O28. Effectiveness of a novel integrated solarization system to control soilborne pathogens of strawberry and effects on non-target microorganisms in Northern Italy

F. Aloi[1], V. Battaglia[2], G. Dardani[1], M. Garello[1], M. Cermola[2], P. Mormile[3], D. Spadaro[1,4], E. Lahoz[2], V. Guarnaccia[1,4]

[1]Dipartimento di Scienze Agrarie, Forestali e Alimentari (DISAFA), Università degli Studi di Torino, Grugliasco, Italy; [2]Consiglio per la Ricerca in Agricoltura e l'Economia Agraria (CREA), Centro di ricerca cerealicoltura e colture industriali, Caserta, Italy; [3]Green App, Benevento, Italy; [4]Centro Interdipartimentale Agroinnova, Università degli Studi di Torino, Grugliasco, Italy. E-mail: francesco.aloi@unito.it

A novel integrated solarization system, referred to as the Solin® method, offers a promising alternative to fumigants or pesticides for managing soilborne plant pathogens. The technology, inspired by solar panels, creates a black matrix that absorbs more solar radiation, raising the temperature of the superficial soil. The technology has been applied to control strawberry soilborne plant pathogens in Northern Italy. To assess its effectiveness, the study employed small polyethylene bags (0.02 µm membrane sun bags) containing wheat seeds colonized by fungal strains of *Neopestalotiopsis* spp., along with temperature probes, which were buried in plots covered with different types of solarization films. Furthermore, soil samples were collected to conduct a metagenomic analysis of microbial communities, focusing on fungi, bacteria, and oomycetes. The experimental design included four treatment plots: (i) untreated soil (control), (ii) standard solarization with PET film, (iii) solarization with multilayer thermal film (Polysolar), and (iv) the Solin method. The study showed evidence for the enhanced efficacy of this innovative approach, as indicated by a significant increase in soil temperature and a faster achievement of the thermal sums suitable for reducing the inoculum potential. The evaluation of temperature, survival of fungal pathogens, and analysis of resident microbial communities across the treatment plots demonstrated the potential of solarization as an effective tool to control soilborne plant pathogens without disrupting the soil microbial community. Notably, these findings challenge the conventional assumptions regarding the problematic application of solarization in regions characterized by less favourable climatic conditions, such as Northern Italy.

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