

## DRYBACK - A SUCCESSFUL METHOD TO PROLONG THE STORAGE PERIOD OF SPROUTED SEEDS IN RICE

Direct sowing, one of the stand establishment techniques used in rice is of interest as a means of reducing production cost. Sowing of sprouted seeds on to the puddled soil, which is popularly known as 'wet seeded rice' has been gaining increased adoption in irrigated rice ecosystems as a viable alternative to trans-

planting. In wet sowing, generally seeds are sown immediately after sprouting. However, occurrence of unprecedented rains and subsequent floods necessitates delay in sowing in some cases causing loss of valuable seed material to farmers. An investigation was carried out at the Regional Agricultural Research Sta-

Table 1. Mean seed germination and survival during the first week (7 days after sprouting)

Variety	Control		Dried under shade		Dried under sun	
	Germination %	Survival %	Germination %	Survival %	Germination %	Survival %
Kairali	95.6	90.3	91.6	80.3	63.0	60.3
Kanchana	96.0	92.0	94.3	94.0	83.6	65.3
Aathira	94.0	81.0	82.3	30.0	41.6	11.3
Aiswarya	93.6	80.6	84.0	59.0	54.3	32.6
			Germination %		Survival %	
CV			2.95		7.98	
CD (0.05)	Varieties		1.56		3.48	
	Treatments		1.35		3.01	
	Var x Treat		2.71		6.02	

Table 2. Mean seed germination and survival during the second week (14 days after sprouting)

Variety	Control		Dried under shade		Dried under sun	
	Germination %	Survival %	Germination %	Survival %	Germination %	Survival %
Kairali	95.0	81.6	89.0	50.6	48.3	39.6
Kanchana	95.6	91.6	93.0	75.1	62.3	47.3
Aathira	92.3	71.0	78.0	29.6	18.0	10.0
Aiswarya	92.0	73.6	79.3	25.0	27.3	21.6
			Germination %		Survival %	
CV			3.28		5.57	
CD (0.05)	Varieties		1.56		1.92	
	Treatments		1.35		1.67	
	Var x Treat		2.69		3.33	

Table 3. Mean seed germination and survival during the third week (21 days after sprouting)

Variety	Control		Dried under shade		Dried under sun	
	Germination %	Survival %	Germination %	Survival %	Germination %	Survival %
Kairali	94.0	90.6	82.6	41.0	39.3	32.0
Kanchana	95.0	91.0	85.3	41.6	40.0	36.3
Aathira	91.6	69.6	74.0	24.0	17.0	6.60
Aiswarya	91.6	72.0	76.0	21.3	23.3	16.30
			Germination %		Survival %	
CV			4.03		5.86	
CD (0.05)	Varieties		1.78		1.73	
	Treatments		1.54		1.50	
	Varieties x Treatments		3.08		3.00	

tion (RARS), Pattambi to formulate a simple, low cost technology for maintaining the storage potential of sprouted seeds of rice so that the same can be kept for longer periods without losing the viability.

Four recently released high yielding rice varieties developed at the RARS, Pattambi and popular in Kerala viz., Kairali, Kanchana, Aathira and Aiswarya were chosen for the study. Dried seeds, 150 g each of all varieties having 11.5% moisture were soaked in water for 12 hours, drained and kept in moist cloth bags at 27°C and 95% relative humidity to initiate sprouting. The seeds were considered as sprouted when the radicle length was approximately 2 mm. Sprouted seeds of each variety were divided into two sets. One set was dried under shade and the other under direct sun for 10 to 12 hours to bring the moisture level back to the original. After drying, the seeds were stored in dry cloth bags. Germination percentage of the seeds and survival of the seedlings were recorded at weekly intervals for four weeks consecutively from three replications and the control. The data were analyzed using two-way ANOVA.

The data on percentage germination and survival of the four varieties for four consecutive weeks are given in Table 1 to 4. In general, a linear trend of decrease in germination of seeds and survival of seedlings was discernible with increase in storage time. However, significant varietal difference was noticed with regard to germination of seeds and survival of seedlings under different treatments.

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During the first week, seeds of all the varieties dried under shade recorded high germination as well as seedling survival compared to those dried under direct sun where the seed germination and survival rates were highly reduced. The response of the varieties to the treatments differed significantly. When Kanchana recorded the maximum germination and survival, Aathira recorded the minimum under the different treatments. Similar trend was noticed in the subsequent weeks also but only the seeds dried under shade could retain more than 80% germination up to the fourth week whereas the germination and survival of the seeds dried under direct sun declined rapidly as time advanced. Here also, variety Aathira succumbed faster compared to others while Kanchana retained its viability up to a certain extent even during the fourth week.

The results of the present study reveal that slow or gentle drying of sprouted seeds immediately after sprouting so as to bring the moisture content to the initial level helps in retaining the viability of sprouted seeds for longer periods suggesting that their ability to tolerate desiccation may be developmentally programmed and this may be restricted to the embryo. A similar case of prolonging the viability and fertility of maize pollen grains by gentle drying has been reported by Barnabas and Rajki (1981). As viability can be expressed most precisely by germination characters, it may be assumed that varieties having high germination and survival under stress are of better viability and consequently of better tolerance to environmental stresses.

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## REFERENCE

Barnabas, B. and Rajki, E. 1981. Fertility of deep-frozen maize (*Zea mays* L.) pollen. *Ann. Bot.* 48: 861-864