SUMMARY

Assessment of a NFT hydroponic system for the production of lettuce (*Lactuca sativa* L.) in a controlled environment

Agricultural production in Mexico is considerably affected by social, economic and environmental factors that directly demerits the performance, quality and safety of horticultural products. In order to face this situation, focusing on food security, it is required to find out alternatives that promote access to food production, such as the urban and peri-urban agriculture. In this context, the present study was focused on the implementation of growing conditions through NFT hydroponic system in a controlled environment for the production of lettuce (*Lactuca sativa* L.). The methodology included calculation and design of a greenhouse structure, optimizing a non cultivable space with traditional methods, as it is a roof with an area of 46 m^2. The green house was located in the municipality of Rio Blanco Veracruz at 1,300 meters, with an average maximum temperature of 35 °C. The determining factor for the production was the temperature, since lettuce tolerates only a maximum temperatures of 27 °C. To solve this problem it was selected the intybacea lettuce variety, that tolerates a higher temperature range in the green house and the addition of climate control misting systems and forced ventilation. Crop development variables were compared with inside and outside greenhouse conditions as a function on temperature control. Variables such as length and width of leaves, chlorophyll content units (SPAD) and fresh weight at harvest were evaluated. Moreover, an oriented consumer study was conducted in order to determine acceptability differences among treatments. The time elapsed from planting to harvest was of 60 days, in this time, a highly significant difference between treatments was found, favoring the cultivation under controlled conditions in both performance and sensorial preferences. We conclude that the NFT hydroponic system had better results when placed in a controlled environment.

Key words: urban agriculture, hydroponics NFT system, climate control.