

## REPORT ON EXPERIMENT REGARDING STORING SPRING POTATOES OF 1937.

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### OBJECT OF THE EXPERIMENT :

The area of potatoes under cultivation increases from year to year. The spring harvest season is very short — from the end of May to the end of June, and the large quantities of potatoes brought to the market during this short period cause a considerable drop in the prices. The problem, therefore, arises — how can we store potatoes for 6—8 weeks in order to prolong the marketing period? The experiment outlined below is preliminary, and includes only a few methods of storage. No examination or study was yet made of the methods and practices of cultivation of the crops. The experiments include the following methods of storage :

- 1) Potatoes in a pile, in the field, covered with earth and limed on the outside.
- 2) Potatoes in a pile in the field, covered with earth under a roof of matting.
- 3) Potatoes in a pit dug in the field, covered with earth and limed on the outside.

In each of the three experiments there were two types of storage.

- a) The tubers were arranged in layers with dry sand between them. On top a layer of straw and a layer of earth were placed.
- b) The tubers were placed in a pile without sand between the layers. Covered as above.

In the piles, as well as in the pit, ventilation was arranged by means of wooden board channels. These were arranged on the ground in the middle of the pile and the pit and passed through the length of the piles of potatoes. The openings of the ventilation channels were protected by a wire-screen to prevent the entrance of insects (moths). In the piles and in the pit, maximum and minimum thermometers

were placed to record the fluctuation of temperature during the storage period.

4) Storage in a well ventilated building in Gan Shmuel,

5) Storage in the wine cellars at Mikveh Israel.

Each of these experiments included three types of storage :

a) A pile of potatoes with layers of sand between them. On top a layer of earth was placed.

b) A pile of tubers, covered with a layer of earth, without layers of sand between.

c) Potatoes in bags well protected with a wire screen to prevent the entrance of the tuber moth.

6) Cold storage in Tel-Aviv.

(a) In boxes of 100 kgs., and (b) in bags of 100 kgs. each.

#### PROCEDURE :

(1) The experiment was carried out at Gan Shmuel. The earth was of a medium, red, sandy soil. The variety of the potatoes was "Up-to-date". Time of planting towards the end of February. Harvesting time — early in June. Overhead irrigation was used. Tubers of medium size, with tough skin, were chosen for the experiment. For a period of two weeks after the harvest, the tubers were kept in bags. During this time they were sorted out : infected tubers, bruised, or infested with the moth, were removed. The end of the storage period was determined by the beginning of the germination of the tubers. In the warehouses, thermometers were placed so that the fluctuations of the temperature were recorded for the storage period. On the 23rd of July, the tubers were examined to establish their condition and to examine the temperature and humidity, as well.

Exp. 1, 2 and 3 began 28/VI — ended 12/VIII Storage period 46 days

" 4	" 5/VII	" 12/VIII	" "	38	"
" 5	" 5/VII	" 15/VIII	" "	41	"
" 6	" 5/VII	" 26/VIII	" "	52	"

At the end of the experiment the tubers from each of the methods of storage were weighed and examined. Records were taken of :

(1) The loss in weight ; (2) The loss due to decay ; (3) The loss due to Potato Tuber Moth ; (4) The condition of germination ; (5) Loss due to bruises and other defects.



## RESULTS OF THE EXPERIMENTS :

## PERCENTAGE OF LOSSES DUE TO VARIOUS CAUSES

No. of Experiment	METHOD OF STORAGE	Type	Weight of Tubers before storage in kgs.	Total loss during the storage period in %	Percentage of losses due to various causes				Condition of Germination at the end of the storage period
					% of loss in weight	% of decay	% of loss due to tuber moth & other	% of loss due to bruises & other blemishes	
1	Pile of potatoes limed outside	a	500	6.2	0.4	3.4	0.8	1.6	Beginning germs firm
		b	500	8.9	0.2	2.7	5.0	1.2	
2	Pile of potatoes under mating	a	500	16.45	9.25	4.4	traces	28	as in No. 1
		b	500	47.15	—	7.2	30.7	—	" " " 1
3	Pit	a	500	9.8	0.6	5.6	1.6	2.0	Strong germination adjacent to walls.
		b	500	6.9	0.7	2.7	2.5	1.0	Strong germination but less than in „a”.
4	Storage building in Gan-Shmuel	a	200	5.5	2.5	2.0	0.25	0.75	Beginning
		b	200	5.5	1.0	2.5	0.25	1.75	"
		c	200	7.5	1.0	1.25	4.5	0.75	" (emptied)
5	Cellar in Mikveh-Israel	a	200	0.8	+1%	0.5	—	0.3	Very strong germination, long germination prouts.
		b	200	2.0	1.4	0.3	—	0.3	Strong germination, less than in type „a”.
		c	200	4.0	2.0	1.0	—	1.0	Strong germination, less than in type „b”.
6	Cold Storage	a	100	0.5	—	—	—	0.5	none
		b	100	1.0	—	—	—	1.0	

Experiments 1—5: a) tubers between layers of sand  
 b) " covered with sand  
 c) " in bags

Experiment 6: a) " in boxes  
 b) " in bags

## CONCLUSIONS :

Cold storage, at a temperature of  $1-3^{\circ}\text{C}$  is the best way of preserving potato tubers. This form of storage prevents the development of decay, the development of the potato tuber moth, and delays the beginning of germination of the tubers. In spite of its merits, this method of storage cannot be taken into consideration for large quantities of potatoes for good consumption because of its excessive cost. However, it may be considered for the purpose of storing tubers for seed.

A simple and inexpensive method of storage, which gives more or less satisfactory results, is the storage of the tubers in piles in the field or in warehouses, with layers of sand or fine earth between the layers of potatoes. The piles should be covered with a layer of sand or earth 20 cm. thick and limed on the outside, or covered with a roof of matting, if stored in the field.

Directions are given regarding handling and cultivation of potatoes and the handling of potatoes before storage in order to obtain the most satisfactory results.

## RHIZOCTONIA BATATICOLA IN FRUIT NURSERIES.

by Dr. J. Perlberger, Division of Plant Pathology.

A wilting disease of deciduous fruit trees caused by *Rhizoctonia bataticola* is described. The fungus attacks the young nursery stock at the root crown and sometimes spreads downwards to the roots and rootlets.

In general the fungi isolated from the diseased tissues were found to belong to HAIGH's type B.

Observations in the field resulted in the statement that *Rhizoctonia bataticola* attacks those parts of the trees which have been damaged by overheating in the uppermost layers of the soil.

Directions for the prevention of the disease are given.