

## Reviving Somalia's Banana Industry through Tissue Culture Technology



Figure 1 Source: Agriculture Strategic plan

Banana is a significant cash crop in Somalia, representing one of the most profitable ventures in the horticultural sector. The crop is grown commercially, predominantly along the banks of the Shebelle and Juba rivers.

During the early 1970s, the banana production in Somalia experienced exponential growth, reaching up to 200,000 metric tons annually. At the peak of the industry, it directly employed over 120,000 people and generated a revenue of approximately \$90 million.

This remarkable expansion was primarily driven by strong export market demand. However, the sector declined significantly following the outbreak of the civil war in the early 1990s.

According to the National Economic Council, (2019), In the recent years, small shipments of Somali bananas have found their way to various international markets, including Turkey and the Middle East. Somalia boasts a rich agricultural heritage, with bananas being a profitable crop for both domestic consumption and export.

However, the country faces challenges in banana cultivation due to disease susceptibility, limited access to quality planting materials, and low productivity.

The establishment of tissue culture technology inside Somalia presents an opportunity for farmers to access healthy and high-quality planting materials which when coupled with good agricultural practices will significantly increase productivity by at least %25.





Figure 2 Filsan company tissue culture Afgoi, 2021

The Ministry of Agriculture and Irrigation (MoAI), seen tissue culture as key game changer in increasing banana production and allows for the rapid multiplication of high-yielding and disease-resistant banana varieties, providing access to healthy and high-quality planting materials. The ministry has provided the following recommendations to leverage the potential of tissue culture:

- ✦ **Varietal Improvement:** Focus on enhancing existing banana varieties for disease resistance, yield, and quality through tissue culture techniques
- ✦ **Propagation & Quality Control:** Dedicated to the mass production of disease-free banana plantlets through tissue culture technique
- ✦ **Farmers' Support Network:** Establishing a network to provide ongoing support and guidance to farmers adopting tissue culture practices
- ✦ **Compliance:** Ensuring adherence to national and international quality standards and regulations in tissue culture and agriculture



  
**MANAGEMENT  
OF MEALYBUGS  
(PSEUDOCOCCIDAE)**  


**Identification**

Mealybugs are in the insect family of Pseudococcidae, part of the superfamily Coccoidea, which also includes armored scales, soft scales, and cottony cushion scale. Mealybug bodies are distinctly segmented and usually covered with wax. Older individuals may have wax filaments around their body margins. In some species the filaments are longer in the rear and can be used to help distinguish between different species. Mealybugs are usually found feeding in colonies in somewhat protected areas such as between two touching fruits, in the crown of a plant, in branch crotches, on stems near soil, or between the stem and touching leaves. A few mealybugs species feed on roots. While adult females

are wingless and similar in shape to nymphs, adult male mealybugs, which are rarely seen, are tiny two-winged insects with two long tail filaments. Furthermore, many mealybug species can reproduce asexually without mating.



**Figure 1:** Life cycle of mealybug

**Damage**

Mealybugs damage plants by inserting their hair-like mouthparts into plant tissue where they remove plant sap. During feeding, mealybugs excrete copious amounts of honeydew, which coats surfaces beneath the feeding site and facilitates sooty mold growth, turning plants black.



**Figure 2:** Completely destroyed Papaya orchard by Mealybugs, Afgoi district, L/Shabelle region, Somalia, in 2019.

Some mealybugs, like the citrus mealybug, secrete a toxin during feeding, which causes the host plant to drop its leaves and buds. Although relatively immobile, mealybugs can easily disperse through wind. Individual adult females can produce several hundreds of offspring during their lifetime. Plants growing indoors or in greenhouses are especially vulnerable because year-round mild temperatures favor mealybug populations, and indoor plants are usually not exposed to the natural enemies that often keep mealybugs under control outdoors.

