Understanding seed, breeding and multiplication of different seed classes

Emmarold Mneney
AgriExperience

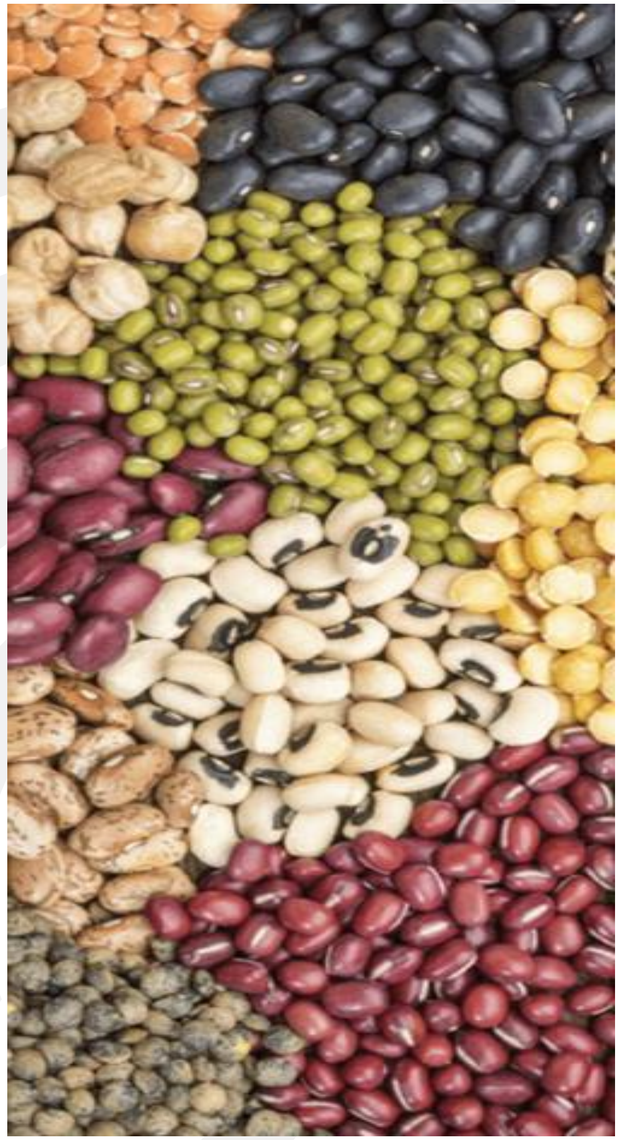
Presented at the Training Workshop for Journalists and Editors on Improved seed and seed systems Oceanic Hotel and Resort – Bagamoyo November 3 – 4, 2023

AGRA
Sustainably Growing Africa's Food Systems

CONTENTS

Why is seed important

- Seeds are the very source of life
- Seeds are source of energy
- Seeds are source of food and medicine (food and nutritional security)
- Seed supply raw materials to industry
- Seed is a source foreign currency
- ……any many more!!!



