ediblecity: an R package to model and estimate the benefits of urban agriculture

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## Abstract

Urban agriculture is gaining attraction to become one of the pillars of the urban ecological transition and to increase food security in an urbanized planet. However, there is a lack of systematic quantification of the benefits provided by urban agriculture solutions. In this communication, we present an R package to estimate several indicators related to benefits of urban agriculture. The goal is to provide a tool for researchers and practitioners interested in the impacts of urban agriculture. The ediblecity package provides functions to calculate 8 indicators: urban heat island, runoff prevention, green areas accessibility, NO2 sequestration, jobs created in commercial gardens, volunteers involved in community gardens, green per capita and, finally, food production. Moreover, the package also provides a function to create scenarios with different implementations of urban agriculture. We illustrate the use of the package by comparing three scenarios in a neighborhood of Girona (Spain), which is included in the package as an example dataset. There, we compare scenarios with an increasing amount of urban agriculture solutions. The ediblecity package is open-source software. This allows other R developers to contribute to the package providing new functionalities or improving the existing ones.

**Keywords:** edible city solutions; urban farming; urban food; nature-based solutions; Rstats; urban challenges; societal challenges; urban agriculture