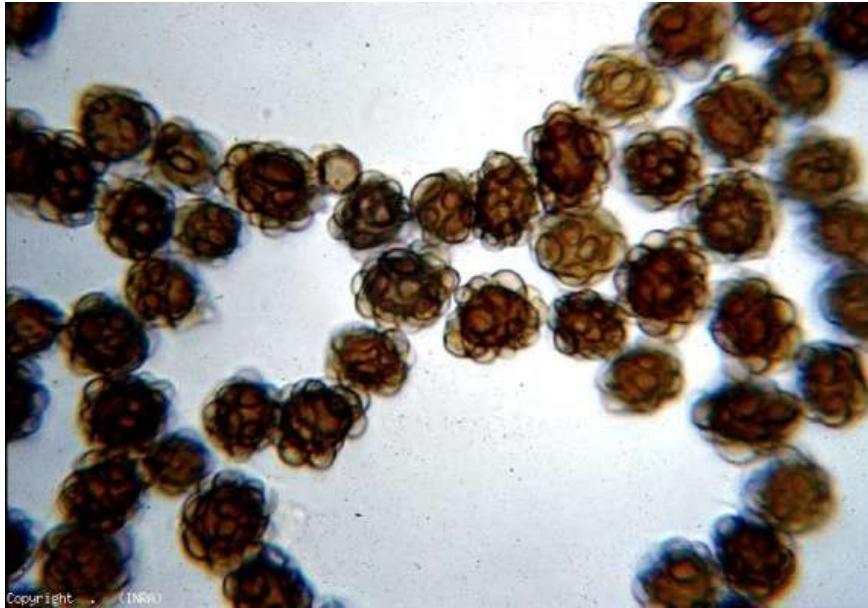
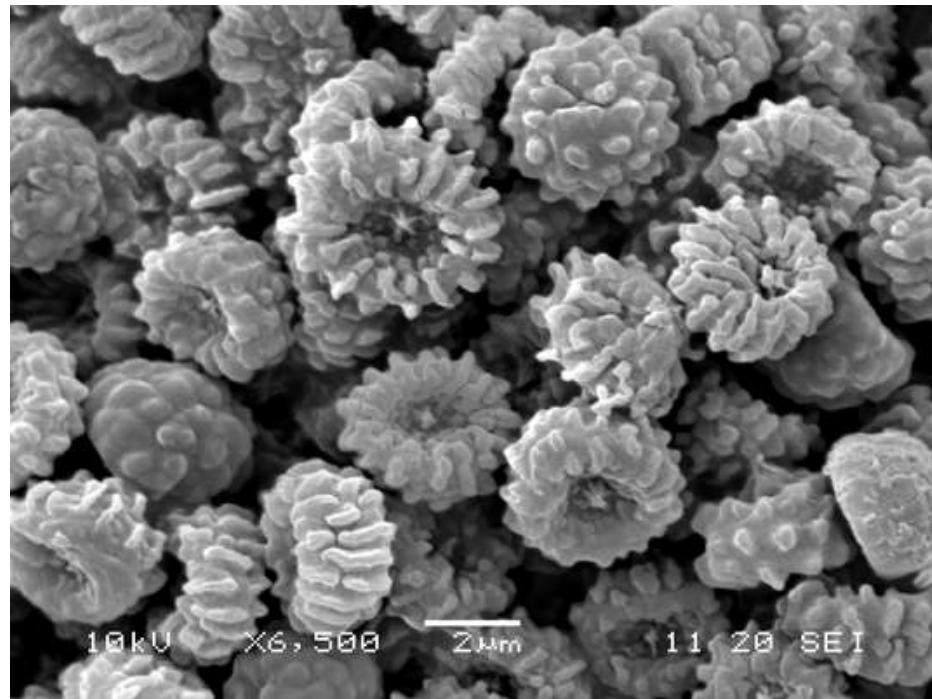
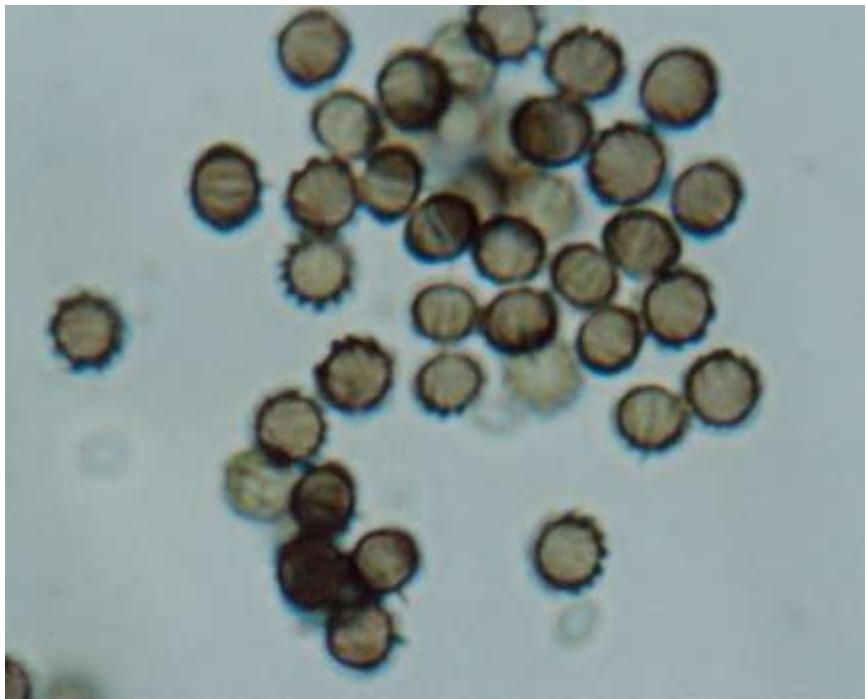
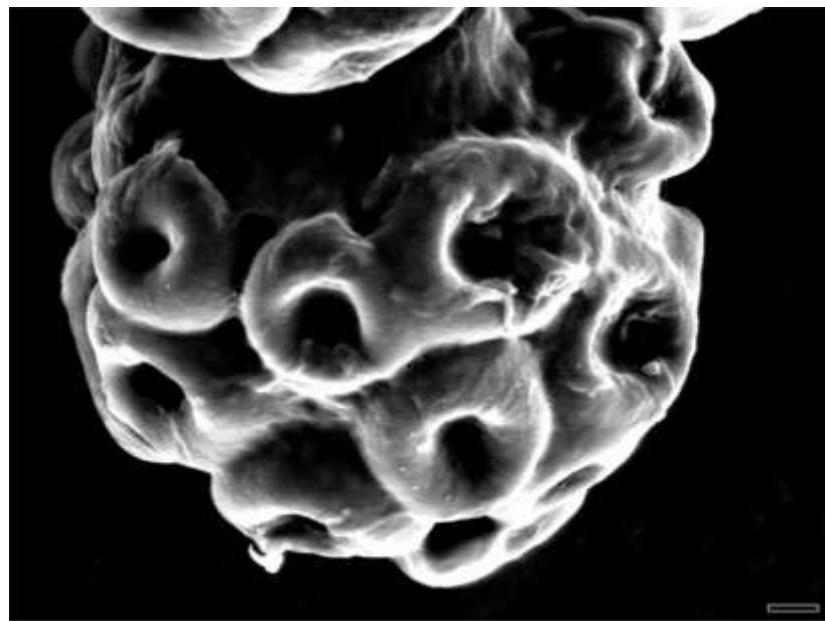


Microscopic characteristics of *Aspergillus niger*  
are found in this survey.



