

# Isolation - Not a bad thing!

**In this article BSES principal extension officer Peter McGuire, based at Condong, NSW highlights how some serious diseases such as leaf scorch and several strains of mosaic disease occur overseas, but not here. He also reviews the situation with insect pests, citing the major concerns as stalk and top borers.**

Australia is sometimes described as "the lucky country". For Australian agriculture much of that luck is due to our isolation and good quarantine services. It is quarantine that has kept Australia free of major diseases, such as foot-and-mouth and rabies.

However, no matter how good the quarantine service, it is inevitable that some exotic diseases and insect pests will eventually enter the country and take hold. Despite the many pests and diseases that the Australian sugar industry has to contend with, there are many more "out there".

BSES is committed to research on all sugarcane pests and diseases that threaten or could threaten the Australian sugar industry. The problem we face is: How do you undertake research on a pest or disease that hasn't occurred here yet? The obvious answer is to go where the pests and diseases are.

It is for this reason that BSES pathologists, entomologists and extension officers are working with their Indonesian counterparts on major pest and disease issues in Indonesia. The Australian Centre for International Agricultural Research (ACIAR) has funded a project that will achieve better pest and disease control for both the Australian and Indonesian sugar industries. These BSES staff members are collaborating with staff from the Indonesian Sugar Research Institute (ISRI) to carry out the project. ISRI began as the world's first sugar research station and is famous for breeding the "wonder cane" POJ 2878.





**Above:** Top borer (*Scirpophaga excerptalis*) damage in Indonesia. Top borers do not occur in Australia.

In Indonesia over 140,000 farmers grow sugarcane, and the industry supports more than 1.3 million workers in associated industries. There are 58 sugarcane factories in Indonesia processing 30 million tonnes of sugarcane grown on 380–400,000 ha. Over three-quarters of the sugarcane production occurs on the island of Java. All work for this project will be done in Java.

Because sugarcane originated in the Indonesian archipelago and New Guinea, so too did many of the pests and diseases that infest sugarcane. This makes Indonesia an ideal place to study exotic sugarcane pests and diseases. Collaboration with Indonesian researchers has already produced large benefits for the Australian sugar industry. Our early smut screening trials were done in collaboration with ISRI and it was this work that provided the first smut ratings for our commercial varieties and advanced seedlings.

During a recent trip to Java, Indonesian and Australian project staff reviewed the results of a very large pest and disease survey that ISRI staff had undertaken. The major findings of the survey show that:

- target blotch was found for the first time in Java;
- leaf scorch was found in Central Java for the first time;
- mosaic (several strains), RSD and smut are widespread;
- chlorotic streak was not previously known in the industry;
- five species of borer were found, of which three are major pests;
- several species of canegrub were found, of which two are major pests.

**Left:** Project team members from L to R: Dr Peter Samson (BSES entomologist), Etik Achadian (ISRI entomologist) Dr. Damar Sasongko (Head of Plant Protection Division at ISRI), Peter McGuire (BSES extension officer), Dr Régis Goebel (CIRAD entomologist working with BSES), Trikuntari Dianpratiwi (ISRI extension specialist), Ari Kristini (ISRI plant pathologist and Indonesian project leader), Wiwit Wiyasari (ISRI tissue culture expert). Team members absent are Dr Rob Magarey (BSES plant pathologist & Australian project leader) and Dr Nader Sallam (BSES entomologist).



**Above:** This stalk borer (*Chilo sacchariphagus*) occurs throughout Java. It causes yield and CCS loss. (Photo Dr Nader Sallam).



**Above:** Survey team in the field. Two Indonesian teams have surveyed 30 mill districts across Java.



**Above:** Rearing parasites for biological control. (Photo Dr Nader Sallam).

Australia is the only major sugar producer that is free from major borer pests. And from an Australian viewpoint, borers pose the biggest risk to our sugar industry. Stalk borers reduce yield as well as CCS. The top borer does similar damage but because it usually kills the growing point the stalk dies. Losses up to 40 tonnes per ha have been recorded from this pest. Top borer occurs widely throughout Asia, especially Southeast Asia.

The focus of the project will be on better control of the major pests and diseases. The Indonesian industry relies on biological control of borers through mass releases of parasitic wasps. Dr Régis Goebel is a part of this project and has extensive experience with sugarcane borers in Africa, Reunion and Asia. His experience will ensure that parasite breeding and releases are done in the most effective manner possible.

Of the diseases found in the survey, perhaps the mosaic diseases are of most interest from an Australian viewpoint. Sugarcane streak mosaic (not present in Australia) occurs in Java, together with three strains of sugarcane mosaic (we only have one strain). Working with these diseases and their insect vectors in Java provides valuable experience for key BSES staff if ever one of these exotic virus diseases is found here.

### Conclusion

Past collaboration with Indonesian researchers has served the Australian industry well. In the case of smut, BSES pathologists gained valuable experience with the disease before it was found in Australia. Similarly, this cooperative project will provide key staff with experience on exotic pests and diseases while bringing benefits to the Indonesian sugar industry.

