རྒྱལ་ཡོངས་རོ་ཞིང་སྲུང་སྐྱོབ་ལྟེ་བ། སོ་ནམ་ལས་ཁུངས། སོ་ནམ་དང་སྒོ་ནོར་ལྷན་ཁག།
NATIONAL PLANT PROTECTION CENTRE
DEPARTMENT of AGRICULTURE
MINISTRY of AGRICULTURE & LIVESTOCK
SEMTOKHA

NPPC/ADM/68/2025-2026/241 **June 25, 2026**

Advisory Note on Management of Brown Planthopper (*Nilaparvata lugens*) and Whitebacked Planthopper (*Sogatella furcifera*) in Paddy

The National Plant Protection Centre (NPPC) would like to alert Dzongkhag Agriculture Officers and extension officials on the increasing risk of Brown Planthopper (BPH) and Whitebacked Planthopper (WBPH) infestations in rice across paddy-growing ecosystems. Both pests are highly destructive sap-sucking insects that feed at the base of rice plants, leading to rapid crop decline and, under favourable conditions, "hopper burn", which causes irreversible plant drying and yield loss. Recent climatic variability and warning issues by NCHM associated with El Niño conditions (El Niño) may lead to warmer and irregular monsoon patterns in Bhutan, favouring rapid pest multiplication and weakening natural biological control systems.

Figure 1: Paddy fields at Singye gewog, Sarpang (Image source: Ratu Kinley)

Key Rice Planthoppers in Bhutan (Field Identification)

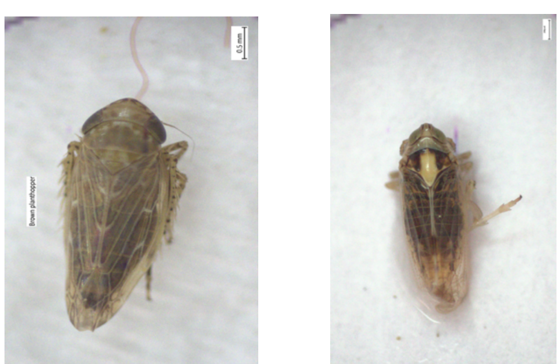

Figure 2: Adult Brown Planthopper (*Nilaparvata lugens*) and Whitebacked Planthopper (Image source: NPPC)

P.O. Box: 670, Semtokha Tele: 351016/351655 Fax: 351656 E-mail: nppcsemtokha@gmail.com www.nppc.gov.bt

Paddy Vulnerability Window to Plant Hopper Infestation

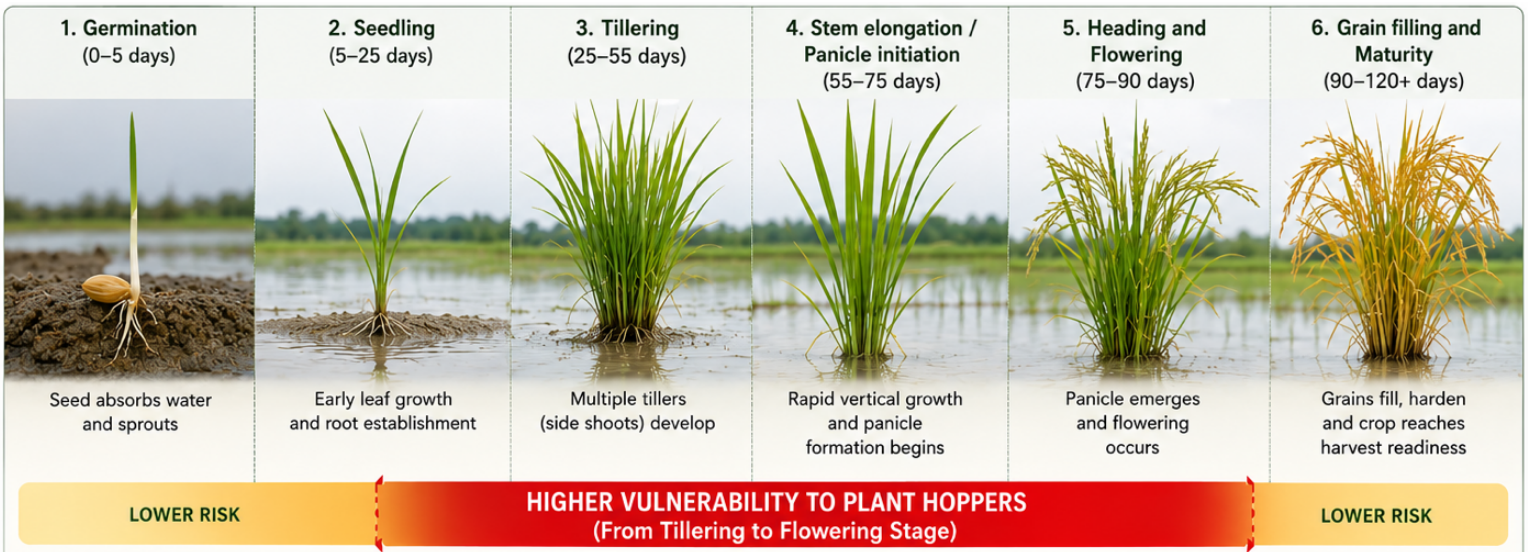

Figure 3: Paddy growth stages and vulnerability to plant hopper infestations

Highly vulnerable (CRITICAL PERIOD)