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Soft rot symptoms of shallot for isolation



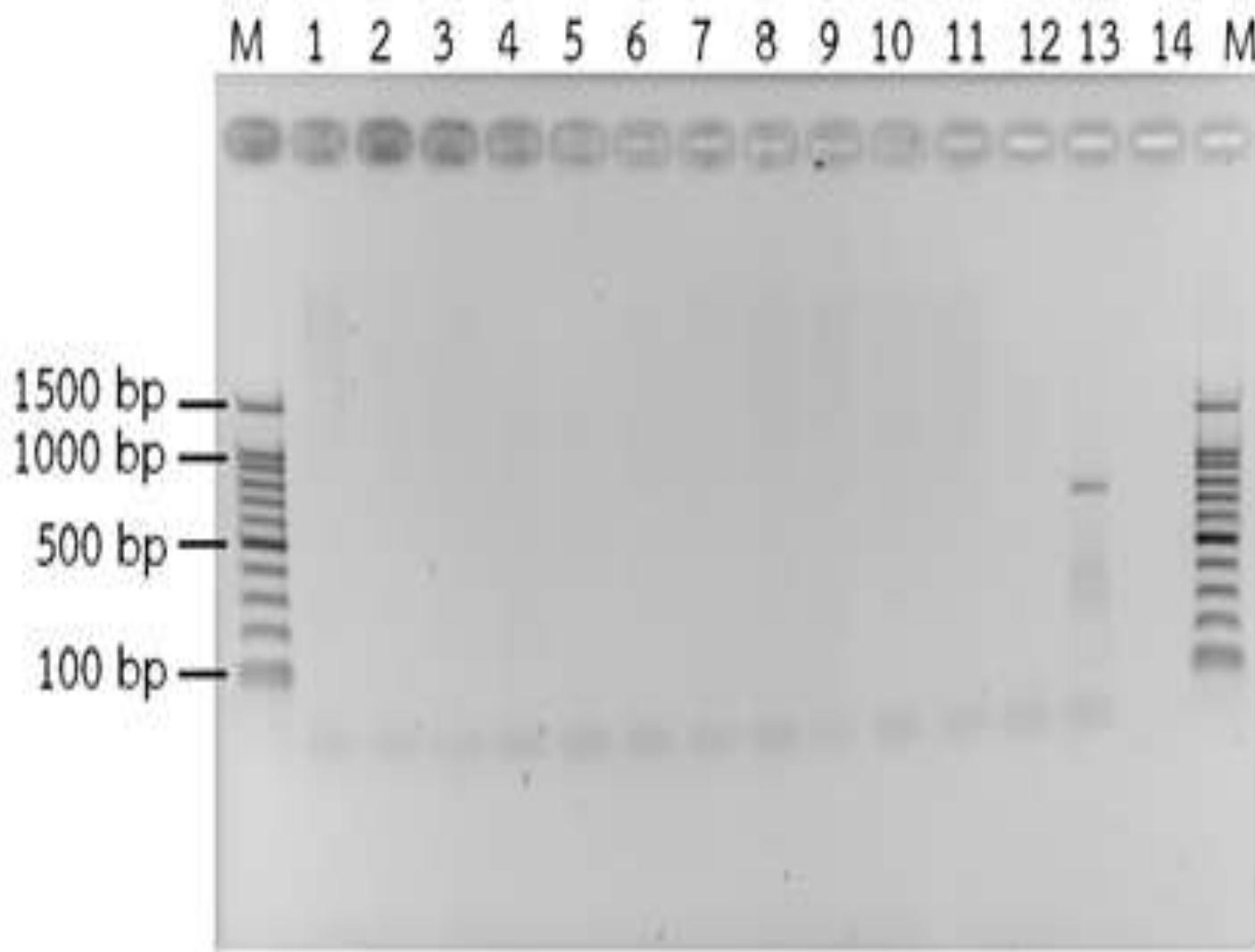
Fluorescence bacteria selection on  
King's medium B and Arginine dihydrolase test



Arginine dihydrolase test on Thornley's medium

Positive test – It is not *P. syringae* pv. *syringae*

Negative test – It may be *P. syringae* pv. *syringae*



Specific of the PCR protocol with B1 and B2 primer set. M indicates Molecular marker lane (Gel Pilot 100 bp plus Ladder, lane 1-12 indicates Fluorescence bacteria, lane 13 indicates positive control and lane 14 indicates the negative control



Pest status:

*Urocystis cepulae*

*Pseudomonas syringae* pv. *syringae*  
are not present in Thailand.





