

STORAGE EXPERIMENTS WITH SWEET POTATOES

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The sweet potato has long been known in this Presidency as a useful tuber crop. The tubers are consumed in a variety of ways. The crop has come into prominence at the present time as an alternative foodcrop due to the shortage of cereals. Early this year (1946) the Government ordered that its culture and use be encouraged and popularised to provide people with a carbohydrate—rich food supplement. While information is available on the methods of propagation and cultivation of the sweet potato crop, no information is available as to the best methods of storage and the keeping quality of the tubers on storage.

A scheme of experiments was therefore drawn up to study the various methods of storage suitable for rural conditions and with facilities available with every cultivator. This scheme was communicated to selected Agricultural Research Stations and to the Central Farm at Coimbatore and the Agricultural College at Bapatla. The methods of storage were as follows:

- i. Usual heap method (control).
- ii. Storing in racks.
- iii. Storing in pits lined with straw and vegetable refuse.
- iv. Storing over a bed of sand completely covered with sand.
- v. Smearing the tubers with a coating of mud and storing in heaps after the surface is dried up.

There were six replications of each treatment and identical quantities by weight, 20 lbs each, constituted the units. Monthly examination of the tubers stored, weighments to determine the loss in storage and elimination of the material that got diseased and rotten, were asked to be carried on regularly *for twelve successive months*. The experiments went on for six months, and the data collected are summarised and given below:

Table I.

Central Farm, Coimbatore—Expts. started 22—3—47
(Initial weight 20 lbs.)

Average weight of six replications in each treatment.

Treatment No.	after 1 month		after 2 months		after 3 months		after 4 months		after 5 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I	10	7	5	3	4	6	4	1	3	11
II	9	15	6	0	4	9	4	2	3	11
III	17	12	15	4	8	13	4	4	2	10
IV	18	6	17	8	13	15	11	15	10	3
V	8	9	5	3	4	14	4	4	3	12

Insect attack (weevil) and decaying of tubers were greatly in evidence in the case of treatments I, II, & V and to a lesser extent in Treatment III. Only treatment IV i.e. storing over a bed of sand (completely covered over with sand) was definitely better, but here almost all the tubers sprouted. Samples of such sprouted tubers were analysed by the Government Agricultural Chemist and found to have undergone no deterioration from the nutritional point of view (food value and minerals)

Table II.

College Farm—Bapatla Expts. started 8—4—46 (Initial weight 20 lbs.)

Average weight of six replications in each treatment.

Treatment No.	after 1 month		after 2 months		after 3 months		after 4 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I	13	10	* Nil		Nil		Nil	
II	13	15	2	5	3 " 10		* Nil	
III	17	15	8	13	9 11		3 2	
IV	19	15	17	5				
V	13	12	* Nil					

* got diseased and decayed.

In treatments I, II & V the keeping of the tubers during storage was very poor. Treatment IV was better than the rest, but sprouting tendency was high.

Table III.

Agricultural Research Station, Gudiyatham (Expts. started 23—3—46) Initial weight 20 lbs.

Average weight of six replications in each treatment.

Treatment No.	after 1 month		after 2 months		After 3 months		after 4 months		after 5 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I	10	8	1	10	0	5	0	5	* Nil	
II	11	6	6	12	4	14	1	3	"	
III	15	7	5	4	0	5	* Nil		"	
IV	16	7	14	3	12	4	9	14	7	10
V	10	13	3	1	0	7	0	7	* Nil	

* got diseased and decayed.

Only treatment IV was found to be the best method at every stage of storage, but sprouting of tubers was very high.

Table IV.

Agricultural Research Station, Taliparamba (Expts. started 14—3—46) Wt. 20 lbs.

Average weight of six replications in each treatment.

Treatment No.	after 1 month		after 2 months		after 3 months		after 4 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I	13	14	5	2	* Nil		—	
II	14	3	6	11	* Nil		—	
III	15	5	9	10	5	12		* Nil
IV	17	2	15	1	14	1		—
V	13	3	3	6	—			—

* diseased and decayed.

Sprouting occurred in treatment IV to a very great extent.

Table V.

Agricultural Research Station, Koilpatti (Expts. started 25—4—46 initial wt. 20 lbs)

Average weight of six replications in each treatment.

Treatment No.	after 1 month		after 2 months		after 3 months		after 4 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I	4	7	* Nil		—		—	
II	0	7	* Nil		—		—	
III	15	3	10	5	1	9		* Nil
IV	16	2	5	6	2	9		0 12
V	5	12	* Nil		Nil			Nil

* diseased and decayed.

Sprouting was noticed in IV to a large extent after 2 months.

Table VI.

Agricultural Research Station, Anakapalli.

Average weight of six replications in each treatment.

Treatment No.	After 1 month		After 2 months		After 3 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I		* Nil		Nil		Nil
II	0	11	0	1		Nil
III		* Nil		Nil		Nil
IV	7	15	5	5	3	10
V		* Nil		Nil		Nil

*All diseased and decayed.

(Sprouting was pronounced in Treatment IV)

Table VII.
Agricultural Research Station, Pattukottai.

Treatment No.	After 1 month		After 2 months		After 3 months		After 4 months	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
I	16	2	13	0	2	15	Figures not yet received.	
II	14	4	7	10	4	1		
III	17	15	15	9	8	5		
IV	18	13	15	8	8	1		
V	16	9	11	9	2	6		

2. The experiment has been in progress for six months now and the results obtained from the monthly weighments of the tubers and observation on the sprouting and decaying of the tubers give the following indications :

- i. Of the five treatments, that with the pit completely covered over with sand is the best.
- ii. The ordinary heap method of storage is the least efficient.
- iii. The pit system of storage is attended by the sprouting of the tubers even in a fairly dry climate like that of Coimbatore and vary markedly so in damp places like Taliparamba. Sprouting of the tubers however has been found not to detract from its food value as recorded by chemical analysis of the tubers, and there is no deterioration in quality.
- iv. The damage from insect attack by weevils and fungus and hardening and drying up of the tubers was reported in all treatments except method IV.

In general it may be said that the sweet potato does not lend itself to prolonged storage and is best utilised within two or three months even when stored under the best conditions, in pits covered over with sand.

