

STUDY OF THE RELATIONSHIP BETWEEN RESISTANCE INDUCTORS AND CHEMICAL AND BIOLOGICAL SOIL PARAMETERS.

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Introduction: Studies involving inductors are important due to non-predicted effects on crops. However, the management of these substances can influence, directly or indirectly, other elements of the system. The composition and/or distribution of the fauna, soil fertility and the interactions between the pesticide residues and their metabolites are examples of this influence.

Objective: This study aimed to compare soil conditions (chemical and biological aspects, such as soil fertility parameters, pesticide residue levels and edaphic mesofauna frequency) in areas in which resistance inductors are in use and areas free of these substances.

Methodology: Soil fertility parameters and pesticide residue levels were calculated in 4 different tomato crop areas, with and without the application of resistance inductors, in order to verify possible synergisms in the crop management techniques. The distribution of the edaphic mesofauna in these areas throughout crop development was also monitored. The inductor in use was acibenzolar-S-methyl (Bion-Novartis®). Soil fertility parameters were evaluated before and after sowing and during young plant development, according to EMBRAPA methodology [1]. Pesticide analyses were conducted before sowing, after resistance inductor pulverization and after their respective grace periods [Vianna, 2008]. Mesofauna collection was conducted using a Berlese-Tüllgren funnel, concomitantly to soil collection for pesticide residue analysis.

Results: No synergic effects were found in this study, indicating that the use of growth inductors is a very good alternative to pesticide use. This result also indicates an increase in the retention of these residues in the soil or in the vegetation after the first crop application. A result of the use of resistance inductors in crops is reduced pesticide pulverizations, which, in turn, results in these areas presenting higher taxa frequency of edaphic mesofauna, when compared to areas that do not suffer inductor management.

Conclusions: According to the results obtained in this study, the soil profile can benefit from edaphic mesofauna action in the plant-soil system, indeed, even potentiating the resistance inductor effect. However, the use of these products must be the focus of continual monitoring, due to the fact that they interact with other elements in the system, and/or interact with mechanisms outside their predicted field of action as a resistance inductor, in different development stages of the whole system and in crop management.

[1] - Silva, F. C. Manual de análises químicas de solos, plantas e fertilizantes. Embrapa Solos. 370 pp. 1999.

[Vianna, 2008] - Vianna, M.S. Pesticidas em solos agrícolas de Nova Friburgo, RJ: aplicação da metodologia enzimática de inibição da AChE e estudos da influência dos parâmetros de fertilidade do solo. 190 pp. 2008.