### Management

Mealybugs are very difficult to manage with insecticides. Fortunately, most species have natural enemies that keep their populations below damaging levels in outdoor systems such as landscapes and gardens. Therefore, the management of mealybugs is based on strategies which combine different approaches. The first rule of successful control of mealybugs is to detect and act upon them early. It is easier to manage a small infestation than to eradicate a full-blown attack

### Cultural Practices

Mealybugs are often introduced into landscapes (especially into indoor areas)

on new plants or on tools or pots. Because adult females can neither crawl very fast, they do not rapidly disperse in the garden on their own. Inspect any new plants thoroughly for mealybugs before planting them. If you cannot remove all the mealybugs present, discard and destroy the plant or, if possible, take it back to the source.

Regularly inspect mealybug-prone plant species in your landscape or indoor plantings for mealybugs. If you find an infestation, physically remove the insects by handpicking or prune them out. Toss out older “grandmother” plants that may be a source of infestation for new plants. Check pots, stakes, and other materials for mealybugs and their egg sacs and dispose of any infested items

### Scouting

Mealybugs do not fly, except for the adult male, so they are not captured on yellow sticky cards.

Visual plant inspections are the only way to detect early mealybug infestations. Because of their cryptic behavior and small size, scouting via visual inspections is labor intensive and impractical. Scouting efforts should be focused on plant species highly susceptible to mealybugs.

This can be done by tagging a number of plants (five to 10 per plant species) and inspecting them regularly, which may help detect mealybug populations early. Workers should wear disposable rubber gloves when handling highly susceptible plants.

### Biological control

Naturally occurring predators of mealybugs include lady beetles, green and brown lacewings, spiders, minute pirate bugs, and larvae of predaceous midges, and parasitoids. The mealybug destroyer lady beetle, *Cryptolaemus montrouzieri*, is the most important of these predators in many areas.



**Figure 3:** *Cryptolaemus montrouzieri* feeding on mealybugs



**Figure 4:** Parasitoids on citrus mealybug

### Mating disruption

Synthetic sex pheromones are commonly used as non-pesticide insect control methods (mating disruption and mass trapping) by manipulating insect behavior and disrupting sexual communication

### Chemical control

Mealybug stage	Products
Crawlers (easiest stage to control)	Contact active insecticides, insecticidal soaps, azadirachtin products, oils, insect growth regulators
Nymphs or adults	Systemic insecticides, Horticultural oils



## Desert Locust Situation

The Desert Locust situation remained calm during June 2024.

A few scattered mature solitarious adults were present on the northwest coast particularly near escarpment south of Berbera as well as in the plateau near Buraco.

Isolated mid-instar solitary hoppers found west of Burao at the beginning of June indicate egg-laying occurred at beginning of last month.

During the limited spring breeding season for desert Locusts, fledglings appeared in the second half of June. No locusts were seen in Puntland and Galmudug States.

Surveyed areas in Bari, Nugal, Mudug, and Sanaag regions are experienced wet, high soil moisture and green vegetation cover, due to rainy season.

## Forecasting:

There is a possibility for a generation of limited breeding during the spring along the northwest plateau.

Immature adults will continue during the first three weeks of July.

Locusts will decline and no significant developments are likely.

Cyclone activity poses a risk along the Gulf of Aden and the Arabian Peninsula in July.

Weather models predict above-average rainfall which may bring a favourable breeding conditions.

The Ministry of Agriculture and Irrigation of Somalia will continue to monitor the situation and provide regular updates and alerts.

## HEALTHY SOILS FOR A HEALTHY LIFE

In pursuit of the Sustainable Development Goals (SDGs), particularly Goal 15 focusing on Life on Land, the Ministry of Agriculture and Irrigation, alongside the Department of Irrigation and Early Warning, emphasizes the critical importance of soil health in achieving national prosperity and environmental sustainability.

Soil health forms the bedrock of sustainable agriculture and ecosystem stability. It supports biodiversity, enhances water filtration, and, crucially, mitigates climate change by sequestering carbon dioxide.

As climate variability and environmental degradation pose challenges, preserving and enhancing soil health emerge as imperative priorities for ensuring food security and sustainable development.

The Federal Government of Somalia recognises healthy soils as essential for achieving multiple SDGs, including ending hunger (Goal 2), ensuring access to clean water and sanitation (Goal 6), and combating climate change (Goal 13).

