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## Background:

- Soil Aquifer Treatment (SAT) System.
- Relies on Percolation and adsorption.
- Deep layer pathogens viability not really explored.
- Hypothesis: Pathogens' distribution in the soil profile of the SAT will be mainly governed by the water quality of the recharged Treated Wastewater (TWW) and flooding and drainage/drying cycles of the infiltration basin.

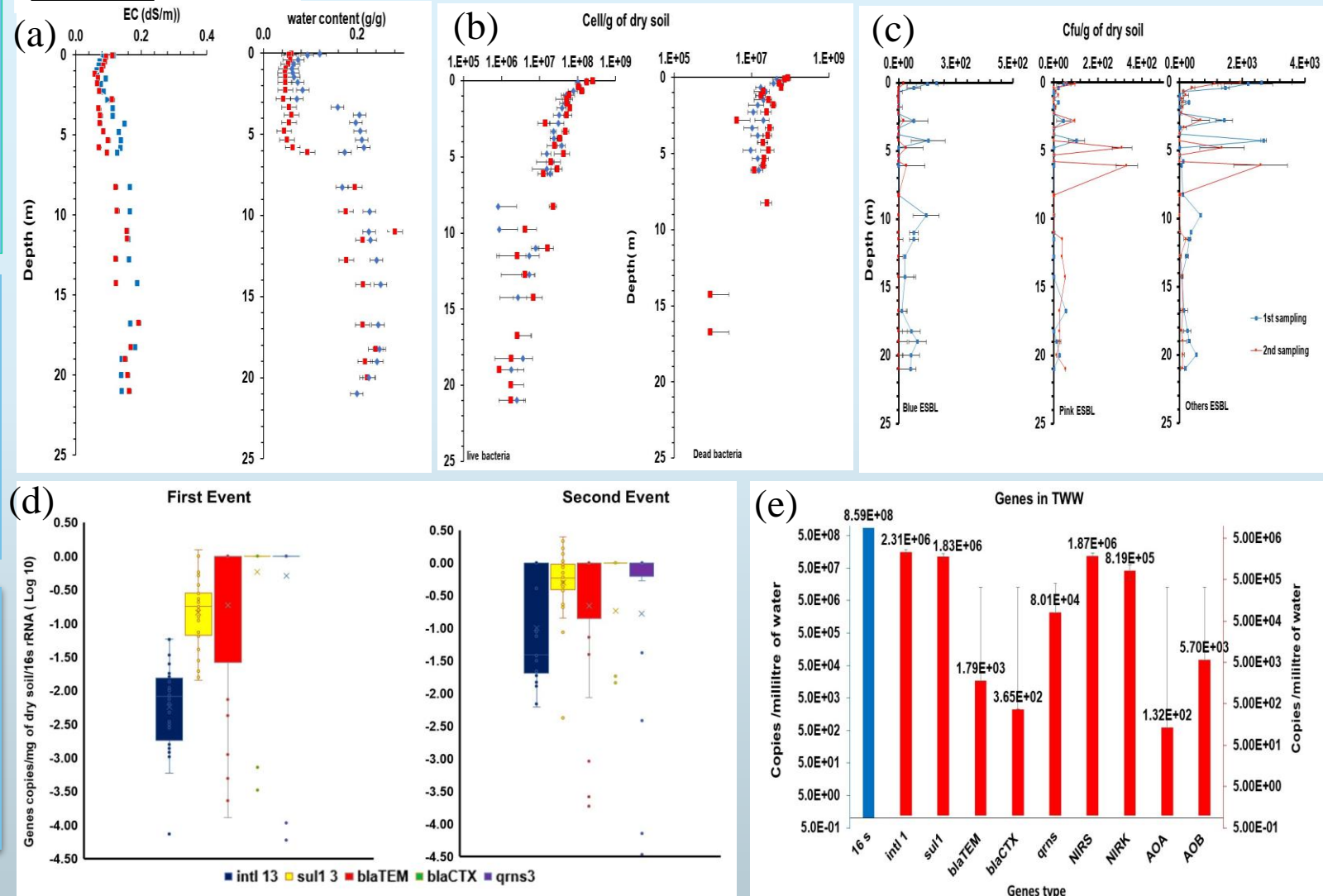
## Methodology:

- Soil profile sampling (20 m) of TWW infiltration basin at the end of flooding and after 3 days of drainage/drying
- Live/Dead Count. – Fluorescence Microscopic
- Viable Plate count. for total, E.coli and ESBL
- Enzyme Activity – FDA Hydrolysis and spectrophotometer
- DNA extraction and Quantitative PCR

## Conclusions:

1. A high prevalence of *Klebsiella sp.* and *E. coli*, followed by other bacteria, was observed among ESBL isolates.
2. High concentration of pathogens in the topsoil layers and a gradual decline with depth.
3. Dominating *intl1* in TWW and *Sul1* in soil samples, gene implying on anthropogenic pollution.

## Results



**Figures:** (a) EC and water content, (B) Plate viable bacterial count, (c) live/Dead bacteria, (d) genes in soil, and (e) genes in TWW.