

MICROBIOLOGICAL QUALITY OF RIVER WATER USED FOR IRRIGATION OF READY-TO-EAT FRESH PRODUCE BY LOCAL SMALLHOLDER FARMERS IN PIETERMARITZBURG, SOUTH AFRICA



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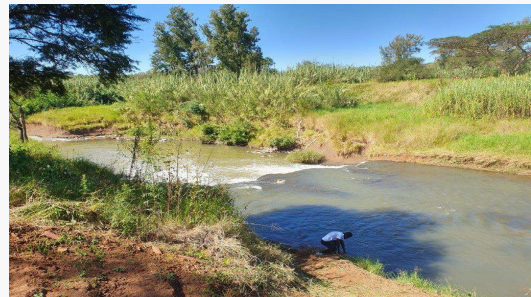


Scenario

- Surface water quality declines across Sub-Saharan Africa
- South African river water - poor microbiological quality
- Full-contact irrigation of RTE produce by small-scale farmers
 - River water – easily contaminated with pathogens
 - Possible transfer of bacterial pathogens to RTE produce
- Compromised food safety
- Aim: To assess the suitability of the river water for full-contact irrigation of RTE fresh produce



Study site

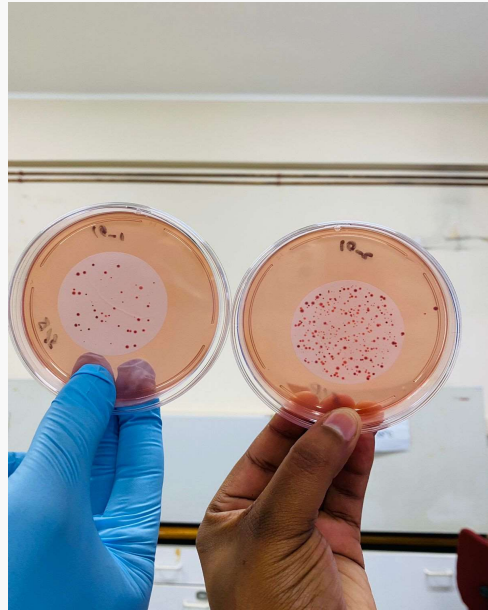


Results

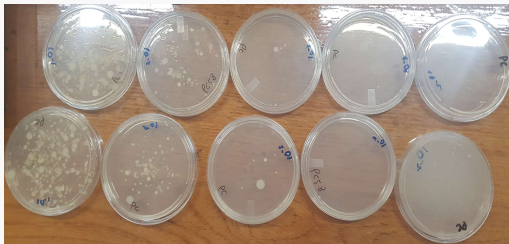
Physico-chemical parameters (min-max ranges)	SEASONS			
	Spring 2022	Summer 2022/23	Autumn 2023	Winter 2023
pH	7.01 – 7.50	7.03 – 7.49	7.18 – 7.38	7.11 – 7.21
Temp	19.7 – 23.6	20.1 – 25.7	19.5 – 22.1	13.7 – 18.1
COD (mg/L)	13 – 27	30 – 46	10 – 40	15 – 21



