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Significance of Soil for Environmental Resilience and Food Security

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Description

Pedology consists of a branch of soil technology that studies the soil and its origin in addition to the interaction of the landscape. Hydrology is a technological know-how that studies natural water in its special environment (soil and rocks), the use of the water body as a benchmark to analyse water dynamics, and also its interaction with the landscape.

In recent years, the topic of discussion and analysis has been the connection of these competences, which has contributed to the emergence of a multidisciplinary technological competence, the purpose of which is to connect different fields of research. As such, pedology was important in terms of hydrology, enabling the establishment of a base for methods related to collection and groundwater technology, especially regarding and based on the micro morphological analysis of soils and horizons that can prevent water flow. For pedology, hydrology can be an integral part of understanding the processes of soil formation in various landscapes, in addition to the formation of amenity through the testimony of substances produced by the interaction of soil, weathering, and drainage, and its importance to soils. Pedogenesis therefore, the competence and deepening of pedological analyses at the microscale and top sequence of a given panorama and its integration into hydrological theories allows for the development of particularly acceptable hydrological parameters. Awareness of the importance of wetlands is growing, therefore the Department of Human Settlements, Water and Sanitation (DHSWS) requests professional hydrogeological surveys of companies applying for water use permits under positive conditions. Hydrogeology, the study of soil-water interactions, provides insight into the interaction strategies between groundwater and groundwater in the subsurface.

According to Christie Terrell, specialist surveyor (water resources) at SRK Consulting, the study allows the capture of floating media caused by wetlands and waterways that may be affected by the activities of the water permit holder. "Using the knowledge, driver builders can make better decisions about what mitigation measures they want for the company," Terrell said. "Highlights which areas must be included so that the input flow is essentially maintained and which areas can be developed."

According to Roanne Sutcliffe, bio resources engineer at Steffen, Robertson and Kirsten (SRK) Consulting, Department of Human Settlements, Water and Sanitation (DHSWS) can also request hydrogeological investigations under sections 21(c) and 21(i) of Groundwater Act 36 of 1998. These parts are controlled by two water uses commonly associated with a wetland. "Any development or activity within the 500 meters buffer zone of the wetland will fall into these parts and activate hydrogeological monitoring," Sutcliffe said. Hydrogeological techniques in the broadest sense are all soil processes where flowing or stagnant water acts as a medium or factor or transporter. These techniques affect the visible morphological properties of the soil profile and corresponding functions at the Pedon, polypedon, chain line, and terrestrial landscapes or soil mounting scales.

These features can be classified according to different peological class structures, and conversely, they can be used to isolate and semi quantify the groundwater strategies that produced or influenced them. In the narrower sense, only those ways in which, the water with movement and stability are considered as hydrogeological techniques. Soil plays a vital role in relation to food security, environmental security and climate change. Cultivable land is threatened by erosion, soil compaction, soil carbon deficiency and compaction. Soil-the thin and delicate crust of the Earth-is complex and not yet fully understood, but the clinical analysis carried out in our segment helps to better understand the importance of soil to life on Earth. The aim of the department is to create a basic knowledge of soil physical, chemical and hydrological methods and to obtain a quantitative understanding of the spatial distribution of soil properties locally, regionally and nationally. We want to identify agricultural techniques that can be sustainable in terms of maintaining soil quality and minimizing unwanted environmental impacts.

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