Definitions and Concepts

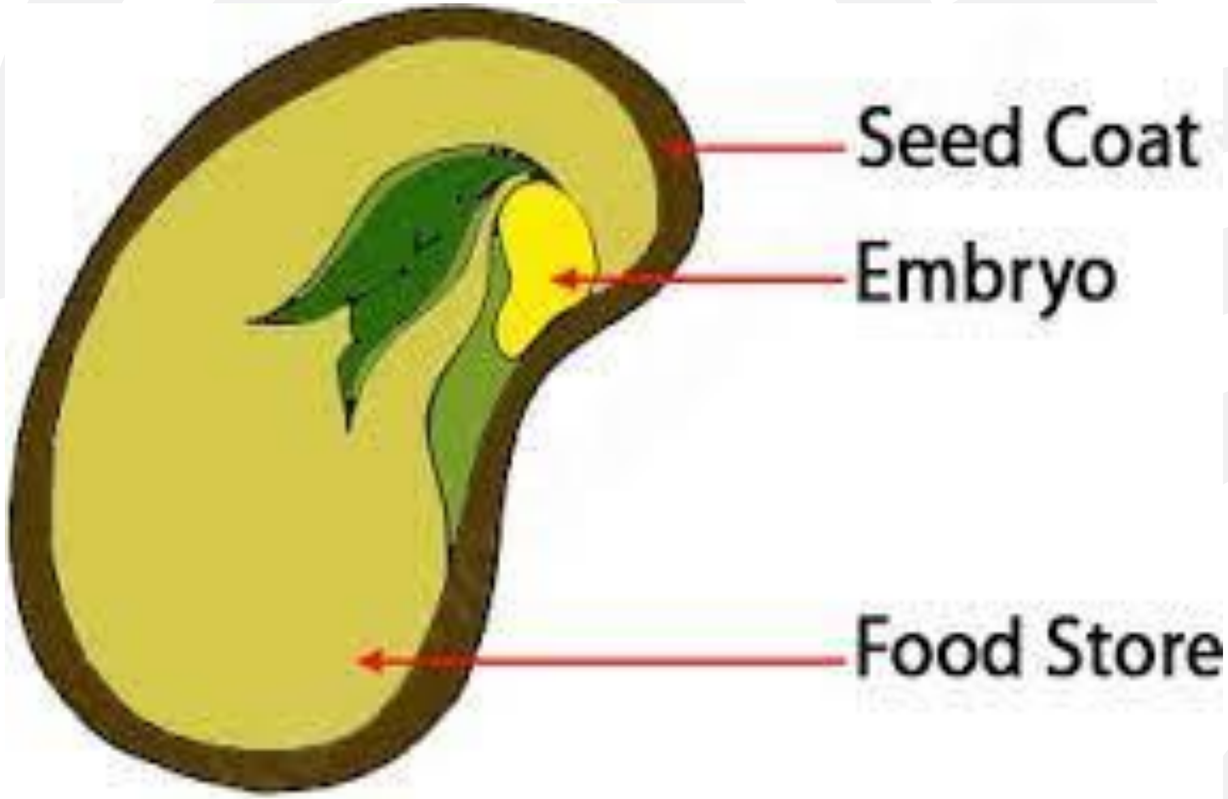
What is seed

It is any plant part used for raising the crop is seed. Seed include true seed seedling cutting, rhizome, grafts, roots etc used for propagation.

Botanically seed is a mature ovule that comprises an embryo or a miniature undeveloped plant and food reserves, all enclosed within a protective seed coat.

Given the appropriate growth conditions, it will become the new plant.

What is seed



Definitions and concepts--ctd

What is a Traditional Variety

A local variety of a species of plant or animal that has distinctive characteristics arising from development and adaptation over time to conditions of a localized geographic region

What is an improved seed

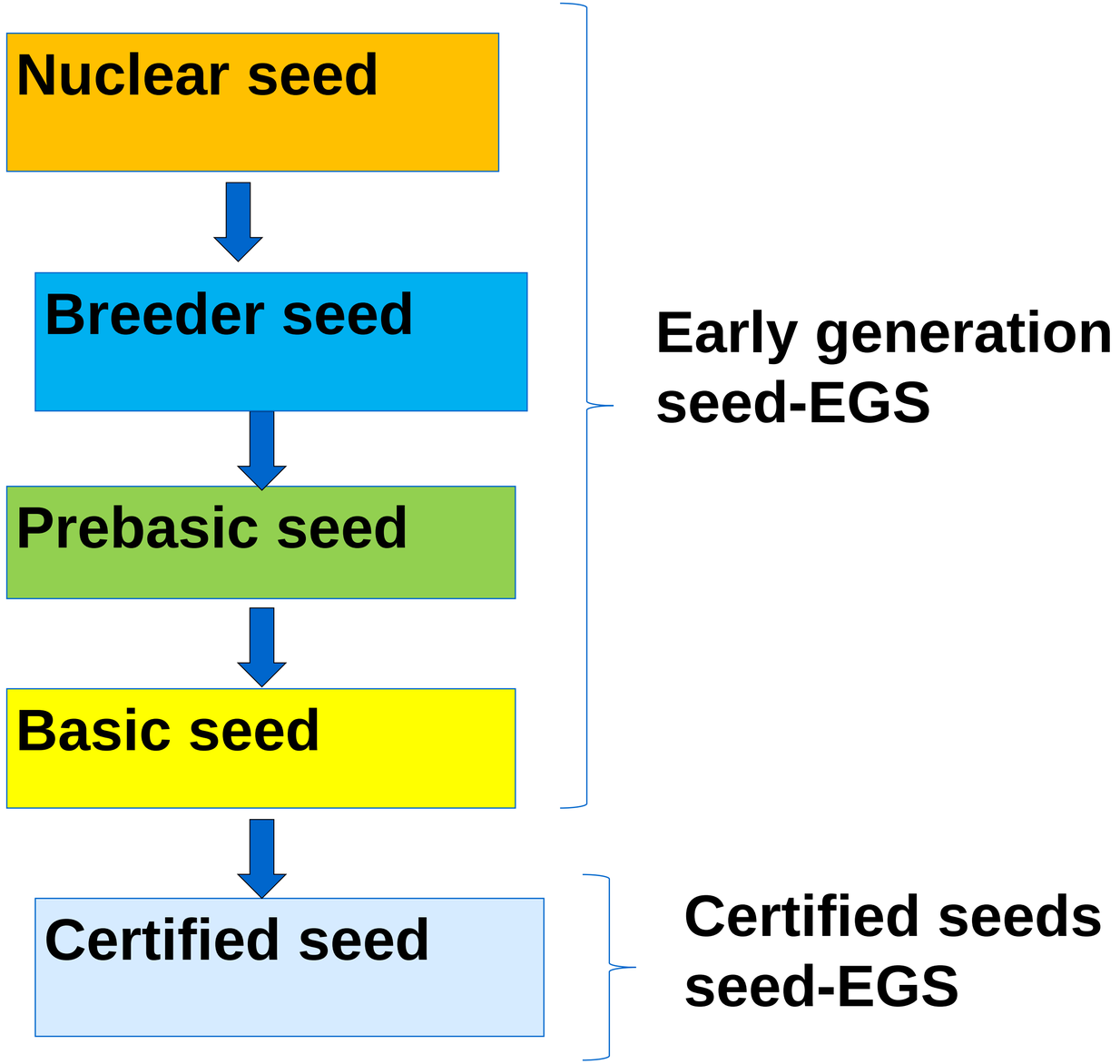
These are seeds from plant varieties that have been bred to provide higher yields as well as to increase resistance against diseases, insect pests, drought, parasitic weeds, and other environmental challenges.

