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STORAGE OF HIGH MOISTURE PADDY SEEDS

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Study conducted to find out the storage potential of high moisture IR 50 paddy seeds at different moisture levels treated with propionic acid/acetic acid by weight at 0.25 per cent in combination with and without activated clay and thiram showed the superiority over untreated control. Storing the seeds by using paper bag was found to be better compared to aluminium foil. It is concluded that high moisture paddy seeds can be stored upto 7 days without affecting viability.

Rice is the stable food in Tamil Nadu, and it is cultivated an extend of 26.89 lakh hectares. This crop usually grown during June-July and October-November seasons besides a little extend during summer. The short duration seed crop is grown during early period and medium and long duration during later periods are common in Tamil Nadu. The seed crops grown during October-November and summer seasons escaped from monsoonic rain, but the seed crop raised during June-July got up the monsoonic rain. Harvesting, threshing, drying and storing of seed is a great problem during this period is due to lack of facilities and improved technology by the farmers. Due to continucus rains and cloudy weather, drying of these harvested seeds to a safe seed moisture level is not possible for larger extend, and hence, keeping this high moisture seeds in storage for some time is a unavoidable one. Because, keeping this seeds in storage, there will be chances for declining vigour and viability due to sprouting, heating and fungal invation. Anthonyraj *et, al.* (1980) found that in high moisture paddy grains, use of 5 percent sodium choloride immediately aftar harvest were found to be stored for 7-10 days without sprouting and fungal growth. They also recorded that the viability percentage were lost completely during this storage period and they concluded that for grain purpose these methods could be successfully employed but not for the seed purposes Vasan *et al ;* (1981) recorded the control of sprouting in wet paddy by using soil-salt mixture. Jalote and Vaish (1976) recorded that when storing high moisture IR 8 paddy seeds the germinability were found te decrease rapidly They also recorded storage of these seeds in gunny bags was less harmful than stored in polythene bags. Srinivas *et al*, (1983) reported that paddy harvested in rainy season containing 37 per cent moisture content was mixed with common salt and stored for 2 months without affecting the consumer quality. Hence it is highly important to findout a suitable method for storing this high moisture paddy seeds.

An experiment was conducted at seed technology laboratory in Department of Seed Technology, Tamil Nadu Agricultural University, Coimba-

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fore to findout a suitable method for storing of high moisture seeds by using different chemicals.

MATERIALS AND METHODS

Paddy IR 50 seeds obtained from Central Farm, Tamil Nadu Agricultural University, Coimbatore was used as test variety. The initial seed moisture content was estimated by using hot air oven method. Then 25 grams of seeds of each were taken and allowed to imbibe water, in between blotter paper medium in order to raise the seed moisture content to 15, 20 and 30 per cent But the estimated seed moisture content was 16, 22 and 28 per cent respectively. The excess moisture present on to the seed surface was removed by using blotter paper and then the chemicals were mixed as per treatment. These treated seeds were stored in brown paper bag and aluminium foil bag. The treatments were follows :

T_1 — Untreated control
T_2 — 16 per cent moisture content (Control)
T_3 — ,, + Propionic acid 0.25%
T_4 — ,, + Acetic acid 0.25%
T_5 — ,, + (Propionic + Acetic acid) 0 25%
T_6 — 22 percent moisture content (Control)
T_7 — ,, + Propionic acid 0.25%
T_8 — ,, + Acetic acid 0.25%
T_9 — ,, + (Propionic + Acetic acid) 0.25%
T_{10} — ,, + 28 per cent moisture content (Control)
T_{11} — ,, + Propionic acid 0.25%
T_{12} — ,, + Acetic acid 0.25%
T_{13} — ,, + (Propiotnic + Acetic acid) 0.25%
T_{14} — 16 per cent mc + Propionic acid 0.25% + Activated clay (2 g/kg of seed) + Bavistin (2 g/kg of seed)
T_{15} — ,, + Acetic acid 0.25% + -do-
T_{16} — ,, + (Propionic + ,, + Acetic acid 0.25) -do-
T_{17} — 22 per cent mc + Propionic acid 0.25% -do-
T_{18} — ,, + Acetic acid 0 25% + -do-
T_{19} — ,, + Propionic + Acetic acid 0.25% + -do-
T_{20} — ,, + 28 per cent mc + Propionic + acid 0.25% -do-
T_{21} — ,, + Acetic acid 0.25% + -do-
T_{22} — ,, + (Propionic acid + do- + Acetic acid 0.25%)

These treated seeds were tested for viability from first day, 3rd day, 7th day and 14th day after storage by conducting regular germination test,

RESULTS AND DISCUSSION

Higher germination percentage was recorded in untreated control, where the seed moisture content was 12 per cent. In general, seeds with higher moisture content treated with organic acids were found to be good for maintaining viability for shorter periods. On the other hand, seeds stored in brown paper bags were found, to maintain the viability more, irrespective of different treatments. Seeds treated with any one of the organic acids in combination with Activated Clay and Bavistin were found to record more germination, of which seeds having low initial moisture content performed better in storage. They also maintained higher viability when compared to other two moisture regimes which confirmed the work carriedout by Jalote and Vaish (1976).

Table : Mean germination percentage in roll towell medium

Treatment	Brown paper bag	Aluminium foil	Mean
1	368	379	93.3
2	331	286	77.1
3	326	313	79.9
4	326	296	77.8
5	283	291	71.8
6	313	268	72.6
7	325	273	74.8
8	324	284	76.0
9	326	301	78.4
10	291	246	61.1
11	298	274	71.5
12	285	268	69.1
13	293	261	69.3
14	319	289	76.0
15	328	285	76.6
16	334	294	78.5
17	313	289	75.3
18	318	283	75.1
19	327	287	76.8
20	308	278	73.3
21	283	298	72.6
22	298	263	70.1
Mean	78.6	71.3	

C.D. for container — 1.03
C.D. for treatment — 3.43
C.D. for Treatment x Container — 4.85

Seeds treated with organic acids were found to control sprouting of seeds upto 7days. Seeds treated with propionic acid recorded higher germination per cent rather than acetic acid (which recorded lesser sprouting). Fungal growth was also very much limited in seeds treated with organic acids, and in combination with other seed treating chemicals and it was more in control treatements where the seed moisture content was high. This was also reported by Anthoniraj *et al.*, (1980).

Comparing different storage containers, storing the seeds in paper bag was found to maintain seed viability. This was illustrated by Jalote

and Vaish (1976) who stored IR 8 paddy seeds in gunny bags and polythene bags. The rate of deterioration was minimum in seeds that were stored at 10 percent moisture content in polythene bags, and that of seeds with high moisture stored in gunny bags were found to maintain viability.

It is plausible that the higher viability percentage recorded in gunny bags might be due to exchange of moisture between seed and atmosphere and this was not the case in respect to polythene bags. The present results also confirm the results. Anthoniraj *et al.*, (1979); Babu *et. al* (1983).

The seeds treated with activated clay and Bavistin proved beneficial and accounted for the control of fungal growth. The viability was affected which may be due to heating of seeds accountable with increased respiration. The containers used for storing the high moisture seeds also important one. Gunny bags may used for storing the seeds, as is being done by the farmers for better storage. Storing the seeds in paper bag or gunny bag was advantageous owing to exchange of moisture between seeds and atmosphere.

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