By adopting integrated soil management practices and promoting precision irrigation techniques, agricultural productivity can be optimised while conserving natural resources and safeguarding the environment. Education and capacity-building are integral components of our strategy.

Empowering farmers with knowledge about soil conservation, nutrient management, and sustainable agricultural practices enhances resilience and improves livelihoods in rural communities. Early warning systems for weather-related risks enable proactive measures to mitigate soil erosion and degradation caused by extreme events.



**Figure 1: Enhancing Soil Health: Sustainable Strategies for Improved Crop Yields and Resilience**

As we progress towards sustainable development, the profound impact of healthy soils on human health, ecosystem stability, and economic prosperity cannot be overstated.

Through collaborative efforts and innovative solutions, we aim to ensure that every citizen benefits from the resilience and productivity of a thriving agricultural sector. Abdirahim Adan, Head of the Soil and Land Management Section at the Ministry of Agriculture and Irrigation's Department of Irrigation and Early Warning, reaffirms our commitment to championing «Healthy Soils for a Healthy Life.»

By nurturing healthy soils, we pave the way towards a prosperous and harmonious future for all.

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## Public Private Partnership in Somalia

Even after significant international investment targeted at improving stability, Somalia continues to face difficulties with security, governance, and the rule of law.

In order to support the ongoing discussion on the viability of the PPP approach in improving governance and service delivery in public institutions and sustaining them towards economic development in Somalia, some background information on Public Private Partnership (PPP) in Somalia will be provided in this section.

It is important to note that improved public-private sector collaboration in Somalia will have a gradual positive impact on development, which can subsequently be reinforced by a stable and reliable political system.

The operational thesis states that while PPP is determined to fortify these structures for future generations, it can rely on current structures and resources—both internal and external—to ameliorate the worsening circumstances in Somalia.

Post-conflict states recently formed government institutions are ill-equipped to supervise the efficient execution of PPP and appropriate regulation.

Even though Somalia has established the institutions and frameworks necessary to serve as the cornerstone of good governance, the country and the political class in the region continue to face challenges in their ability to conceptualize and implement new ideas in governance, PPP among them, with clarity.

This implies that, in spite of the general goodwill, capacity-related issues continue to be a barrier to the full implementation of PPP.

### Common goals of PPPs in agriculture:

- ✦ Develop agricultural value chains.
- ✦ Integrate technology transfer, innovation, and agricultural research.
- ✦ Develop and enhance the market's infrastructure.
- ✦ Provide business development solutions to farms and enterprises.

### Potential benefits of agri-PPPs to agricultural development:

- ✦ Boost both financial and operational productivity.
- ✦ Incorporate the social interests of communities.
- ✦ Consider the community's social interests.
- ✦ Boost productivity, expand market reach, enhance product quality, and make it easier for smallholders to adopt new technologies.
- ✦ Boost the ability of farmer associations.
- ✦ Generate jobs both on and off farm.
- ✦ bolstering of institutions in the public sector.
- ✦ Boost sales for the involved companies.
- ✦ Improve affordability by combining funding from different sources

### Challenges and Issues Facing Agricultural PPPs in Somalia

While agri-PPPs have a lot of potential to help Somalia's agricultural transformation, there are a lot of obstacles in the way of their implementation.

**A few of those challenges are summarized in this section.**

- ✦ Land tenure issues.
- ✦ Failure to enforce existing regulations.
- ✦ Issues with contract farming enforcement.
- ✦ Inconsistent local administrative structures that make it difficult to understand who is responsible for what.

### KEY MESSAGES

- ✦ Globally, public-private partnerships have become an important tool for development in both highly developed and resource-poor environments.
- ✦ By offering supportive infrastructure and other enabling mechanisms, successful PPP models ensure that investments are properly coordinated within commodity supply chains and facilitate stakeholder communication. The relationships that are formed are essential in assisting smallholders in gaining access to profitable markets and funding.
- ✦ MOAI has the authority to specifically provide for measures that support the growth and prosperity of agri-PPPs.

