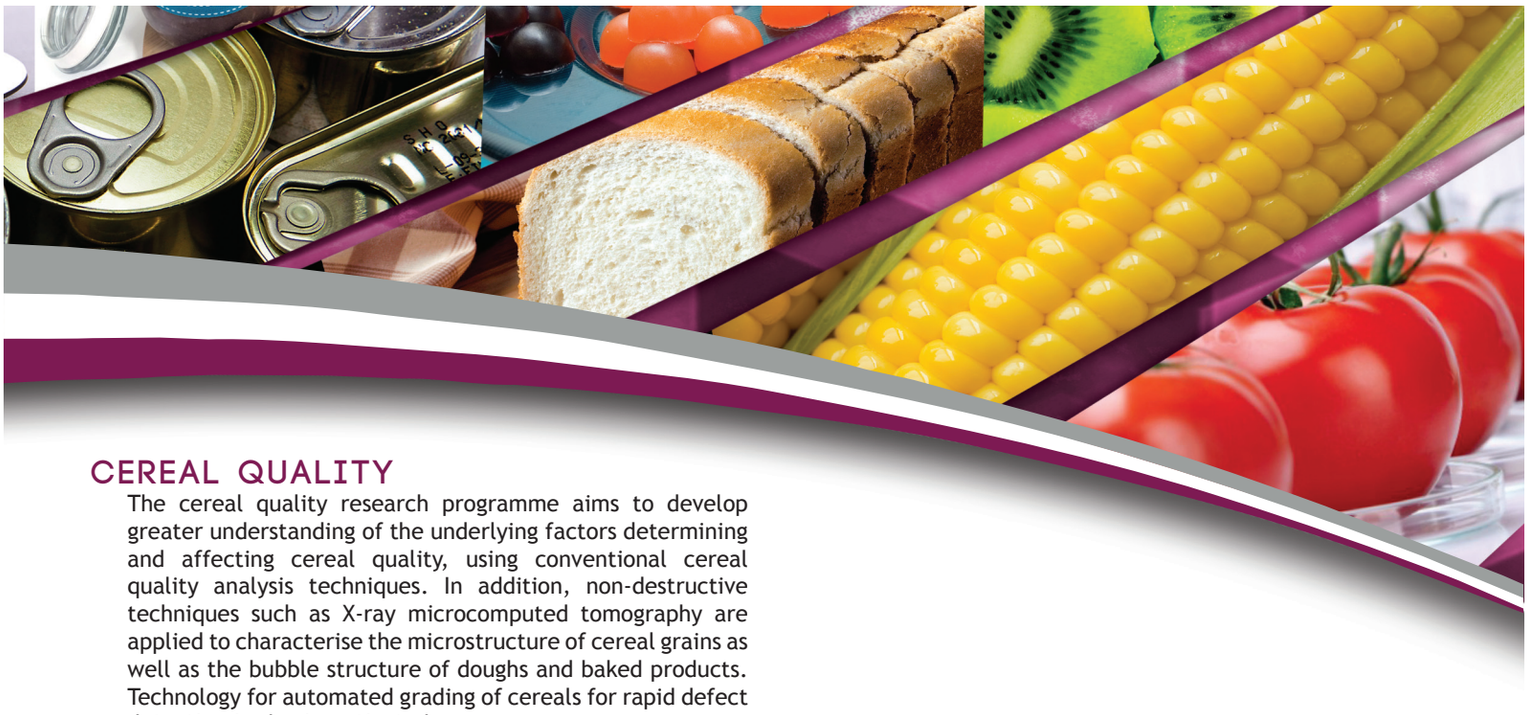

CEREAL QUALITY

The cereal quality research programme aims to develop greater understanding of the underlying factors determining and affecting cereal quality, using conventional cereal quality analysis techniques. In addition, non-destructive techniques such as X-ray microcomputed tomography are applied to characterise the microstructure of cereal grains as well as the bubble structure of doughs and baked products. Technology for automated grading of cereals for rapid defect detection is also investigated.

