Monitoring soil moisture was determined by moisture probes 6 Delta-T SM200 randomly distributed, which records the water content of the topsoil.

Compared with rockrose, there is a higher percentage of interception in pine and lowest percentage of cortical runoff. This is due to the architecture of the rockrose and the resin secreted by the stem and leaves, acting as a water repellent and reducing the retention of intercepted rainfall. Besides, in both species decreases the capacity of interception with increasing rainfall.