

PROTECTING AUSTRALIA FROM BIOSECURITY RISKS

INVESTMENT IN BIOSECURITY RESEARCH IS A VALUABLE INSURANCE POLICY FOR THE INDUSTRY TO PROTECT AGAINST EXOTIC THREATS. IN THIS ARTICLE, WE TALK WITH SRA RESEARCHER DR ROB MAGAREY ABOUT ONE OF THESE COLLABORATIVE RESEARCH PROJECTS.

For more information on biosecurity visit the SRA website sugarresearch.com.au

If you've spotted anything unusual on your farm, please call the Exotic Plant Pest Hotline on 1800 084 881.

The Australian sugarcane industry is now better prepared to manage an outbreak of the exotic disease, sugarcane streak mosaic (SCSM), should it ever occur.

SCSM (caused by sugarcane streak mosaic virus) has been identified as a potential high-risk disease for the Australian industry because of its prevalence throughout Southeast Asia, including Indonesia, and the severe impacts that it can cause to production.

SCSM is an entirely different disease to the existing mosaic virus that already exists in Australia (sugarcane mosaic), and is much more severe, with the exotic disease causing an estimated A\$40-\$50 million in losses to the Indonesian industry.

Until recently, both the Australian and Indonesian industries only had a limited understanding of SCSM, which added to the risk for Australia from this disease.

However, through a project funded by the Australian Centre for International Agricultural Research (ACIAR), SRA scientists have collaborated with the Indonesian Sugar Research Institute (ISRI), the Indonesian Fibre Crops and Sweetener Research Institute (IFCSRI) and the University of Bogor to improve both countries' understanding of SCSMV.

SRA Leader for Disease Management, Dr

Rob Magarey, led the project and he said that because SCSM is so widespread in Indonesia, this made the research valuable for both countries.

"SRA continues to take a proactive approach with biosecurity risks, knowing that our industry cannot afford to wait for diseases to strike before preparations are made," Dr Magarey said. "Once the horse has bolted, it is too late to shut the gate."

"The disease does not kill, nor severely restrict the yield, of individual plants or portions of a crop, which makes its appearance in the paddock less dramatic. However, because it affects whole crops, actual yield losses are very significant. Through our research, losses have been shown to vary between 17-26 percent, depending on crop class."

Previous to this project, there was limited information on how the disease spreads, where it occurs in Indonesia, how to detect the virus, the resistance of our varieties, and the most effective integrated disease management strategy (IDM).

Through this work, with extensive trials and field surveys within Indonesia, these questions now have answers.

The research team determined that SCSMV is largely spread through diseased planting material, which has resulted in the virus making its way into more remote parts of the Indonesian Archipelago.

Specific surveys of commercial fields and garden canes in Sumatra, Sulawesi and the eastern Archipelago highlighted the presence of SCSMV in many commercial fields, especially on Java, but also in such places as West Papua - a sugarcane production expansion area relatively close to Australia. It was found in greater than 80 percent of the 931 crops surveyed in SCSMV research.

The project also worked with Indonesian growers on extension programs to help Indonesian growers manage the disease.

"Project impacts so far have included a better understanding by Indonesian farmers of how the disease is likely to affect their crops, and the recommended IDM options to reduce yield losses," Dr Magarey said. "The Indonesian industry now has the ability to test planting material for the presence of the disease, enabling better selection of disease-free planting material."

"The essential elements of effective disease management include: disease-free planting material, varietal resistance and termination of heavily-diseased crops."

"The Indonesian industry is facing the challenge that most of their commercial varieties are susceptible to the disease, with only a few rated as resistant, leaving farmers with few options - disease-free nursery material a key strategy. However,

many nurseries are also affected by the disease."

Dr Magarey said that a better understanding and management of the disease in Indonesia potentially could reduce the likelihood of it reaching the Australian sugarcane industry.

"In addition to that, our industry now has important tools that we can use, should we ever need them," he said.

"Through our work, we have a better understanding of pathogen variation, and we have developed optimised molecular and serological tests for detecting the virus in planting material."

He added that the project also examined variety resistance. "There may be some variation in varietal resistance to SCSMV in Australian varieties, although further testing is needed to confirm this variation."

He said that a next step would be to update the Australian industry's contingency plan for this disease, incorporating the findings from this research project. ■

(Over page and above) The research team preparing a sugarcane streak mosaic yield loss trial in Indonesia. (Top right) Sugarcane streak mosaic. (Middle right) One of the trials assessing the transmission of sugarcane streak mosaic virus. (Bottom right) One of the survey teams in the field, including SRA staff Ms Lisa Derby and Dr Nicole Thompson.

