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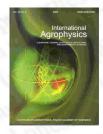
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Effect of oxygen deficiency on soil dehydrogenase activity in a pot experiment with triticale cv. Jago vegetation



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abstract Dehydrogenase activity of an Orthic Luvisol developed from loess (Ap horizon) was observed in a greenhouse pot experiment with triticale cv. Jago vegetation under different aeration conditions. Soil aeration conditions were modified through the use of the combination of three degrees of soil compaction (1.20, 1.35 and 1.50 Mg m-3) and three levels of water condition (control level of 15-80 kPa; 2-5 kPa and water saturation). Triticale plants were planted into the soil at three density levels and water conditions were maintained at the control level, except at three physiological stages of tillering, shooting, and the beginning of plant flowering when 14-days oxygen stresses (I, II and III, respectively) were applied. During the stresses the water regime of the soi was elevated to the level of 2-5 kPa or flooded, except for the control pots. Four replications of each combination of compaction and water status were prepared. Soil aeration parameters such as oxygen diffusion rate - ODR, redox potential - Eh, concentration of Fe+2 and soil dehydrogenase activity were measured four times during each stress period. The changes of the dehydrogenase activity at particular water content levels during the stresses are presented. Significant correlations between dehydro- genase activity and soil aeration indicators (Eg, ODR, Eh, Fe+2) are reported. keywords soil aeration status, dehydrogenase activity, triticale, redox potential, oxygen diffusion rate

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