

EVALUATION OF QUALITY PSEUDOGLEY SOILS BASED ON ITS WATER-AIR PROPERTIES

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Abstract

This paper provides an overview of the most important water-air soil properties (water retention capacity, permanent wilting point, plant available water capacity, soil water permeability and air capacity) in order to assess the quality of its productive properties. The study has been conducted on arable soil type pseudogley on the Agro-chemical School Dr. Djordje Radic in Kraljevo farm. The gained results of investigation showed unfavorable water-air properties, as the result of the unfavorable shape of porosity. Also, in the humic and Eg horizons, there have been determined low values of plant available water capacity, on the one hand, and high values of moist of permanent plants wilting, on the other hand. Unfavorable water regime of the soil is in a large extent a consequence of its low permeability of water, even in the Ah and Ahp horizon, where the ratio of water filtration is rarely higher than 30 mm/hour, whereas the individual values were less than 10 mm/hour. Extremely low permeability of soil water was in Btg horizon, which in the rainy seasons was becoming practically impermeable for water. Examined soil shows low values of absolute air capacity in Ah and Eg horizons (<10 vol. %), which does not provide sufficient aeration during periods of moderate humidity. Unfavorable water-air properties of the studied pseudogley soil require the application of appropriate pedomeliorative measures such as are: deep loosening of soil, deepening of arable horizon, breaking formed an impermeable layer, as well as the application of liming measures with humization in this soil type.

Key words: *permanent plant wilting, pseudogley, retention capacity, soil, soil-water properties, water permeability.*

Introduction

Pseudogley is the soil type, which is characterized by the alternation of wet and dry phases of moist. The cause of such a water-air regime is the presence of compacted horizon, which is impermeable or poorly permeable to water. In the case of higher rainfall, due to this provision upper soil profile becomes saturated with water, which it is stagnant and prevents normal aeration of the soil. Hence, during the dry season surface layers are very dried and deeper impermeable horizon hardens "like concrete".

Above hardly permeable horizon upper groundwater occurs, which causes anaerobic environment which produces reduced compounds toxic to plants (Caron et al., 1992; Ezeaku and Alaci, 2008). Shallower pseudogleys, where low permeability horizon lies close to the surface, quickly saturated with water in the winter and spring months. When rainfall in the sesoils during winter plant species suffer from a lack of oxygen, since all land pores are filled with water. With deeper pseudogley, the situation is better and it can be better used.

Estimation of some forms of soil water and its efficient use is related to the variability of soil physical properties and characteristics of water present, and the pronounced variability in

