

OVERVIEW OF SEED QUALITY ASSURANCE SYSTEMS – STAGES IN LIFE OF SEED PLANT, ELEMENTS OF SEED QUALITY IN THE LABORATORY AND FIELD

SEMIS COURSE ON
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INTRODUCTION

- Quality assurance (QA) is the means by which a seed company is satisfied that its product and service are:
 - a. maintained and enhanced
 - b. meet the customer and
 - c. corporate expectations
- Seed QA program provides a uniform and unbiased quality control system and marketing tool for their seeds
- Seed QA system makes everybody in the seed production and marketing chain responsible for seed quality.

Introduction cont'd

- QA is usually achieved by:
 - a. Documented systems comprising policies and procedure, and defining the corporations quality position and policies
 - b. Setting formal standards for the characteristics of products and processes

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Introduction cont'd

- c. Formal monitoring processes provided by each company systemic review of the respective process to identify steps where defects or failure could be introduced into the process
- d. Development of process control around these critical points
- e. Auditing product and process to ensure compliance to and effectiveness of the program

Introduction cont'd

- Purpose of seed QA
 - provide the customer with a sense confidence that factors impinging on the quality of seed have been identified and managed in a formal manner that is reflected at all levels in the seed company
 - Within the company, it provides employees with measurable performance objectives that tie in with the objectives and interest of the company.

Introduction cont'd

- QA provides protection by early warning of a disaster
- In QA systems quality is measured in the ability of a product or service to fulfill the needs of the customer

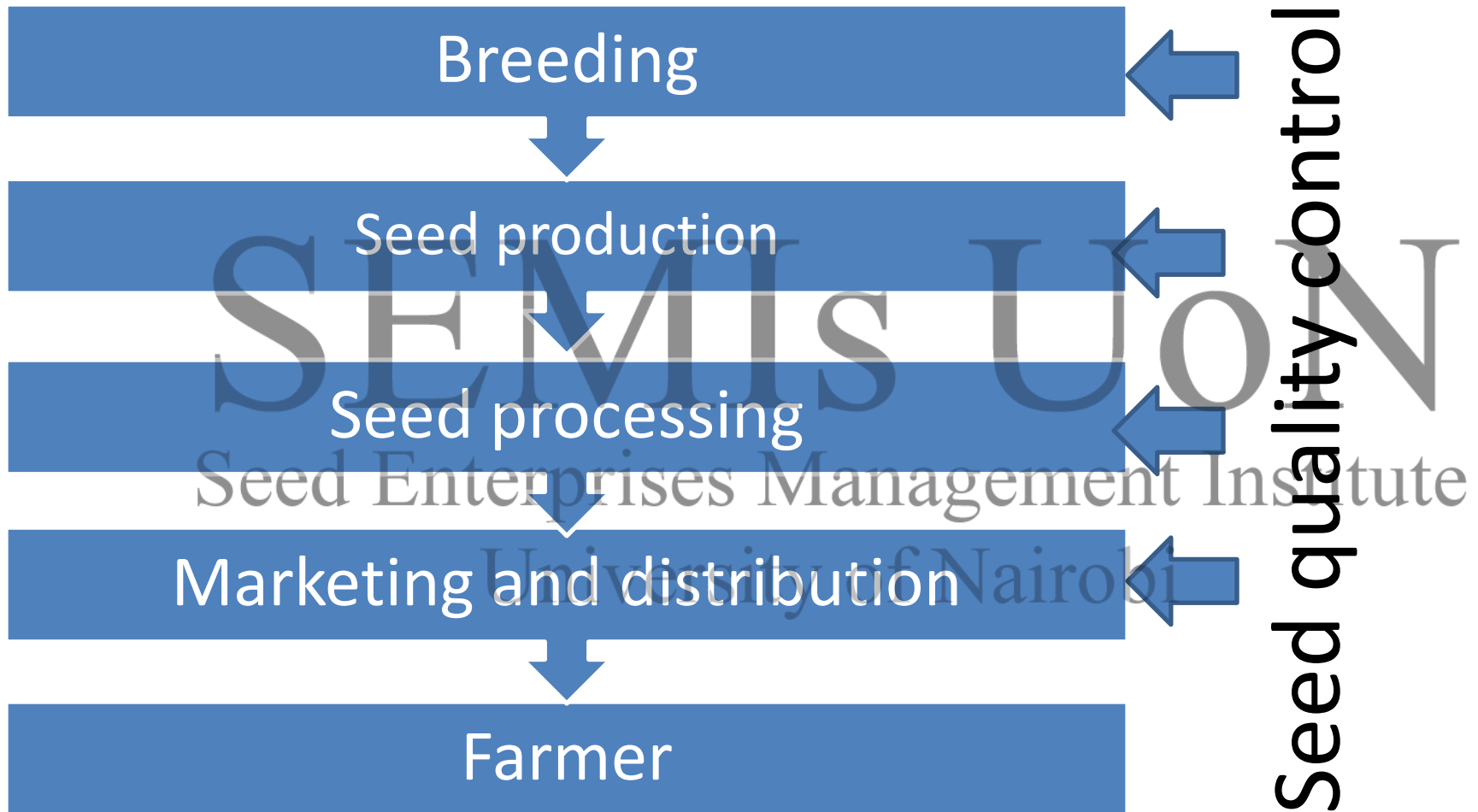
Objectives of seed QA

- The objectives of QA are to provide:
 - a. unbiased field inspection and laboratory testing for quality control in seed production, processing and marketing
 - b. Unbiased system for use in meeting National laws requirements
 - c. A marketing image of sound quality control for selling varieties
 - d. Seed buyers with assurance that a designated variety has met quality standards

Why do we need seed QA?

