

**T6****“Managing Water Transport with Soil Additives: a New Solution”**

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**A new soil additive derived from naturally sourced material is presented. It enhances soil water holding functions, enabling a better usage of water and soluble agricultural inputs.**

Managing water transport in soils is a way to control the delivery to the plant of most of agricultural inputs (fertilizers, soluble pesticides and of course water) at a scale and in a medium (soil) where application systems lack precision. It is a powerful way to increase the efficacy of the treatments, and to get the most yield from available water resources.

Usage of additives can enhance the soil natural function to store and transport water from the surface to the plant. However, as of date, only a few classes of additives are available: they belong mainly to 2 families, surfactants and superabsorbents. Both families have their limitations: surfactants are small molecules that tend to be easily washed away after a few irrigation/rain cycles, whereas superabsorbents cannot behave efficiently if capillary transport of water is poor (sub critical hydrophobic soils). Also, their quite slow swelling kinetics can be a limitation. Another aspect is that synthetic chemicals mixed with soils may not provide an acceptable solution from a sustainability standpoint.

We present in this talk an innovative soil additive made out of a natural based material that enhances soil water holding capacity through an improvement of capillary water storage. Strong adsorption to the soil prevents leaching effects and provides benefits in terms of soil aggregates structuration.

We show lab evidences of the improvement of water holding capacity vs. dosage and demonstrate new ways to manage water transport in soils by taking advantage of capillary forces. We compare different methods of application (bulk treatment vs surface treatment) and show conditions where the additive can efficiently reduce water evaporation without any compromise with penetration time during irrigation/rain.

To conclude with, we discuss environmental impact based on preliminary evaluation of ecotoxicity, biodegradation and impact on micro-organism flora.