Regina Billones, a recipient of the New Zealand Plant Protection Society Research Scholarship in 2009/10, is a third year PhD student at Lincoln University. Before commencing her PhD studies, Regina completed a Masters in Applied Science at Massey University in 1999 and a Masters in Plant Pathology at the University of the Philippines – Los Baños in 2005. She worked as a crop protection specialist for Del Monte Philippines, Inc., which is one of the largest pineapple processors in the world, until she began her PhD in 2007.

Regina’s research is focused on Botryosphaeriaceae infection in grapevine nurseries. Several species in the Botryosphaeriaceae are reported to cause cankers, dieback symptoms, graft failures, cane bleaching, bud necrosis and bunch rot in grapevines. The Botryosphaeriaceae disease cycle is not well understood, although these species are known to produce conidia on the surfaces of dead wood, to disperse by rain splash and to infect through fresh wounds, from which the die-back symptoms usually develop quite slowly. The initial sources of infection have not been fully investigated, although there is some evidence that infection of young plants may originate in propagation nurseries.

Regina aims to investigate the sources of Botryosphaeriaceae inoculum and its infection potential throughout grapevine nursery propagation processes. Her initial survey of grapevine nurseries found that 23% of samples (cuttings and plants) were infected, with eight Botryosphaeriaceae species being identified, all of which were pathogenic to grapevines. Infection sites were evenly distributed on cuttings but were concentrated around the graft union of young plants. Regina’s investigations into the sources of Botryosphaeriaceae inocula, conducted in three commercial nurseries in 2009, showed that canes from the mothervine blocks had internal infections and were externally contaminated with Botryosphaeriaceae conidia. However, these conidia were hardly ever detected in the propagation system, suggesting that the current sanitation practices of the nurseries are effective in preventing Botryosphaeriaceae spread during the grafting process. Further research will now focus on the mechanisms of infection in mothervine blocks, and between cutting harvest and cold-storage.

Regina has found that the commonly used scion and rootstock varieties were all susceptible to these pathogens, so using resistant grapevine varieties is not an option. Ongoing research will investigate the potential for use of cultural and chemical control measures during cutting production. Since other studies have shown that conidia are dispersed by rain-splash throughout the year and can infect wounds in green and woody tissues, preventing spread in vineyards may be difficult. This places greater emphasis on developing control measures that are effective in the nursery to ensure that the disease is excluded from vineyards.