
A Plant Epidemic is Key to HPAI Outbreak in Vietnam and China

Carla S. Thomas, Gary Jahn, Rishi Kapoor, David
M. Hartley, Noele P. Nelson

*Imaging Science and Information Systems
Center, Georgetown University*

Georgetown University Proprietary - Division of Integrated Biodefense



Plant Health Impacts Human Health

- Rice is the staple food of more than 65% of the people of China, and all of the people of Vietnam.
- In 2006, the total area planted to rice:
 - 7.4 million hectares in Vietnam
 - 29.4 million hectares in China
 - China produced 29% of the world's rice in 2006, =183 million tons.

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Planthopper Vecteded Virus in Vietnam

- Planthopper species are rice pests
 - Brown planthopper (BPH) *Nilaparvata lugens* (Stal)
 - Whitebacked planthopper (WBPH) *Sogatella furcifera* (Horvath)
 - Small brown planthopper *Laodelphax striatellus* (Fallen)
- 10,000 insects per square meter–hopperburn.
- BPH vectors two virus pathogens
 - Rice Grassy Stunt Virus (RGSV)
 - Rice Ragged Stunt Virus (RRSV)



Planthopper-Virus Epidemic

- Heavy outbreaks of planthoppers in China and Vietnam in 2005-2007.
- In 2005-06 rice losses due to BPH:
 - 2.77 million metric tons in China
 - 400,000 metric tons in Vietnam



Rice Epidemic (Cont.)

- Since 2006 rice losses due to BPH
 - 1 million tons in Vietnam
 - 4 million tons in China



Methodology

- Thousands of media and other public domain Internet sources searched including media, news, university extension sites, blogs, business and financial reports following the Project Argus methodology.
- Sources were searched iteratively for direct and indirect indicators and warning of potential crop, animal and human epidemics.



Methodology (cont.)

- Weekdays from February 2006 to December 2007, using multiple key word combinations in English, Vietnamese and Chinese.
- Over 180 Vietnamese and 580 Chinese language sources yielded Project Argus crop reports.



Search Results

Country	Language	Total Articles	Unique Articles
Vietnam	Vietnamese	1984	123
Vietnam	English	104 (5.2 %)	31
China	Chinese	3026	81
China	English	46 (1.5 %)	4



Key Project Argus Reports 2006

- Mar 2, 2006 - BPH has infested nearly 65,000 hectares in 16 provinces, 335,000 ton shortfall.
- Nov. 5, 2006 - BPH and RRSV spread to 21 provinces.
 - Affecting > 500,000 ha rice; losses US \$125M.
- Dec. 6, 2006 – HPAI re-introduced into Vietnam, suspect smuggled birds.



Key Project Argus Reports 2007

- Mar 1, 2007 – unvaccinated birds found dead, H5N1 positive.
- They had been taken from area of HPAI outbreak to Soc Trang to feed in recently harvested rice fields.
- Mar. 12, 2007 – H5N1 determined to be Chinese strain.
- Vietnam lifts the 2005 ban on raising ducks and geese. 60 M waterfowl in country used for reducing feed costs and pest epidemics.



Key Project Argus Reports 2007 (Cont.)

- May 7, 2007 – BPH epidemic 10-fold more severe than last year.
- June 1, 2007 – BPH spreads to China in storm winds.
- June 29, 2007 – 100's of free range dead ducks, no owner, concern over public health.
- September 7, 2007 - Vietnamese government launched a campaign to prevent AI along with rice pests and diseases.



Rice and the Avian Influenza Epidemic

- In Vietnam, rice paddies are local compost sites.
- Over 100,000 birds destroyed in 16 provinces
- 2006-07
 - 12 infected humans,
 - 9 fatalities in Vietnam.



Monre.gov.vn



Bird Sanitation- Decontamination



Monre.gov.vn



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Plant Epidemic Impacts Avian Influenza

- Free range ducks for planthopper control.
- Duck breeding banned due to the AI outbreak in 2003.
- A duck shortage in Vietnam.
- Hopper-eating ducks were smuggled from China.
- Smuggled ducks had HPAI.
- Re-introduced HPAI to Vietnam.



<http://www.guardian.co.uk/world/2008/mar/31/thailand.food>

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Avian Influenza: if it looks like a duck...



...is that the whole story?



Conclusion



Plant Health provides a
critical foundation in
animal and human
health:

Nutrition
Vectors
Sanitation-
Decontamination

We cannot ignore the
interrelatedness



Thank you

