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Abstract: This study evaluates the impact of minimum tillage technology on the yield and quality of winter wheat in Poarta Albă, Constanța County, between 2021 and 2024. The varieties Avenue and Katarina were cultivated using conservation techniques supported by irrigation. Yields were high and stable despite climatic stress, demonstrating the system's capacity to mitigate abiotic factors and enhance sustainability. Measurements focused on plant density, spike and grain characteristics, thousand-kernel weight, and yield per hectare. All data were processed using Analysis of Variance (ANOVA) to assess the significance of differences between cultivars and years. Additionally, Pearson correlation and linear regression were used to explore the relationship between climatic variables and yield components. Results confirm the efficiency of minimum tillage in supporting wheat production under increasingly variable climate conditions.

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Introduction



MULTIDISCIPLINARY

In the context of modern



agricultural challenges, the for need

sustainable and

climate-resilient



