4-1-1988

Quality Enhancement Through Quality Assurance

C.C. Baskin

QUALITY ENHANCEMENT THROUGH QUALITY ASSURANCE

Charles C. Baskin[1]

Quality assurance, the commitment a seed company makes to its customers, is attained through a system of quality control. Over the years, numerous systems have evolved and many papers presented on different approaches to quality control/quality assurance.

When a farmer purchases seed in your company's bag, will he have a mental picture of a good stand of fast growing plants and a bountiful yield at harvest time? Does your company assure the grower that he will get the quality of seed he needs to meet his production goal?

Quality control is one of the most powerful management tools available to a seed company. How it is to be used is a management decision? The extent to which seed quality is enhanced through quality control will vary from one company to another and is dictated by market demand.

Every seed company has some type of quality control program because there are certain minimum standards that must be met in order to market seed. A company's commitment to quality above these minimum standards will vary.

We can place seed companies in three groups.

- Those that meet the minimum standards; they barely get by.
- The "middle of the road group"; company standards are above the minimum, but are not at the maximum level that can be attained.
- The "best seed available" group. This company's standards are high. These standards must be met or seed are not sold.

The level of quality control depends on a number of things.

- Costs and return - a company must make a profit to stay in business.

---

[1]Professor and Agronomist, Department of Agronomy, Seed Technology Laboratory, Miss. State University, Miss. State, MS.

- Market demands.
- Crops involved.
- Capabilities in conditioning.
- Methods of measuring quality.

Basic steps are necessary for a successful program.

- Management must be committed to the program. If management decides to market seed that do not meet quality standards the program will not succeed.
- Objectives must be identified and goals established.
- What will be the level of:
  - physiological quality (germination and vigor)
  - physical quality (purity, moisture, mechanical damage, plantability, etc.)
  - genetic quality, (varietal purity)
  - pathological quality (incidence of disease)

The necessary organization must be provided to meet these objectives and goals.

A quality control department must be established with a person designated to be responsible for meeting goals.

Standards and operational procedures must be established. Written procedures and acceptable standards must be available to all personnel who must make decisions.

A systematic approach to identification and resolution of seed quality problems must be developed and implemented. A quality control program must be encompassing and comprehensive.

<u>Planting Seed Selection is the Beginning</u>:

- Varietal purity, the desired level of genetic purity must be met when seeds are selected;
- Mechanical purity, weed seed content in particular, is extremely important; and

- Physiological quality, a good stand of uniform, healthy plants is equally or more important in a seed program as in a grain program.

Land Selection:

- Uniform land with a high production potential is desirable. Uniformity aids in planting and weed control; it also contributes to uniform maturity and aids in harvesting;
- The previous crop relates to varietal and mechanical purity.
- Weeds present must be considered;
- Can required isolation distances be achieved?

Cultural Practices:

- Generally, good production practices for grain are good for seed.
- Some practices may need to be varied, weed control may need to be more intensive for seed. Desiccation or defoliation times may be different. Fertility rates may be different such as boron on clovers for seed production.

Field Inspections to Check For:

- Acceptable stands;
- Weed control;
- Progress of the crop;
- Flowering time and flower color for varietal purity in soybean or pollen shed in corn;
- Varietal purity and weeds prior to harvest.

Harvesting:

- Seeds should be harvested as soon as possible to minimize field deterioration; the eed moisture content at harvest time will vary with the species and how it is to be handled after harvest;
- Harvesting equipment must be clean;
- Proper adjustment of harvesting equipment is extremely important; harvesting is often the primary source of mechanical damage.

Storage before Conditioning:

- Pre-cleaning prior to storage may be necessary to remove green materials from seed prior to storage;

- Drying may be necessary where seeds are above 12 to 14% moisture;

- Aeration to remove "field heat" even when seeds are low enough in moisture for safe storage is a desirable practice; if seeds are to be stored for more than a few days, they should be cooled to 50 to 60F as soon as possible.

Conditioning:

- Cleaning all equipment before conditioning and between kinds and varieties is necessary to prevent contamination;

- Equipment should be properly adjusted to remove contaminants and minimize mechanical damage;

- Regular checks are necessary to be sure equipment is operating properly.

Storage after Conditioning:

- Temperature and dry conditions are important for storage after conditioning;

- Arrangement of lots in the warehouse is necessary so that they can be identified and sampled as necessary; this will also aid in inventory control;

- Insect and rodent control is essential.

Preparation for Shipping:

- Seeds should be sampled and tested as close to shipping as possible to be sure that quality is at the desired level before shipping.

Testing is the heart of a quality control program. The kind and number of tests will vary depending on the kind of seed and level of seed quality desired. There are numerous tests available. You must select the ones that fit your particular program.

Sampling is critical because evaluation of seed quality is based on evaluation of samples. Results of tests, therefore, are only as good as the samples on which they are based. Sampling procedures have been established and must be followed if samples are to be representative of the quality of seed sampled.

The world's agriculture is becoming more productive and more sophisticated. Cost of production is increasing. There is less room for error than ever before. Everything in the production system revolves around the seed. Producers must be assured that the quality of seed they plant is adequate to meet their needs.