

# NECK BLAST

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## Problem

Neck blast is a severe fungal disease that affects the neck or panicle node of the rice plant, leading to significant yield losses. The disease first appears as brown to black discoloration at the base of the panicle, where the grain-bearing part of the plant connects to the stem. This infection weakens the neck, causing the panicle to break or remain unfilled, resulting in reduced grain production.

Infected plants often show premature drying of panicles, giving them a whitish or bleached appearance. This is a clear sign that the grains have failed to develop properly due to the restricted flow of nutrients and water. In severe cases, entire panicles may die before reaching maturity, drastically reducing the overall harvest.

The damage caused by neck blast is usually most severe when conditions favor fungal growth, such as prolonged moisture, high humidity, and moderate temperatures. Farmers must closely monitor their fields, especially during the grain-filling stage, to detect early signs of neck blast and implement control measures before the disease spreads further.

## Background

Neck blast is caused by the same fungal pathogen responsible for leaf blast, but it targets the panicle nodes instead of the leaves. The disease is most prevalent in regions with high humidity, frequent rainfall, and cooler temperatures during the flowering and grain-filling stages. The fungus spreads through airborne spores, making it difficult to control once established in a field.

The infection typically begins when spores land on the plant and germinate under favorable conditions. If environmental factors such as excessive nitrogen fertilization, poor field drainage, or dense plant growth create a suitable habitat, the fungus can rapidly spread from one plant to another. The disease is particularly destructive in upland and rain-fed rice fields, where moisture management is more challenging.

Unlike leaf blast, which affects plants at all growth stages, neck blast is most damaging when rice is at the reproductive stage. If the infection occurs early, it can prevent grain formation entirely. Even if grains do develop, they are often small, lightweight, or chalky, leading to poor-quality harvests. Effective management strategies are necessary to minimize losses and ensure a healthy rice yield.

## Management

The best way to manage neck blast is to use resistant rice varieties whenever possible. Breeding programs have developed strains with genetic resistance to the disease, reducing its

impact on crop production. However, resistance is not always permanent, as new fungal strains can emerge. Therefore, combining resistant varieties with other control measures is essential for long-term disease management.

Balanced fertilization is key to reducing neck blast incidence. Overuse of nitrogen promotes excessive vegetative growth, making plants more susceptible to infection. Applying the right amount of nitrogen, along with sufficient phosphorus and potassium, strengthens plant defenses and improves resistance. Farmers should follow recommended fertilization guidelines to maintain plant health while minimizing disease risk.

Cultural practices such as maintaining proper field drainage, removing infected plant residues, and controlling weed hosts help in reducing disease incidence. Drying the field during the fallow period can significantly lower the fungal population by eliminating spores present in soil and plant debris. Additionally, avoiding overhead irrigation can minimize leaf wetness, thereby reducing the chances of infection.

Fungicide application can be effective in controlling neck blast, especially in fields with a history of the disease. Fungicides like tricyclazole, isoprothiolane, and edifenphos have shown good results in preventing infections. Spraying should be done at the early flowering stage and repeated if necessary. However, to avoid fungicide resistance, it is advisable to integrate chemical control with other management strategies, such as crop rotation and resistant varieties.