

# Herbagreen and The Brown Plant Hopper

October 2010



The very damaging white back plant hopper

In the last 5 years new viruses transmitted by 65 species of plant hopper has been causing direct damages to rice crops, the three main pest species transmit 4 [virus diseases](#) that have been causing huge crop losses in China, Thailand, Vietnam, Bangladesh, India and several SE Asian countries

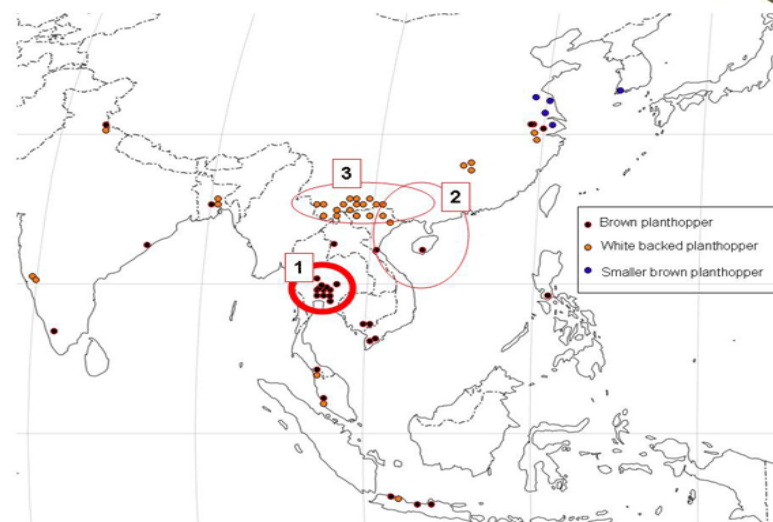
Rice crops sprayed with pesticides in the early crop periods are generally more vulnerable to [hopper attacks](#)

Already more farmers believe now that insecticides could cause more hopper problems

The prophylactic sprays destroy ecosystem services and make their crops vulnerable to rapid increase of hopper invaders that often lead to hopper-burn.

The situation is still unclear of the ecological relationships that cause outbreaks and the obvious insecticide resistance

# Farmers suffer heavy financial losses from brown plant hoppers



The plant hopper problem seemed to have worsened in the first quarter of 2010 with large areas in Suphan Buri complete destroyed by the virus diseases.

The most significant outbreaks caused by the plant hoppers in Central Thailand, Northern Vietnam, and Yunnan province, China. Rice production in Thailand suffered one of the biggest losses they have ever experienced. At least 1.1 million tons paddy or export potential of US\$ 275 million was reported lost.

Farmers spraying their fields with insecticides hoping to prevent attacks. They spray their crop up to 18 times applying them in cocktail mixtures of a variety of products including abamectin, cypermethrin, chlorpyrifos, BPMC and several others they could not recall their names. These insecticides are mostly recommended by local pesticide shopkeeper. They spent about 3000 to 4000 baht per rai (or US\$ 320 to 400 per ha) in pesticide purchases. However the result is in losing much of their harvest because their crop are badly destroyed by plant hoppers and virus diseases.



# Effected rice fields in Kamphaeng Phet



Brownish patches – damage within 3 days !



Left field already damaged, right field not yet.



Complete destruction



100% loss !



# Pest !

Sept . 2010

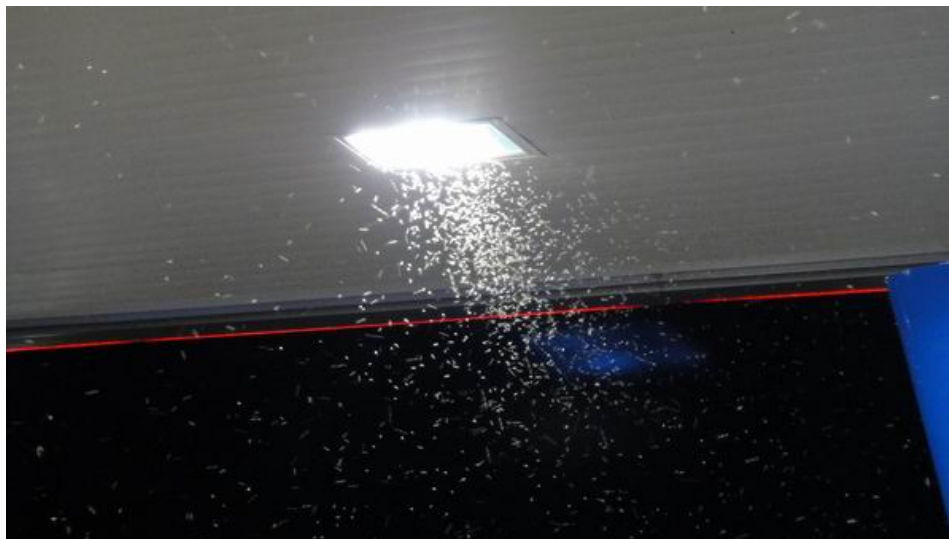


## Effected Areas:

- Evaluating the scary potential of those insects , just a stop over at a Gasoline station let us feel the intense presence by them.
- Left side pictures are near Nakhon Sawan at night time.
- Below picture is taken in Suphanburi at day time



Mating time



Massive swarming around light



Total penetration of Plant hoppers at this public Resting Area



# Damage review near Chachoengsao



Damaged field, 2<sup>nd</sup> Oct 2010



Reality check, observation and preparation for test



good PH soil value



Clear damaged plants, visible by yellowish stems



# Destroyed plants



Stems effected by “empty” inner parts



Eaten up



Un-rolling stem reveals the problem



Manure of plant hopper left inside in stem

# Recovery process

8<sup>th</sup> Oct. 2010



2<sup>nd</sup> Oct. 2010, Herbagreen sprayed in marked part of field



8<sup>th</sup> Oct. 2010, recovered part visible at dark green rice

- Objective:** duplicate Herbagreen success result of other provinces in eliminating Brown Plant Hopper and it's destructive impact in rice cultivation
- 2<sup>nd</sup> October , visit test site and analyze situation. Prepare Herbagreen in double usage, marking test - and control area.
- One swift spray application applied, even so rain happened before and after spraying of Herbagreen. (HG is taken up by plants within short time)
- Samples from Hopper damage have been taken. (see slide no. 5+6 ).
- Re-visit site 1 week later on the 8<sup>th</sup> October to evaluate recovery progress. the RESULT:
- Rice changed to dark green coloring, no Plant Hoppers remaining in Herbagreen area, but still present in control site, rice pinnacles shooting out very well and in larger size, damaged plants recovered with extreme dynamics – very strong new rooting at all joints of rice straw, (see Pictures below), also strong and immediate new “flowering” of new pinnacles of damaged plants. (and this within only 1 week!)
- PROGRESS will be followed till harvest.



# Recovery results:



Recovered plant with strong pinnacle growth



Herbagreen Plant

Control Plant

- Within 1 week: HG plant with multiple level of NEW rooting !
- Control Plant still weak from Hopper damage.
- HG effect in very fast and strong pinnacle development.
- Visible stronger straw structure.



# Explosive new lease of life



- Extreme rooting within 1 week
- Never seen before: rooting on every joint of rice straw !
- Immense strength of rice straw.
- Every newly developed arm carries pinnacle in body.



# Mechanism of Plant recovery



- Herbagreen stimulate attacked plant to take chances and shoot new roots out at any possible joins of stem/straw.
- New, healthy and long roots grow above old root patch
- Plant gets new life from new roots - but in faster pace than initial growth.



# roots



Massive roots, 3 pinnacles as result



Close up view