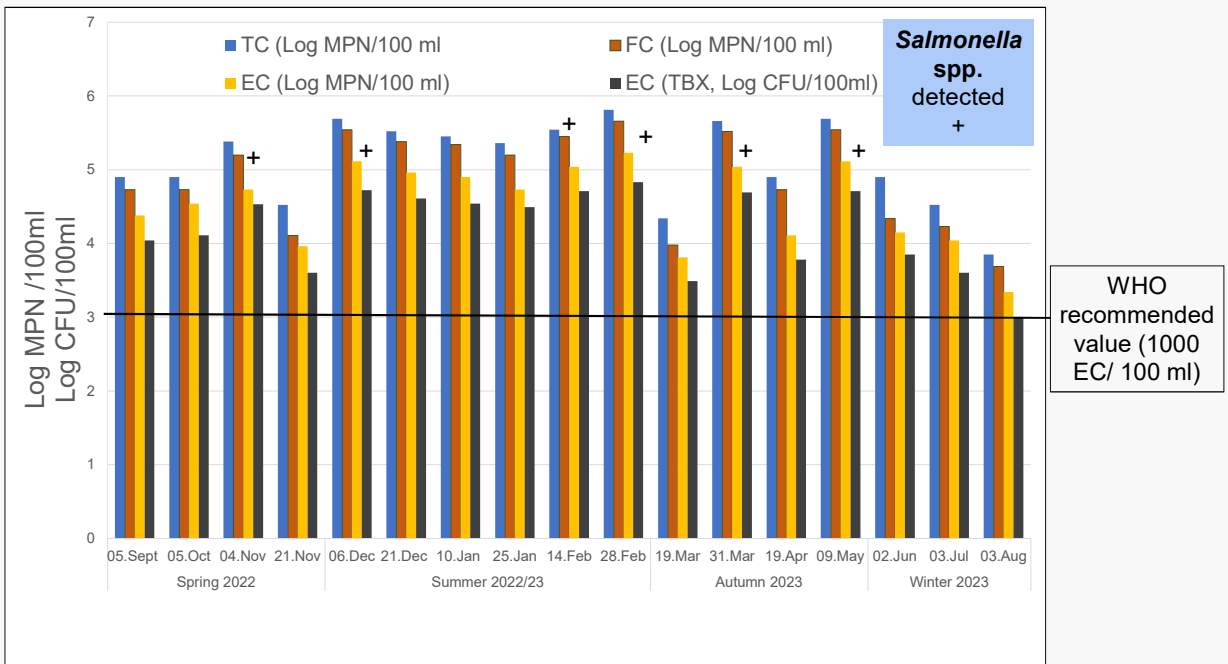
Salmonella spp.

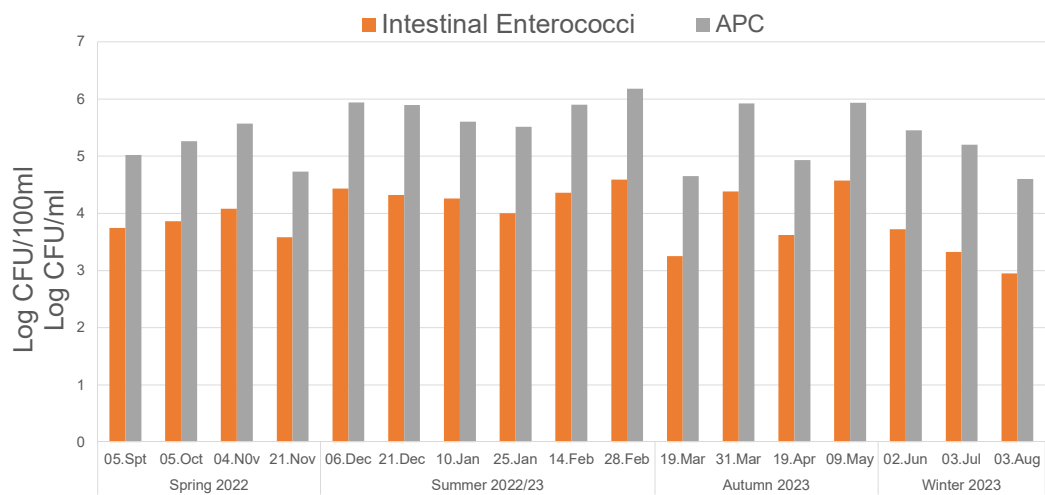


Intestinal enterococci



Aerobic plate count (APC)





Conclusions

- uMsunduzi River water exceeded WHO recommended safe irrigation threshold (1000 *E. coli* per 100ml) on all occasions
- Additional indicators (Intestinal Enterococci and APC) confirmed the high microbial burden
- *Salmonella* spp. was frequently detected
- uMsunduzi River water is not suitable for full-contact irrigation of ready-to-eat (RTE) produce

