tamu tamu tanzania

March 2025

business case

Medium-Density Apple Cultivation in Equatorial Africa

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executive summary

helping farmers diversify their business and replace imports with medium-density farming

tamu tamu tanzania (TTT) aims to capitalise on East Africa's (EA) US$500 million annual apple and apple product import market. Our business model, backed by 6 years of extensive commercial R&D, offers a compelling opportunity for investors and commercial farmers.

Key advantages of medium-density apple farming:

- Rapid Return on Investment: Cash positive after Year 3.
- Resource Efficiency: Lower water requirements compared to other tree crops.
- Market Stability: High and stable year-round sales prices.
- Diversification: Apple processing opportunities for value-added products.
- Simplified Compliance: Local market focus eliminates export compliance needs.

about us

2017 founded

61 employees

13 apple varieties

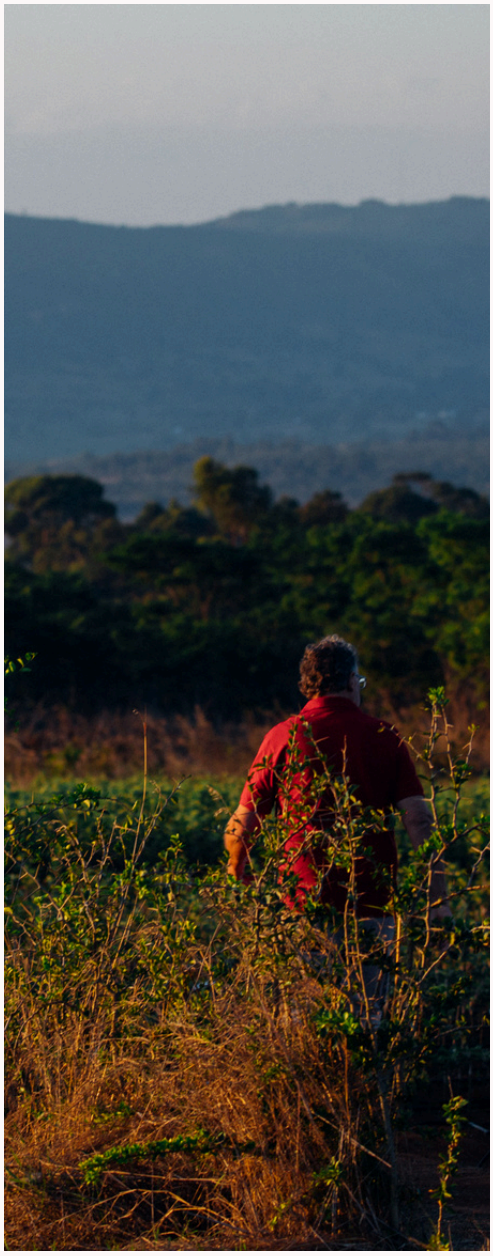
316 customers

tamu tamu tanzania (TTT) is located in the Southern Highlands of Tanzania. Over the past 6 years, we've undertaken an extensive privately funded R&D programme right on our farm. Commencing with more than 50 apple varieties, TTT has identified 13 well-adapted varieties for different agro-climatic zones and elevations across equatorial Africa. These varieties are also suited to both fresh and processed product market opportunities.

Having established ourselves as a high-quality grafted apple tree producer, and now having identified multiple value-addition opportunities in the apple sector (i.e., cold-pressed juices, cider, vinegar, dried apples), TTT is well-positioned to partner with potential investors and commercial farmers across Africa.

our offering

TTT proposes medium-density apple farming that leverages our successful research into apple varieties for East African climates. We have identified 13 high-performing varieties suitable for different local environments, ensuring optimal yields and quality. There are two main reasons why we are the right team to partner with.



01

research

Our privately-supported R&D programme positions us as industry leaders in tropical apple cultivation. Our ongoing rootstock optimisation research promises to further enhance productivity and efficiency in high-density commercial apple production.

02

products + services

1. Well-adapted apple trees grafted to superior disease-resistant and drought-tolerant rootstocks.
2. Comprehensive farmer training and support programmes.
3. Experience with strategic off-taking arrangements and value-addition.

This business case presents a unique opportunity to tap into Africa's growing demand for apples while fostering sustainable agricultural practices and improving farmer livelihoods.

why apples?

we want to make food access more equitable and affordable

With the EA regional population set to double in the next 30 years and existing demand for apples or apple products at an all-time high, consumption will only continue to escalate along with prices.

Recent significant economic and political turmoil demonstrate the potential fragility of international supply chains, therefore making resilient local value-chains more attractive in comparison. This dynamic clearly sets the apple sector apart from other well-established export focused tree crops, such as avocados and macadamias.

These factors set a strong incentive for investors to commit now to developing commercial-scale apple production. The lowest cost for adopting medium-density stand alone trees is described in more detail on the following pages.

medium-density orchard overview

A medium density stand-alone orchard system involves planting quality trees that are grafted onto a well-proven semi-dwarfing rootstock, as used by TTT.

Medium-density systems provide a cost-effective entry point to commercial production that does not require the high upfront CAPEX involved in trellising trees at high-density, nor the same level of focused management.

