IPM Package of Practices (POP) for management of False smut of Paddy

False smut is a fungal disease caused by *Ustilaginoidea virens* and it emerged as a major disease in the recent years. The incidence of the disease is particularly more on hybrid varieties. The incidence of the disease is more in states like Haryana, Punjab, Uttarakhand, Bihar, Chhattisgarh, Gujarat, Jharkhand, Odisha, Uttar Pradesh, Himachal Pradesh, Jammu and Kashmir.

(i) Symptoms

False smut is visible only after panicle exsertion. It can infect the plant during flowering stage. Plants infected with false smut have individual rice grain transformed into a mass of spore balls. These spore balls are initially orange, and then turn into greenish black when these mature. In most cases, only few grains in a panicle are usually infected and the rest are normal.

Orange coloured spore ball

Mature black spore balls

(ii) Disease Cycle and Epidemiology

The disease can occur in areas with high relative humidity (>90%), temperature ranging from 25−35 ºC and moderate rainfall well distributed during the period of flowering. Soil with high nitrogen content also favors disease development. Wind can spread the fungal spores from plant to plant.

I. Nursery/seedling stage to transplanting stage:

- ✓ Keep the field clean, remove infected seeds, panicles, and plant debris after harvest.
- ✓ Crop rotation with non host crops, it provides a mechanism that separates viable spores in crop residue from the newly emerging seedlings
- ✓ Use high quality disease free certified seeds. Infected seeds may serve as inoculum for further spread and development.
- ✓ Early planted crop has less smut ball than the late planted crop
- ✓ Hot water treatment of seeds at 52^0C for 10 mins
- ✓ Treat the seeds with *Pseudomonas fluorescence* 10g/lit of water for 30 minutes or *Trichoderma viridae* @5-10 g/kg of seeds gives protection soil borne and seed borne diseases.
- ✓ Dip the seedlings in with *Pseudomonas fluorescence* 5g/lit of water for 20 minutes before transplanting. *Pseudomonas* suppresses the diseases and also acts as plant growth promotion and reduces the severity of many diseases.
- ✓ Apply neem cake @150 kg/ha

II. Vegetative to panicle initiation stage:

- ✓ Regular monitoring of disease incidence is very essential to take necessary proactive measures
- ✓ Balanced use of fertilizers and micro-nutrients as per local recommendations. Apply nitrogen fertilizers in three split doses 50 percent at basal dose, 25% in tillering stage and 25% in panicle initiation stage
- ✓ Reduce humidity levels through alternate wetting and drying of fields rather than permanently flooding the fields

- ✓ Foliar spray with *Pseudomonas fluorescence* 5g/lit of water at an interval of 15-20 days after transplanting
- ✓ Spray recommended fungicides only after the observation of initial infection of the disease

III. Flowering to harvest stage

- ✓ Regular monitoring of disease incidence
- ✓ At the time of harvesting diseases plants should be removed and destroyed, so that sclerotia do not fall in the field. This will reduce the primary inoculum for the next season
- ✓ Foliar spray with *Pseudomonas fluorescence* 5g/lit of water at an interval of 15-20 days after transplanting.
- ✓ Spray recommended need based fungicides only after the observation of initial infection of the disease.
- ✓ Spray with recommended fungicides having lesser waiting period

List fungicides approved against loose smut of paddy

Fungicides	**Dosage per ha**			**Waiting period from last application to harvest (in days)**
	a.i (g)	**Formulation (g/ml)%**	**Dilution in water (L)**	
Copper Hydroxide 53.8%	525	1500	500	10
Copper Hydroxide 77%WP	1000 gm	2000 gm	750	-
Fluopyram 17.7% + Tebuconazole 17.7%w/w SC	Fluopyram110 +Tebconazole110	550 g/ha	500	22
Picoxystrobin 7.05% + Propiconazole 11.7% SC	200	1000	500	24
Tebuconazole 50% + Trifloxystrobin 25% WG	-	350-400	500	35