# Detection- presence or absence

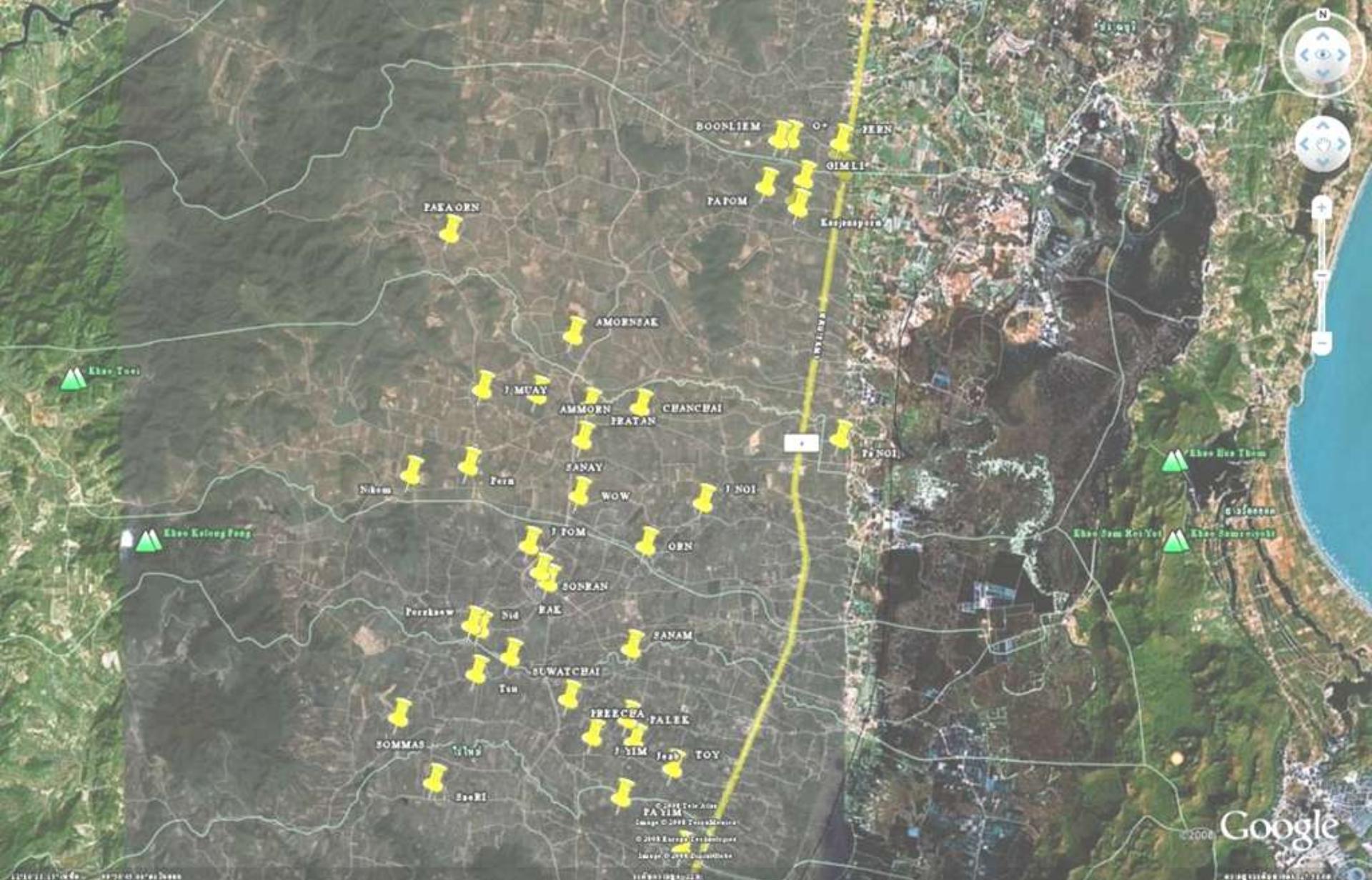
**Target pests:**

*Sternochetus mangiferae*

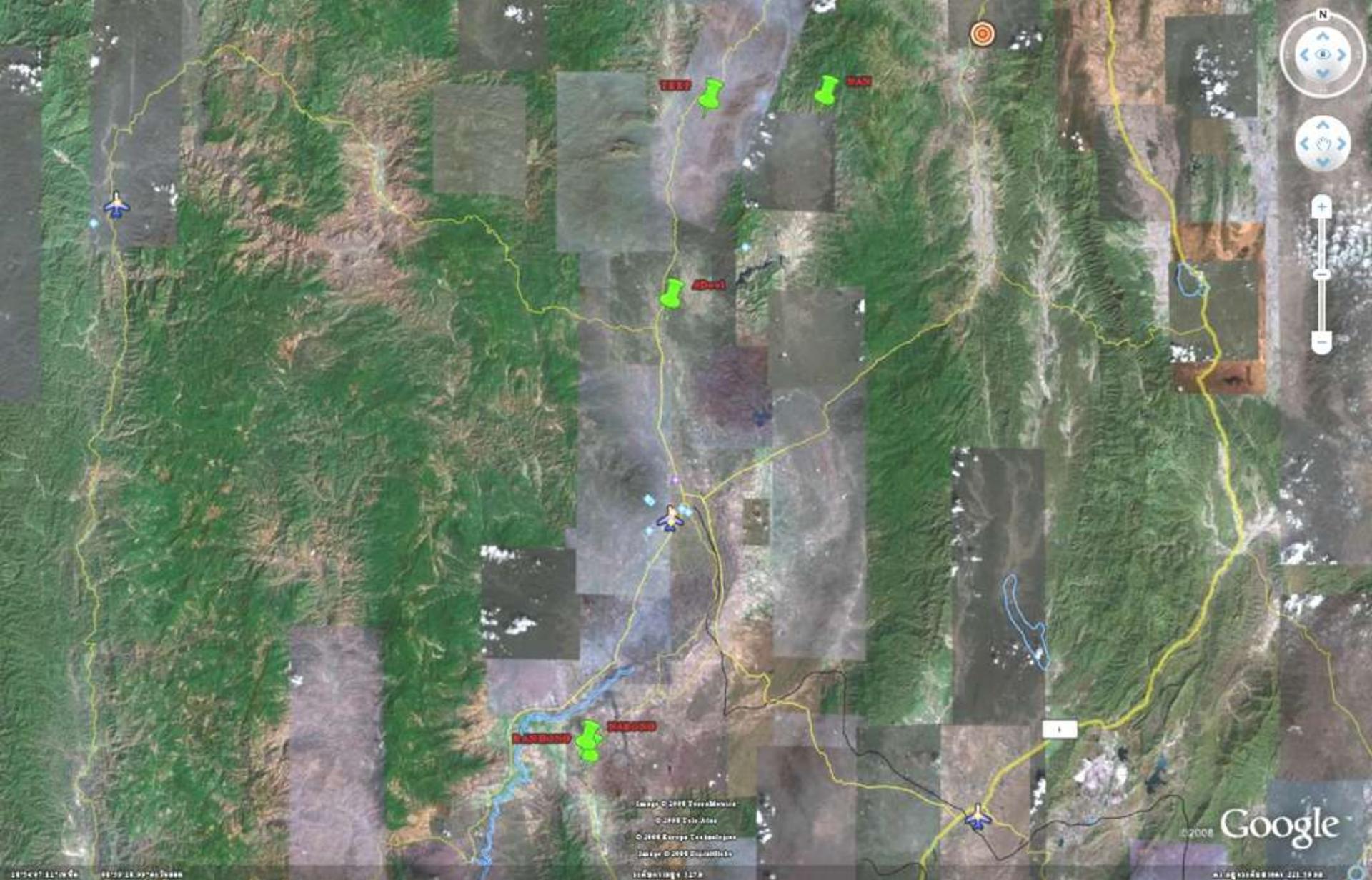
**Host:**

Mango: *Mangiferae indica L.*

The purpose of the survey to conduct pest status for mango export.



# Mango orchards in the west Thailand



# Mango orchards in the north Thailand



Mango orchards in the northeast Thailand



A close-up photograph of a large pile of green, oval-shaped seeds, likely from a passion fruit plant. Many of the seeds are cut open, revealing their white, fleshy interiors and dark, segmented cores. A small white rectangular box contains the text "33,195 seeds".

**33,195 seeds**

*Sternochetus olivieri*

35

828

22



## Pest status:

*Sternochetus mangiferae* is not present in Thailand.





# Detection- presence or absence

**Target pests:**

*Pantoea stewartii* subsp. *stewartii*

**Host:**

Corn: *Zea mays* L.

The purpose of the survey to conduct pest status for corn export.

# Source of information

- FAO
- CABI
- Host index
- Thesis, special problem
- Research
- Web site, Journal, Text

# Distribution Maps of *Pantoea stewartii* subsp. *stewartii*

The screenshot shows a web browser window with the following details:

- Address Bar:** http://www.cabi.org/dmpd/?page=4050&reviewid=13: This is the URL of the page.
- Title Bar:** The title bar includes tabs for "erwinia st...", "plant dise...", "Erwin...", and a new tab icon. It also features standard browser controls like back, forward, and search.
- Content Area:**
  - Header:** "Cookie Information" and "Distribution Maps of Plant Diseases" with the CABI logo.
  - Navigation:** "Home/Maps", "Abstracts Database", "About DMPD", "Editorial Team", "Index", and "Free Maps".
  - Maintenance Notice:** "Search... maintenance work Friday 2nd August"
  - Login Form:** A sidebar on the left with fields for "Username" and "Password", and buttons for "Login", "use my IP Address", and links for forgotten credentials and support email.
  - Page Content:** The main content area displays the distribution map for *Erwinia stewartii*. It includes a link to "Distribution Maps of Plant Diseases, 1976, April (Edition 3), Map 41" and a note about viewing the PDF.
  - Text Block:** A large text block describes the geographical distribution of the organism, mentioning Asia, China (Honan), Thailand, Vietnam, Europe, Italy, Poland, Romania, Yugoslavia, North America, Canada (Alta) (Ontario), (British Columbia), Mexico, USA, Central America & West Indies, Costa Rica, Puerto Rico, South America, Brazil (Sao Paulo), Guyana, and Peru (coast). The word "Thailand" is highlighted with a red box.