## JOWHAR OFF-STREAM PROJECT | JOSP

A delegation headed by the esteemed Deputy Prime Minister and the Minister of Agriculture and Irrigation recently convened in Jowhar, Hirshabelle State, to mark the inauguration of the JOSP project.

This significant initiative will oversee the restoration of the Sabun Barrage and the revitalization of the Hawadley reservoir. The commencement of this project symbolizes a crucial step towards enhancing agricultural sustainability and water resource management in the region.

The JOSP project, spearheaded by a collaborative effort between governmental bodies and key stakeholders, aims to address the longstanding water management challenges in Jowhar, Middle Shabelle.

The Sabun Barrage, a vital infrastructure component, will undergo extensive repairs to optimize water flow and ensure efficient irrigation practices for local farmers. By restoring the Hawadley reservoir to its full capacity, the project promises to mitigate water scarcity issues and bolster agricultural productivity in the region.

During the inauguration ceremony, the Deputy Prime Minister emphasized the government's unwavering commitment to prioritizing sustainable development initiatives that benefit local communities.

The Minister of Agriculture and Irrigation outlined the strategic importance of the JOSP project in advancing the agricultural sector and fostering economic growth in Hirshabelle State.

Additionally, both officials commended the collaborative spirit demonstrated by all stakeholders involved in the project implementation. The Shabelle River Floodplain is a fertile land that since centuries ago has been used as cropland. The irrigation development started in the 1920s with the creation of the Jowhar Sugar

Estate. Since then the scale of the irrigation grew to reach 60,000 hectares by the end of the 1980s, roughly half in the districts of Jowhar and half in the district of Balcad.

This rapid expansion was allowed, especially in the decade from 1980 to 1991, by the construction of the following hydraulic infrastructures: Sabun barrage, Supply Canal, OffStream Reservoir and Outlet canal that were able to control the river waters and avoid floods in the Jowhar region, and counter balance the lack of water due to droughts further downstream.

As reported in the MottMcDonald report of 1996 "Until the implementation of the Jowhar Off-stream Storgare Project (JOSP) in 1980, irrigators were subject to the seasonal and annual vagaries of the river, both in terms of water shortages in January to April, and as a result of floods later in the year.

The present inoperable state of the JOSP has therefore reduced the scale of irrigated agriculture, and many rainfed farmers live under the threat of crop loss due to flooding" (MottMcDonald, 1996, Middle Shabelle Flood Control Study, Final Report).

