



# Farming with poor quality irrigation water

South Africa's water security depends on rainfall, built water infrastructure, underground water resources and effective land management in catchment and wetland areas. A limitation in any one of the above puts both the volume and quality of usable water at risk.

**GIVEN POOR RAINFALL**, soil erosion due to poor farming practices, and excessive or inappropriate fertilizer use, water salinity levels have risen. Water pollution and contamination caused by poor sewage and wastewater management, mining and factory pollution, are further culprits. These limitations lead to a low supply of bad quality water for agricultural irrigation and threaten water, soil and food security.

Irrigation water use of surface water in the Berg River Water Management Area is fast approaching its limit and the poor quality of this limited irrigation water has also become a serious challenge for farming in the area. This polluted water containing excessive amounts of mineral salts and suspended matter, are deteriorating soil health and crop productivity at an alarming rate. Also, the chemical quality of underground water sources via boreholes is generally much worse than the surface water.

To address these water and soil issues, Nexus<sup>AG</sup> offers the unique Puricare<sup>®</sup> water treatment system and a comprehensive soil health strategy to restore productivity. The well-researched and scientifically proven technology improves water quality, cleans irrigation systems and reduces soil compaction. Add to this the comprehensive Nexus<sup>AG</sup> soil health strategy identifying soil challenges and an integrated soil reclamation programme – it equals balanced soils, beneficial micro-organisms and healthy, productive soils.

The Puricare units can be fitted on any irrigation system (drip, pivot, sprinkler, flood, etc.). The advanced oxidation process improves the chemical, biological and physical quality of irrigation water.

## Clean irrigation systems

The source and quality of irrigation water determines how much sediment is present in irrigation systems, as well as the cleaning and management thereof. This sediment is deposited as a precipitate and/or biofilm in the entire irrigation system. The sediment can partially or even fully block emitters, accumulate in mainlines and laterals thus reducing water flow, and also necessitate frequent cleaning of filters.

Puricare technology works in the irrigation water and breaks down any sediment already deposited in the irrigation system and prevents any further sediment buildup. The result is clean and effective irrigation systems.

## Less soil compaction

Excessive salts in irrigation water cause imbalances in soil fertility and compact soils. Conventional agricultural practices to rectify this problem can be expensive and are not



**A - Treated B - Untreated. The Puricare Advance Oxidation Process promotes soil aeration which stimulates deeper and more prolific root growth. The result becomes evident when comparing the root growth of crops irrigated with treated and untreated water.**

always effective.

The advance oxidation process causes several different chemical reactions in the irrigation water, which are then transferred into the soil solution. Amongst the many things that happen, calcium is made more available in treated water. This calcium displaces sodium on soil colloids, which increases the air pore volume between soil particles and thus increases soil aeration.

Along with the improved water, the induced soil aeration stimulates biological soil processes resulting in healthier soils, better roots and water infiltration and enables other soil amendment products to work more efficiently.

To address your water and soil challenges in the Berg River area - Contact Nexus<sup>AG</sup> for more information on Puricare and the Nexus<sup>AG</sup> integrated soil programme.

## References

1. Kennedy Nmutamvuni, 19 June 2018. SANBI: New partnership project for water security launched. Accessed 2 January 2020, <https://www.sanbi.org/news/new-partnership-project-for-water-security-launched/>
2. Cole, Megan J, Bailey, Richard M, Cullis, James DS, New, Mark G. March/April 2018. Water for sustainable development in the Berg Water Management Area, South Africa. South African Journal of Science, Volume 114, Number 3/4. □