## *Pantoea stewartii* subsp. *stewartii* (Smith) Mergaert et al.

- : Stewart's wilt (Syn. Stewart's disease, Stewart's bacterial wilt)
- : Quarantine pest :EPPO : A2 list and APPC and IAPSC
- : Seed transmission (Seed borne)
- : the corn flea beetle (*Chaetocnema pulicaria*), vector of *Pantoea stewartii*
- : Indigenous to America and has been introduced to other parts of the world with maize seed
- : Found in the past but not establish in Thailand

## Symptoms and signs



The seedling wilt phase

# Symptoms and signs

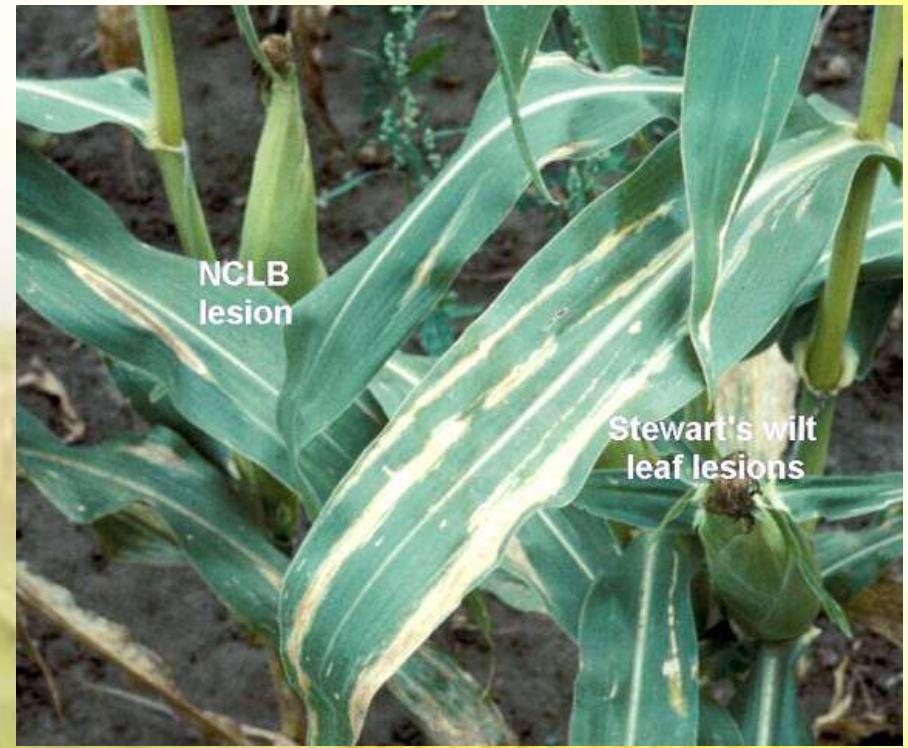


The leaf blight phase

# Symptoms and signs



infect kernels



Symptoms of NCLB resemble symptoms of  
Stewart's wilt

# vector of *P. stewartii* subsp. *stewartii*

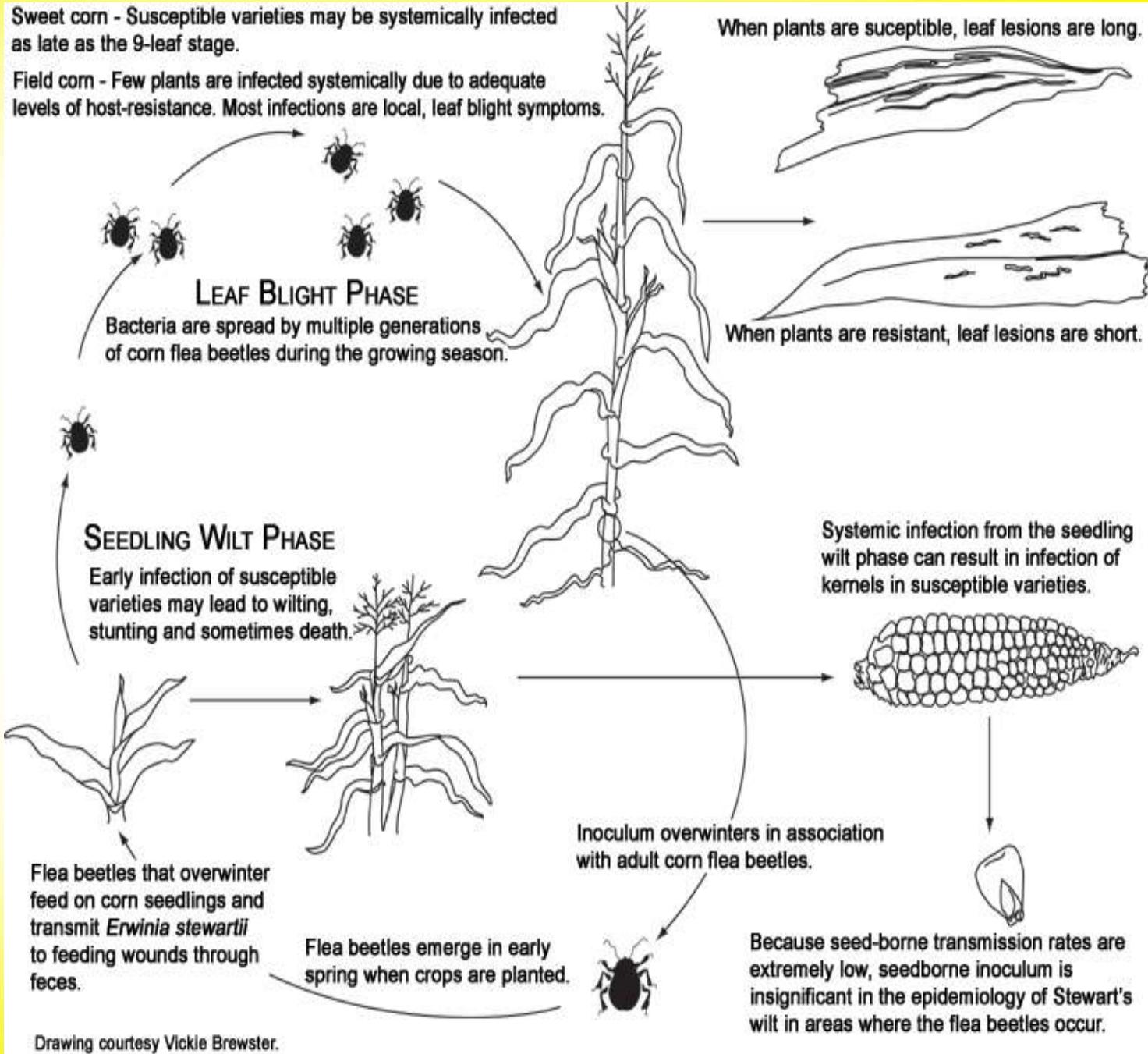


the corn flea beetle (*Chaetocnema pulicaria*),

# Colony of *P. stewartii* subsp. *stewartii*



# Pathogen survival and dissemination



# Identification of *Pantoea stewartii* subsp. *stewartii*

- Data Sheets on Quarantine Pests *Pantoea stewartii* subsp. *stewartii* (EPPO quarantine pest)
- diagnostic protocol for *Pantoea stewartii* subsp.*stewartii* (2006 OEPP/EPPO, Bulletin OEPP/EPPO Bulletin 36, 111–115)
- Diagnostic protocol for *Pantoea stewartii* subsp.*stewartii* in Thailand

