

## EXPERIMENT NO: 04

### STUDY OF IMBIBITION

#### PRINCIPLE

Process of 'imbibition' is considered as a special type of diffusion since the net movement of water is along a diffusion gradient. Dry seeds, when placed in water show a noticeable swelling resulting in an increase in volume and weight of the seeds. The imbibition properties of seeds or dry plant materials are due to the presence of colloidal materials.

The rate and extent of the process is affected primarily by temperature, the nature of colloidal substances present that regulates the osmotic balance, nature of imbibants and also the seed coat impermeability. The seed coat acts as a permeability barrier as tested in terms of water absorption efficiency in seed with or without seed coat.

#### MATERIALS REQUIRED

1. Dry Gram or Pea seeds.
2. Beaker, Glass rod, Balance with weight box, Blotting paper, Forceps, Graph paper, Pencils etc.

#### PROCEDURE

1. Place 5 g seeds with seed coat in a 50 ml beaker. In another 50 ml beaker place 5 g of gram seeds without seed coat.
2. Put 30 ml distilled water in both the beakers and then keep both of them at room temperature i.e.  $29 \pm 1^\circ\text{C}$ .
3. After 1 hour remove seeds from both the experimental sets and blot off their surface water by blotting paper.
4. Then weigh the seeds separately.
5. Finally, tabulate the initial and final weight and % of water absorption in the two sets and plot the data graphically to denote the effect of seed coat on water absorption efficiency by dry seeds due to imbibitional properties.
6. Repeat each experimental set mentioned above.

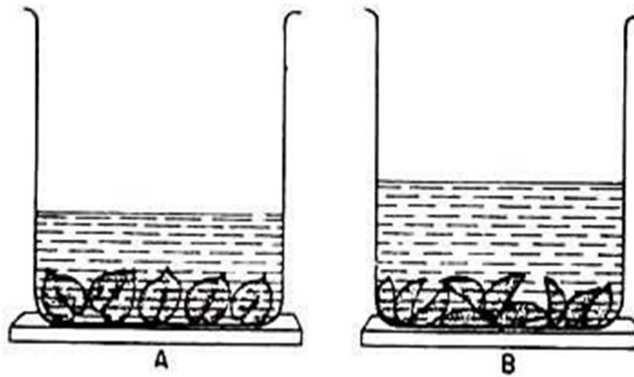


Fig. 3.5 : Absorption of water by seeds : (A) seeds with coat and (B) seeds without coat

## RESULT

Experimental condition	No. of observation	Initial seed weight (g)	Final seed weight (g)	Difference (g)	% of water absorption (mean)
Seeds with seed coat	1.				
	2.				
	3.				
Seeds without seed coat	1.				
	2.				
	3.				

## CONCLUSION