

The Use of Allelopathic Influences of Auxiliary Plants in the Bioproduction of Tomatoes

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Abstract : It is known that bioactive compounds that are secreted by allelopathic plants sown with the main culture and are natural phytotoxic substances can be used as natural pesticides that, unlike synthetic agrochemicals, are less likely to disrupt the global ecosystem. Alternative plant protection approaches to date include components of integrated pest management programs and natural plant protection tools. Every year, more and more evidence is given on the successful use of these means, including allelopathic compounds in plant protection against pests. Proper use of these interactions between plants and other organisms can become a serious alternative to synthetic pesticides. Due to the relevance of the issue, the purpose of the study was to study the impact of some companion allelopathic plants on the Tomato culture (variety 'Kharisgula') on the test plot of the Tsilkani Base Bioagricultural Service of the Agricultural Research Center (East Georgia) and the village of Kharagauli. The study was conducted in 2023-2024 with methods adopted in organic agriculture and plant protection. Various companion plants were studied: Basil (*Ocimum basilicum* L.), Imeretian saffron or marigold (*Tagetes patula* L.) and beans (*Phaseolus vulgaris* L.) (variety 'Tsanava') affects tomato culture in mixed crops. It was established that when sowing basil in rows and on the perimeter, the yield in the Tsilkani increased by 39.7%, and in Sagandzile - 42.8%. In the case of Imeretian saffron, economic efficiency in Tsilkani reached 29.5%, in Sagandzile - 28.5%, while the difference in the bean variant with the control was 31.7% in Tsilkani, and in Sagandzile - 23.8%. The study also found that when sowing aromatic plants (basil, marigold) with tomato, the number and spread of pests is quite decreasing compared to the control. In particular, the number of green vegetable bugs (*Nezara viridula* L.) decreased by 59.4% compared to control.

Keywords : allelopathy, companion planting, tomato, bioproduction

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