



## **The Prevalence of Salmonella Species in South African Pork Production at Farm Level and its Response to Antibiotics and Sanitisers**

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### **Abstract**

In order to control the existing zoonotic pathogens in the food chain to prevent foodborne outbreaks from occurring, it is crucial to identify all points of pathogen entry into the food chain, as well as to understand the various potential foodborne transmission routes throughout the food chain, while also finding preventative control methods to control the entry and spread of these pathogens in the food chain. Salmonella species are responsible for the majority food-related outbreaks, causing Salmonellosis, as about 65% of foodborne outbreaks are associated with Salmonella species.

A total of 558 samples were collected from three pig farms in the Western Cape, during 2020. Samples were collected from pig species as well as environmental samples, including feed, water, biosecurity bathrooms and general infrastructure. Conventional phenotypic methods were used to detect Salmonella species using ISO method 6579:-1:2017/ Xylose Lysine Deoxycholate (XLD) agar. A representative 60 Salmonella isolates were tested for resistance against two commercially used QAC-based sanitisers. In addition, antimicrobial susceptibility tests (AST) were conducted on all isolates against 12 different antibiotics.

From the 558 samples analysed, 209 (38 %) were positive for Salmonella species. Of the 60 isolates selected for sanitiser resistance tests, 39 (65 %) were resistant to one of the commercially used QAC-based sanitisers and 4 (6.7 %) were resistant to the other sanitiser that is used on all three of the farms. This indicates that QAC-based sanitisers may not be effective in eliminating Salmonella species on pork farms and alternatives need to be investigated and implemented in order to help better control the high prevalence of this pathogen. The AST results showed that there is high resistance to antibiotics that are frequently used in the human medicine clinical sector namely: ampicillin (82 %), tetracycline (97 %) and sulphafurazole (95 %). In addition, the majority of the isolates were multidrug resistant, thus highlighting the need to control this resistant pathogen to ensure food safety within the pork industry as well as indicating that this process needs to start at the initial stage of production – the farm.

### **Biography: Caitlin McQuillan**

Caitlin is currently completing her final year Stellenbosch University Master's Student pursuing a career in Food Microbiology