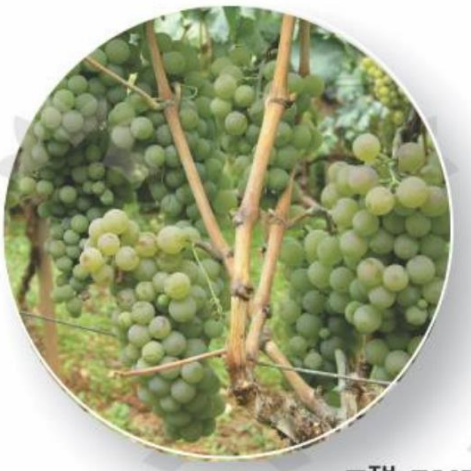

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EFFECT OF ORGANIC WASTE APPLICATION ON OUTFLOW ELECTRICAL CONDUCTIVITY AND MICROBIAL ACTIVITY OF A COARSE TEXTURED SOIL

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Hazelnut husk (HH) as an organic waste was incorporated into a sandy clay loam soil with the rates of 0 (control), 2, 4 and 6% in order to investigate the effect of organic waste on hydraulic properties, outflow electrical conductivity and microbial activity during its mineralization period for 16 weeks. Experiment was conducted at five different incubation periods (1, 2, 4, 8 and 16 weeks) under the greenhouse conditions. HH application increased organic carbon (OC) content, basal soil respiration (BSR), soil electrical conductivity (ECs), aggregate stability (AS), total porosity (F) and decreased bulk density (BD), saturated hydraulic conductivity (Ks), pore water velocity (Vp), outflow electrical conductivity (ECo)in 5 pore volume effluent of the soil over the control. OC content gave the significant positive relations with ECs (0.635**), F (0.947**) and the significant negative relations with Vp (-0.529*), BD (-0.960**) values. Basal soil respiration had significant positive relations with ECs (0.887**), OC (0.864**), AS (0.522*) and F(0.856**). Outflow ECo showed significant negative correlations with Ks (-0.751**) and Vp (-0.777**). Increasing OC content in soil increased ECs, BSR, and F, but decreased Vp values. While the percentage of EC in bulk soil increased with HH application over the control, that in outflow decreased. According to path analyses of the data, BSR as an indicator of microbial activity in soil had the highest direct effect on Ks (44.16%) and ECo (51.84%). The highest indirect effects on soil hydraulic properties were also determined via OC or BSR. Increasing soil microbial activity due to mineralization of HH increased AS, F, ECs and generally decreased Eco, Ks and Vp during the incubation period. Electrical conductivity in 5 pore volume outflow decreased with increasing Ks and Vp values.

Key Words: Organic Waste, Outflow, Hydraulic Soil Properties, Microbial Activity