

ROADMAP FOR INVESTMENT IN SEED POTATO TAITA TAVETA COUNTY, KENYA, 2021

1. INTRODUCTION AND BACKGROUND

Potato is grown by approx. 3,000 smallholder farmers in high altitudes areas of Taita, Mwatate and Voi sub-counties, playing a crucial role in food security and wealth creation for potato farming households. Prior to the Accelerated Value Chain Development (AVCD) program, farmers planted an annual average of 0.02 ha of potato, considering two seasons a year. With AVCD interventions to support potato farming, the average annual area increased to 0.23 ha per farmer. Ware potatoes fetch fairly high unit prices compared to other major potato growing counties, as high as Kes 60-80/kg farm gate. Potatoes are sold at farm gate by kilogram rather than the 50-kg bag. Increased farmer production and favourable market conditions justify developing a seed system to produce seed within the county.

Seed Production and Access

Prior to 2020, all seed potato used in the county was being purchased from large scale seed merchant farms (e.g. Kisima and ADC farm) located > 300 Kms away from the county as there were no seed producers in the county. Due to great distances to purchase seed without a system in place to aggregate orders, most farmers recycle on-farm saved seed leading to low yield, 6.3 t/ha (AVCD-Potato Value Chain Baseline Survey, 2019). AVCD interventions to expose farmers to the benefits of using certified/high quality seed resulted in yields almost doubling to 12.2 t/ha as revealed by the end line study 1.5 years later (AVCD-Potato Value Chain Endline Survey, 2021).

Working in collaboration with County Government, AVCD partnered with a private sector, Taita Papa cuttings nursery to start commercial production of apical cuttings in the county during the LR 2020. During the same time, Kenya Climate Smart Agricultural Project (KCSAP) supported four farmer groups previously trained by AVCD to produce certified seed under outgrower model using KALRO seed merchant licence. Whereas these initiatives have resulted in increased supply of quality seed, demand far outstrips the supply. There is need to develop seed plans for sustainable seed production in terms of land availability and business economics, in order to ensure sustainable growth. Access to clean land to ensure sustainable production of commercial seed in the county is highly limited, making it quite tricky to produce seed following the current approach of several successive seasons of bulking seed.

Seed production using basic seed as starter material: Basic seed needs to be multiplied two seasons to be economical, meaning for every 1 ha of basic seed planted, 5-10 ha of land for the second multiplication are required if sell up to half of the harvest on the first multiplication for cash flow. If business model is to sell the entire harvest after one round of multiplication, seed units process would be greater. If farmers are willing to pay greater prices for locally produced seed, this can support this model of seed production with only one round of multiplication compared to sourcing seed externally. The high value of ware potato in Taita Taveta warrants a higher value/cost for seed (greater than the standard 55-65 Kes/kg), however will farmers continue to outsource seed if significant cost savings?

Seed production using apical cuttings: Obtaining commercial quantities of seed when coupling apical cuttings with saving seed on farm requires significantly less land compared to bulking basic seed by following the standard approach of several successive field multiplications. When starting with 1,000 cuttings on a 120 m² plot, seed produced from apical cuttings requires 0.25 ha for two rounds of multiplication to produce 4.5–6.5 tonnes of seed. Farmers can produce 45–65 tonnes of seed, sufficient to plant 20–35 ha, after a further season of field multiplication or using small seed plot technique. Farmers can also buy cuttings directly to produce seed on-farm ([Routed apical cuttings for on-farm seed production for potato farmers Kenya, https://hdl.handle.net/10568/110031](https://hdl.handle.net/10568/110031)).

The seed road map is a plan for urgent and collective action in which all stakeholders in the county will collaborate with others to address seed issues that no single actor can solve by itself, aiming to provide an important mechanism to drive the value chain leading increase profitability of potato-farming households and businesses.

2. SEED SYSTEM STAKEHOLDERS

Seed system development requires the seed businesses to comply with quality control standards. This requires access to sufficient land, while being commercially viable. The county government of Taita Taveta and other stakeholders need to support seed business to increase seed production and drive seed use, Table 1.