Seed types: True vs Vegetative

True seed

Vegetative propagated seed

Seed classes



Seed Classes --ctd

What is Nucleus Seed

It is the initial amount of pure seed of improved variety or parental lines of a hybrid produced under supervision of the plant breeder who has evolved that variety of hybrid.

The nucleus seed is genetically cent percent pure and does not contain other physical impurities. The nucleus seed is produced strictly under isolation so as to avoid both genetically and physical contamination.

Producers: TARI, SUA, Private companies, CG centers

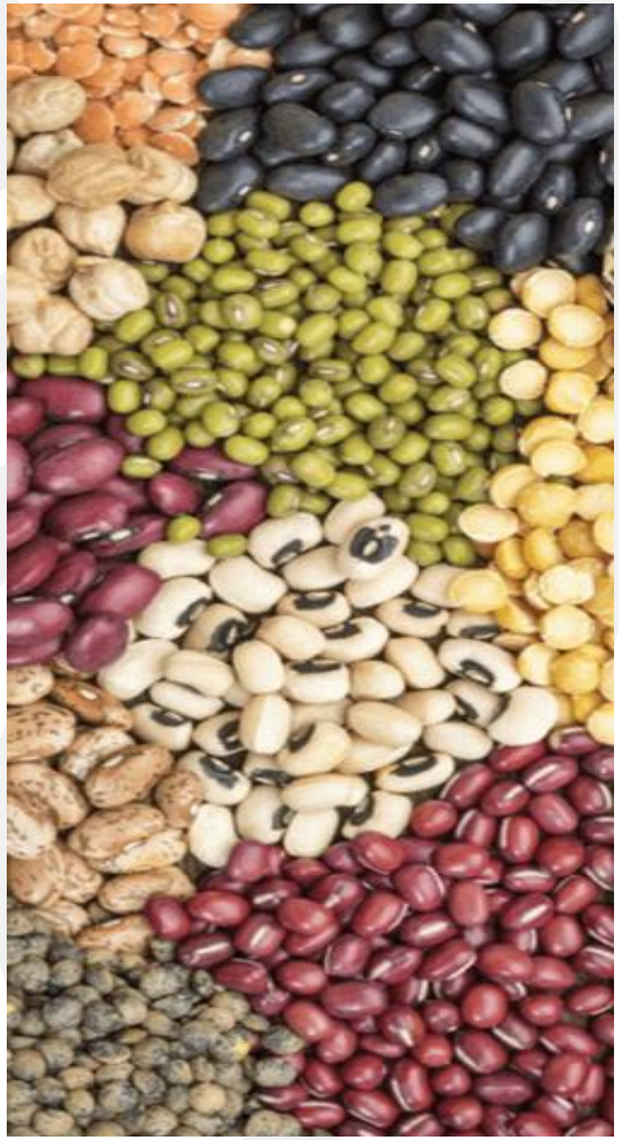
Seed Classes --ctd

Breeder Seed

It is the progeny of nucleus seed. It is normally produced by the beeder. This stage produces the least amount of seed, with the highest level of varietal purity.