# Identification of *Pantoea stewartii* subsp. *stewartii*

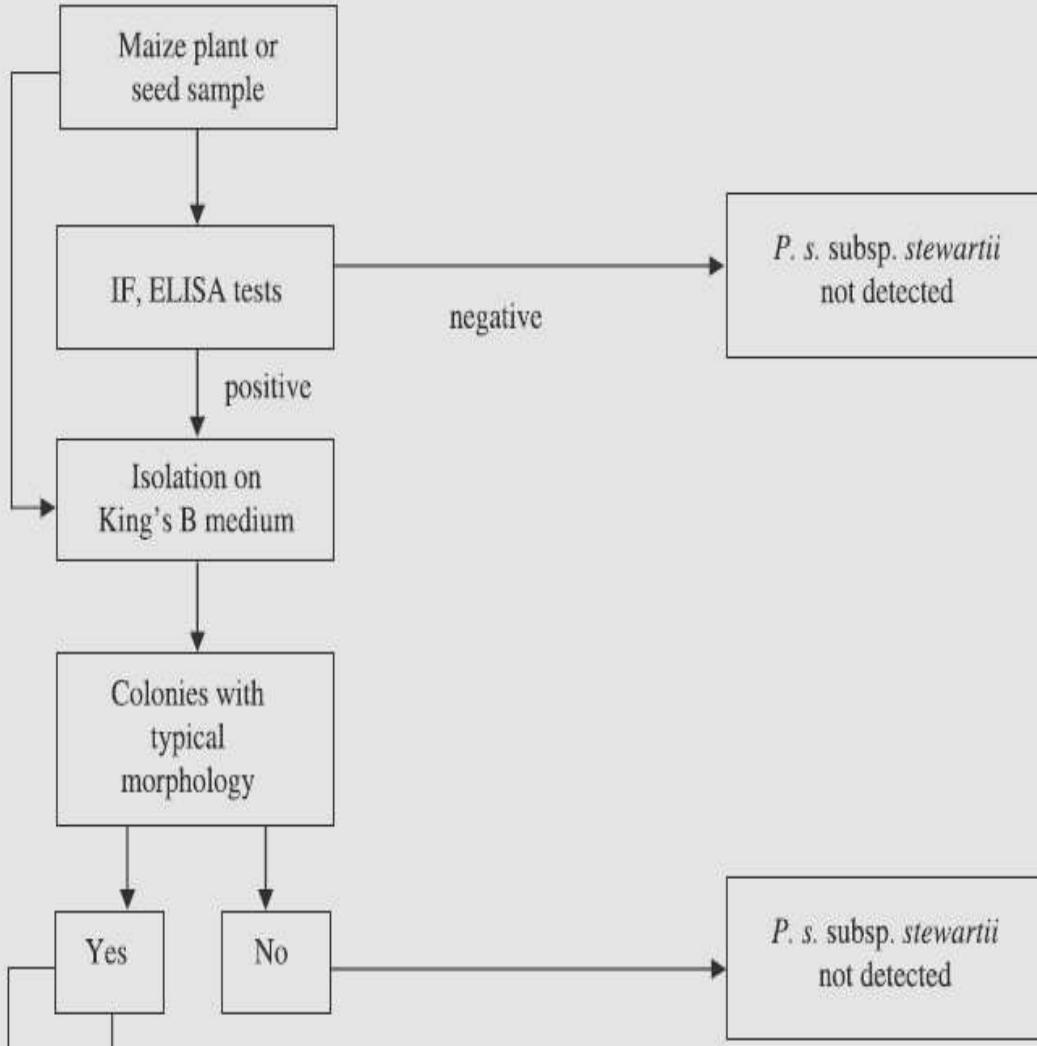
- Similar to *Pantoea stewartii* subsp. *indologenes* and *Pantoea agglomerans*
- False positive by ELISA and PCR
- Identification using multiple method

**Table 1** Morphological and biochemical tests for identification of *Pantoea stewartii* subsp. *stewartii* and distinction from similar species

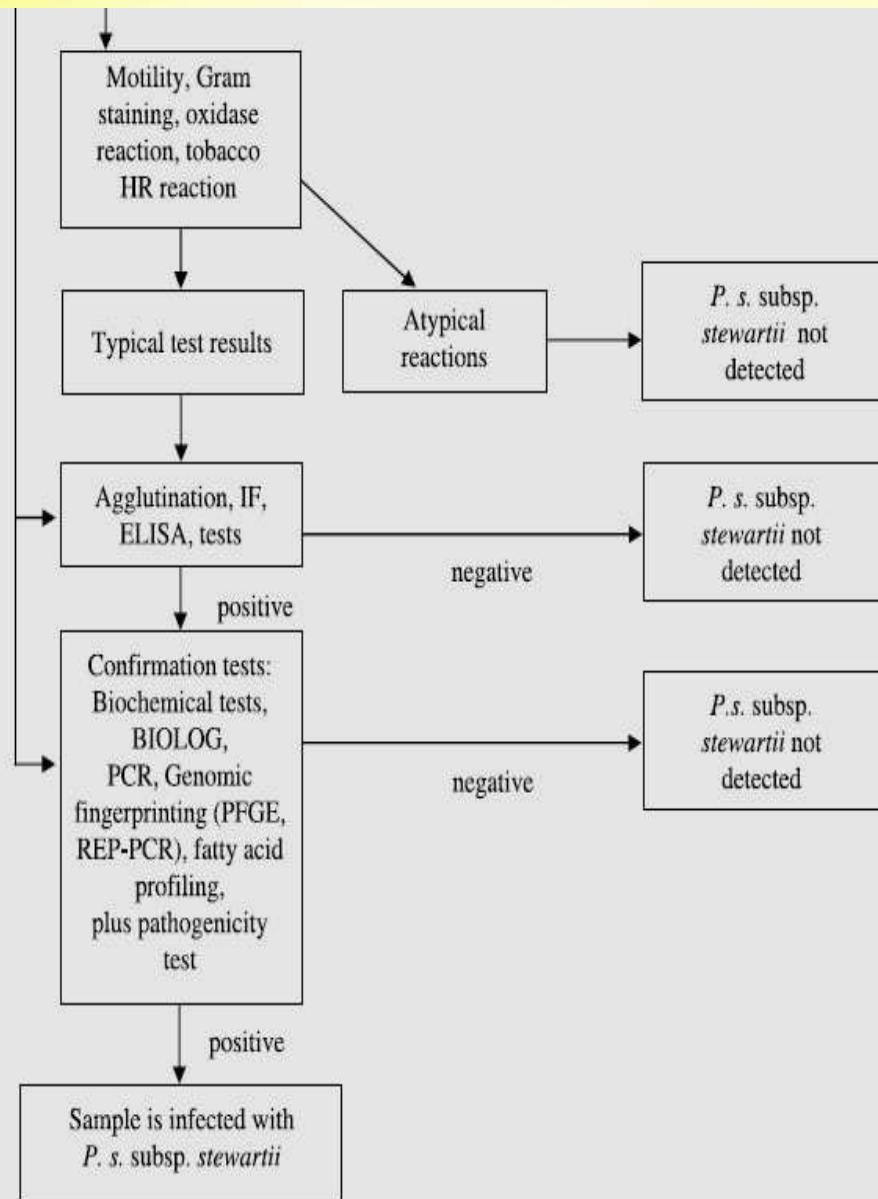
Tests	<i>Pantoea stewartii</i> subsp. <i>stewartii</i>	<i>Pantoea stewartii</i> subsp. <i>indologenes</i>	<i>Pantoea agglomerans</i>
Motility	non-motile	motile (or non-motile)	motile
acetoin production	negative	positive	positive
indole production	negative	positive	negative
nitrate reduction	negative	negative	positive
esculin hydrolysis	negative	positive	positive
growth on <i>cis</i> -aconitate	negative	positive	positive
acid production from:			
maltose	negative	positive	positive
arbutin	negative	positive	positive
salicin	negative	positive	positive
raffinose	positive	positive	negative
utilization of malonate	negative	negative	positive
gram staining	negative	negative	negative
cytochrome C oxidase	negative	negative	negative

