

Status of false smut (FS) of rice in eastern Uttar Pradesh, India

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FS caused by *Claviceps oryzae-sativa* Hashioka [*Ustilaginoidea virens* (Cke) Tak.] has become a very important disease of wet season rice in eastern Uttar Pradesh. We have studied FS incidence and factors related to its incidence since 1975.

Considerable variability in FS severity has been noted in different varieties from year to year and from

locality to locality in the same season. Varieties flowering early generally escape infection. Meteorological factors relationships to FS incidence indicate that relatively lower temperatures (around 20°C) and high humidity (above 90%), coupled with well-distributed moderate rainfall during flowering, favored the disease. Late sowing usually resulted in higher FS infection. The disease was more severe at higher fertility levels (100-50-50 kg NPK/ha) than at lower fertility levels (50-25-25 kg NPK/ha).

The percentage of smutted grains/panicle varied considerably in different varieties, but there was little

variation in the size of smut balls. There appears to be a direct correlation between percentage of infected tillers and percentage of smutted grains/panicle. FS infection reduces grains/panicle and 1,000-grain weight, compounding yield reductions. It increases the number of partially filled and unfilled grains, leading to high chaffiness. The seeds near smutted grains have lower germination than seeds from healthy panicles.

Eastern Uttar Pradesh had a FS epidemic 1984-85 to 1985-86. FS incidence ranged from 10 to 30% in affected rice plots. Cultivars showing high disease intensity were TN1, IR8, Jaya, IR24, Ratna, Prasad, Sona, Bala, Sarjoo 49, Sarjoo 52, Mahsoori, Sita, Saket 4, Narendra 1, Narendra 2, and Cauvery. In years of low FS incidence, these varieties were free of symptoms. Field evaluation for varietal resistance gave ambiguous results.

Newer cropping technology, including planting high N-responsive varieties, enhancing the moisture supply, and including late sown wheat in the crop rotation, aggravated the disease in farmers' fields. In years of severe incidence, FS losses equaled losses to bacterial blight and sheath rot. □

Antifungal effects of plant extracts on *Drechslera oryzae* in rice

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We screened 31 plant extracts belonging to 22 families for their antifungal effects on *Drechslera oryzae*, using the paper disk method (inhibition zone technique).

A 25-g sample of each plant material was washed, chopped, ground with a mortar and pestle in 50 ml of distilled water, and filtered through cotton wool. The filtrate was autoclaved for 20 min at 15 lb pressure. Sterile filter paper disks (10 mm) were soaked in the sterile plant extract, control disks were soaked in sterile water. *D. oryzae* spore suspension (10^6 spores/ml) was mixed with warm potato dextrose agar and poured into sterile plates. Two treated disks were placed in each plate and maintained at laboratory temperature ($28 \pm 1^\circ\text{C}$). Each treatment was replicated three times. Radius of inhibition zone was recorded at 48 h (see table).

The maximum *D. oryzae* inhibition zone was observed with leaf extract of *Mentha piperita*, followed by *Piper nigrum* seed extract and *Allium sativum* extract. □

Effects of some plant extracts on *Drechslera oryzae* in rice. Tamil Nadu, India.

Plant extract	Radius of inhibition zone	
	mm	Transformed value
<i>Mentha piperita</i>	22.33	4.77
<i>Piper nigrum</i>	22.00	4.74
<i>Allium sativum</i>	21.00	4.63
<i>Eupatorium cannabinum</i>	20.66	4.59
<i>Acorus calamus</i>	20.66	4.59
<i>Azadirachta indica</i> bark	18.66	4.37
<i>Tecoma stans</i>	18.33	4.33
<i>Zingiber officinale</i>	15.66	3.97
<i>Piper betle</i>	15.33	3.97
<i>Canna indica</i>	13.66	3.76
<i>Catharanthus roseus</i>	12.33	3.58
<i>Azadirachta indica</i> leaf	9.66	3.18
<i>Eucalyptus citrodora</i>	9.00	3.07
<i>Allium cepa</i>	8.66	3.02
<i>Azadirachta indica</i> seed	7.66	2.85
<i>Casuarina equisetifolia</i>	5.33	2.40
<i>Pennisetum purpureum</i>	3.33	1.95
<i>Leucaena leucocephala</i>	1.33	1.34
<i>Polyalthia longifolia</i>	1.00	1.22
<i>Datura metel</i>	0.66	1.05
<i>Ruellia tuberosa</i>	0.33	0.87
<i>Brassica juncea</i>	0.00	0.70
<i>Tribulus terrestris</i>	0.00	0.70
<i>Musa paradisiaca</i>	0.00	0.70
<i>Amorphophallus campanulatus</i>	0.00	0.70
<i>Bougainvillea glabra</i>	0.00	0.70
<i>Carica papaya</i>	0.00	0.70
<i>Cosmos bipinnatus</i>	0.00	0.70
<i>Passiflora edulis</i>	0.00	0.70
<i>Pseuderanthemum atropurpureum</i>	0.00	0.70
<i>Parthenium hysterophorus</i>	0.00	0.70
Control	0.00	0.70
Mean		0.08
CD (P = 0.01)		0.23

Loss in rice seed weight due to *Trichoconiella padwickii*

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T. padwickii infects rice seeds at maturity, causing pink or purple to light brown discoloration on the glumes. Infected seed samples of varieties Cauvery and Mahsuri were graded on severity of discoloration:

- 0 — apparently healthy, free from specks and discoloration
- 1 — 1-2 minute pinhead-like pink specks on the surface of the seed coat
- 3 — 2-5 specks approximately 0.5-1.0 mm size