

EFFECT OF CALCIUM PEROXIDE COATING OF RICE SEEDS AND WATER REGIMES ON GERMINATION OF RICE SEEDS AND WEED GROWTH

Wet broadcasting is the basic system of cultivation of rice in Kuttanad tract of Kerala. Transplanting of rice is labour intensive and not only the cost of labour is increasing day by day but also it is in short supply during the rice transplanting period. In the wet sown rice cultivation, sprouted seeds are broadcasted in standing water. After 24 hours the water is drained out. If the field is not properly levelled, it is difficult to completely drain the field which results in poor germination and seedling establishment. Threat from weeds is another important constraint in this system of cultivation. The extent of yield reduction due to weeds alone under this system is around 30 to 35%.

A new direct seedling technology which is capable of overcoming the twin problems of seedling establishment and weeds can go a long way in revolutionising the rice production technology. Japanese workers (Yamada, 1952; Yoshida and Rivera, 1978; Nishiyama *et al.*, 1980) have shown that coating rice seeds with calcium peroxide increases the germination and helps in seedling emergence under submergence. It is well known that the emergence of weeds can be prevented to a great extent by submergence. With these basic information attempts were made at the Rice Research Station, Moncompu to evolve a new direct seeding technology, eliminating the above two problems.

Considering these aspects, a field experiment was conducted at the Rice Research Station, Moncompu during the wet crop season, 1982. The experiment was laid out in RBD with four replications. Two levels of calcium peroxide coating (20 and 40%) were tested under two moisture regime viz., a thin film of water and under 8+2 cm column of standing water during the initial ten days from seeding. The test variety used was Jaya of medium duration. Calcium peroxide coated seeds in these moisture regimes were compared with the conventional method, for germination and seedling establishment. The effect of moisture regime on the control of weeds was also assessed quantitatively.

The data on the effect of calcium peroxide coating of rice seeds and water regimes on germination of rice and population of weeds are presented in Table 1. Though the germination of rice seeds does not significantly differ with the treatments, the seedling emergence in treatments 5 and 6 (calcium peroxide coated seeds at 20 and 40% respectively sown under water) is more than the other treatments. These treatments (5 and 6 respectively) gave 20 and 30% increased germination over the conventional practice of sowing sprouted seeds in puddle (Treatment 7). These results are in conformity with that of Prasad and Singh (1981).

The grass weed population in the water regime of maintaining 8+2 cm water column during the initial ten days of seeding was significantly lower than the other water regime. However the population of broad leaved, sedges and aquatic

Table 1

Effect of calcium peroxide coating of rice seed and water regimes on germination of rice seeds and population of weeds

Treatments	Germination count/sqm*	Weed population/sqm*					Total
		Grass	Broad leaved	Sedges	Aqu- atic		
1 Broadcasting non-coated seeds @ 100 kg/ha over puddled soil in a thin film of water	39.5	18.4	16.1	13.5	15.7	26.9	
2 Broadcasting coated seeds (40% coating) @ 100 kg/ha over puddled soil in a thin film of water	41.0	19.3	16.8	15.9	15.7	30.0	
3 Broadcasting coated seeds (20% coating) @ 100 kg/ha over puddled soil in a thin film of water	48.2	14.9	16.7	14.7	16.2	26.9	
4 Broadcasting non-coated seeds @ 100 kg/ha over puddled soil in a standing column of 8+2 cm of standing water	38.8	11.0	13.9	10.0	10.0	14.7	
5 Broadcasting coated seeds (40%) as in T4	49.5	16.5	15.7	12.8	14.1	24.5	
6 Broadcasting coated seeds (20%) as in T4	53.8	15.9	13.5	13.9	12.8	22.2	
7 Broadcasting sprouted seeds as in T1	41.1	19.4	18.5	18.4	14.9	32.6	
8 Broadcasting sprouted seeds as in T4	40.7	11.0	22.8	13.5	20.3	23.4	
CD (0.05)	NS	5.9	NS	NS	NS	9.5	

* Transformed values $\sqrt{(x+1)}$

weeds did not differ significantly with the water regimes. The significant effect of maintaining 8+2 cm water column on suppression of weed growth is evident from the data on total weed population also. In all the treatments which received this water regime the total weed population is significantly less. The results of the present study revealed that coating with calcium peroxide can effect selective emergence of rice seeds under submergence. This has an indirect effect on suppressing the emergence of weeds, especially that of the grasses.

സംഗ്രഹം

കാൽസ്യം പെറോക്സയിഡ് പുരട്ടിയ നെൽവിത്തുകളുടെ മുകുളനവും തുടർന്നുള്ള വളർച്ചയും രണ്ടുതരം ജലപരിപാലന മൂർകളിൽ മകൊമ്പു നെല്ലു ഗവേഷണ കേന്ദ്രത്തിൽ, 1982ലെ ജൂൺ-സെപ്റ്റംബർ വിളക്കാലത്ത് പഠന വിധേയമാക്കി. വിതകഴിഞ്ഞ് ആദ്യത്തെ പത്തു ദിവസങ്ങളിൽ 8+2 സെ.മീ. വെള്ളം കെട്ടിനിർത്തുന്നതും കാൽസ്യം പെറോക്സയിഡ് പുരട്ടിയ നെൽവിത്തുകളുടെ മുകുളനത്തെയും വളർച്ചയേയും ഒരു വിധത്തിലും പ്രതികൂലമായി ബാധിക്കില്ല എന്നും, തൽമൂലം കവട, വരിനെല്ല് തുടങ്ങിയ പുല്ലു വർഗ്ഗത്തിൽപ്പെട്ട കളകളെ ഗണ്യമായി നിയന്ത്രിക്കാമെന്നും പ്രസ്തുത പഠനം വ്യക്തമാക്കി.

Rice Research Station
Moncompu, Kerala

M. S. Nair
N. K. Sasidharan
P. S. John

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