Breeder's seed is produced in small plots where a breeder can monitor the plants to ensure that there is no pollen contamination, and that the plants are 'true to type'. The breeder or the developer of the variety is responsible for maintaining breeder's seed, i.e. ensuring that its genetic purity is maintained.

Producers: TARI, SUA, P/companies, CG canters

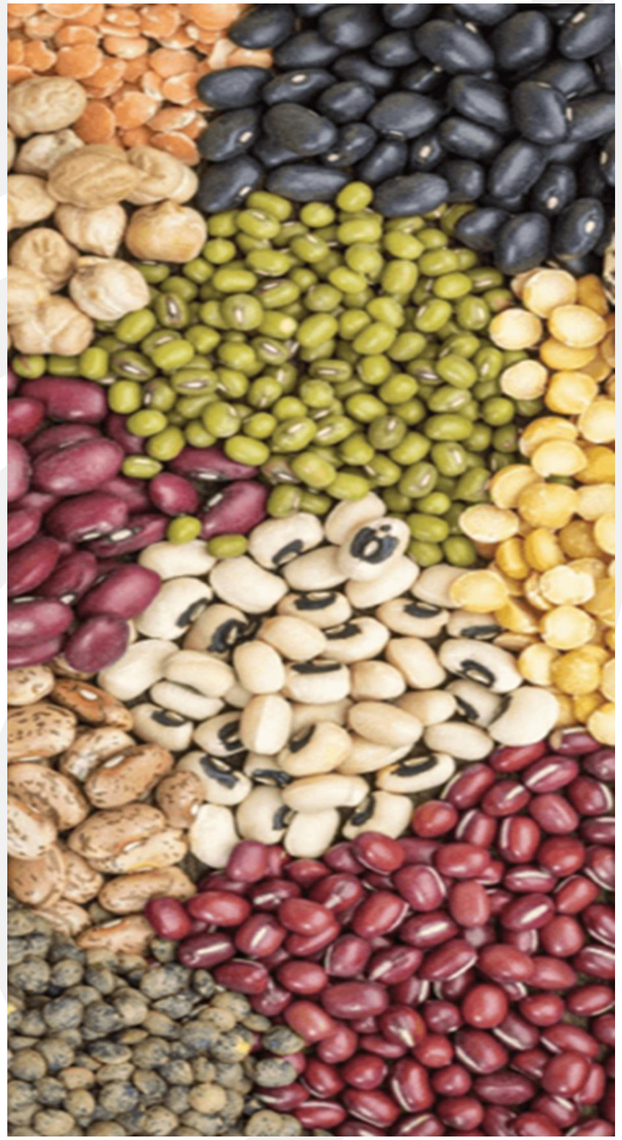


Seed Classes --ctd

Basic seed

It is the progeny of breeder seed and is produced in isolation and with great care to ensure the variety remains true to type. The basic seed is produced by breeders or by seed companies. The seed companies will sell basic seed or give it to selected farmers to produce certified seed under contract.

Producers: ASA, TARI, SUA, Private companies



Seed Classes --ctd

Certified seed

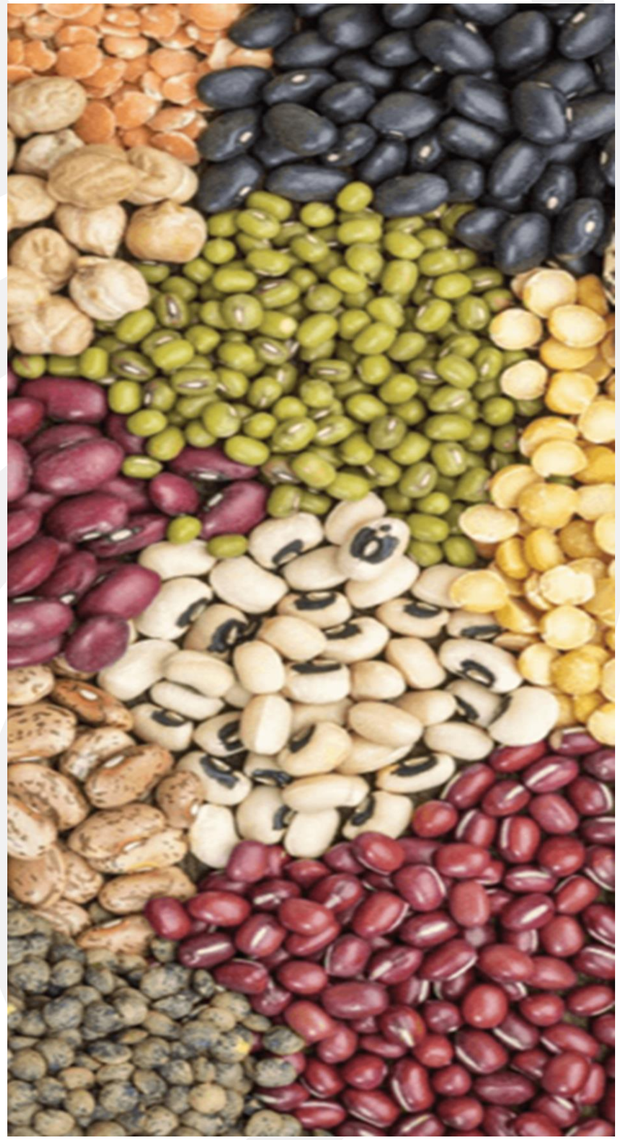
certified seed is the last stage in seed multiplication. Seed companies contract farmers to produce certified seed. The seed is produced from basic seed and grown in isolation and under controlled standards to ensure purity and identity. This seed is processed and packaged for sale to farmers to produce grain.

