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## Australia extends digital pest-detection network to Asia

Australia's digital pest-detection network is expanding to neighbouring Asian nations to identify and combat invasive insects and diseases that threaten Australia's agricultural industries and markets before they arrive.

A network of more than 30 camera-connected microscopes linked to a public internet-based image library is already part of the arsenal being deployed to meet Australia's biosecurity challenges.

This includes remote districts like Kununurra in Western Australia, which would otherwise have a limited access to the expertise required to identify new plant pests and diseases.

The digital diagnostic technology and procedures developed by the Cooperative Research Centre (CRC) for National Plant Biosecurity have now been extended to East Timor, Thailand, Laos, Malaysia and Vietnam to enhance their diagnostic capability and contribute to Australia's 'pre-border' surveillance.

Plant pathologist Dr Gary Kong is leading the CRC's digital diagnostic project and says the increasing volume of international trade and people movement are placing greater pressure on our quarantine systems.

"At the same time the pool of expertise to diagnose new incursions is shrinking. Digital tools are helping us to do more with less and increasing access to information that improves our capacity to identify new pests and disease and respond more quickly."

Dr Kong's team has developed the CRC's Plant Biosecurity Toolbox, which is hosted in Museum Victoria's Pest and Disease Image Library (PaDIL).

PaDIL already contains 20,000 highly detailed images of insects and plant diseases, available publicly through the internet at [www.padil.gov.au](http://www.padil.gov.au). The website has proven to be a leading international resource for plant and disease identification internationally, with users in more than 180 countries.

In conjunction with PaDIL, the Plant Biosecurity Toolbox provides diagnostic details of harmful plant pest and diseases, including symptoms, the damage they cause, taxonomy and molecular diagnostic tests.

Dr Kong says early detection and confident identification mean that immediate steps can be taken to minimise the risk or impact of incursion.

The network of microscopes equipped with cameras will use the internet to link non-experts to experts anywhere in the world. The system allows images of pest specimens to be shared in real-time to make an accurate identification.

A web-portal is being constructed to log all remote microscope events and store associated diagnostic images, to provide a dynamic picture of pest movement across south-east Asia and Australia. The remote microscopy network is expected to grow dramatically in the near future to include Canada and the USA, while New Zealand already has installed systems in three locations. Remote microscopes will also be used

for remote diagnostic training, giving experts the ability to communicate their knowledge to multiple users in remote locations.

The CRC for National Plant Biosecurity's project support officer, Michael Thompson based at CSIRO has recently installed remote microscope equipment at government entomology research laboratories in south-east Asia and trained staff in its use.

The remote microscope equipment was supplied by the CRC, Australian Centre for International Agricultural Research, Northern Territory's Primary Industries and AusAid, and through mutual partnership, will contribute substantially to Australia's pre-border surveillance.

"We import produce from these countries and if we can identify outbreaks of pests or disease before it leaves these countries we can protect the relevant industries in Australia.

"For instance three of these countries have fruit fly, different species to the ones we have. If these species should establish in Australia they could decimate our horticulture industries," Mr Thompson says.

"We need to be able to identify pests like fruit fly, help our neighbours identify fruit fly, and be able to differentiate their species from our own when they reach our shores, and this network improves our ability to do this."

Mr Thompson says the cost of entry level equipment required to join the network is expected to become more affordable in the near future – an internet connection, computer with a USB connection, and the microscope/camera, which begins at around \$500 for magnification up to 500 times.

He says that with a wireless internet connection it is possible microscopes connected to ultra micro computers (UMPCs) or, in the near future, to mobile phones will provide real-time images from the field to experts for immediate identification, or will be uploaded to a central database for identification.

## **ENDS**

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High-resolution images of Dr Gary Kong and Mr Michael Thompson are available for download from [www.crcplantbiosecurity.com.au/news/media-releases](http://www.crcplantbiosecurity.com.au/news/media-releases)

Captions:

CRC National Plant Biosecurity support officer Michael Thompson demonstrates the remote microscope operation, transferring the microscopes view on an insect to his laptop, for transmission via the internet to experts for identification.

Leader for the CRC's digital diagnostic project Dr Gary Kong demonstrates the diagnostic feature of the Pests and Diseases Image Library (PaDIL), which allows expertise to be quickly and easily shared around the world.