

## LECTURE FOUR

### DETERMINANT OF SEED QUALITY

1. **Source of seed:** Varietal purity and mechanical purity are attributes of quality which are influenced by seed source. Avoid variety of crop that is mixed with seed of another variety or seed.

2. **Inheritance:** inheritance differences among species and even down to cultivar level are biological fact which the seed scientist has no control over. The best we can do is to avoid seed with genetic weakness. The weakness might be contributed by maternal or paternal e.g some cultivars of soybeans have tick seed coat susceptible to mechanical injury. Note, try to avoid genetic weakness which may create quality problem later.

3. **Field contamination:** Other crop seeds are contaminant and they derive from 3-major sources

i. Contaminants in the stock seed used for seed production

ii. Contaminants in the soil on which the seed are produced

iii. Contaminants in the equipment used for harvesting, drying cleaning etc

Of these three, soil contamination is probably the most important. We must produce seed on the clean land possible. Selection of land for the purpose should be based on the land history. Watch out for volunteer plants, similarly a field over grown with weeds the previous season, the soil will act as reservoir and replenish the weed population

4. **Growing condition:** Soil fertility, drainage, fertilizers, insecticide, herbicides applications and cultural practices have a great influence on both seed quantity and quality. Seed has a remarkable capacity to compensate for deficiency in rather than the quality.

5. **After Maturation (Before Harvest) condition:** As seed decreases in MC after maturation, they come more and more under the influence of field environment. In effect, the shorter the

period of field storage (i.e the interval between maturation and harvest) which may be a few days or several weeks) the better for the seed. Remember field conditions are seldom favourable for storage especially too low temp., high RH and frequent precipitation. These can act singly or in combination to cause a substantial reduction in quality before the seeds are even harvested.

N.B field weathering –If crops are left unharnessed at right time, it will lead to seed withering (Vigour and germination problems, colour)

6. **Harvesting:** The method time and procedures to handle the harvested seed crop affect seed quality. Minimization of field exposure through harvest at a proper time is very critical because overly dried seeds are liable to mechanical injury. Climatic conditions may sometimes not be favorable for timely harvest. In this situation, harvest should commence as soon as weather permits. Equipment use for the harvest are always potential source of mechanical injury. Usually harvesting and threshing are accomplished by mechanical means. Note that if the mechanical action is not mechanically controlled properly then the same forces that thresh the seed can cause serious injury.

7. **Aeration and Drying:** field heat above combined with heat produced by respiration of the seed and green materials mixed there with can quickly lead to deterioration of seeds. Timely and proper aeration will remove field heat and reduce seed temperature and will also prevent the damage which can be caused by moisture migration in a bulk storage bin. Both aeration and drying are timely operations, if not done on time their effectiveness decrease/ diminish. Note that the longer the delay in harvest and the on-set of drying, the greater will be the reduction in seed quality

8. **Handling:** Elevator, conveyor and other devices used in transporting seeds into processing plant and then on thin bagging can have important influence in the quality of seeds. Also note that every mechanical device used in handling seed is a potential source of seed injury and

contamination. All conveyers must be properly cleared after they are used to handle a different variety or crop (preferably the self cleaning type). Please note that some seeds are more susceptible to injury than others, exercise care in handling the seed of different types, don't use auger to convey seed of soybean

**9. Processing:** Cleaning, size grading, density grading and threshing are all carried out to prepare seed for packaging and marketing. Consumer appeal must be enhanced. Note that processing equipment are also a source of contamination and should be thoroughly cleaned each time a new crop is handled.

**10. Storage:** before distribution of seed to a retail outlet, seeds must be stored for a period of time. Ensure that seed of high quality are always put in store as storage, irrespective of how favourable. Storage does not improve seed quality but maintain quality. Note that most problems do not originate in storage, it is only noticed there. Failure to stop 'pest in the incoming seed, fumigation should be carried out and germination test should be done periodically.

**11. Age:** chronological age is also an important determinant of quality. Seeds are alive and like all living things, will deteriorate with time and die. During ageing, seed vigour decline at a much more rapid rate than germination percent. Old seed may therefore have a reasonably good germination but be so low in vigour, but they are 'worthless in planting'.

**12. Uniformity:** A non uniform seed field produces non uniform seed lot. Portion of the seed lot may contain different levels of contaminant or even entirely different contaminant, soil fertility, - light, land, topography, non uniform management, etc. All could cause non uniformity and these affect the purity of the seed lots.

## **CONTRAST SEED PRODUCTION**

**Contract growing** :Is the important practice in seed production. Is the growing of  $C_1$  from basic seed and of  $C_2$  from  $C_1$ . Is the most trickiest part of the operation. Huge quality handle here require planning and supervision

### **Why contract Grower?**

- For large seed farms, in order to be able to produce more seed as large as possible. In seed company progress, you must try not to become a general farmer. Hence majority of seed companies have opted for contract seed growing i.e contract growers. In this way, the company itself does not get too involve in the agric operations and can them concentrate on processing, marketing etc. in his/her industry.

### **Characteristics of contract growers**

- Must be a good farmers in the local community
- Must be intelligent, reliable, energetic and trustworthy. i.e prepare to take advice, must not do any nasty things, reliable
- Must be able to do think when seed experts are not there.
- Must have reasonable facilities e.g drying facilities, store, simple cleaning equipment approximate for his farm size, storage room/place.
- The location must be favourable for inspection especially for inspection point of view.
- Do not gave large contract to a new grower
- It must be profitable so as to make it appealing to farmers i.e because there must be a guaranteed price.

### **Organization of contract Growing**

The key personnel is the production manager who co-ordinates and run all seed programmes depending on the company size, Is expected to have field staff, that will liaise with the grower for him. He must draw up programmes each year for each crop.

The information he must have are

1. production target each crop, guided by sales and marketing department. Do demand survey to know how much seed is needed next year.
2. How much basic seeds he has available for production
3. Have information from field staff for about what land is available for contract growing 2-3 months in advance.
4. He must draw up a master plan for his operations with flexibility for alteration. If there is a special variety that is likely to have problem, give it specially to an experienced (best) grower(s) and pay special attention to it. Also the particular land should be sited close to headquarters for close supervision.

### **Contract documents**

This is a binding legal documents.

- Is a contract and has status in law court
- It must comply with the standard of legal proceeding in the country.
- It must be freely entered into by both parties.
- There must be no element pressure.
- Both parties have an equal standing in the contract
- There must be an agreement with where to drop the seed.
- Have contracts in two parts
- One part in respect of standard legal contract

- Second part contains all normal standard conditions that the company have.