



WHAT OTHER DISEASES ARE THREATENING OUR SUGARCANE INDUSTRY?

DR ROB MAGAREY, PRINCIPAL RESEARCHER BASED AT BSES TULLY, WAS INVITED IN BOTH 2009 AND 2010 TO PARTICIPATE IN SURVEYS OF A RANGE OF CROPS FOR MAJOR DISEASES AS PART OF A TEAM SEEKING TO IMPROVE PLANT PATHOLOGY EXPERTISE IN TWO DEVELOPING SOUTH-EAST ASIAN COUNTRIES – VIETNAM AND LAO PDR.

biosecurity feature

Professor Lester Burgess, a distinguished plant pathologist from the University of Sydney, coordinated the visit. In this article, Rob outlines the severe sugarcane disease epidemics he found, and how these visits will benefit the Australian sugarcane industry.

VIETNAM – 2009

Vietnam's sugarcane industry has been established for a number of years and cane is grown in many parts of the country. I visited the NAT&L sugar factory in Nghe An Province, situated about 17.0 N of the equator (similar latitude to Tully). Many other crops are grown, including rice, corn, various vegetables and some tropical tree crops. A striking feature of their industry is the average farm size.

The NAT&L sugar factory processes cane from 24,000 ha and has 24,000 farmers supplying the factory! This provides a very significant extension challenge!

Green Grassy Shoot Disease (GGSD)

At the time of my visit, a severe GGSD epidemic was affecting crops. This disease is caused by a phytoplasma (similar to a bacterium) resulting in symptoms of stunting and grassiness with many small green shoots in ratoon crops. Yields are very badly affected. There is no known vector of the disease and control is through termination of badly affected crops, use of disease-free planting material and resistant varieties.

My visit enabled me to recognise the disease and to observe the impact it has on susceptible crops. Our visiting team made submissions to Government authorities on the control programs needed to reduce disease impacts. The team also provided training for local pathologists in sugarcane disease management. We hope to develop disease-resistance screening tests for our Australian varieties as a result of this visit.

GGSD is a serious disease and requires vigilance and appropriate preparation on the part of the Australian sugarcane industry. Details of the disease will be included in the new Australian pest and disease field guide, due for release in 2011.

Lao People's Democratic Republic (PDR) – 2010

I collaborated again with Professor Burgess in 2010 to undertake a survey of the Lao PDR, situated at a similar latitude to Vietnam (a neighbouring country). The visit had a similar focus – to assist young Lao plant pathologists become familiar with sugarcane diseases. The sugarcane industry in Lao was only recently established and is in its infancy.



White Leaf Disease (WLD)

Little was known of the disease status of the Lao sugarcane industry before my visit. However, observations in the first few crops suggested all was not well. Many crops were very badly affected by WLD. As with GGSD, this disease is caused by a phytoplasma and is characterised by the production of pure white leaves in diseased plants. Ratooning and plant growth are badly affected and, as for GGSD, WLD is a major disease capable of destroying susceptible crops. Control is through the termination of badly affected crops, the use of disease-free planting material and the cropping

of resistant varieties. In order to improve our detection techniques for both diseases, leaf samples were sent through quarantine (receiving gamma irradiation) to our BSES Indooroopilly laboratory where they are being used to improve our assay techniques. We need to ensure that our industry possesses the capability to diagnose samples affected by both GGSD and WLD, should plants with similar symptoms be found in Australia. We also hope to cooperate more fully with the Lao industry to gain further information on the resistance of our commercial varieties.



CONCLUSION

BSES continues to remain vigilant with regard to potential threats to the Australian sugarcane industry. This will require us to maintain a watch on the pest and disease threats lurking offshore, to make preparation with regard to disease detection strategies and to fully understand the resistance of our varieties to these important pests and diseases.

There will be no relaxing of our commitment to ensure the Australian industry is prepared for what might come our way!



FIGURE 1 | Professor Burgess (second from left) inspecting a white leaf disease-infested cane field with local staff in the Lao PDR.

FIGURE 2 | Close up of sugarcane with WLD disease: note the pure white leaves.

FIGURE 3 | Small ratoon shoots (bottom left) very severely affected by green grassy shoot disease (GGSD) in Vietnam.

FIGURE 4 | Sugarcane affected by WLD: the lower leaves may be green, but the more recently produced leaves are pure white.

FIGURE 5 | A badly affected field showing very high levels of infestation with WLD in Lao PDR.

FIGURE 6 | ATSE Crawford Fund-sponsored workshop attendees in Vinh City, Vietnam where management strategies were outlined for control of GGSD (April, 2009).