Producers: Private companies, TARIs, ASA

Production and supply challenges of EGS

Overall, the amount of nucleus/breeder seeds produced is inadequate due to challenges facing production

- lack of sufficient resources for maintenance breeding, irrigation, cold storage facilities,
- inadequate staff with necessary skills and experience on seed production technology
- Land scarcity is critical especially to hybrid maize seed production which demands isolation distance of not less than 400m
- here is no clear and transparent system for pre-ordering for EGS.



Myth/Misconception about improved seeds

- Disappearance of traditional seeds because of introduction of improved seeds such as hybrids

- Hybridization between introduced and indigenous varieties can lead to loss of unique genetic resources and hence extinction.

Facts about improved seeds

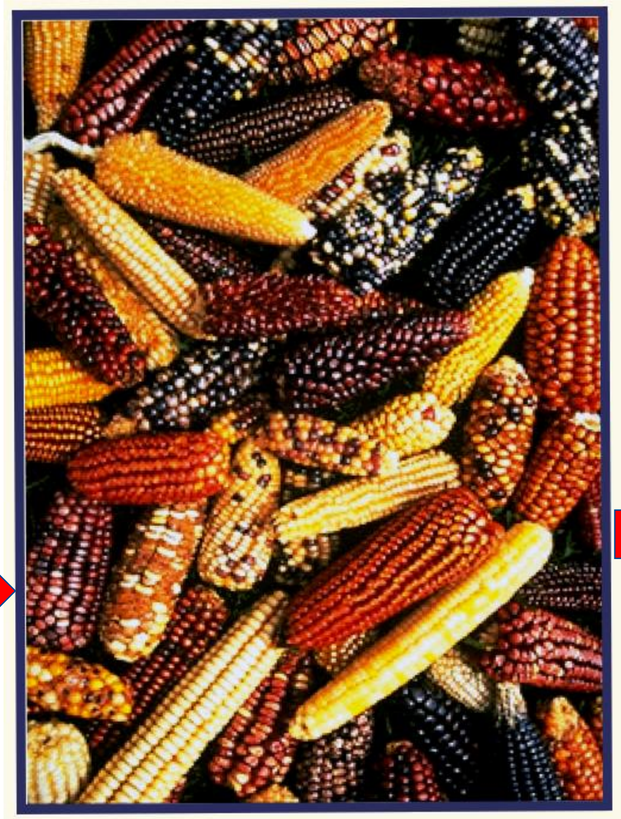
- Breeding for improved seed is about giving the traditional varieties improved traits so that they are that more resistant to disease, pests, and environmental stressors.

- Human intervention through hybridization is inevitable given the climate change challenges and ever-increasing population

Climate challenges

- Drought
- Elevated temperatures
- Floods
- Emergence of new disease
- Emergence of new pests

Seed technology development



Teosinte

Improved maize

The origin of maize is Mexican grass- teosinte.

Climate change effects

Conclusion

in conclusion.....

- Improved seed varieties and seed innovation are crucial to ensuring the sustainability of farming in the face of climate change

- An indispensable input for climate-smart Agriculture is quality seeds and planting materials of well-adapted varieties
  - **Climate-smart seeds or climate resilient**

- Tanzania need to invest in seed innovation if it wants to feed Africa

Thank you so much for your attention and
I look forward to your comments and question!!!