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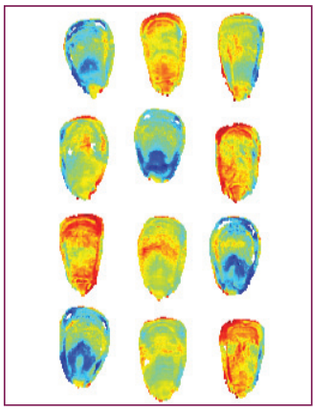
VIBRATIONAL SPECTROSCOPY AND CHEMOMETRICS



Conventional near infrared (NIR) spectroscopy and NIR hyperspectral imaging are used, in conjunction with chemometrics, for quantitative, qualitative and authentication studies. Advanced image analyses are applied to study spatially resolved hyperspectral images (chemical maps) of food and agricultural products. The newly established Vibrational Spectroscopy Unit of the Central Analytical Facility of SU is housed in the Department.

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Faculty of AgriSciences

STELLENBOSCH UNIVERSITY

DEPARTMENT OF FOOD SCIENCE

EXPERIENCE THE CUTTING EDGE OF RESEARCH

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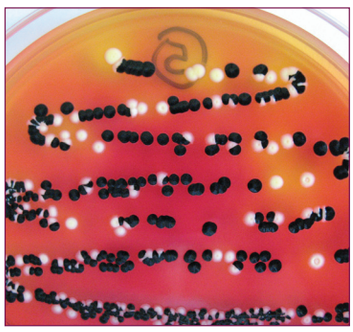
The **Department of Food Science** has a strong research culture based on the application of fundamental scientific principles and focuses on expanding our understanding of foods as biomaterials. The research initiatives cover a range of topics including chemical, processing, sensory, microbiological and safety aspects. Food science is an exciting field of study that applies the basic sciences to improve the flavour, appearance, shelf-life, quality, safety and nutritional benefits of our food supply.

The Department prides itself on fostering strong student-staff interactions and thereby creating a stimulating research environment. Cutting-edge research, addressing the needs for today's global food industry, i.e. **food safety**, **quality** and **sustainability**, attracts significant funding.

FOOD AND WATER SAFETY

The food safety team conducts research in the multidisciplinary sphere of the food, environmental and public health nexus. Research focuses on the detection and identification of a diversity of microbial populations present in fruit, fruit juices, vegetables, dairy products, cereals, processed meat, livestock and fermented foods. The occurrence, identity, survival and control of spoilage organisms as well as food-borne pathogens, in the pre- and post-harvest processing environment are investigated. A One Health approach is followed to minimise the effects of foodborne pathogenic organisms on public health.

The link between food safety and irrigation water quality, in commercial and subsistence agriculture, is studied with emphasis on produce that is consumed raw or after minimal processing. The impact of food processing operations on water usage, wastewater characteristics and treatment options is also investigated. This includes the application of anaerobic digestion technology and the use of other pre-treatment techniques to improve the efficiency of wastewater treatment systems.



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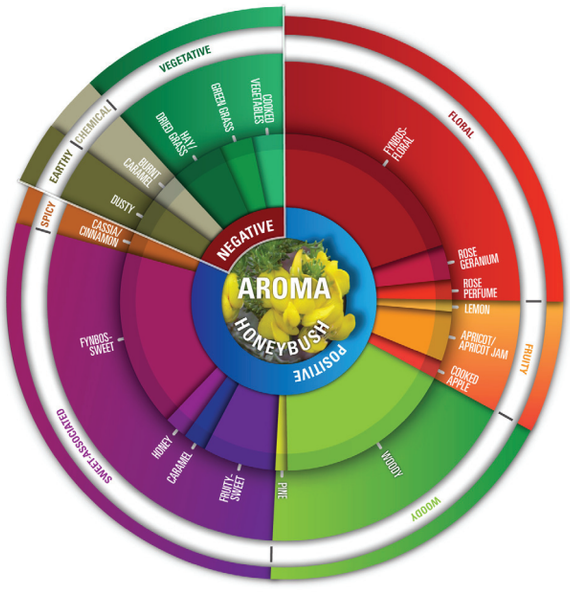
SENSORY SCIENCE

Sensory science research is often multidisciplinary, correlating chemical, sensory and physical quality of food products. Sensory quality is ascertained using trained panels and standard sensory profiling techniques such as descriptive analysis (DA). Rapid profiling techniques such as projective mapping, free sorting and polarised sensory positioning are validated for industry applications. These methods are extremely flexible and less time-consuming than DA, and are thus ideal for researching industry-related problems.



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SENSOMETRICS

Sensory science research is complimented by sensometrics, advanced statistical methods to model sensory, chemical, physical, and/or consumer-liking data. Techniques such as partial least squares (PLS) regression are used to predict sensory bitterness of plant material, such as honeybush, using its phenolic composition.