

Effect of the Use of Tomato Transplants from a Nursery in Sussiya on Early Fruit Setting, Yield and Fruit Quality of the Tomato Greenhouse cv. 'Shiran' and 'Meital' Grown Bio-Organically at the Yair Research Station, 2007/8

Rivka Offenbach, Ariel Yafe, Yoram Zvieli, Rami Golan and Israel Tzabari – Central and Northern Arava R&D

Address for correspondence: Rivka@arava.co.il

Abstract

The marketing period for exported tomato is short, from November until April. Growers usually transplant beginning in September, when the weather is warm and not conducive to fruit setting (average air temperature above 35°C). Transplanting during this period is problematic because conditions for fruit setting (for the fruit intended for export) begin to prevail in mid-October. Early transplanting can lead to problems with fruit setting, and these plants are also exposed to a number of different pests which are very active during this period, particularly the virus vector whitefly and mites. In organic production systems, hormones can not be sprayed and the majority of the growing areas (for both the organic and conventional crop) are not equipped with cooling systems. During this short marketing season, the export crop is small and its profitability has declined from year to year.

During the summer of 2006/7 season, a project was begun to evaluate the possibility of earlier transplanting in the Syro-African Rift Valley. This research found that earlier transplanting was only successful in structures that were physically cooled using a fan and pad evaporative cooling system. In light of this finding, a decision was made to evaluate the possibility of later transplanting of slightly older tomato plants at a later date. Fruit setting would be induced in the nursery under cooler conditions, prior to transplanting, to ensure the continuous setting of quality fruit and decreased production costs.

The present work was conducted at the Yair Research Station during the 2007/8 season. When young tomato plants (cv. Shiran and Meital – Hazera Co.) from different cohorts from the Sussiya nursery in the Hebron Mountains, where temperatures are lower than those in the Arava, were transplanted into organic greenhouse plots 15 days later than usual (25 Sept. 2007. vs. 10 Sept.), there was no difference between the yields of the two cultivars. For cv. Meital, the overall yield and the yield of clusters for export were greater for the 45-day-old plants that were transplanted on 25 September than for the standard plants that were transplanted earlier. The plants transplanted at the later date produced fruits that were lighter (weight of individual fruits) than those of the plants transplanted at the earlier date. Early fruit setting, which allowed for a harvest in December, was only observed in the regular plants transplanted at the later date, and was less significant for the plants that were transplanted when they were 45 or more days old than for the control. There was no advantage to transplanting 60-day-old plants instead of 45-day-old plants. For 45-day-old transplants of cv. Meital, the overall yield for the later transplanting date was greater than the overall yield for the earlier transplanting date. However, the yields of clusters for export were similar for the two planting dates. No early fruit setting was observed for the second transplanting date.

Delaying the transplanting of slightly older tomato plants raised in Sussiya (cv. Shiran and Meital) by 15 days did not lead to a significantly earlier harvest, had no negative effects on overall yield or yield quality and led to increased yields when the transplanted plants were 45 days old. There was no advantage to transplanting 60-day-old plants instead of 45-day-old plants.