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Effects of hazelnut husk compost application on soil quality parameters in hazelnut orchards in Turkey

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The long-term application of excessive chemical fertilizers has resulted in the degeneration of soil quality parameters such as soil microbial biomass, respiration, and nutrient content, which in turn affects crop health, productivity, and soil sustainable productivity. The objective of this study was to develop a rapid and efficient solution for rehabilitating degraded two hazelnut orchards having different textures by precisely quantifying soil quality parameters through the application of different doses (0, 1.25, 2.5, 5.0, 7.5 and 10 ton da-1) of hazelnut husk compost (HH) during hazelnut growth. After nine months of HHC application, soil quality parameters such as microbial biomass carbon (Cmic), basal respiration (BSR), total organic carbon (Corg), total N, C/N ratio, aggregate stability and some soil chemical properties (pH, EC and NO_3-N content) were carried out on collected soil samples. The results showed that soil quality parameters were significantly affected by soil texture and HHC application doses. In general, Cmic, BSR, C/N ratio and the contents of Corg and N increased (P<0,001) and Cmic/Corg values decreased (P<0,001) with increasing HHC application in comparison with the control. In addition, HHC markedly increased the contents of NO_3-N, the aggregate stability of soil, and the hydrolic conductivity in the soil were notably heightened. According to the results of field experiments conducted different location and condition, when the focusing on the organic substance management and sustainability of the quality parameters in soil, it was clear from the evidence obtained the research that the ideal HHC application was 5 ton per decare to increase the organic matter content by 2%. (This research was supported by The Scientific and Technological Research Council of Turkey, Project number: 111O698).