

IPM Package of Practice (POP) for management of Wheat Blast Like Disease (WBLD) on Wheat

Wheat crop is India's most staple food crop, second only to rice. It plays a vital role in food and nutritional security of the country. With the advent of the green revolution in the 1960s in India wheat production and productivity increased at a great level. Wheat crop is grown mainly in the northern states viz, Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Himachal Pradesh, West Bengal etc.

The production and productivity is being affected by many abiotic and biotic factors. Among biotic factors pest and diseases are major concern in wheat production. In 1985 the disease was reported on wheat (*Triticum aestivum*) in Brazil. It has since spread throughout many of the important wheat growing areas of Brazil and to neighboring South American countries. Currently wheat blast affects three million hectares of wheat cultivation.

In April 2016, the outbreak of worrisome Wheat Blast Disease caused by fungal pathogen *Magnaporthe oryzae sub.sp. triticum* was reported from Bangladesh as a first report from Asia. The fungus strikes directly to wither and deform wheat grains, leaving farmers with no time to act. Wheat blast like disease can reduce wheat yields from 10 to 100% depending on genotype, planting time, rainfall and disease severity.

Major States affected: Districts in West Bengal adjoining to Bangladesh

Symptoms:

Wheat blast considered as spike disease. However, the pathogen infects all the above ground parts of the plant. On leavers lesions vary in shape and size depending on the stage of the plants. Lesions with white centre and reddish brown margin on upper side, dark grey on the underside of the leaf can be observed on both young and old infected leaves. Bleached spikes blackened reaches are the most notable symptoms of wheat blast.



a. Completely bleached wheat spike with traces of gray from blast sporulation at the neck (*arrow*) of the spike



b. Complete bleaching of a wheat spike above the point (*arrow*) of infection



c. Two completely bleached spikes with traces of gray (*upper arrow*) and a lesion (*lower arrow*) from blast sporulation at the base

Disease Epidemiology:

Wheat blast is an exotic fungal disease which mostly thrives in hot and humid climate. Epidemic years are characterized by several days of continuous rains and an average temperature between 18-25°C during flowering followed by sunny hot and humid days. India, the neighboring country of Bangladesh, second largest wheat producer in the world is under threat, as this pathogen can spread through infected seeds and airborne spores. Several grasses and weeds occur commonly in wheat fields may act as secondary hosts.

IPM strategies:**Regulatory measures:**

- Avoid cultivation of wheat in the border area adjoining Bangladesh, impose strict Quarantine measures
- A buffer zone of 2 km all along the border areas of W.B with Bangladesh were established and declared as “Wheat free buffer zone” during 2017-18 and Wheat Holiday Campaign was launched by the Government and promotion of cultivation of non host alternate crop for two years 2017-18 and 2018-19.

Cultural measures:

- Avoid heading to coincide with increasing temperature, high precipitation, high RH
- Affected area to be slashed/ deep buried
- Destroy the alternate weed host
- Crop rotation with non-cereal crops like sesame, Mungbean, *Sesbania*
- Procurement of quality seeds produced in disease free area for planting
- Use of wheat blast like resistant wheat varieties and germ plasm
- Training of field extension officers and farmers in identification of wheat blast and other diseases of wheat.

Biological control:

The methanol extract from stems of a tree of Chinese origin, *Catalpa ovata*, *Trichoderma harzianum*, *Pseudomonas spp.* and *Bacillus spp* is effective against Wheat Blast like disease.

Chemical control:

- Seed treatment with Tebuconazole
- Foliar spray with Tebuconazole+ Trifloxystrobin or Tebuconazole
- Foliar and panicle sprays: Triazols with strobilurins, Tebuconazole (600ml/ha), Trifloxystrobin 10% + Tebuconazole 20% at 3 kg a.i./ ha