Impact of Solarization and Methyl Bromide Alternatives for Greenhouse Hot Pepper Production in Costa Rica

Bielinski M. Santos[1], James P. Gilreath[1], Jorge A. Solórzano-Arroyo[2], and Jorge Mora-Bolaños[2]
[1]Gulf Coast Research and Education Center, IFAS-University of Florida, Wimauma, Florida, USA; email: bmsantos@ifas.ufl.edu. [2]Laboratorio de Fitoprotección, Instituto de Innovación y Transferencia de Tecnología Agropecuaria, San José, Costa Rica.

Abstract. Greenhouse studies were conducted in La Ceiba, Alajuela, Costa Rica, to examine the effect of fumigants and solarization on soilborne pest control and 'Campana' hot pepper (*Capsicum frutescens*) marketable yield. Fumigant treatments were: a) methyl bromide plus chloropicrin (MBr + Pic 98:2 w/w) at a rate of 500 kg/ha; b) emulsifiable concentrate of 1,3-dichloropropene (1,3-D) plus Pic at 275 L/ha; c) emulsifiable concentrate of metham sodium (MNa) at 275 L/ha; and d) non-treated control. Plots were either solarized for 8 weeks or not solarized. Hot pepper seedlings were transplanted in mulched beds. The solarized plots showed higher weed, rootknot nematode (*Meloidogyne* spp.), soilborne fungal and bacterial control than the non-solarized treatments. Among the fumigants, MBr + Pic and 1,3-D + Pic had the best performance against rootknot nematode populations. However, there was no significant difference in marketable yield between the solarized and non-solarized treatments. The fumigant 1,3-D + Pic had marketable yield 9% higher than MBr + Pic, whereas there was no difference between MNa and MBr + Pic.