Table 1. Role of The Various Potato Stakeholders in Implementation of the Seed Potato Road Map for Taita Taveta County

Institutions to be involved	Role in implementation of this road map
County Government: Department of Agriculture, Cooperative, Social Development	<ul style="list-style-type: none"> ○ Allocate funds to support potato value chain ○ Provide extension services to farmers and groups in GAPs, agribusiness, good governance and leadership ○ Promote potato technologies, innovation and best practices ○ Train farmers in on-farm seed production from cuttings to expand demand for cuttings ○ Support Taita Taveta Potato Farmer Organization ○ Create sustainable linkages between seed and ware value chain
National Programs: World Bank funded Kenya Climate Smart Agricultural Program (KSCAP)	<ul style="list-style-type: none"> ○ Support farmers produce certified seed using out grower seed model with farmer groups ○ Links seed producers with KALRO to train farmers and give them rights to use their seed merchant license ○ Links seed producers with KEPHIS on seed certification process
International Potato Center through Accelerated Value Chain Development Program (AVCD) and other programs	<ul style="list-style-type: none"> ○ Support extension services to carry out training for farmers and establish learning farms ○ Support production of cuttings – technical backstopping, training ○ Support production of certified seed potato using cuttings and basic seed ○ Introduce potato technologies, innovation and best practices ○ Technical backstopping for Taita Papa cutting satellite nursery
Kenya Agricultural and Livestock Research Organization: KALRO-Tigoni	<ul style="list-style-type: none"> ○ Provide basic seed potato for outgrowers ○ Extend seed merchant license to outgrowers to produce certified seed ○ Disseminate research findings to the county and other stakeholders ○ Capacity building on seed production and marketing
Kenya Plant Health Inspectorate Services (KEPHIS)	<ul style="list-style-type: none"> ○ Seed certification ○ Soil and irrigation water analysis ○ Phytosanitary and quarantine measures
Private Sector: Taita Papa Apical Cuttings Nursery	<ul style="list-style-type: none"> ○ Commercial production of apical cuttings in the county for use by: <ul style="list-style-type: none"> ▪ seed producers as starter material for certified seed production ▪ farmers to save seed on farm ○ Promote use of locally produced cuttings as starter material
Taita Taveta Potato Farmer Organization, farmer groups	<ul style="list-style-type: none"> ○ Collective purchase of seed and other inputs and services for member farmers ○ Create sustainable linkages between seed and ware value chain ○ Potential for commercial seed production
National Potato Council of Kenya (NPCK)	<ul style="list-style-type: none"> ○ Link farmers to financial institutions, markets and other stakeholders through Vizi Soko ICT platform - A virtual marketplace for seed and ware potatoes ○ Collect, collate and disseminate information on potatoes ○ Inform national policy and regulatory making process

3. SEED SYSTEM DEVELOPMENT ACTION PLAN

Seed potato business requires support for several seasons before it becomes self-reliant – technically and economically. There are three models that can be applied in Taita Taveta county. Each model requiring specific support from various stakeholders. Each model is to be integrated to ensure sustainable seed production and inclusive access to seed, which relies on both externally sourcing seed and in-county seed production.

3.1 Taita Taveta Potato Farmer Organization (TTPFO) consolidates orders to source seed externally.

- This provides immediate solution to bridge the seed gap, and forms part of the seed plan to respond to seed demand to supplement seed produced within the county.
- This also provides an opportunity for TTPFO and other farmer groups to operationalize under guidance of KSCAP, AVCD and other support services before becoming autonomous.

3.2 Trained farmer groups multiplying basic seed or tuber from cuttings for a maximum of two seasons

- Immediate solution: trained farmer groups without much experience supported to produce certified seed under supervision of KCSAP and KALRO.
- Longer term solution: Trained farmer groups with longer experience in business skills and enterprise development and to develop own business plans
- For the two strategies, AVCD and KCSAP programs in collaboration with county government to continue to support the selected farmer groups through:
 - Technical backstopping for seed production
 - Seed planning to ensure access to sufficient land and storage for seed production
 - Business plan to ensure seed production is profitable and identify areas to improve efficiencies.

3.3 Commercial production of cuttings by Taita Papa nursery farmers buy cuttings or early generation seed for bulking on farm saved seed

- Immediate solution: Trained farmers to buy cuttings or early generation seed for bulking on farm saved seed
- Longer term solution: Current out growers buy cuttings as starter material rather than depending on basic seed >400 km away. There is need to determine license modality of get starter material from TP but operate under KALRO license
- For both strategies, extension staff needs to train more farmers to produce seed from cuttings.

3.4 Development County Potato Strategy and Seed Business Plan

To harmonize the coordination of the seed potato and explore synergies and complementarities with the value chain and among the various stakeholders, there is need to develop County Potato Strategy and seed system plan.

- KCSAP, NPCK and AVCD to support the county develop a seed plan to ensure sustainability of seed interventions.
- KCSAP, NPCK and AVCD to support the county develop potato strategy.