Fig. 1 Flow diagram for the diagnosis of *Pantoea stewartii* subsp. *stewartii* in maize

114 Diagnostics



**Fig. 1 Flow diagram for the diagnosis of *Pantoea stewartii* subsp. *stewartii* in maize**



Bulletin OEPP/EPPO  
Bulletin 36, 111–115

**Fig. 1** Flow diagram for the diagnosis of *Pantoea stewartii* subsp. *stewartii* in maize.



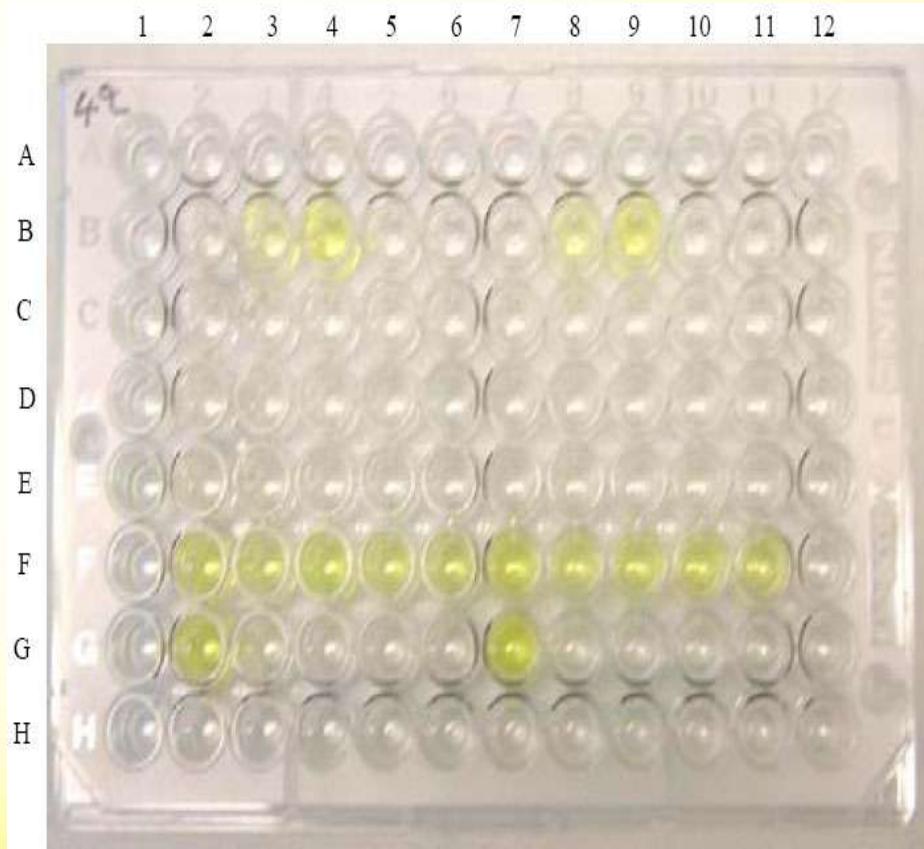
# Leaf blight symptoms

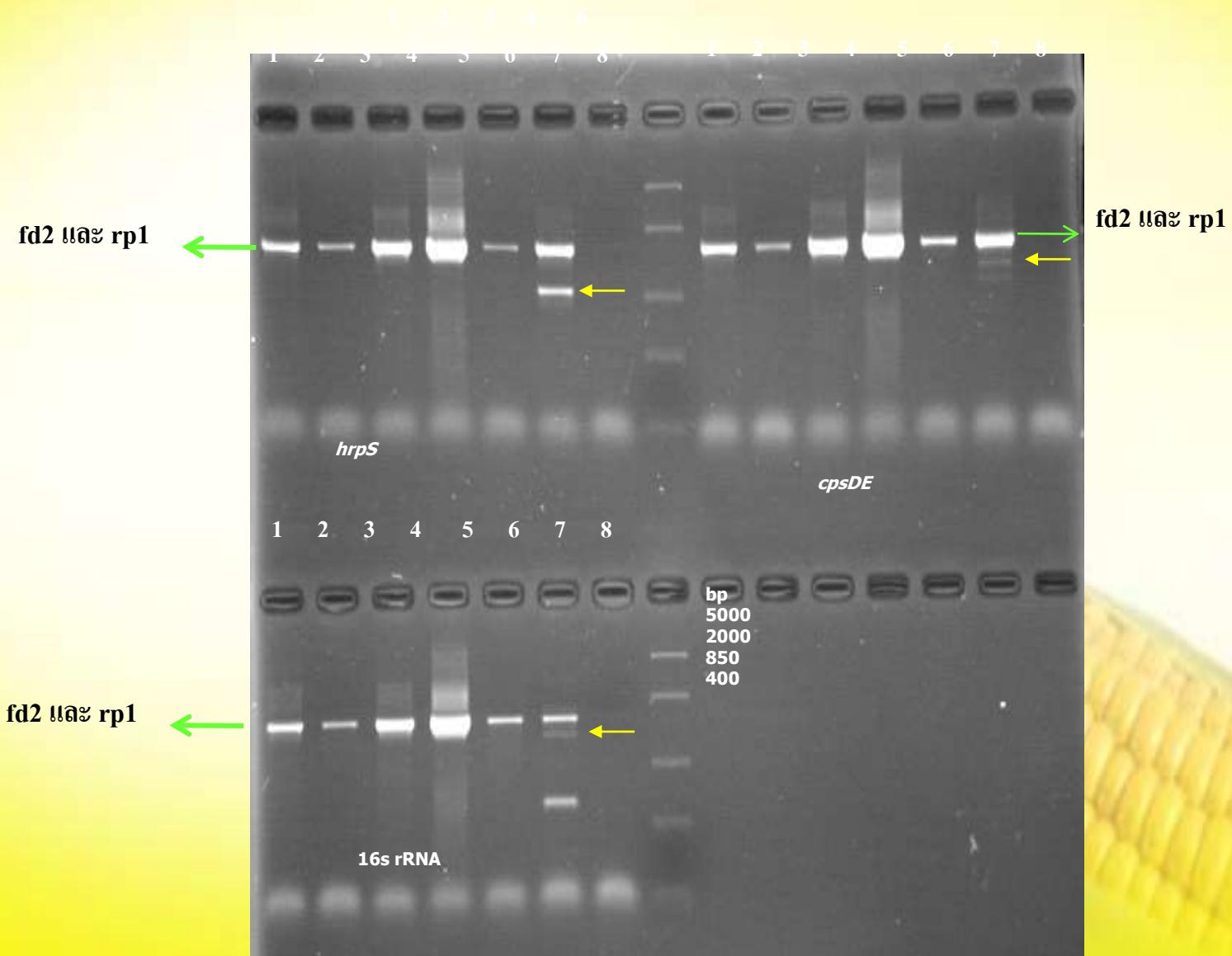


– Not found seedling wilt symptom Collect samples of  
leaf blight 1,054 samples

– ELISA and PCR

## *ELISA [PathoScreen (Agdia, Inc., USA)]*





## Pest status:

*Pantoea stewartii* subsp. *stewartii*  
is not present in Thailand.

