

# Evaluation of the potential for producing vegetables in screenhouses in Mozambique

G. Joaquim<sup>1</sup> and F.J. Baptista<sup>2,a</sup>

<sup>1</sup>Departamento de Engenharia Rural, ECT, Universidade de Évora, Évora, Portugal; <sup>2</sup>Departamento de Engenharia Rural, ECT, and Instituto de Ciências Agrárias e Ambientais Mediterrânicas (ICAAM), Universidade de Évora, Évora, Portugal.

## Abstract

The production of vegetables in Mozambique presents a seasonal production, characterized by reasonable production levels during favourable climatic conditions, that means a cold season in which temperatures are mild. The climate of Mozambique is tropical, characterized by two distinct seasons a “cold” and dry season, from May to September and a hot and humid season between October and April. The production of vegetables during the summer in Mozambique has low levels of productivity. Although Mozambique is a producer of vegetables, the country needs to import in order to satisfy the domestic demand. In fact, between 2010 and 2014 import more than doubled from about \$ 10 to 24 million. The main goal of this study is to evaluate the potential for producing vegetables in screenhouses in Mozambique during the hot season when outside production is insufficient. It is expected that using screenhouses a wide range of horticultural crops of great importance can be cultivated in Mozambique, taking advantage of higher productivity, better quality and the great advantage of the products being obtained out of the regular season. These structures allow to control temperature and humidity, providing the minimum conditions required by the crops. However, this involves higher production costs, that need to be compensated by the increase in productivity. Results showed an inside air temperature lower than the outside air temperature between 0.8 and 2.3°C and the inside air relative humidity increases between 4 and 15 percentual points.

**Keywords:** food safety, thermal balance, mass balance, tomato yield

## INTRODUCTION

Mozambique’s agricultural production is mainly family type, where, according to the statistics, it represents 99%, corresponding to 3.8 million farms. In the specific case of horticulture, the family sector takes the lead in producing and supplying the urban centres and more than 97% of the farms that are dedicated to these crops are small farms. The horticultural production is concentrated mainly along riverbanks and spread in all the country. However, their spatial distribution is dependent on several factors, such as the agro-ecological conditions of each region, the proximity to the markets, the food habits of the growers and the available income of the consumers (Calima, 2015).

The productivity of the crops is low and the production is insufficient to ensure the population needs. National production is not enough for the demand and import is the solution to supply the necessities (Walker et al., 2016). Between 2010 and 2014, import more than doubled, approximately from \$ 10 to 24 million (ITC, 2019). The value chain is usually very short, approaching the grower and the consumer, with prices varying in time and space according to the season of the year and affected by the seasonality of the production. In fact, most of the production occurs in a single season (the “cold” and dry) in open fields, using predominantly traditional practices with a minimum incorporation of inputs in very small farms. The tomato crop (*Solanum lycopersicum*) is one of the most important horticultural crops in Mozambique, grown during the “cold” season, but the national deficit stands at

<sup>a</sup>E-mail: fb@uevora.pt

