

Seasonal Incidence of Major Pests in Rice and Wheat

ARTICLE ID: 0240

Priyanshu Raj

Student, School of Agricultural and Environmental Sciences, Shobhit Deemed University, Meerut (U.P.)

Rice (*Oryza sativa*) and wheat (*Triticum aestivum*) are the two most important staple food crops of India and the world. Together, they form the backbone of food security and rural livelihood. However, both crops are attacked by a wide range of insect pests at different growth stages, leading to considerable yield losses. The activity and abundance of these pests vary with seasons, cropping pattern, temperature, rainfall, and relative humidity. Understanding the seasonal incidence of pests is essential for forecasting outbreaks and adopting timely integrated pest management (IPM) strategies.

Seasonal Incidence of Major Pests in Rice

A. Rice Stem Borer (*Scirpophaga incertulas*, *Chilo suppressalis*)

Seasonal Incidence: Peak activity during July–October in Kharif season, coinciding with high humidity and

moderate temperature. Two distinct peaks are seen: early infestation causes “dead hearts” in tillering stage, while later infestation at panicle initiation causes “white ears.”



Favorable Conditions: Cloudy weather, intermittent rains, and continuous rice cultivation.

B. Brown Planthopper (BPH) (*Nilaparvata lugens*)

Seasonal Incidence: Appears from September onwards and reaches peak in October–November. In Rabi rice (Andhra Pradesh, Tamil

Nadu), it peaks from December–February.

Favorable Conditions: High humidity (>70%), dense planting, excessive nitrogen use, and stagnant water.

C. Rice Leaf Folder (*Cnaphalocrocis medinalis*)

Seasonal Incidence: Most abundant during August–October in Kharif rice, especially at vegetative to booting stage.

Favorable Conditions: Humid and cloudy weather with moderate rainfall.

D. Gall Midge (*Orseolia oryzae*)

Seasonal Incidence: Occurs from July to September, particularly in rainfed and transplanted rice. Peaks coincide with the tillering stage of rice.

Favorable Conditions: Continuous wet spells and high humidity.

E. Rice Hispa (*Dicladispa armigera*)

Seasonal Incidence: Appears after the onset of monsoon in July–August and may persist up to October.

Favorable Conditions: High rainfall, excessive cloudiness, and young crop stage.

F. Rice Gundhi Bug (*Leptocorisa acuta*)

Seasonal Incidence: Incidence increases during September–October, coinciding with grain filling and milk stage.

Favorable Conditions: Warm and humid conditions, late planted rice fields.

Seasonal Incidence of Major Pests in Wheat

A. Wheat Aphids (*Rhopalosiphum maidis*, *Sitobion avenae*)

Seasonal Incidence: First appear in December–January and reach peak in February–March during grain filling.

Favorable Conditions: Cool and moist climate, excessive nitrogen use.

B. Armyworm (*Mythimna separata*)

Seasonal Incidence: Infestation starts in December, peaks in January–February, especially at the seedling and tillering stage.

Favorable Conditions: Cloudy weather and lush green crop fields.

C. Termites (*Odontotermes* spp., *Microtermes* spp.)

Seasonal Incidence: Active from sowing to maturity, but most destructive during November–January in irrigated and rainfed wheat.

Favorable Conditions: Warm soil moisture conditions and presence of crop residues.

D. Pink Stem Borer (*Sesamia inferens*)

Seasonal Incidence: Incidence starts from December and peaks in January–February. Larvae bore into stem causing dead hearts and white ears.

Favorable Conditions: Mild winter and continuous cropping system.

E. Shootfly (*Atherigona naqvii*, *A. oryzae*)

Seasonal Incidence: Severe during November–December on late sown wheat, causing dead hearts in seedlings.

Favorable Conditions: Late sowing, high temperature at germination stage.

Integrated Pest Management (IPM) Strategies

Timely Sowing: Adjusting sowing time of wheat (before 15th November) reduces shootfly attack.

Resistant Varieties: Use of pest-resistant varieties like stem borer-resistant rice and shootfly-tolerant wheat.

Field Sanitation: Removal of stubbles, alternate hosts, and maintaining clean bunds.

Biological Control: Egg parasitoid *Trichogramma japonicum* against rice stem borer. Predators like coccinellids and syrphid flies against wheat aphids.

Botanical Control: Use of neem seed kernel extract (NSKE 5%) and neem oil sprays for sucking pests.

Chemical Control

Rice: Imidacloprid, fipronil, chlorantraniliprole for stem borer and leaf folder.

Wheat: Imidacloprid seed treatment for termites, foliar sprays of dimethoate or thiamethoxam for aphids.

Conclusion

The seasonal incidence of pests in rice and wheat is closely linked with climatic conditions, crop stage, and agronomic practices. In rice, stem borers, planthoppers, leaf folders, gall midge, hispa, and

gundhi bug are major pests with peak activity during the monsoon and post-monsoon months. In wheat, shootfly, termites, armyworms, pink stem borer, and aphids are important, with maximum incidence during the cool winter months (November–February). Understanding these seasonal patterns is critical for developing pest forecasting systems and implementing timely IPM measures. Adoption of eco-friendly strategies with minimal reliance on chemicals ensures sustainable crop production and food security.

References

1. Atwal, A.S. & Dhaliwal, G.S. (2007). *Agricultural Pests of South Asia and their Management*. Kalyani Publishers, Ludhiana.
2. Dhaliwal, G.S. & Arora, R. (2010). *Integrated Pest Management: Concepts and Approaches*. Kalyani Publishers, New Delhi.
3. FAO (2018). *Integrated Pest Management Guidelines*. Food and Agriculture Organization, Rome.
4. ICAR-IIWBR (Indian Institute of Wheat and Barley Research). (2020). *Wheat Pest Management Package of Practices*. Karnal, Haryana.
5. Kalode, M.B. (2005). *Rice Pests and their Management*. Indian Council of Agricultural Research, New Delhi.
6. Nair, M.R.G.K. (2019). *Insects and Mites of Crops in India*. ICAR, New Delhi.
7. Pathak, M.D. & Khan, Z.R. (1994). *Insect Pests of Rice*. International Rice Research Institute, Philippines.
8. Prasad, Y.G. & Prabhakar, M. (2012). *Climate Change and Insect Pests*. ICAR, New Delhi.