โครงการวิจัย การเฝ้าระวังศัตรูพืช 07-01-51-01

กิจกรรม การเฝ้าระวังเชื้อสาเหตุโรคพืชที่เป็นศัตรูพืชกักกัน

กิจกรรมย่อๆ การเฝ้าระวังเชื้อสาเหตุโรคพืชที่เป็นศัตรูพืชกักกัน

การทดลอง 1 - การเฝ้าระวังการเกิดและการแพร่กระจายของรา *Guignardia citricarpa* สาเหตุโรคคงด้าวของส้มได้

07-01-51-01-01-01-51

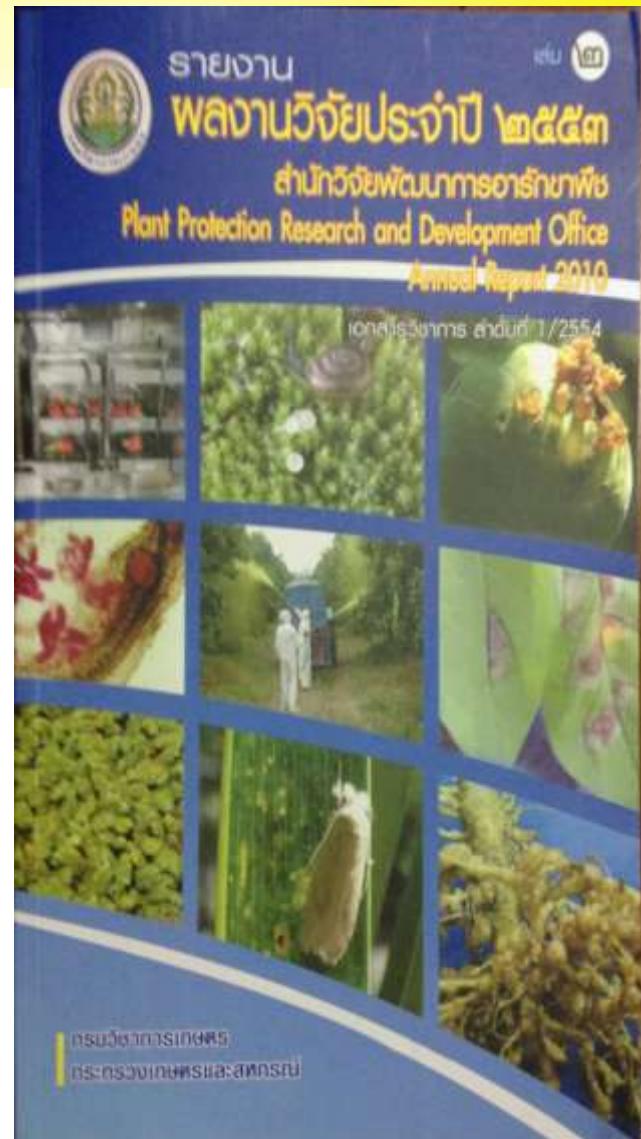
➤ พฤหัสบดี อริปัญญา ภานุ และคณะ

- การเฝ้าระวังการเกิดและการแพร่กระจายของแบคทีเรีย *Pantoea stewartii*.....1366

*Pantoea stewartii*

07-01-51-01-01-01-04-51

➤ ณัฐธิมา โนเชตเจริญกุล และคณะ





## Surveillance and Dissemination of *Pantoea stewartii* subsp. *stewartii* Thailand

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<sup>b</sup>Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture, Bangkok, Thailand  
<sup>c</sup>Center for Agricultural Biotechnology, Kasetsart University, Kamphang Saen, Nonthaburi, Thailand  
\*Corresponding author. Telephone: (662) 576-4500; Facsimile: (662) 847-4377; e-mail: [suttha@kku.ac.th](mailto:suttha@kku.ac.th)

### Abstract

From October 2007 to September 2010, a corn pest survey was conducted in Thailand to determine the establishment of the bacterial disease Stewart's wilt (*Pantoea stewartii* subsp. *stewartii*). Total 95 sites from 12 locations of corn production (10 sites of Chiang Mai province, 10 sites of Nakhon Sawan province, 5 sites of Mae Hong Son province, 10 sites of Chang Mai province, 10 sites of Nakhon Ratchasima province, 5 sites of Lampang, 5 sites of Phrae, 10 sites of Nan, 10 sites of Nong Khai, 10 sites of Nakhon Pathom province, 5 sites of Saraburi and 5 sites of Lopburi) were surveyed throughout the province. No-wilt symptoms of seedling were detected. 347 samples of leaf blight symptoms were collected and detected for *P. stewartii* subsp. *stewartii* by ELISA detection kit (AgDelt, Inc., USA) and PCR following the protocol of Cogli et al. (2002). The result showed all samples were negative for *P. stewartii* subsp. *stewartii* by ELISA and PCR methods.

### Introduction

Stewart's wilt (*Pantoea stewartii* subsp. *stewartii*) causes Stewart's bacterial wilt and leaf blight of maize and maize, a bacterial disease that is responsible for serious crop losses. The disease is spread by corn borer beetles. *Cnaphalocerus mediterraneus* can be used translocated at a very low frequency. However, the potential risk of seed transmission is considered to be very low. In contrast, the potential risk of soil transmission is high. More than 50 countries have its impact, unless it is confined to be free of *P. stewartii* subsp. *stewartii*. Thailand is the important maize seed production in Southeast Asia. Every year Thailand export corn seed to over 40 seed production industry. It makes a high risk of bacterial disease enter through the farming system in the country. Therefore, it is necessary to survey, monitoring and surveillance to the scientific information in preparing the list of pests, pest risk analysis, and the pest-free area.

### Objective

To know the status of Stewart's bacterial wilt and *Pantoea stewartii* subsp. *stewartii* in corn seed production in Thailand

### Materials and Methods

- Collected the information of corn seed that was imported from the countries which reported outbreaks of Stewart's bacterial wilt during the years 2007 - 2009
- Prepared the executive Stewart's wilt disease survey which contains pictures of wilt and symptom pictures that obtained from a search of the website AgDelt.net

#### Symptoms and signs



#### Identify the survey area:

- > 95 sites from 12 location of seed production site of corn, maize, batatas and/or the age of 30 days or 30 days.
- Specific survey: Pest status survey for *P. stewartii* subsp. research

- > Sampling sites: One sampling site covers approximately 20 ha. Each sampling site is divided into 4 sub-sites. In each sub-site, 15 sampling points approximately 2-3 meters are randomly selected to monitor the status of Stewart's wilt disease by completely randomized design

- > Detection method for *P. stewartii* subsp. *stewartii*
  - > ELISA detection kit (Pantoea stewartii AgDelt, Inc., USA)
  - > PCR following the protocol of Cogli et al. (2002)

### Results and Discussion

#### Information of corn seed that was reported from the countries which reported outbreaks of Stewart's bacterial wilt during the years 2007 - 2009

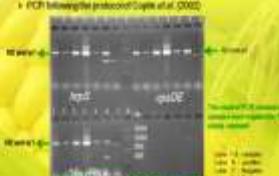
#### Detection methods for *P. stewartii* subsp. *stewartii*