- Tillering stage (20–45 DAT)
- Late vegetative to booting stage (45–70 DAT)

Key reasons:

- High nitrogen content in plants
- Dense canopy
- Rapid reproduction

Hopper Burn and Damage Symptoms

Hopper burn is caused by the brown planthopper, and to a lesser extent, the white-backed planthopper. Hoppers feed at the base of rice plants and remove large amounts of sap, leading to rapid plant dehydration and collapse.

Key field symptoms:

- **Patchy field damage**: irregular circular or oval patches of dried plants that expand quickly, often mistaken for “burnt” areas

- **Sudden plant collapse**: healthy green plants turn yellow and then brown within a few days
- **Damage at the plant base**: drying starts from the lower stem and progresses upward
- **Presence of insects at the base**: large numbers of planthoppers congregate near the water line and jump when disturbed
- **Sticky honeydew and sooty mould**: leaves and stems may feel sticky, often with black fungal growth
- **Easy plant uprooting in severe cases**: roots and basal stems are weakened due to continuous sap feeding

Figure 4: Severe hopper burn causing sudden drying and death of paddy plants (Image: NPPC)

Differentiating Hopper Burn from Nutrient Deficienc

Feature	**Hopper Burn**	**Nutrient Deficiency**
Field pattern	Patchy, circular “burnt” patches	Uniform or gradual field-wide symptoms
Speed of appearance	Very rapid (days)	Slow (weeks)
Initial symptom	Base of plant	Leaves

Insect presence	Planthoppers present	No insects
Plant response	Sudden collapse	Gradual discoloration
Root/stem condition	Weak, plants easily uprooted	Generally intact
Distribution	Localized hotspots	Uniform distribution
Associated signs	Honeydew, sooty mold	Absent

Management of Planthoppers (IPM Approach)

1. **Cultural Control**
   - Remove weed hosts on bunds
   - Avoid excessive nitrogen application
   - Avoid synchronised continuous rice cultivation
   - Drain fields for 3 or 4 days during heavy infestations

2. **Biological Control**
   - Conserve key natural enemies:
     - Spiders (primary predators)
     - Mirid bugs
     - Parasitoids and predatory beetles

Note: Reduced pesticide use enhances predator survival. Broad-spectrum insecticides may trigger pest resurgence.

3. **Chemical Control (LAST RESORT ONLY)**
   - **Scouting and Threshold (ETL-based)**
     - Sampling pattern: W-shaped walk
     - Minimum: 20 hills per field
     - Avoid border rows (walk ≥5 m inside field)

- Inspect 3–5 leaves and plant base per hill
- Weekly monitoring (twice weekly during outbreak risk)

Economic Threshold Levels (ETL)

- Tillering stage: 20–30 hoppers per hill
- Reproductive stage: 10–20 hoppers per hill

Chemical Decision Framework for Hopper Management

Step	Decision Point	Field Condition	Action	Recommendation
1	Field monitoring (W-shaped scouting)	Presence of hoppers at plant base	Assess infestation level	Continue IPM monitoring if low
2	Is ETL reached? (10–20% hills infested with active nymphs/adults)	NO	Below threshold	No pesticide; strengthen cultural + biological control
3	Is ETL reached?	YES	Threshold exceeded	Proceed to chemical control
4	First-line treatment	ETL reached (early infestation)	Apply systemic insecticide	Imidacloprid 17.8% SL (1mL/L)
5	Post-treatment evaluation (3–5 days)	Population reduced	Effective control	Stop spraying; continue monitoring

6	Post-treatment evaluation	Population still high	Heavy infestation persists	Proceed to rescue treatment
7	Rescue treatment	Severe outbreak	Apply organophosphate	Chlorpyrifos 20% EC (4 ml/L)
8	Post-rescue evaluation (3–5 days)	Controlled	Success	Stop chemical application
9	Post-rescue evaluation	Still infested	Persistent outbreak	Avoid repeating same chemical

Resistance Warning

Planthopper populations globally have developed strong resistance to multiple insecticides. Repeated application of the same chemical group may result in control failure. Rotation of modes of action and a strict ETL-based application is strongly recommended

Reporting channel

All suspected or confirmed outbreaks of Planthopper should be reported immediately to ARDCs and NPPC for timely technical guidance, verification, and a coordinated management response.

Jigme Wangchuk
Offg. Program Director