

PhD Opportunity - Expressions of Interest

Aphids and Climate Change



Industry PhD Scholarship – Grains Research

Supervisors: Dr Kevin Powell (DPI Victoria) and Dr Paul Cooper (ANU Canberra)

Complex interactions: Barley Yellow Dwarf Virus, cereal aphids and climate change

Climate change will directly influence the environment by increasing CO₂ and temperature levels and changing precipitation patterns. This in turn will impact directly and indirectly on crop development, host plant geographic range, insect pest distribution, insect-host plant interactions, vector and disease interactions and virus epidemiology.

This project will explore the interactions between aphid vectors (Hemiptera: Aphidae) and the plant pathogenic Barley Yellow Dwarf Virus (BYDV) and its host plants (cereals and perennial grasses) under climate change conditions. BYDV is the most widespread economically important virus disease of cereal crops worldwide affecting most major cereals (wheat, barley, oats, rice) and annual and perennial grasses. It is a persistent phloem-limited virus and aphids must feed in order to first acquire the virus and then transmit to a suitable host.

The interactions between host plants, virus serotypes and associated insect vectors to climatic change conditions including elevated carbon dioxide, modified water availability and increased temperature need to be assessed for Australian conditions. Climate change could alter the spatial distribution of disease vectors, severity of disease symptoms, acquisition and transmission efficiency as well as have indirect impacts on vector physiology through direct impacts on host plant physiology.

Climate change and in particular elevated temperature has a direct impact on insect development, reproduction, survival, migration and distribution. Insects, and in particular phloem feeding aphids are very sensitive to temperature and changes in host plant physiology.

Based in Rutherglen Northeast Victoria and collaborating with researchers in Melbourne and Horsham the successful candidate would receive training in insect physiology, molecular biology, host plant chemistry and climate change.

Industry stipend - \$25,000 tax free plus operating and travel stipends (by application) to present in national and international conferences.

Applicants must be an Australian or NZ Citizen or Australian permanent resident and have a strong academic background in entomology, ecology or agricultural science.

For more details please contact: 1Dr Kevin Powell (DPI –Victoria Kevin.powell@dpi.vic.gov.au, 02 6030 4542).

Closing date for application 30 October 2009.