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GERMINATION TESTS ON SORGHUM SEEDS PRESERVED IN EARHEAD

BY G. N. RANGASWAMY AYYANGAR B.A., I. A. S.
&
M. A. SANKARA AYYAR, B.A., B. Sc.,
Agricultural Research Institute, Coimbatore.

To a plant breeder with whom seed material especially of single plants, accumulates rapidly, the whole of which cannot be worked off each succeeding year, the question of how long and in what way this seed could best be preserved with unimpaired viability is a matter of primary importance. In a previous article (Rangaswami Ayyangar and Vijayaraghavan)* the result of the germination tests of loose sorghum seed stored in tin screw top bottles has been reported, and it was recorded that the seeds retain full vitality for about 2½ years and when four years old deteriorated to a germination capacity of only about 10 per cent. It was also recorded that preserving the seed in naphthaline, which keeps the seed free from damage from pests of stored grain, does not affect its germination capacity.

In breeding work in sorghum the individual head is usually the seed unit and it has been the practice at the Millets Breeding Station to keep the seed material from single plant selections as earheads and to thresh them only just prior to sowing. As the earheads are compact and the seeds safely clipped up in the glumes, it has been found that it was enough to scissor off portions of the earhead for sowing purposes and have the rest of it as a sample for future reference, so that the general configuration of the earhead and the seeds on it is, in a measure, preserved for future use. Leaving the seeds in the glumes is an added advantage.

The sample heads thus preserved accumulated through years and in 1933, after ten years of seed accumulation, it was decided to discard superfluous earheads; and before they were rejected the seeds in them were tested for their viability. One to ten years old earheads of the same variety were used in these tests. Two to four heads in each of different important varieties representative of typical tracts were chosen, and 200 grains from each head were germinated. Germination tests were made by keeping the seeds on wet blotting paper or germination trays in an incubator.

The first indications of germination are usually observed from 12 hours onwards and in the case of fresh ($\frac{1}{2}$ to 1 year old) seeds germination will be completed in 3 days. In these tests the ungerminated seeds were retained up to a week, and then rejected as having

* Madras Agri. Dept. Year Book, 1926, p. 14.

no vitality. The results of the germination percentages obtained in the different varieties tested are given below.

Viability of Sorghum Seeds Preserved in the Earheads.

Local Name.	Botanical group.	Percentage of germination.							
		1 year old.	2 years old.	3 years old.	4 years old.	5 years old.	6 years old.	7 years old.	
1. Vellai Cholam	Sorghum Durra.	89	82	59	38	1	0	0	Irrigated (Dindigul).
2. Chinna Manjal Cholam	,,	100	99	86	22	5	0	0	Irrigated (Coimbatore).
3. Peria Manjal Cholam	,,	...	93	97	87	58	1	0	Rainfed (Coimbatore).
4. Patcha Jonna	,,	...	...	...	92	16	4	0	Rainfed (Ceded Dts.)
5. Tella Jonna	Sorghum cernuum	...	...	...	95	18	0	0	,,
6. Talai Virichan	Sorghum Roxburghii var. Hians.	...	94	90	69	21	2	0	Rainfed Gaping glumes.

It will be noted that in this naked grain, grains with their glumes on the earhead retain their viability longer than when kept as loose seed. So even when larger quantities of seed are to be preserved, picked earheads can be stored in closed metal bins or earthern pots with a few balls of naphthaline.

The rate of deterioration in viability is higher in the irrigated than in the rainfed sorghums. The percentage of germination decreases rapidly in the irrigated varieties after the second year, while in the rainfed varieties the seeds retain full vitality (about 90 per cent.) for three to four years and decreases to less than 50 per cent. after five years and even when six years old stray seeds (1 to 5 per cent.) germinate. In no case did seven years old seeds germinate.

SOME SOUTH INDIAN VILLAGE STUDIES *

(A Preparatory Study of " Villur ", Village No. 119, in Tirumangalam Taluq, Madura District, Madras Province.)

BY P. S. SESHADRI,
School of Tropical Medicine, Calcutta.

Rainfall and Irrigation.

Nature of Rainfall. The rainfall is very uncertain and scanty even in the best of seasons. A study of the district during a number of years shows no indication of its being concentrated in the two short periods during which the monsoons blow. On the contrary, it appears that there is a continuous rainy season of 9 months' duration

* Continued from Page 148, April issue.