


(iii) Certified seed, and (iv) Approved seed.

**i. PRE-BASIC SEED.**  → or (Breeder Seed)

It is the seed or vegetative material identified or developed by the breeder for crop production. It is of high genetic purity. It is directly controlled by the breeder or sponsoring agency / institution. Hence it is also called breeder's seed. The amount of such seed is usually too small. So it needs multiplication. In order to maintain its genetic purity its multiplication is restricted to specific area, having similar climatic conditions.

The bags of pre-basic seeds are identified with a **white tag having a diagonal violet line**. Pre-basic seed serves as the initial source of all the seed classes of a newly developed or introduced variety. It has to pass through several stages of multiplication before reaching the farmers.

**ii. BASIC SEED.**  → or (Foundation Seed)

It is the first progeny of pre-basic seed. It is produced and handled so carefully as to maintain its genetic purity and identity. Federal seed certification department checks the quality of such seeds and decides about its further multiplication. Such seed is multiplied at govt research farm or extension farm. Basic seeds, also known as foundation seeds, are identified with **white tags on the bags.**

**iii. CERTIFIED / REGISTERED SEED**  → purple

It is the progeny of basic seed, and is produced by registered growers selected by the Seed Corporation. After registration by the Federal Seed Certification Department the seeds are produced, cleaned and packed. This task is regulated and inspected by the certification agency. The Seed Corporation supplies certified seeds to the growers. This type of seed is labeled with **purple tag.**

## 5. SEED

### 5.1 INTRODUCTION.

Seed is a unit of reproduction of flowering plants. It is the structure developed from the ovule after fertilization, This on germination grows into a young plant, called seedling. Thus a seed refers to fertilize ripened ovule. It is a dormant, minute living body that consists of (i) an embryo, which later grows to a new plant, (ii) an endosperm or storage tissue, which contain food to nourish embryo, and (iii) seed-coat or protective covering to shield the embryo and endosperm. The embryo is made up of a radicle, a plumule, and one or two cotyledons. The plant roots develop from radicle, and the shoot from plumule.

Seed is the initial capital of a plant that plays a vital role in its survival, multiplication and distribution. Some facts about seeds are note worthy. They are outlined as follows: (i) a plant may bear seeds once or many time in life, (ii) most plant bear seeds in a specific season and at a specific site, (iii) all flowering plants may not bear seeds, (iv) all seeds on the mother plant may not produce new plants, (v) some plants may bear seeds or fruits at their apex (as in rice and wheat), below the apex (as in maize), and even below the ground (as in peanut) and (vi) seeds may remain viable both in soil and in the store house for years.

### 5.2 CLASSIFICATION OF PURE SEEDS

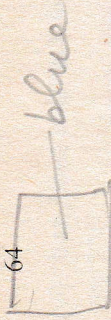
The seeds are identified or evolved by selection and / or breeding. They are tested for their yield and quality. In case they are found to be better, they are further multiplied and released for commercial production. The Pakistan Seed Act of 1976 defined four categories of pure seeds:

- (i) Pre-basic seed      (ii) Basic seed



#### iv. APPROVED SEED.

Re-multiplication of certified seed may be needed to meet the demand of farmers. The second generation of certified seeds is called approved seed. It is labeled with blue tag.



### 5.3 CLASSES OF OTHER SEEDS

#### i. IMPROVED SEED: *10-15% more genetic potential*

It is better seed substituted for the one which is inferior in genetic purity and physical quality. Such seeds have atleast 10 to 15% more genetic potential and resistant to pests and diseases. It is well adopted to the agroclimatic conditions of the locality, and more responsive to better growth conditions and to inputs (fertilizers and water).

#### ii. HYBRID SEED:

It is the seed produced by hybridation, i.e. by crossing between two or more homozygous inbred lines to obtain a desirable type having high yield potential. The first generation (called F-1) is only recommended for use as seed for commercial production. To obtain such F1 hybrid seeds, parents are to be maintained and freshly bred each time, particularly if the same vigor and qualities are desired.

Hybrid seeds may be the product of single or double cross or multiple cross.

#### iii. COMPOSITE SEED.

Composite seeds are produced by inter-crossing a number of selected varieties by making germplasm complexes. Such composites possess the genetic potential for higher production and comparatively more stable than hybrids. Thus they

need not to be replaced after F1 generation for commercial production.

#### iv. MUTANT SEED.

These are the seeds produced by mutation breeding. In this technique the genetic make-up of the seed is changed by chemicals or other agents such as radioactive rays (e.g  $\gamma$ -rays). Mutant seeds have greater yield potential and are stable compared to hybrid and composite seeds.

### 5.4 SEED QUALITY

The success of a good crop stand largely depends on the seed quality. It refers to those aspects of seed which are related to its performance. Good seeds should not only belong to an ideal and adaptable variety, but they must also have (i) good-viability or germinability, (ii) proper size, shape, colour and weight, (iii) uniformity and vigour (iv) freedom from seed-borne diseases (v) homogeneity/purity i.e freedom from weeds and other crop seeds.

Good quality seed should be pure and true to type so that the farmers can enjoy the benefits of the breeder's efforts. It should be viable, germination rate more than 80%. The size and weight of the seed is related to the amount of reserve food it carries for the young plant. It is therefore important that seed should be large, plump, and well developed. It should also be of uniform size and vigour to produce a normal and healthy crop stand.

Some diseases are seed borne. For example, smuts of small grains, root-rot in maize, and scab in potatoes. Good seeds should be free of such diseases. Likewise, freedom from weeds and other crop seeds is important in lots to be used for seed. This will prevent weed infestation and produce normal crop with better yield and quality.