

SOIL-DWELLING ORGANISMS

In a soil conservation strategy



Rob Elfick



Soil has to function as a living ecosystem that works to sustain biological productivity. That's healthy soil. By Rob Elfick

Building and maintaining soil health is essential to agricultural sustainability and overall ecosystem functioning. With World Soil Day in mind, soil health is essential for plant growth and vigour, as well as the integrity of the entire agro-ecosystem. Healthy soil forms a base for diverse biological communities and complex interactions that are stable and resistant against external disturbances, and that help to reduce outbreaks of undesirable organisms like plant pathogens and herbivorous insect pests.

Unfortunately, healthy and natural soil formation is a slow process. The production of stable, mature soil is strongly reliant on the constant addition and subsequent decomposition of soil organic matter (SOM) into humus. Agricultural impacts that

undermine soil by changing its physical, chemical, and biological properties can degrade healthy soils and deplete SOM before it can be regenerated. Such impacts include tillage, excessive irrigation, use of chemical fertilisers, pesticide applications, and biodiversity loss. Thus, soil should be treated as a non-renewable resource that warrants focused conservation.

Various practices help to conserve, replenish and protect our on-farm soil resources, such as no-till farming, mulching/ composting, crop rotation, cover crops and drip irrigation.

At River Bioscience we aim to support soil and agro-ecosystem health by reducing pesticides and focusing on the use of sustainable pest management tools, as well as biological control agents to curb



TRICHOTECH® WP mode of action.

Inhibits developmental stages of plant disease causing fungi.

Improved plant vigor

Invades and parasitizes plant pathogenic fungi.

Creates a barrier against soil pathogenic fungi by rapidly growing and out-competing for nutrients.

Releases locked nutrients from decaying organic matter, making them available to plants.

the negative effects of damaging insects and diseases. Research into soils, and soil microbes in particular, has been valuable for identifying beneficial organisms that can be used to promote soil diversity and conservation practices.

Our newly-formed strategic alliance with Dudutech has provided us with an opportunity to increase our suite of microbial products, particularly soil-dwelling microbes that work together with plants to combat pathogens, without the need for potentially deleterious chemical controls. For instance, fungal products containing *Trichoderma* spp. help plants combat disease-causing fungi like *Rhizoctonia*, *Sclerotinia*, and *Pythium*, whilst increasing plant vigour by stimulating root growth and improving access to soil nutrients. Bio-stimulants such as these can be used to promote soil health by reducing the number of fertiliser inputs required. *Trichoderma* spp. also works in concert with other soil-dwelling biological control agents, such as entomopathogenic fungi and nematophagous fungi.

The Dudutech products, made available in SA by River Bioscience, Trichotech (*Trichoderma asperellum*) and Mytech



Untreated



Treated

(*Paecilomyces lilacinus*) work well together to reduce pathogens, stimulate growth and protect plants from parasitic nematodes that cause root knot, cyst, and root lesions. All this can be achieved while safeguarding other beneficial fungi and free-living nematodes in the rhizosphere. These are just two examples of the many ways that we can use soil-dwelling organisms and diversity to our advantage to simultaneously control pests, increase production and maintain soil health into the future. 🌱

For more information regarding the synergistic effects of Trichotech and Mytech and to learn about other biological products in the River Bioscience range, visit our website or contact our Specialty Crops Manager, Pieter van Tonder, at pieter@riverbio.com / +27 74 303 5698.

