

Effect of Day-Time Heating on Pepper Production in Sodom Valley

Shabtai Cohen, Rivka Offenbach, Ami Madual, Israel Tzabari, Yoram Zvieli and Rami Golan – Central and Northern Arava R&D
Eviater Itiel – Negev Extension Service, Ministry of Agriculture

Address for correspondence: sab@inter.net.il

Abstract

In a study conducted at the Zohar Research Station (Sodom Valley), pepper production inside a greenhouse that was warmed during the day, by closing the sides of the greenhouse to trap the heat inside so that the temperature approached 28°C, was compared with pepper production in a plastic-covered greenhouse with open sides. In previous seasons of this experiment, a positive yield effect was observed in greenhouses in which day-time heating was used. In a continuation of this study, an experiment was conducted in the 2007/8 growing season in two greenhouses. The control greenhouse was continuously ventilated; its sides were left open for the entire cropping season. The treatment greenhouse (day-time heating) was connected to a climate control system (Eldar), which maintained the prescribed temperature by opening and closing the sides of the greenhouse in response to the temperature. The defined temperature thresholds were as follows: sides were closed at 27°C and opened at 30°C. Within the framework of the experiment, two pepper cultivars, Celica (Efal) and 7158 (Zeraim Gedera) were transplanted (4 Sept. 2007) into the ground and perlite sleeves (calculated stand = 3.3 plants/m²). Spanish trellising was used. As the crop developed, the plants were maintained according to current standard practices for indoor pepper in the Arava. At the end of the experiment, we did not find that the heating treatment had any positive effect, and this treatment was associated with decreased yield of export-quality fruit. Throughout this experiment, cv. 7158 yielded more than cv. Celica. Apparently, the temperatures in the day-time heating treatment were not high enough to induce the expected positive yield effect. The results collected from this year of the study contradict those collected in earlier years. This is apparently due to exceptionally low temperatures both outdoors and in the day-time heating treatment.