# Evaluating Pepper Rootstock Lines and Their Compatibility with Commercial Organic Pepper Cultivars

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

Address for correspondence: Rivka@arava.co.il

## Abstract

The decreased use of chemical soil treatments, the decreased variety of chemicals applied, increased nematode damage and a lack of nematode-resistant cultivars have all increased the need for appropriate rootstock lines for commercial production of conventional and organic pepper. In an experiment that was conducted during the 2007/8 growing season in screen-houses in the organic section of the Yair Research Station (Arava region), we tested new rootstock lines, in comparison with the veteran rootstock line, 23, in an effort to identify pepper rootstock lines that exhibit vigorous vegetative growth under different growing conditions. In particular, we evaluated the performance of the plants in the presence of salinity, low winter temperatures, diseases and soil pests (nematodes). We examined the following new rootstock lines: Capital, 72001 and 72002. During the growing season, the plants from cultivars 7158 and Vergasa that had been grafted onto rootstock line 23 produced many side branches. These branches were removed at a late date, which damaged the yields of these graft combinations and this rootstock line. Overall, ungrafted 7158 yielded 8.9 kg/m$^2$, as compared to the 7.7 kg/m$^2$ produced by 7158 grafted onto rootstock line 23. The difference in these yields is due to the side branches mentioned above. A similar negative yield effect was observed for plants in which 'Vergasa' was grafted onto rootstock line 23. These grafted plants yielded 7.4 kg/m$^2$, as compared to the 8.0 kg/m$^2$ produced by ungrafted 'Vergasa' plants. The quantities of fruit suitable for export and the percentages of the total crop that were suitable for export were also similar. Grafts of 7158 onto the rootstock lines 72001 and 72002 produced overall yields of 8.4-8.6 kg/m$^2$, similar to the yield of the ungrafted 7158 plants (8.9 kg/m$^2$). The combination of 7158 grafted onto 'Capital' rootstock produced an overall yield that was less than 7.4 kg/m$^2$. The results involving export quality were similar.

In light of the problems that arose as a result of the rapid sprouting of side branches in rootstock line 23, it is difficult to make any conclusions regarding the grafts of 7158 and 'Vergasa' onto this control veteran rootstock line. Of the three new rootstock lines that were evaluated (Capital, 72001 and 72002), the lines 72001 and 72002 both performed well. We recommend continued evaluation of these two rootstock lines, in comparison with the outstanding control rootstock from previous years, 23. Following transplanting, it is important to diligently remove side branches as they are produced by the rootstock line. We recommend future evaluations of new rootstock lines with high levels of resistance to viruses, including resistance to the TSWV virus. It is important that the rootstock line and graft have similar virus resistance profiles, to prevent the collapse of grafted plants as a result of incompatible resistances, a phenomenon that is found in tomato grafts.