



MICROBIUM
Detection and elimination of microbes

Project Partner: Microbium d.o.o.

Country: Slovenia

Industrial ecosystem: Agrifood

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Duration: 01/12/2023 – 30/11/2024

~ MPN Analyser – safe water reuse in agri-food ~

Water scarcity is an escalating challenge in agriculture, driven by climate change and rising demand. To address this, the MPNWR project upgraded the MPN Analyser, a compact device for microbiological water quality control, to enable safe and efficient reuse of wastewater in irrigation.

The enhanced system now allows automatic detection and quantification of *E. coli*, coliforms, and *Enterococcus* sp., cutting analysis time from days to 24 hours and reducing manual work by over 95%. Sample preparation is simplified to just 3 minutes, and the new design also slashes single-use plastic waste by 55 kg per 100 tests. These improvements offer a scalable, low-cost, and digital alternative to conventional lab methods, enabling faster response to contamination and more sustainable water monitoring practices.

Validated against standard methods and tested in operational wastewater treatment settings, the solution opens up the potential to support safe reuse of up to 6.6 billion litres of wastewater annually, helping reduce freshwater use in agriculture by an estimated 5%. By enabling smarter water management, the project contributes directly to reducing agricultural dependence on freshwater and strengthening resilience in food production."