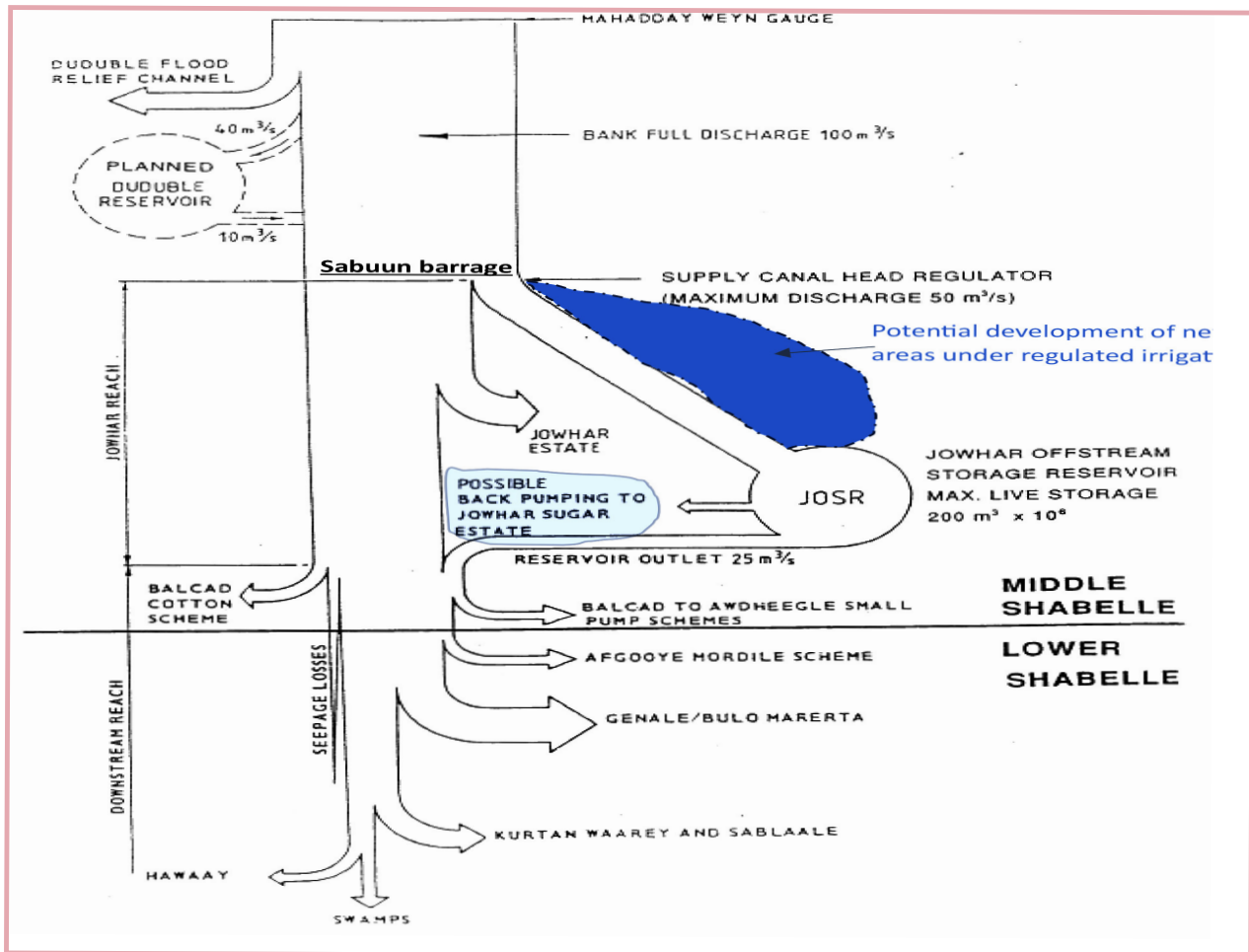
### *The situation since 1996 has changed especially in two directions:*

- (1) the population has doubled, occupying more flood prone land, and requiring more food to become food secure;
- (2) the hydrological regime of the Shabelle has changed due to a strong deforestation in its upper catchment, and new hydraulic structures controlling the river flow upstream in Ethiopia.

Once fully rehabilitated, the scheme is expected to contribute to flood and drought relief for an estimated 1.65 million people across Middle and Lower Shabelle, as well as sustainably enhancing food security in the region and beyond by boosting local production, thereby reducing reliance on imported food.

# JOWHAR OFFSTREAM STORAGE PROJECT

Proposed Allocation of Annual River Flow (As Conceived in 1978)



## Present Situation

At present some canals are directly taking water from the river into the former Jowhar Sugar Estate. Particularly two canals upstream of the Jowhar weir, one named Labaa Canal and one more upstream, called the 21st October canal, are feeding into the former Jowhar Sugar Estate.

A large portion of the cropland to the East of the Supply canal receives only partial and inadequate irrigation waters and will benefit enormously from the availability of regulated irrigation water and especially from the removal of the danger posed by random flood waters waterlogging these fields. The figure below, taken from the first and second assessment done by the MottMcDonald surveys,

shows schematically the functioning of the JOSP with black lines. In blue it is shown the areas of new potential development of regulated irrigation.

As it is evident from the Figure below, the rehabilitation of the JOSP infrastructures will allow for improved irrigation of the former Jowhar Sugare Estate but mostly for a controlled availability of irrigation waters downstream, all the way into the Lower Shabelle.

Ideally also the more upstream Duduble canal or Chinese canal should be fully rehabilitated to have a total control on the flood waters in the Jowhar area and downstream.