ARC ITTC Food Safety in Fresh Produce PhD Scholarship

Project List

Scholarship 1  A risk-based model to assess effect of environment, land use and topography on foodborne illness outbreaks in fresh produce.

Environmental variation and climate change lead to changes in biological organism behaviour and survival. Climate change has been shown to adversely affect incidence and risk of foodborne and waterborne disease through rising temperatures and extreme weather events. Yet, relatively little is known about the survival mechanisms of many bacteria and the associations between environmental factors and pathogenicity. Understanding the adaptability and epidemiology of pathogens to climate change is key to reducing illness and mortality associated with consumption of fresh horticultural produce food. ‘Big Environmental Data’ is an important tool for analysing causal relationships with microbiological outbreaks, e.g. linking incidents associated with specific weather patterns, topography and land use. The aim of this research project is to understand these relationships and develop predictive models to help target strategies to reduce the risk of food borne outbreaks.

Scholarship 2. Risk assessment in leafy greens: effect of environmental conditions on the survival of foodborne pathogens.

The increase in consumption of leafy green salads and raw vegetables has led to increased risk of foodborne illness associated with fresh produce. Pre-harvest food safety risks in leafy greens include contamination of leaf and root surfaces by Salmonella, Listeria monocytogenes and E. coli. While bacterial loads on farm are reasonably easy to quantify, changes in bacterial loads along the transmission route from the farm to the consumer are largely unknown for Australian supply chains. This project aims to understand the effect of local environmental conditions on microbial survival during pre-harvest activities. This information will be used to develop and refine a decision support tool based on QMRA, for reducing microbial risk in the Australian leafy greens market. This decision support tool will be useful for informing quality assurance certification schemes and growers on managing risks in the leafy green food industry.