MAIZE SEED PRODUCTION & POST HARVEST HANDDLING

MAAIF
Ministry of Agriculture
Animal Industry and Fisheries

NARO

AFRICAN DEVELOPMENT BANK GROUP

SITE SELECTION FOR SEED PRODUCTION

Select fields with well drained soils and minimum perennial weeds

Avoid swampy or water logged areas

LAND PREPARATION

Clearing Land

First Ploughing

Second Ploughing

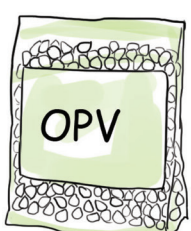
Plough twice and harrow before planting

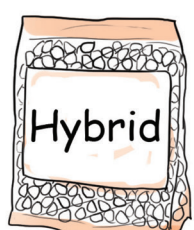
SOURCE OF EARLY GENERATION SEED (EGs)

Buy EGS from authorised sources

Carefully read the label

VARIETY TYPE





OPV Vs Hybrid

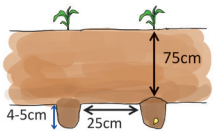
CHARACTERISTICS OF GOOD SEED PARENTS

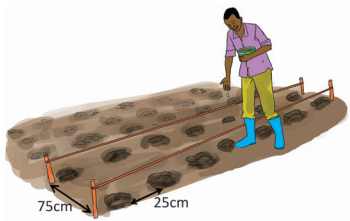
PLANTING DESIGN

Key issues:

- Always observe the proportion (ratio) of female to male rows.
- EGS should always be provided by a mandated research institute or seed company
- Ensure proper labeling of the seed stock received
- Use different colors for male and female parents to ease identification
- Keep proper records of the identity of the seed, i.e. its source, date received, planting season (e.g. 2022B or 2023A), date planted, quantity of seed planted for both male and female parents (planting returns)
- MAAIF labels verified (proper labeling and record- packaging date, expiry date, lot number)

PLANTING





Plant when soils are moist

- The spacing between rows should be 75cm and between plants 25cm (for 1 seed per hole), or 75cm between rows and 50cm between plants (for 2 seeds per hole)
- Measuring tape, strings and pegs are required to achieve proper measurements
- Hole depth should be 4-5cm
- Basal fertilizers (DAP and NPK) are usually applied at planting at a rate of 50kg/acre
- Organic manure may be used instead of inorganic fertilizers (DAP & NPK)

APPLICATION OF FERTILIZERS

Apply DAP to the soil at planting (50kg per acre)

Step I: Dig a 4-5cm hole

Step 2: Use a soda bottle top to apply fertilizer

Step 3: Use the foot to cover the fertilizer with some soil

Step 4: Put the seed in the hole

Step 5: Use your foot to cover the seed with some soil

Apply Urea 3-4 weeks after germination (50kg per acre)

- Apply fertilizer when the soil is moist
- Place fertilizer near the plants but avoid contact with the plant
- Fertilizer application improves soil fertility and increase yields

SEED INSPECTION AND CERTIFICATION

WEED CONTROL

Hand hoe weeding

Use of selective herbicides

ROQUEING

DETASSELING

SEED HARVESTING AND PROCESSING PRACTICES

WHAT TO DO BEFORE HARVESTING

Pre-plan for drying, shelling and storage

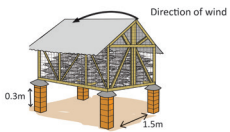
Repair or buy new pallets

Buy new sacks

Fumigate or spray store

HARVESTING

HOW TO DRY THE SEED



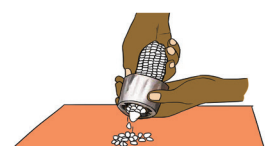
Use mats, tarpaulins or cemented floor or maize drying crib

Avoid contact with water

Let maize dry sufficiently (13-% moisture content)

SHELLING MAIZE

Hand shelling



Using a hand maize sheller

Motorized mechanical sheller

Do not beat with stick

SORTING AND CLEANING

Sieve to remove chaff and broken grain

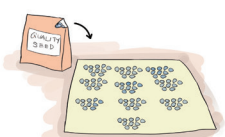
Remove mouldy and insect damaged grain

Winnowing

Damaged kernels

Sound kernels

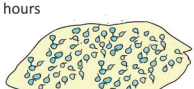
SEED SAMPLING AND TESTING



1. Select 100 seeds from your seed pack

3. Wrap them in a moist/wet tissue for 24 hours

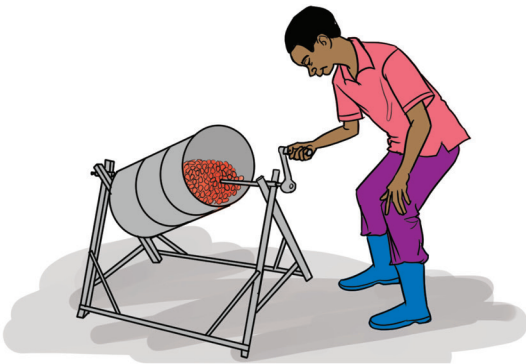
2. Sock them in water for at least 24 hours



4. Open tissue and count how many seeds have sprouted. eg 80 sprouts means 80% germination rate

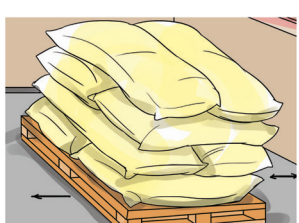
NB: To ensure consistence of results, at least 2 samples (replications) would be required

SEED TREATEMENT



STORAGE

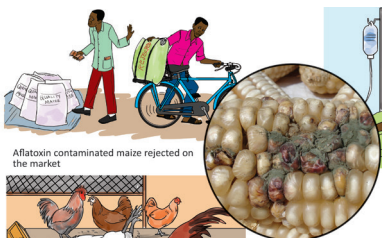
Silo



Grain Sacks

MYCOTOXINS e.g AFLATOXINS AND ASSOCIATED DANGERS

DANGERS OF AFLATOXIN



Aflatoxin contaminated maize rejected on the market

Consuming aflatoxin contaminated maize causes health problems including cancer

Consuming aflatoxin contaminated feeds can cause death in chicken and other livestock

Consuming aflatoxin contaminated maize can lead to stunting in children

CONTROL OF AFLATOXIN BEFORE STORAGE

BEFORE STORAGE

Receive produce with recommended moisture content for storage

CHECK FOR

Mouldy and discolored grains

Chaff, Soil and stones contaminated grain

Mould contamination

Broken grains

Broken grains Bad smell

Insect and insect damaged grain

DURING STORAGE

Ensure that stored grain is sorted, clean and graded

Carry out regular mornitoring of the grain to ensure the right moisture content, and freedom from insects and moulds

Periodically re-dry produce to recommended moisture content

DURING TRANSPORTATION

Dry grain should be trasported when well protected from dust and rain

Use clean and untorn bags

Ensure that grain is well dried before transportation

Do not expose produce to rain and dust during transportation

Do not offload on bare ground

Do not transport unbagged, poorly-bagged produce

Do not transport produce with other products eg petroleum, water, charcoal etc

IMPROVED MAIZE VARIETIES BY NARO

Name	Year of release	Attributes	Importance
UH5961 (NARO-MAIZE 61)	NACRRI, 2019	Medium maturity (120-130 days) Yield potential: 7 – 9 tons/ha Tolerant to foliar diseases – GLS, Turcicum, common rust, Maize Streak Virus (MSV. Mid altitude Drought Tolerant (1200-1700Masl)	MAdvanta Seeds Limited +254723539522 Sabramanian.k@advanta-seeds.com
UH5962 (NARO-MAIZE 62)	NACRRI, 2019	Medium maturity (120-130 days) Yield potential: 7 – 9 tons/ha Tolerant to foliar diseases – GLS, Turcicum, common rust, Maize Streak Virus(MSV) Mid alti-tude((1200-1700Masl) Drought Tolerant	Masindi Seed Company Ltd (MASCO) Luzige Eugine (General Manager), +256465442297/772349032 masindiseed@gmail.com, leugine@yahoo.co.uk
NAROMAIZE60-IR	NaCRRI 2017	Hybrid varieties with special resistance to Imazapyr, a herbicide that is used to control witch weed (Striga spp). This herbicide is able to kill the Striga early enough before it damages the maize plants, without killing resistant maize plant as other common herbicides would do.	Enables production of maize in areas heavily infested with Striga spp Yield advantage of up to 70% compared to popular non Imazapyr resistant (IR) varieties
WE2101	NaCRRI 2014	Intermediate maturity, drought tolerant and good grain type	High productivity under drought (4.6T/ha) and optimum conditions (9.8t/ha)

WE2103	NaCRRI 2014	Intermediate maturity, drought tolerant and good grain type	High productivity under drought (4.3T/ha) and optimum conditions (9.6t/ha)
WE2104	NaCRRI 2014	Intermediate maturity, drought tolerant and good grain type	High productivity under drought (4.8T/ha) and optimum conditions (9.4t/ha)
WE2106	NaCRRI 2014	Intermediate maturity, drought tolerant and good grain type	High productivity under drought (4.7T/ha) and optimum conditions (9.1t/ha)
UH5401	NaCRRI 2014	Early to intermediate maturity –Weevil resistant hybrid Tolerant to common foliar diseases such as maize streak Virus, Turcicum leaf blight and Gray leaf spot	Improved storability and enhanced quality of grain
UH5402	NaCRRI 2014	Intermediate drought tolerant hybrid and resistant to common foliar diseases and cob rots	High productivity in areas with high foliar disease pressure
UH5556 (NARO maize 56	NaCRRI 2015	Intermediate-late, high potential variety with tolerance to maize lethal necrosis (MLN) and resistance to other prevalent foliar diseases	Yield potential of up to 9.5T/ha and suitable for MLN endemic areas
UH5557 (NARO maize 57)	NaCRRI 2015	Highly adaptable variety which combines tolerance to drought and low nitrogen	Suitable for resource-poor farmers who apply very low fertilizer rates
WE1101	NaCRRI 2016	Disease resistant and drought tolerant, intermediate maturing variety, resistant to aflatoxin	Maintains yield of > 3t/ha under drought hence good for drought-prone areas High grain quality and marketability due to low accumulation of aflatoxins
UH5403 (NARO maize 03)	NaCRRI 2016	Early-intermediate variety with very high resistance to common foliar diseases, weevil resistance and good grain quality	Suitable for war and humid areas with high foliar disease pressure, Good for long-term grain storage and marketability
WE3103	NaCRRI 2016	Drought tolerant, intermediate maturing variety	Maintains yield of > 4t/ha under drought hence good for drought-prone areas

WE3106	NaCRRI 2016	Drought tolerant, intermediate maturity	Maintains yield of > 3.5t/ha under drought hence good for drought-prone areas
WE3109	NaCRRI 2016	Drought tolerant, intermediate maturing variety	Stable under drought stress (yield of >3.6t/ha) and optimum conditions, Very high response to fertilization (>9.6t/ha), hence suitable for both small scale and commercial farmers
WE2114	NaCRRI 2013	Drought tolerant, disease resistant intermediate maturing variety	Maintains yield of 8.4T/ha under optimum and 4t/ha under drought prone seasons
WE2115	NaCRRI 2013	Drought tolerant, disease resistant intermediate maturing variety with very good plant morphology and ear placement	Maintains yield of 8.5T/ha under optimum and >3t/ha under drought prone seasons
UH5354	NaCRRI 2013	High potential intermediate-late variety that combines drought with resistance to maize lethal necrosis (MLN) and other prevalent foliar diseases	Very high potential (9.6T/ha) under optimum conditions and 4T/ha under drought. Safeguards farmers' yield during an outbreak of MLN
UH5355	NaCRRI 2013	High potential, intermediate-late disease resistant hybrid	High potential 9.1T/ha and stability across mid-altitude areas
UH5051	NaCRRI 2012	Drought tolerant varietal cross hybrid (OPV by OPV cross) created by combining two open-pollinated parents	Easy and less costly seed production and maintenance, making it suitable for small-medium scale seed companies, with due to reduced time (< 2 years) of bulking and commercialization Yield potential of 2t/ha higher than popular open pollinated maize varieties such as MMS, Longe 4, Lone 5 and Longe 5D

UH5052	NaCRRI 2012	Drought tolerant varietal cross hybrid created by combining two open-pollinated parents	Easy and less costly seed production and maintenance, making it suitable for small-medium scale seed companies, with due to reduced time (< 2 years) of bulking and commercialization Yield potential of 2t/ha higher than popular open pollinated maize varieties such as MMS, Longe 4, Lone 5 and Longe 5D
UH5053	NaCRRI 2012	Drought tolerant varietal cross hybrid created by combining two open-pollinated parents	Less costly seed production and parental maintenance, making it suitable for small-medium scale seed companies. Reduced time (< 2 years) of bulking and commercialization Yield potential of 2t/ha higher than popular open pollinated maize varieties such as MMS, Longe 4, Lone 5 and Longe 5D

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