



**FACULTY OF AGRICULTURAL SCIENCES
AND ALLIED INDUSTRIES**

**DR. SUHEL MEHANDI
ASSISTANT PROFESSOR
GENRTICS & PLANT BREEDING
SST 221, PRINCIPLES OF SEED TECHNOLOGY**

Seed Quality – Classes of Seed

Objective: Multiplication of quality seed under vigilant supervision of breeder of seed certification agency to distribute quality seed of notified varieties for sowing purpose.

Seed of notified varieties are multiplied in four tier system by the involvement of ICAR Institutes / State Agricultural Universities, State / National Seed Corporation and Seed Certification Agencies.

1. Nucleus seed: Nucleus seed: This is 100 per cent genetic pure seed with physical purity produced under the direct supervision of the concerned plant breeder.

2. Breeder's seed: This is the progeny of the nucleus seed multiplied in large area under the supervision of plant breeder and monitored by a committee. It provides cent per cent physical and genetic pure seed for production of foundation class. Golden yellow coloured certificate is issued for this category by the producing agency.

3. Foundation seed: Progeny of breeder's seed is handled by recognized seed producing agencies in public and private sector under the supervision of Seed Certification Agency in such a way that its quality is maintained according to the prescribed standard. Seed Certification agency issues a white colour certification for foundation class seed. Foundation seed is purchased by Seed Corporation from seed growers. Foundation seed can again be multiplied by Seed Corporation in the events of its shortage with similar seed certification standard.

4. Certified seed: Progeny of foundation seed produced by registered seed growers under the supervision of Seed Certification Agency by maintaining the seed quality as per minimum seed certification standards. Seed Certification Agency issues a blue colour (Shade ISI No. 104, azure blue) certificate.

Nucleus seed is the handful of original seed obtained from selected individual plants of a particular variety for maintenance and purification by the originating breeder. It is further multiplied and maintained under the supervision of qualified plant breeder to provide breeder seed. This forms the basis for all further seed production. It has the highest genetic purity and physical purity.

Seed Quality

Thompson (1979) defined seed quality as a multiple concept comprising several components and their relative importance in different circumstances and laid much emphasis on

1. Analytical purity / physical purity
2. Species purity / Genetic purity
3. Freedom from weeds
4. Germination percentage
5. Seed vigour and health
6. Seed Moisture content
7. Seed size, weight and specific gravity

Seed quality characters: A good seed should have the following quality characters.

1. Improved variety: It should be superior to the existing variety i.e. the yield should be higher by 20-25% than the existing variety or it should have some desirable attributes like disease resistance, drought resistance, salt tolerance etc., with good yield potential.

2. Genetic Purity: The seed should be true to type. The seed should possess all the genetic qualities / characters, which the breeder has placed in the variety, genetic purity has direct effect on the yields. If there is any deterioration, there would be proportionate decrease in the yield or performance.

3. Physical Purity: Physical purity of a seed lot refers to the physical composition of the seed lots. A seed lot is composed of pure seed, inert mater, broken seeds, undersized seeds, soil and dust particles weed seeds, OCS etc. Higher the content of pure seed better would be the seed quality. Pure seed together with germination gives the planting value of the seed lot.

4. Seed germination and vigour: Seed germination refers to the ability of a seed when planted under normal sowing conditions to give rise to a normal seedling. Seed vigour refers to the sum total of all seed attributes that give effective plant stand in the field. Higher germination percentage and vigour gives adequate plant population and uniform growth, which have profound effect on, yield and determine the planting value of the seed.

5. Freedom from weeds and other crop seeds: This is an extension of physical purity described earlier. There are certain weed species, which are very harmful to the crop and once established they are difficult to eradicate. An absolute freedom from seed of such species is highly desirable and is one of the important criteria for determining the planning quality of seeds.

6. Seed health: Seed health refers to the presence or absence of disease organisms or insect pests on the seed. The quality of a seed lot depends on its health, hence the seed should be free from seed borne disease and insect pests.

7. Seed moisture: The seed moisture is the most important factor in determining the seed germination and viability during storage. At high seed moisture content there is high incidence of pest attack and at moisture content above 16% seed get heated and the viability is lost. Hence the seed should be stored at safe moisture levels of 11-13%.

8. Seed size, weight and specific gravity: Seed size, weight and specific gravity has been found to have positive correlation with seed germination and vigour in many crops. Therefore the seed should be bold with high specific gravity.

9. Seed Colour: The colour of the seed often reflects the condition during seed maturation. The farmers from ancient times have regarded good normal shine as invariable quality guides. The colour and shine deteriorates only when the weather conditions are adverse during maturation or when insects infest the crop or when it is handled badly. The seed lots having high genetic purity, high germination and with a minimum amount of inert matter, weed seeds and other crop seeds and are free from diseases is said to be of high quality and if it is lacking of these it is said to be of low quality.