

CONSUMO DE ENERGIA E CUSTOS DE AQUECIMENTO NA PRODUÇÃO DE FLORES E LEGUMES EM ESTUFA

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Resumo

Pretende-se determinar os consumos de energia e os custos em aquecimento, na produção de flores e de vegetais, ao longo do ano, em estufas de plástico aquecidas, localizadas em diversas zonas de produção de culturas forçadas. No primeiro ano considerou-se Portugal e a produção de rosa. Foram calculados os consumos energéticos e os custos de aquecimento com gasóleo ou gás natural, para duas combinações de temperaturas mínimas do ar noite/dia, em estufas modernas de plástico. O estudo está a ser alargado para a produção de tomate, englobando Portugal e Espanha.

USE OF ENERGY AND HEATING COSTS FOR GREENHOUSE FLOWERS AND VEGETABLES PRODUCTION

Abstract

The energy consumption and the heating costs for rose production in multi-tunnel greenhouses located in several regions of Portugal are presented. The greenhouses with a surface area of about 1 ha and steel structure are covered with a three layer co-extruded plastic film. They are equipped with a hot water heating system, natural ventilation, shadow screens and an evaporative cooling system.

A Greenhouse Climate Simulator (GCS) was used to compute the energy balance with an hourly step, based on solar radiation, temperature, wind speed and relative humidity external weather data. The results presented show the energy consumption in each of the studied locations. For this study, two combinations of greenhouse day/night air temperature set-points were chosen. First the analysis of the energy required is presented considering location versus temperature set-points for the year round production of roses in Portugal. The heating costs using diesel or natural gas were computed based on 2010 prices. This study is now being extended to consider the year round tomato production in heated greenhouses in Portugal and in Spain. It may help the growers to evaluate different strategies to reduce greenhouse energy consumption, environmental impacts and heating costs.