



## Indonesian research project to help protect our sugarcane

*A collaboration between Australian and international sugarcane researchers is setting a foundation to help protect the Australian industry from an exotic sugarcane disease.*

SRA scientist, Dr Rob Magarey, is leading a new project to research an important Indonesian disease that could one day threaten Australian sugarcane crops. The disease is caused by *sugarcane streak mosaic virus* (SCSMV; pictured above) and was first found in Indonesia in 2005. The project, partially funded by the Australian Centre for International Agricultural research (ACIAR), involves scientists from Australia, Indonesia and France.

First recognised in the 1990s in south Asia, SCSMV rapidly infects cane crops, often leading to whole crops becoming diseased. It is now very common and widespread in SE Asia and South Asia (India, Pakistan).

"Much remains unknown about the disease, including how it spreads, where it occurs in Indonesia, the resistance of our commercial varieties, and the level of resistance needed to manage the disease," Dr Magarey said.

"We don't even know whether insects spread the disease."

"The disease is similar to wheat streak mosaic virus, which created significant havoc in Australian cereal crops when it entered Australia in the early 2000s."

The focus of the project is to develop successful management strategies, including assessing the resistance of the Australian industry's commercial varieties. SRA scientists recently visited Indonesia for the annual project review meeting. While there, they formed experimental plans for the coming year after a discussion on the results from the last 12 months research.

"The project continues the close cooperation between Australian and Indonesian scientists as we deal with the pests and disease threats of highest priority to the Australian sugarcane industry," Dr Magarey said.

"SRA is of the belief that we can't afford to wait for diseases to strike our industry before adequate preparations are made. Once the horse has bolted it is too late to shut the gate."

### *The objectives of this project on SCSMV are to:*

- Assess its importance in Indonesia and incidence in Java, Sumatra and Sulawesi
- Determine potential for disease escalation and conditions required to maintain a disease-free nursery (epidemiology)
- Assess economic importance in Indonesia
- Identify resistance of varieties by developing a rapid varietal-screening method
- Develop cheap, rapid detection methods
- Adoption of integrated disease-management strategies

**Australian sugarcane researchers have a strong collaborative history with Indonesia.**  
**Some of our recent and ongoing projects include:**

**Outcomes:** Collaboration with Indonesian Sugar Research Institute (ISRI). This project provided vital information to the Australian industry on resistance of Australian varieties before the 2006 smut incursion. The project provided funds, equipment and training to ISRI. It allowed ISRI to access 10 Australian varieties each year for use in their breeding program. It was funded by Australian sugar industry (BSES and SRDC, the two predecessor organisations of SRA).

**Outcomes:** Collaboration with ISRI. This project provided information on the distribution of pests and diseases as biosecurity threats to each of the three industries, especially from non-commercial sources. The project provided funds, equipment (RSD sampling) and training to ISRI. It was funded by ACIAR.

**2009–2013**  
 Biological control of pests and diseases in Java

**Outcomes:** Collaboration with ISRI and Indonesian Quarantine, CIRAD (France). This project provided Australia with experience with biosecurity threats (stemborers, diseases) and development of diagnostics. The project provided Indonesia with information on distribution, importance, diagnostics and management of target pests and diseases. The project provided funds, equipment and training to ISRI. It was funded by ACIAR.

**Outcomes:** Collaboration with ISRI, Indonesian Sweetener and Fibre Crops Research Institute (ISFCRI), Bogor Agricultural University (BAU), and CIRAD. The project focuses on diagnostics, distribution, impact and management of SCSMV. It provides funds, equipment and training to ISRI, ISFCRI and BAU. It is funded by ACIAR.

**2015–2019**  
 Diagnostics and management of SCSMV



## Indonesia and Australia: A strong collaborative partnership

**Objectives:** A project on borers would assess efficacy of biological-control programs and the level of field parasitism. It would evaluate systemic soil-applied insecticides for management of mothborer larvae, as well as refine foliar pesticide application including timing and application methodology. It would develop reliable pest-monitoring and pest-forecasting systems. It would also review varietal response of new and existing varieties to moth borers and develop capability through training postgraduate students from both Indonesia and Australia.

**Objectives:** A project on Woolly aphids, which are a vector for RSD, would have similar objectives to a project on borers.

**Objectives:** There are number of diseases that warrant future collaboration, including **Downy mildew** (PNG, fungal pathogen); **Leaf scorch** (Sumatra and Java, fungal pathogen); and **Xylaria root and basal stem rot** (Sumatra, a sleeper, very serious disease causing patches of dead stools but unlikely to spread rapidly except in soil or on stalk pieces). Also, **sembur** and **sereh** are two diseases of unknown aetiology that caused widespread losses in the early 1900s in Indonesia but have not been recorded for many decades.

**Potential future collaboration:**  
 Borer management

**Potential future collaboration:**  
 Woolly aphids

**Potential future collaboration:**  
 Diseases