

Recovery of soil health crucial for agricultural sustainability

Press release by Agri Technovation

The life of agricultural soil in South Africa is in a state of total imbalance after years of uninformed application of agricultural chemicals combined with practices that are, often unwittingly, detrimental to soil health.

This is according to Johan Habig, senior researcher in microbiology at Microlife Research Centre. "Soil life plays a vital role in soil health due to the wide range of functions fulfilled by various organisms," he explains. "These functions include the mineralisation and circulation of micro- and macro-elements from the organic material and root exudates, production of plant growth hormones, organic acids and even toxins that could keep disease-causing bacteria, fungi and nematodes away from plant roots."

Promoting soil health

Habig says the imbalance could be exacerbated by increased application of chemical fertilisation, resulting in soil life that cannot function optimally, which is detrimental to plants and general soil health.

"When we as people 'rest', we don't do it without food and clothing. Similarly, agricultural land merely lying fallow does not promote soil health," he says. "The most beneficial way to let soil 'rest', is to keep a layer of organic material on the surface or to plant a cover crop. This keeps soil life nourished and prepared for the next growing season."

Soil cover also regulates soil temperature, prevents water loss and reduces erosion.

Chemical dependence

According to Habig there could be various reasons why producers do not apply these practices, including high costs and a lack of correct information.

He warns that the most detrimental biological result of inadequate attention to soil health is that plants and crops become dependent on chemical fertilisation and other chemical agents to survive. "When this happens, increasing quantities of chemical fertilisers are needed to maintain the same yields," he says.

Secondary functions such as aggregate stability, soil capacity for water penetration and the suppression of soil-borne diseases are compromised by a decline in soil health.

"Soil health deals with the chemical, physical and biological interactive processes and features of soil that are important for sustainable production. Laeveld Agrochem and its partners support the attempts of producers to improve their soil health and we make the technology available to take the necessary measurements of these interactive processes and features.

"Our purpose is to assist farmers to ensure sustainable production and, ultimately, to make nutritious food available to consumers," says Phillip Venter, marketing manager of plant nutrition at Laeveld Agrochem.

A decrease in nutritional value

There is no record of the biological facets of soil health in South Africa, but Willem Eigenhuis, chief agronomist of grain and pecan nuts at Agri Technovation, says international research indicates that the mineral content of the food we eat, particularly fruit and vegetables, has decreased dramatically. "Data from the past 50 years indicates that the mineral content of food such as fruit and vegetables has decreased by between 20 and 50%," says Eigenhuis.

"This is alarming, because it means we are producing food without the necessary nutritional value, which could also be a reason for the growing incidence of obesity; people

taking in large quantities of food depleted of essential minerals and nutritional value."

Damage to the natural environment

A WWF South Africa report, titled *Agri-Food Systems: Facts and Futures*, which was released earlier this year, points out that the way in which we put food on our tables could cause more damage to the natural environment than any other human enterprise. "Existing practices could lead to a loss in biodiversity, deforestation, poorer soil health, desertification, water scarcity and poorer water quality and also contribute to widespread damage to our marine ecosystem," the report states.

"This unfair and environmentally unfriendly food system means that South Africa will have to produce 50% more by the year 2050 to feed the local population, which is estimated to reach 73 million by that time."

Eigenhuis points out that the focus should not be exclusively on greater production, but also the cultivation of more nutritious food. "Corrective agricultural processes could help to produce food with improved mineral content on fewer hectares, which is critically important for South Africa as a water scarce country with only 13% arable agricultural land. More nutritious food will hold the additional benefit of consumers having to take in less to obtain the same, or the necessary nutritional value," he concludes. 🌱

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