

SEED GERMINATION IN PALMAROSA
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Palmarosa is gaining popularity in Kerala as an essential oil yielding crop. Seed viability in this crop is often found to be poor. If this is attributable to dormancy, it might be possible to break this condition by the removal of covering structures. Harrington (1923) and Roberts (1961) reported that any dormancy hypothesis has to account for the fact that in most seeds, dormancy tends to be alleviated by the removal of covering structures. An attempt was made to study whether removal of covering structures in palmarosa seeds leads to improvement in germination.

Fully mature fresh palmarosa seeds of 10% moisture were obtained from the Lemongrass Research Station, Odakkali. Germination tests were conducted for a period of eight months commencing from April 1978 onwards. The treatment consisted of sowing the seeds with and without glumes. The glumes in smaller seeds were removed with the help of needle and under a dissection microscope taking care not to injure the endosperm. A total number of 100 seeds were kept for germination in petridishes lined with moist filter paper. The dishes were kept at room temperature and germination counts were taken after carefully examining the seeds with a hand lense commencing from the second day and continued for a period of 15 days thereafter. The germination thus recorded is presented in Table 1.

Table 1

Germination of palmarosa seeds as influenced by the removal of glumes.

Month	Germination percentage	
	with glumes (control)	without glumes
April	24	60
May	32	64
June	28	44
July	8	20
August	0	7
September	0	0
October	0	0
November	0	0

$t = 3.002$ (Significant at 5% level)

Data were analysed after applying angular transformation.

The results presented in Table 1 indicate that significant differences were detected between treatment and control. It was observed that during the period of

study, germination percentage of control seeds ranged between 0 and 32 and that of treatment between 0 and 64. In both cases highest percentage of germination was noticed in the month of May, namely 32% for control and 64% for treatment respectively. In control, this was followed by 28% in June, 24% in April, and 8% in July whereas for the treatment it was 60% in April, 44% in June, 20% in July and 7% in August. According to Roberts (1962), in rice the effects of removal of covering structures lead to the loss of dormancy due to some oxidation reaction other than conventional respiration. Major and Roberts (1968) reported that when the covering structures (lemma and palea) are removed in barley and rice, the respiratory quotient (RQ) decreased while the rate of oxygen uptake showed increase. The high germination percentage observed for the treatment could be explained on the above basis.

It was observed that the germination percentage was zero during the last four months for control while for the treatment, it was zero during the last three months. This could be attributed to the fact that as seeds age, germinability will be maintained for a specific period after which these enter a period of rapid decline leading to complete failure of germination (Baki and Anderson, 1972)

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പാഠശാലാ പൂർണ്ണവിത്തുകളുടെ ബാഹ്യാവരണം നീക്കം ചെയ്യുന്നതും വിത്തുകളുടെ നന്നിനെ ഗണ്യമായി സ്വാധീനിക്കുന്നതായി പഠനങ്ങളിൽ നിന്നും തെളിഞ്ഞു.

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References

- Aref A-Abdul-Baki and James D. Anderson, 1972- (quoted by Kozlowaki, T.T.)
In *Seed Biology* Vol. II, p. 285, Academic Press, London, New York.
- Harrington, G. T. 1923. Forcing the germination of wheat and other cereals.
J. agric. Res., 23, 79-100.
- Major, W. and Roberts, E. H. 1968. Dormancy in cereal seeds. II. The nature of gaseous exchange in imbibed barley and rice seeds. *J. exp. Bot.*, 19, 90-101.
- Roberts, E. H., 1961. Dormancy in rice seeds II. The influence of covering structures. *J. exp. Bot.*, 12, 430-445.
- Roberts, E. H. 1962. Dormancy in rice seeds. III. The influence of temperature, moisture, and gaseous environment, *J. exp. Bot.*, 13, 75-94.

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