- Many of the important attributes of seeds cannot be assessed visually or instantly at the end of purchase
- To prove such guarantee, there is need for a quality control system that provides comprehensive checks at all levels to ensure that seed quality is maintained

Seed quality control



SEED QUALITY

- Seed quality is a multiple concept comprising of several components and their relative importance in different circumstances. It puts much emphasis on:
 - a. Physical quality
 - b. Genetic quality
 - c. Physiological quality
 - d. Phytosanitary quality

Seed quality assurance

- Quality assurance is the overall management plan to guarantee the integrity of data while quality control refers to series of analytical measurements used to assess the quality

Seed quality assurance

- Seed quality assurance systems are comprised:
 - a. Field inspection of seed crops during active growth – Based on Association of Official seed certifying Agencies (AOSCA) or Organization for Economic Corporations and Development (OECD) Seed Schemes.

Seed quality assurance

- b. Representative sampling of each seed lot in accordance with internationally accepted protocol – Association of Official Seed Analyst (AOSA) and International Seed Testing Association (ISTA)
- c. Laboratory evaluation of each seed lot for germination, pure seed, noxious weeds and varietal purity in accordance with internationally accepted protocol – ISTA /AOSA
- d. Post control grow out tests

Quality assurance/control during active growth

- The causes of deterioration of seed quality:-
 - a. pests and diseases
 - b. mechanical mixtures
 - c. natural crossing
 - d. volunteer plants from the previous season

Quality assurance/control during active growth

- e. poor detasseling
- f. poor synchronization of female and male plants and mutations

Fields inspection during active growth ensures that the quality of seed is maintained by adhering to field inspection standards.

Quality assurance/control during active growth cont'd

- Quality during active growth is ensured through :
 - a. Selection of appropriate seed growers
 - b. Proper handling of seed during planting to avoid mixing – colour coding of parental lines
 - c. Roguing of offtypes and diseased plant

Quality assurance/control during active growth cont'd

- d. Providing adequate isolation
- e. Proper detasseling in maize seed crop
- f. Planting appropriate female to male ratio
- g. Application of good agricultural practices –
weed control, crop protection, fertilizer
application

Quality control/assurance at harvest

- Achieved through:
 - a. Harvesting seed crop at the right moisture content
 - b. Separating male parent from seed parent before harvesting to avoid mechanical mixing
 - c. Sorting of cobs and pods
 - d. Marking of cobs and or pods and keeping them separately

Quality Assurance/control during drying

Quality is assured during drying process

through:

a. Controlling drying temperatures

- Low temperatures delay drying process resulting in damaged seed caused by disease, insects and excessive respiration seed.

Quality Assurance/control during drying

- b. Drying seed on/in appropriate place –
Never dry seed on rocks, iron sheet or black polythene papers to avoid heating
- c. Drying one variety at a time to avoid mixing
- d. Having appropriate seed depth

Quality control during processing

Particular attention should be paid to:

a. Cleaning processing

- Regular lot sampling for inspection to ensure rough cleaning is done

b. Seed grading

c. Dressing of the process seed (appropriate pesticide should be used)

d. Moisture content of seed

Quality control during seed sampling

- Ensure that:
 - a. Representative sample is taken in according with ISTA OR AOSA procedures
 - b. Seed lot presented for sampling is accessible from all sides.
 - c. Seed lot is homogenous.

Seed testing

- The seed testing laboratory should have a quality system that guarantee quality testing. This can be secured through accreditation of the seed laboratory

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Seed testing

In the seed testing laboratory seed are tested for the following quality parameter

- a. Purity**
- b. Germination**
- c. Viability**
- d. Health**
- e. Vigour**

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Quality control in packaging and handling

- Appropriate packaging material should be used
- The packaging material should be able to maintain the viability of the seed
- Seeds should be handled more like eggs than like stones

Quality control of seed in storage

- Seed store should be clean, dry and cool
 - Temperature and moisture affect seed viability
- Cleaning and fumigation of seed stores before storing seed

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Quality control in marketing and transport

- Seed should be transported in a dry and cool condition so as to maintain its ability to germinate
- Monitor the quality of seed at points of sale to ensure that farmers are accessing quality seed

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Quality control in grow out tests

- The genetic quality is controlled through grow out tests
- Purity standards in field inspection are used to evaluate genetic purity of seed in grow out tests

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conclusion

- Seed QA provides protection by early warning of a disaster

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Thank you

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