- > ELISA detection kit for *P. stewartii* subsp. *stewartii* (AgDelt, Inc., USA)

The result of ELISA and PCR analysis against *P. stewartii* subsp. *stewartii* sample

negative, value indicated, false case

- > PCR following the protocol of Cogli et al. (2002)



### Conclusion

The pest survey from October 2007 - September 2010 are no Stewart's bacterial wilt disease and *P. stewartii* subsp. *stewartii* in Thailand

### References

- Cogli E., 1995. Stewart's bacterial wilt. In: Compendium of Corn Diseases. 3rd edn. St. Paul: Minnesota USA: American Phytopathological Society, 4-5.
- OMS, 1987. Pest Action Maps of Plant Diseases, No. 47, Edible oil, Wheatgrass, ECOSAT International.
- Cogli E., and Mappes D., 2002. Identification of *Pantoea stewartii* subsp. *stewartii* by PCR and their differentiation by RFLP. Plant Disease 86: 394-397.
- ENCP, 2005. PCP Database version 4.0. Paris: French Crop Protection and Biotechnology Plant Protection Organization.
- Perry J. E., 2004. Stewart's wilt of corn. The Plant Health Instructor DOI: 10.1094/PHI-2004-0701-0006. <http://www.apsnet.org/edict/phihomepage/070104.html>

# ABSTRACT

## The International Conference on Tropical and Sub-tropical Plant Diseases 2012



February 7-10, 2012  
The Empress Hotel, Chiang Mai, Thailand

### ABSTRACT

*Pantoea stewartii* subsp. *stewartii* causing Stewart's bacterial wilt of corn and maize is a major important phytopathic disease. The disease can be seen mainly at a very low frequency. However, the potential risk of seed transmission is considered as important to continual shipment of corn and that more than 50 countries have its report. Currently it is considered to be free of *P. stewartii* subsp. *stewartii*. During our Thailand project can still be in production industry, it make a high risk of bacterial disease enter through the farming system in the country. Therefore, it is necessary to carry monitoring and surveillance to the scientific information in preparing the list of pests, pest risk analysis, and the pest-free area. From October 2007 to September 2010, a corn pest survey was conducted in Thailand to determine the existence of the bacterial disease Stewart's wilt (*P. stewartii* subsp. *stewartii*). Total 95 sites from 12 locations of corn production (10 sites of Chiang Mai province, 10 sites of Chiang Rai province, 10 sites of Nakhon Sawan province, 5 sites of Mae Hong Son province, 10 sites of Lampang, 10 sites of Phrae, 10 sites of Nan, 10 sites of Nong Khai, 10 sites of Nakhon Ratchasima province, 5 sites of Saraburi and 5 sites of Lopburi) were surveyed throughout the province. No-wilt symptoms of seedling were detected. 347 samples of leaf blight symptoms were collected and detected for *P. stewartii* subsp. *stewartii* by ELISA detection kit (AgDelt, Inc., USA) and PCR following the protocol of Cogli et al. (2002). The result showed all samples were negative for *P. stewartii* subsp. *stewartii* by both ELISA and PCR methods.

**Keywords:** surveillance, Stewart's bacterial wilt, *Pantoea stewartii* subsp. *stewartii*, corn

Kositcharoenkul, N., Pattanavipas, P., Rakkrai, C., Uthaimongkol, N., and Kositratana, W. 2012. Surveillance and Dissemination of *Pantoea stewartii* subsp. *stewartii* in Thailand. Abstract The International conference on Tropical and Sub-Tropical Plant Diseases 2012. P 113.

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Upcoming Events



Friday, 26 July, 2013

# July Meeting for the Technical Panel on Phytosanitary Treatments

This month, on 8-12 July 2013, the Technical Panel



feedback

## About Us

The International Plant Protection Convention (IPPC) is an international agreement on plant health to which 179 signatories currently adhere. It aims to protect cultivated and wild plants by preventing the introduction and spread of pests.

## Core Activities

- Governance
- Commission (CPM)
- Standard setting
- Member Consultation on Draft ISPMs
  - MC for draft specifications (close date: 31 July 2013 - CLOSED)
  - MC for draft ISPMs (close date: 31

## Country Info



- Complete List of Countries
- List of Contact Points
- Pest Reports
- Legislation
- List of regulated pests

- Select a country -

## IRSS Helpdesk

- Where can I find the latest IRSS Survey: Review of the implementation of Guidelines on lists of regulated pests (ISPM19:2003) and Pest reporting (ISPM17:2002)?
- Do you have a simple floor plan for a post entry quarantine facility? If you can share it, please email us at [ippc@fao.org](mailto:ippc@fao.org) with subject line: PEQ facility plan.
- What happens if my country is not a member of the Madrid System for the international registration



# Thailand

[Country Profile](#)[Official Reports](#)[Optional Reports](#)[Other](#)

## Publications (2)

Document Number	Title	Publication Date
	TAS 9031-2008: Diagnostic Protocols for <i>Pantoea stewartii</i> subsp. <i>stewartii</i> Bacterial Wilt of Maize	20 Jul 2010
RAP PUBLICATION 2007/08	Plant protection profiles from Asia-Pacific countries: THAILAND	11 Dec 2007

## Country Editors (3)

Type of Contact	Contact Name	Country
Country Editor	Walaikorn Rattanadechakul	Thailand
Country Editor	Tasanee Pradyabumrung	Thailand
Country Editor	Udorn Unahawutti	Thailand

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Absence of Pantoea stewartii subsp. stewartii from Thailand

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## Absence of *Pantoea stewartii* subsp. *stewartii* from Thailand

**Pest Report Date:** 03/09/2013  
**Changed Date:**  
Tuesday, 3 September, 2013  
**Report Number:** THA-01/3  
**Status of Pest (Under ISPM No.8):**  
Absent: pest no longer present  
**Identity of Pest:**  
*Pantoea stewartii* subsp. *stewartii*.

**Host(s) or Articles concerned:**  
sweet corn seed

**Short description or Summary:**  
During 2007 - 2010, DOA has conducted the surveillance to determine the establishment of the bacterial disease Stewart's wilt (*Pantoea stewartii* subsp. *stewartii*) causal organism of Stewart's bacterial wilt and leaf blight of corn.. The disease has the potential risk of being seed transmitted and is the global quarantine pest. Specific survey has been conducted in 142 sites from 20 locations of corn productions (13 sites of Chiang Mai province, 10 sites of Chiang Rai province, 13 sites of Tak province, 5 sites of Nakhon Sawan province, 5 sites of Mae Hong Son province, 8 sites of Lampang province, 4 sites of Lamphun province, 15 sites of Phrae province, 10 sites of Nan province, 4 sites of Uttaradit province, 4 sites of Phitsanulok province, 2 sites of Phetchabun province, 4 sites of Sakon Nakhon province, 6 sites of Khon Kaen province, 2 sites of Chaiyaphum province, 10 sites of Nong Khai, 10 sites of Nakhon Ratchasima province, 5 sites of Saraburi and 10 sites of Lopburi, 2 sites of Suphanburi province). 1054 samples of leaf blight symptoms were collected and examined for the presence of *P. stewartii* subsp. *stewartii* using ELISA detection kit for *Pantoea stewartii* (AgDia®, Inc., USA) and PCR following the protocol of Coplin et al.(2002). The result showed all samples were negative for *P. stewartii* subsp. *stewartii* in both ELISA and PCR methods.

**Files**

Files: