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# Hybrid and improved forage seed markets in East Africa: Developments, bottlenecks, and future opportunities

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# Motivation

- 1.** The African continent holds a **third of the world's livestock** population, which generates about **40% of the continent's agricultural GDP**. Further growth of the sector is expected for the coming years, given the increase in the population and the per capita consumption of protein of animal origin (Balehegn et al., 2021).
- 2.** In Africa, the current annual per capita consumption of meat and milk of around 14 kg and 30 l **is projected to rise** to 26 kg and 64l, respectively, by 2050 (Balehegn et al., 2021).
- 3.** **More than 70%** of the agricultural greenhouse gas (**GHG**) emissions in Africa **derive from the livestock sector** dominated by the emission of enteric methane (CH<sub>4</sub>) in cattle production (Balehegn et al., 2021).
- 4.** Feed is the **main production cost** in cattle systems, representing 60-70% of the total costs (Strauch & Stockton, 2017; Maina et al., 2022).
- 5.** In East Africa, forages represent the main feed source for dairy cattle. In general, producers use local forage varieties, but in recent years, there has been a **sustained increase in the adoption of hybrid and improved forages**.
- 6.** Forages as the main source of livestock feed represent an **opportunity to improve the productivity** of the sector in terms of quantity and quality and improve adaptation to climate change.

# Our objective and method

**Objective:** To develop a descriptive analysis of the behavior of the hybrid and improved forage seed market (H&IFSM) in East Africa in recent years and develop a perspective analysis on how this market is expected to evolve, in addition to identifying its main problems and opportunities for improvement.

## Method:

- Qualitative study
- Key informant interviews with stakeholders
- Farm visits to observe the implementation of hybrid and improved forages in the region

43 interviews with 48 people

## Stakeholders



- Seed producers, importers, distributors
- Research institutions
- Government
- Development organizations
- Associations
- Farmers

## Countries



- Kenya
- Ethiopia
- Uganda
- Tanzania
- Senegal
- Mali
- Benin
- Madagascar
- Rwanda
- Zambia

## Focus

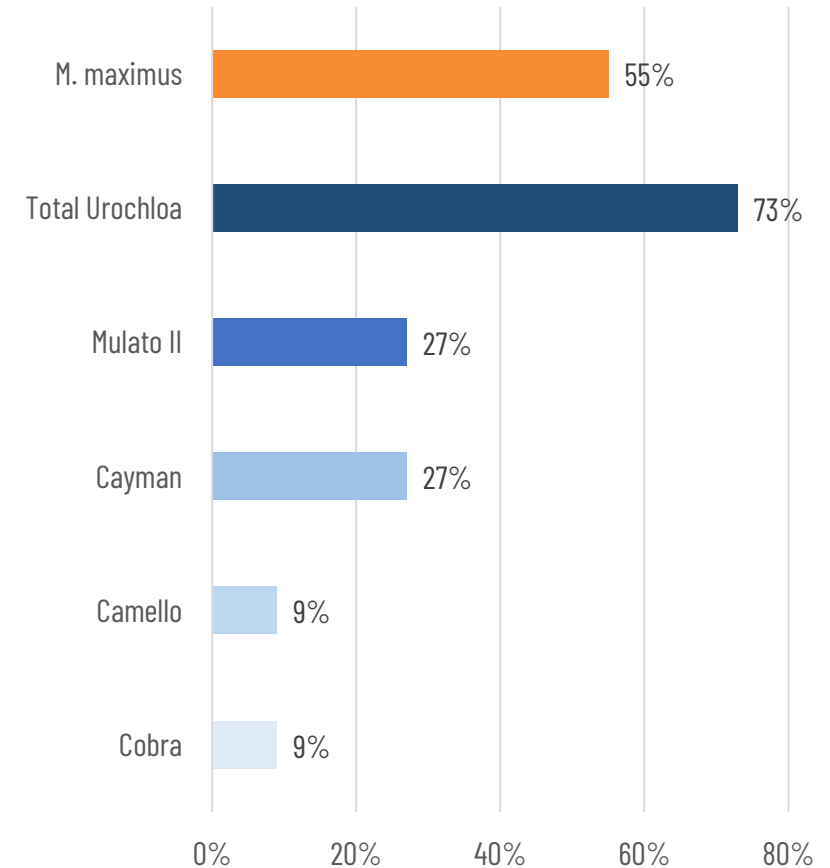


- The past: What happened over the last 10 years?
- The future: What will happen over the next 10 years?
- Problems and opportunities for improvement

# Market development in recent years

- Local forages varieties and fodder still predominate as feed source for cattle.
- In recent years, the H&IFSM has shown a sustained increase in both the **sold quantities** and **sales prices**.
- There is currently a **deficit in the supply** of H&IFS in the region and this gap has not yet been covered, which continues to push prices up.
- The sales price of H&IFS ranges between **40-50 US\$/kg**. This represents a significant barrier to seed access and adoption.
- The most adopted varieties in the region are ***Cenchrus purpureus*** and ***Chloris gayana*** (local), respectively ***M. maximus*** and ***Urochloa*** (improved). There is adoption of ***Urochloa* hybrids cvs. Mulato II, Cayman, Camello, and Cobra**, but at a slower growth rate.

Implementation of H&IFS on visited farms in Kenya



# Future market perspectives

- It is expected that in the coming years the **current growth trend will continue**. It is essential to achieve faster growth in the supply of seeds so that the gap can be closed, and **prices stabilize**.
- Stakeholders expect the **boom** in *Urochloa* and *M. maximus*, the two most popular varieties to date, to **continue** and the use of hybrids to **increase**.
- It is essential that research centers, governments & development organizations continue promoting the adoption of these varieties.



# Stakeholder's requirements for breeding programs

1. Continue with the improvement of varieties such as ***Urochloa* and *M. maximus***
2. Start working on breeding local varieties, especially ***Cenchrus purpureus* and *Chloris gayana***, and legumes such as ***Alfalfa* and *Desmodium***.
3. Increase **biomass** production: one of the main criteria for farmers when selecting a forage.
4. Improve the **nutritional quality** of forage.
5. Work on the **environmental adaptation** of forage. The conditions for forages are different in lowlands and highlands and in different countries.
6. Improved resistance to **spider mite** is required.
7. Increased **tolerance to drought** and reduced water requirement, especially important in East Africa.
8. Improved **palatability and digestibility** of forage for increasing animal welfare.
9. Reduction of **GHG emissions**. Forage varieties that manage to reduce CH<sub>4</sub> emissions by ruminants.

# Main problems in hybrid and improved forages seed market

## Seed price

The main restriction is access to seeds given **seed shortages** and **high prices**.

The seeds of hybrid and improved forages are commercialized in the region in a range of **40-50 US\$/kg**.

This high price is associated with **seed scarcity** (the demand is higher than the supply) and **high transportation costs** to import the seed since it is not produced in the region.

**Transportation costs have increased considerably since the COVID-19 crisis** and the temporary interruptions in the global supply chain.

## Registration of new varieties

This process is quite **complex** and delays the arrival of new varieties in the region, which creates a disincentive to import.

1. The importing company makes the **request** to the health authority.
2. The health authority **tests seed stability and adaptation** to different agroecological zones of the country.
3. If the seed passes the tests, the new variety is registered, **use in the country recommended**, and its commercialization is authorized.

The health authority recognizes that this process is slow and involves a considerable administrative burden.

## Knowledge

Hybrid and improved forages can be more **complex to manage** than the local forage varieties traditionally used by producers. In general, producers still do **not have much knowledge about these forages** and their management, for example, knowledge about adaptation to the soil and the environment of these forages is not disseminated.

Many producers in the most remote areas of the countries are not even aware of the existence of hybrid and improved forages.

# Main improvement opportunities

## Seed prices

- It is necessary to reduce the final sales price to the adopters of hybrid and improved forage seeds.
- On the one hand, supply must be increased to reduce the gap the upward pressure on prices.
- On the other hand, costs must be intervened, mainly transportation and distribution, analyzing the critical points in the transportation chain from the country of origin to the country of destination.

## Registration of new varieties

- It is necessary for governments to improve their processes for registering new varieties of seeds in order to authorize their commercialization in the countries more quickly.
- To this end, research centers and development organizations could offer support to health authorities in reviewing current processes and generating recommendations for improvement.

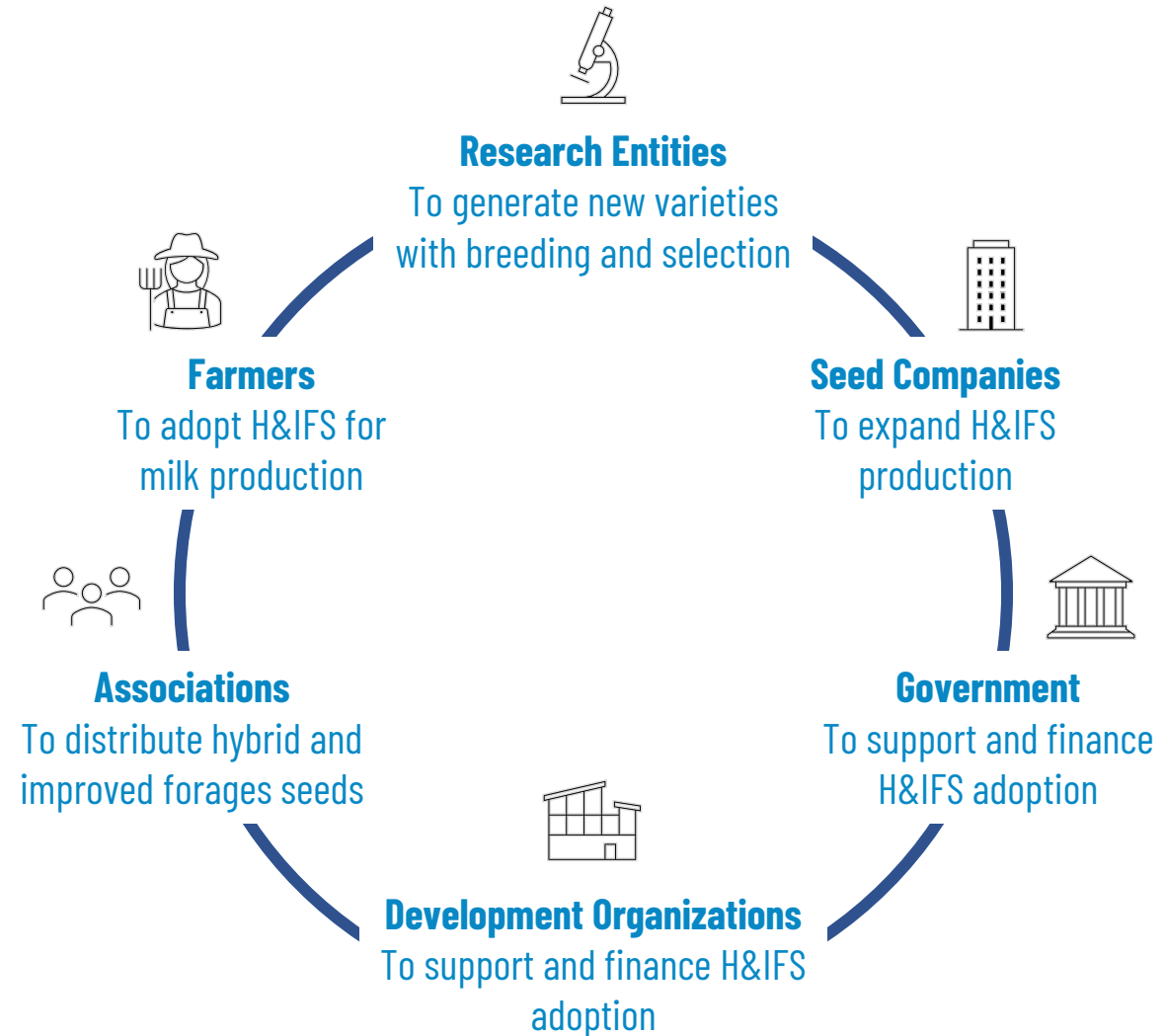
## Knowledge

- It is necessary to start spreading knowledge about the benefits and management of hybrid and improved forages. For this it is recommended to:
- Generate content for multimedia dissemination.
- Expand the coverage of projects of research centers and NGOs.
- Establish alliances with governments to include training on hybrid and improved forages in rural extension programs, which have a greater scope.



# Conclusion

- A **virtuous circle** is observed for accelerating adoption of hybrid and improved forages in East Africa over the coming years.
- In order to materialize this growth potential over the coming years, it is essential to **intervene in the problems identified**. Especially **high prices**, difficulties in **seed registration**, and **low knowledge** of producers.



*Virtuous circle for accelerating adoption*



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# Thanks!

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