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PRACTICAL TRIALS ON SUPERPHOSPHATE PACKING IN EGYPT.

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The packing of superphosphate in Egypt is a serious problem owing to the losses during transport from the attack of super on the sacks.

No doubt the atmospheric conditions in Egypt are quite different from the European and also the local phosphate mined and used in the manufacture of superphosphate contains some impurities causing this deleterious effect after the process of manufacture.

The following is the analysis of Nile Valley phosphates from the two mines at Sibaiya:-

Ingredients	% in sample A	% in sample B
Moisture	1.31	0.96
Tricalcium phosphate	64.97	65.98
Calcium carbonate	11.26	8.53
Fe + Al oxides	2.18	3.74
Calcium Fluoride	2.77	3.12
Sodium Chloride	0.45	0.07
Insoluble material	6.56	10.76

To begin with, a sample of superphosphate made from the two varieties of phosphates was analysed six months after its manufacture and gave the following results:-

HCl	0.10%
H_2SiF_6	0.064%
HF	0.014%

From the above, a hundred kilogram super sack will contain 100 grams of HCl gas. When a super sack is exposed to the sun rays, a brownish colour is noticed on the top part of the sack and after 12-20 hours the sack disintegrates at this part. This may take a shorter period during summer time.

Trials have been made by soaking the sacks in alkali solutions and drying before filling. Lime and carbonate of soda have been tried, but this treatment only lengthened the durability of the sack by two or three days. The attack on wet sacks was less than on the dry ones.

Other trials have been made, and to allow for the different atmospheric conditions in which they were carried out, a normal sack was always used for comparison. This sack is of ordinary Indian jute, dimensions 25"x45" and weighs 2.1/4 lbs. All sacks were filled with the same quantity or product and exposed at the same time in the open, day and night. The normal sack was given a figure 10 as a base value of durability for comparison only.

A. TRIALS ON SACKS MADE OF DIFFERENT MATERIALS

1. Normal jute sack	10
2. Linen sack	14
3. Sisal sack made of thick string	40
4. Paper sack 5 ply, with bitumen in between	100

B. TREATED SACKS

1. Normal sack	10
2. Jute sprayed with waste viscose solution 1% alkalinity ...	12
3. Light jute, treated with waxy material imported ..	45
4. Light jute, treated with a mixture of vaselin & wax	50
5. Light jute sprayed with sodium silicate solution 8%	30

C. LINED SACKS

1. Normal sack	10
2. Jute lined with paper, with bitumen in between (imported)	35
3. Jute lined locally with paper with a Shell mixture (Asphalt and Turpentine) in between ..	30
4. Jute lined locally with paper, with a layer of (tar distillates mixture No.1) in between ..	30
5. Jute lined locally with paper with a layer mixture No. 2 in between	40
6. Jute lined locally with paper with a layer mixture No. 3 in between	35
7. Paper Sack 5 ply, lined with a thin polythene layer (imported)	200

The Shell mixture used for binding the paper to the jute sack was prepared according to the instructions of the Shell Company and the sacks were prepared in our factory.

The heavy tar distillate mixture used for the same purpose in items 4, 5 and 6 was mixed and applied while hot to the paper before sticking to the jute.

CONCLUSIONS.

The paper sacks lined with polythene proved to be the best for superphosphate packing, but unfortunately the Egyptian farmer prefers jute sacks. The price of lined sacks is much higher than that of ordinary sacks.

From the above trials, it was proved possible to improve the jute sacks either by treatment or by lining, the expenses being satisfactory in both cases. The sacks with the most satisfactory prices were those lined with paper bound together with bitumenous materials.

If polythene lining could be cheapened, such sacks would be more convenient and more durable.