
SHORT COMMUNICATION

Management of Damping off and seedling mortality diseases in rice seed bed

D. K. PATRA

Rice Research Station, Chinsurah 712102, West Bengal

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Damping off and Seedling mortality diseases in rice seedbed is a disease complex caused by several seed borne and soil borne fungi. The disease usually develops when the seedlings lack vigour. This is often brought about by cool weather, which retards germination and growth. Field experiment was conducted during *boro* (dry) season 2012-13 and 2013-14 in order to evaluate the method and time of application of different fungicides in rice seed bed against these diseases. Significant result was obtained with a combination of wet seed treatment and seed bed treatment with Metalaxyl 8% + Mancozeb 64% (25.88% seedling mortality). This was followed by and wet seed treatment with Carbendazim 50 WP + seed bed treatment with Carbendazim 50 WP (35.88% seedling mortality). wet seed treatment with Carlendazim 12% + Mancozeb 63% (43.32% seedling mortality) Whereas, 70.52% seedling mortality was recorded at the untreated check plot.

Key words: Rice seedlings, damping off, seedling mortality management

In West Bengal during *boro* (dry) season rice seedlings suffered from a number of diseases in nurseries, commonly known as 'seedling blight' or 'damping off'. The disease usually develops when the seedlings lack their vigour. This is often brought about by cool weather, which retards germination and growth.

Seedling blight or damping off is a disease complex caused by several seed borne and soil borne fungi. The seed borne fungi are *Helminthosporium*

oryzae, *Pyricularia grisea*, *Fusarium moniliforme*, *Alternaria padwickii* and *Curvularia lunata* and the soil borne fungi are *Pythium spp.*, *Rhizoctonia solani*, *Sclerotium rolfsii*.

Different organism produces different symptoms:

Helminthosporium oryzae produces small, circular, brown lesions on leaves. It may also infect and cause black discolouration of roots. Severely infected seedlings are stunted or killed.

In case of *Pyricularia grisea* water soaked eye-shaped (toad eye) 1-2 mm lesions are found on

Table 1 : Percentage of seedling mortality (*boro* 2012-13 and 2013-14)

Treatments	2012-13		2013-14		Mean % seedling mortality
	% seedling mortality	% reduction over control	% seedling mortality	% reduction over control	
T1=Wet seed treatment with Mancozeb 75WP @ 2.5g/l	63.22	13.06	52.67	22.91	57.94
T2=Wet seed treatment with Carbendazim 50WP @ 2.0g/l	48.77	32.93	50.67	25.84	49.72
T3=Wet seed treatment with Carbendazim 12%+ Mancozeb 63% @ 1.5g/l	64.55	11.23	34.33	49.75	49.44
T4=Wet seed treatment with Metalaxyl 8% + Mancozeb 64% @ 2.5g/l	33.02	54.59	45.00	34.14	39.01
T5=Seed bed treatment with Mancozeb 75WP @ 2.5g/l	50.39	69.29	63.33	7.31	56.86
T6=Seed bed treatment with Carbendazim 50WP @ 1.0g/l	66.82	8.11	65.00	4.87	65.91
T7=Seed bed treatment with Carbendazim 12%+ Mancozeb 63% @ 1.5g/l	69.09	4.99	60.00	12.19	64.54
T8=Seed bed treatment with Metalaxyl 8% + Mancozeb 64% @ 2.5g/l	48.55	33.23	50.00	26.82	49.27
T9= T1 + T5	49.89	31.39	48.33	29.27	49.11
T10= T2 + T6	38.10	47.61	33.67	50.72	35.88
T11= T3 + T7	56.65	22.09	30.00	56.10	43.32
T12= T4 +T8	25.09	65.49	26.67	60.97	25.88
T13= Untreated check.	72.72	-	68.33	-	70.52
LSD (P=0.05)	7.763		7.955		
CV%	9.825		10.671		

seedlings. Under low night temperature with dew, lesions enlarge and colour also changes from whitish to greyish centre and brownish margin attaining the shape of the spindle, pointed at both the ends and flattened at the centre.

Damping off due to *Pythium* spp. is found in 3-4 leaf stage. Yellowish discoloration of leaves. Later, rotting of leaves, then wilting and brown lesions appear on roots. It takes place within 5-20°C. *Sclerotium rolfsii* infected seedlings show stunting, yellowing or white stripping or total whitening of the leaves and finally wilting due to fungal attack at the base of the stem near the soil surface. Symptoms always appear in patches. In severe infection, cluster of mustard like sclerotia are found on the affected seedlings. It is found in warm, cloudy weather during December-January.

In *Rhizoctonia solani* seedlings are infected in the nursery if raised in the field in which the last *kharif* (wet) rice crop was infected with sheath blight. The base of the seedlings is attacked. Sometimes all seedlings of the bed are killed. Seedling infection is severe under cold (10 °C), low soil moisture level

(30-60%) and declined under high moisture level.

Germinated seeds of CMS (Cytoplasmic male sterile) lines were sown in 1.0 sqm seed bed in a randomized complete block (RCB) design with three replications during *boro* season of 2013-14. The experiment was conducted with different treatments including,

i) Chemicals four (4) nos.

C1 :Mancozeb 75WP

C2 :Carbendazim 50WP

C3: Carbendazim 12%+ Mancozeb 63%

C4: Metalaxyl 8% + Mancozeb 64%

ii) Time of application

a) Wet seed treatment only before sowing.

b) Seed bed treatment only at 20 DAS

c) Both wet seed treatment and seed bed treatment

Treatments

T1 = Wet seed treatment with C1 @ 2.5 g/l

T2 = Wet seed treatment with C2 @ 2.0 g/l

T3 = Wet seed treatment with C3 @ 1.5 g/l

T4 = Wet seed treatment with C4@ 2.5 g/l
T5 = Seed bed treatment with C1@ 2.5 g/l
T6 = Seed bed treatment with C2@ 1.0 g/l
T7 = Seed bed treatment with C3@ 1.5 g/l
T8 = Seed bed treatment with C4@ 2.5 g/l
T9 = T1 + T5
T10 = T2 + T6
T11 = T3 + T7
T12 = T4 + T8
T13 = Untreated check.

The results during *boro* 2012-13 and 2013-14 revealed that the percentage of seeding mortality in check plot is 70.52% which were sown during last week of December. Among the fungicidal treatments, T12 (i.e. both wet seed treatment and seed bed treatment with Metalaxyl 8% + Mancozeb 64% @ 2.5 g/l gave the best result i.e., 25.88% seedling mortality (Table 1). This was followed by T10 (Wet seed treatment and seed bed treatment with

Carbendazim 50WP @ 2.0 g/l) (35.88%) and T11 (Wet seed treatment and seed bed treatment with Carbendazim 12% + Mancozeb 63% @ 1.5 g/l) (43.32%).

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