Experiment 3

I. Aim : To study the structure of monocot and dicot seed.

II. Materials Required:

1. Bean Seed
2. Maize Grain
3. Blade
4. Needle
5. Watch glass.

III. Procedure:

1. Soak the seeds in water for at least 12 hours.
2. **Maize Grain:** Cut a thin section of the maize grain with the help of a blade and observe it under a dissecting microscope
3. **Bean Seed:** Observe the different structures found on the seed. Remove the seed coat with the help of a needle and observe the underlying structures.

IV.Observation:

A. **Maize Grain:**

i. A large endosperm is found rich in starch.
ii. It is separated from the embryo by a thin epithelial layer.
iii. The outer layer of the endosperm is rich in protein and is called the **aleurone layer.**
iv. The embryo consists of a single cotyledon called the **scutellum,**a radical and a plumule.
v. The radical is towards the pointed end and it is enclosed in a protective sheath, the coleorhizae.
vi. The plumule is towards the upper broader side of the embryonic region and is enclosed in a protective sheath, the coleoptile.

B. **Bean Seed:**

i. Seed coat or the testa is the outermost hard brownish covering.
ii. Tegmen is a thin inner layer lying next to the testa.
iii. Hilum is a distinct whitish oval scar on the concave side of the seed. It represents the spot where the ovule was attatched to the ovary wall through the placenta.
iv. A tiny micropyle is situated close to the hilum.

v. Below the seed coat two thick cotyledons are found which contain food for the embryo.

vi. On the embryo a radical is found which later develops into the roots and the plumule which develops into the shoot.

V. **Precautions:**

1. Be careful using sharp objects such as needles and blades.