NEW ZEALAND PLANT PROTECTION SOCIETY
RESEARCH SCHOLARSHIP

In 2008/09, Nicholas Tabi Amponsah was awarded a New Zealand Plant Protection Research Scholarship. Nicholas was a nematology research scientist at the Savannah Agricultural Research Institute, Ghana, before migrating to New Zealand in June 2006 to pursue a PhD in Plant Pathology at Lincoln University. He is also employed as a teaching assistant by the University.

Nicholas is studying the identity and epidemiology of Botryosphaeriaceae species associated with grapevines in New Zealand. These fungi have recently gained recognition as major pathogens of grapevines worldwide. They are cosmopolitan with a wide geographical distribution, and can be saprophytes or endophytes on a range of woody angiosperm and gymnosperm hosts. On grapevines, these pathogens are regularly associated with trunk dieback, incomplete graft unions, internal necrotic vine tissues, bud mortality, brown streaking inside the wood, as well as a general loss of vigour, termed ‘grapevine decline’. The disease builds up gradually in the vineyard leading to a decline in vigour and yield. Apart from causing grapevine diseases, Botryosphaeriaceae species are also responsible for diseases of other economically important plants, such as apple, avocado, kiwifruit and pistachio.

Nicholas’s research programme has the following specific objectives:
1. Identify the sources of inoculum commonly available in or around vineyards.
2. Identify to species level the different isolates obtained from the field sampling.
3. Develop infection and re-isolation protocols for identifying the most damaging species in New Zealand vineyards.
4. Investigate routes and rates of disease progression of the Botryosphaeriaceae species on grapevine tissues to allow identification of infection courts.
5. Identify the cultural and environmental factors that can affect disease development and spread.

To date, Nicholas’s research suggests that some vineyards within Auckland, Blenheim, Nelson, Gisborne and Canterbury have more that one Botryosphaeriaceae species, with Neofusicoccum luteum (B. lutea), Neofusicoccum austral (B. australis), Neofusicoccum parvum (B. parva), Diplodia mutila (B. stevensii) and Diplodia seriata (B. obtusa) being commonly found in grapevines and other nearby non-grapevine woody hosts. With the exception of Diplodia seriata, all the Botryosphaeriaceae species isolated have been pathogenic on all major grapevine cultivars grown in New Zealand. In mature canes, the pathogen lives as an endophyte, showing no visible disease symptoms. However, dieback occurs from the tip when plants are pruned and similar dieback symptoms have been observed with infected water-stressed plants. Therefore, it is thought that the pathogen becomes aggressive when plants are physiologically or metabolically inactive.