Medium-density orchards on semi-dwarfing rootstock are comprised of medium stature trees (5-6 metres tall) which are more early-bearing and precocious (meaning they bear fruit from years 1-2) than standard-size stand-alone trees. Due to earlier production and higher returns, breakeven for a medium-density apple orchard will be Years 6-7 compared to Years 10-12 for traditional free-standing systems on full-size rootstocks.

Fruit picked from medium-density semi-dwarf orchards tend to have more uniformity than conventional low-density orchard fruit due to the more even light differential from the top to the bottom of smaller trees.

annual operating costs

The major OPEX items in the early years involve irrigation, fertility management, and training tree branches to establish the Central Leader system. Over time, labour costs will increase as crop yields improve. Plan on per annum costs for irrigation to require US$500-700 per hectare (ha), and a similar figure for fertility management.

Experience to-date in our orchard has been that the only significant pest is woolly apple aphid (WAA) which can be controlled well with low-cost biologicals. Note too that the apple rootstocks we use for all TTT trees are WAA resistant to significantly assist with pest management.

Plan for OPEX in the first three years to be US$2,000-2,500 per ha, then increasing subsequently as crop yields improve over the next 4-7 years. To calculate labour costs, work on an average of 250 kilograms per day of fruit harvested and packed per picking team member.

total development costs

DEPARTMENT	DETAILS	COST (US$)
TREES	Need to secure well-adapted trees grafted to suitable semi-dwarfing rootstocks like TTT's trees	$7,500 / ha
SITE SELECTION + PREPARATION	Ensure suitable soil pH (around 6.0-6.5), good broad-based fertility, and establish mixed species cover-crops for inter-rows	$850 / ha $375 (lime) $625 (manure) $200 (soil prep + cover-crop seeds)
TREE PLANTING	Prepare soil pits well in advance for planting trees on 3 metre by 3 metre spacings (1,111 trees / ha or 450 trees per acre)	$850 / ha
IRRIGATION * (DRIPPER OR MICRO-SPRINKLER)	Even in high rainfall areas, water supplementation is needed at key times. However, apples have a 3-4 month dormancy that typically coincides with the dry season so they don't require watering year-round, unlike avocados or macadamias.	$3,500-7,000 / ha
ESTIMATED TOTAL CAPEX		$12,700-16,200

** See irrigation breakdown on next page for more details*

detailed irrigation costs

ITEM	DETAILS	COST (US$ / HA)
DRIPPER LINES	Polyethylene tubing and emitters, spaced to suit the tree planting density	US$800-1,500
MAIN + SUB-MAIN PIPES	All pipes to distribute water from the pump to the dripper lines	US$400-800
FILTRATION SYSTEM	Essential to prevent clogging of dripper line emitters	US$300-700
FERTIGATION SYSTEM	Provides for fully flexible in-crop fertility management via the irrigation system	US$250-400
PUMP + CONTROL SYSTEM	Cost depends on water source and required pump capacity	US$500-2,000
FITTINGS + CONNECTORS	All valves, connectors, and miscellaneous fittings	US$200-500
INSTALLATION LABOUR	Can vary based on local conditions and expertise required for installation	US$500-1,000
ESTIMATED TOTAL FOR IRRIGATION		$2,950-6,900

crop yield expectations

There are no well-established medium-density apple orchards in equatorial Africa yet, so we base our crop yield estimations on our own orchard (7 years of low-density apple production at our farm) which brings a high-level of confidence that apples work well in the region.

Extrapolating from our own stand-alone low-density tree performance relative to more traditional apple growing areas of the world and medium-density orchard yields in these same areas, we are comfortable with the following target yield expectations.

1,111

trees / ha for medium-density orchard

3 metres

inter-row spacing and in-row tree spacing

US$0.55 / kg

average B2B apple price

40cm

Dripper-line irrigation suspended on wire to prevent damage

yield + revenue expectations

YEAR	1	2	3	4	5	6	7	8	9	10+
CAPEX (US$)	14,500									
OPEX (US$)	2,500	2,500	2,567	2,678	2,789	2,922	3,056	3,167	3,167	3,167
YIELD / TREE (KGS)	0	0	3	8	13	19	25	30	30	30
REVENUE (US$ / HA)	0	0	1,833	4,889	7,944	11,611	15,278	18,333	18,333	18,333
CASHFLOW (US$)	-17,000	-2,500	-733	2,211	5,156	8,689	12,222	15,167	15,167	15,167

timelines

Given the up-front CAPEX, opportunity cost of capital, plus annual overheads and operating costs, then a well-managed medium-density apple orchard in equatorial Africa will have the following timelines.

6 years

payback period

7-8 years

full fruit production reached

35-50 years

minimum orchard life at full production

Taking into account that orchards will be in full production for 35-50+ years, apple farming is an attractive long-term investment opportunity, especially for early movers in the space and against the backdrop of significant ongoing population growth rates across Africa.

ready for the next steps?

Our team is available to support you - whether you still have questions or you just need some final guidance to make your decision.

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thank you

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