Pay for Results' Role in Transforming Tanzania's Dairy Input Supplier Model

Executive Summary

Increased demand for fresh milk in Tanzania presents a major opportunity for smallholder farmers – yet, they still have low productivity. What is holding smallholder farmers (SHF) back and can the private sector be a major actor in solving this challenge?

Tanzania's dairy sector has sizable hurdles to overcome that are present across the full value chain. Approximately 97% of Tanzania's dairy cattle are low yield breeds which constrains productivity for smallholder farmers.[1] Other associated factors are the SHF's limited awareness and understanding of quality inputs, low accessibility to inputs, and the lack of accessible and effective extension and advisory services.[2] These combined deficiencies have resulted in minimal use of productivity increasing inputs and therefore reduced outcomes.

The AgResults Tanzania Dairy Challenge Project was established to incentivize private sector input suppliers to raise awareness and educate SHF on the value of adopting productivity-increasing input bundles to enhance production and strengthen dairy-based livelihoods.

Conventional, supply sided 'push' interventions that reward activities rather than results may take years before sustained market transformations occur. However, three years into the Tanzania Dairy Challenge Project, the Pay-for-Results 'pull' incentive approach has already made an impactful shift in the dairy input supplier model and market, strengthening SHF's demand for improved inputs.

Through the prize structure, nine competing input suppliers are partnering with SHF, especially those in historically underserved areas, to supply them with input bundles and advisory services. Smallholder farmers now have access to quality inputs, receive proper training on their correct usage, and have expanded their knowledge of livestock management. Input bundles are also having a profound impact on dairy cattle health – productivity is dramatically rising and mortality is declining. Farmers can judge the impact of increased input usage on milk yield, fertility, and animal health, which is reinforcing the input supplier's extension messages and advice.

The rapid returns SHFs are experiencing from using enhanced extension services has accelerated the shift to make improved input purchases the default. These factors secure the demands for inputs and reduce risks for input supplier businesses. Smallholder dairy farmers are now positioned to participate more fully in formal markets, due to the increased milk supply, improving their incomes and livelihoods.

The project spans four sales periods each lasting nine months (June to February) and is currently in the third sales period. The competition has awarded over $375k in monetary prizes to date, based on input sales made. Competitors have continued to strengthen their business practices

1. https://research.csiro.au/livegaps/findings/livestock-production/dairy-production-in-tanzania/
2. https://www.ilri.org/news/tanzania%E2%80%99s-livestock-sector-stakeholders-define-entry-points-improving-herd-health-services
3. https://core.ac.uk/download/pdf/363995586.pdf

At a Glance: AgResults Tanzania Dairy Challenge Project

- Pay-for-Results prize competition (2019 – 2024)
- Aims to improve dairy productivity & farmers' incomes
- Sales Period 3 Q1 single-input bundles surpassed total bundles sold in SP 1 & 2
- A Fodder Incentive was instated in SP 4 to accelerate SHF uptake of the nutrition bundle by incentivizing supply-side production of dairy fodder

each sales period, helping AgResults achieve its goals of increased input usage and greater dairy productivity. Impact is spreading rapidly and competitors are so encouraged by the results that they plan to continue these practices following the project's conclusion.

Introduction: Low-Yield Breeds, Poor Management, and a Weakened Dairy Value Chain

Tanzania's dairy sector is dominated by SHF, with small numbers of milking cows, who face major inefficiencies in their businesses. Nearly all the dairy cattle are indigenous low-yield breeds (97%), SHF apply sub-optimal management practices, and seasonal fluctuations in forage and feed availability impacts quality input supplies[3]. Additionally, many SHF are precluded from accessing affordable extension or veterinary services due to their remote locations and the limited mobility of extension workers who are already oriented more closely to profitable large-scale farms. All of which leads to very limited extension services and a resulting lack of awareness and adoption of high-quality inputs, such as parasite control, nutritious feed, vaccines, and artificial insemination (AI).

Historically, input providers have been unable to consistently deliver high-quality inputs to farmers due to risk aversion, monetary/resource constraints, and low farmer demand. Further hindering relationships between SHF and input providers has been input providers reactive customer approach, charging high service delivery costs, poor distribution systems, and the provider's lack of familiarity with their customers in remote regions. These input businesses have long struggled to access financing and obtain supplier credit which is crucial for businesses to support and expand operations. Additionally, they've lacked the cash flow to make upfront investments and deliver goods and services to their consumers. As a result, Tanzania's dairy sector has been disjointed, limiting not only farmers' livelihoods and incomes but also affecting the sector's potential.

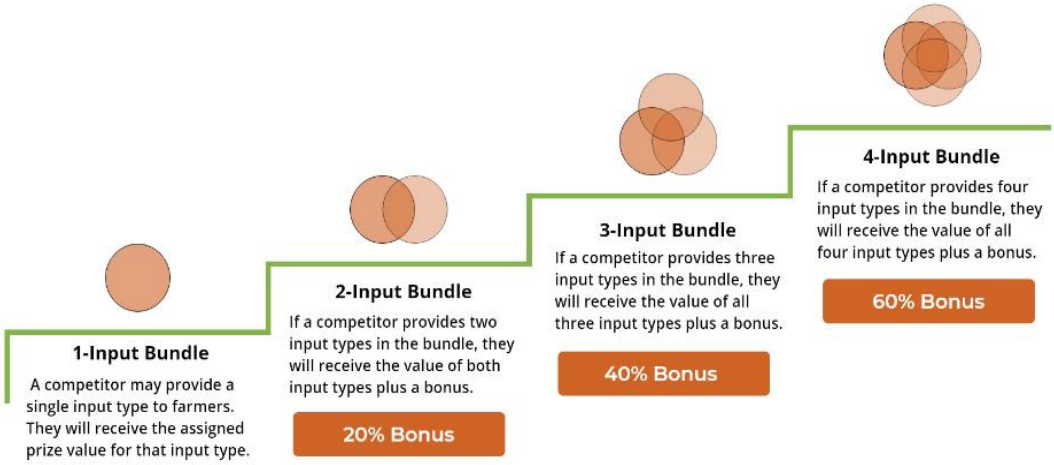
Using PfR Incentives to Encourage Input Suppliers to Deliver Input "Bundles"

The AgResults Tanzania Dairy Productivity Challenge Project is a five-year prize competition that aims to combat these weaknesses by increasing connectivity and information sharing between smallholder farmers and dairy input suppliers. Through its Pay-for-Results prize structure, input suppliers are incentivized to deliver 'bundles' of customized inputs - along with extension services - to smallholder dairy farmers to increase the adoption and uptake of productivity-enhancing inputs and services. The project is being implemented in Tanzania's coastal area, targeting Tanga, Pwani, Morogoro, and Dar es Salaam.

Input categories include:

- **Parasite control:** A combination of acaricides / anthelmintics as a single input package
- **Nutrition:** Hay, fodder, minerals, vitamins, urea molasses blocks, use of individual fodder plots, and standard dairy meal
- **Vaccines:** At least two per cow for commonly occurring cattle diseases, adjusted annually
- **Artificial insemination (AI):** Conventional or sexed semen and minerals

The structure is designed to offer additional prize incentives for bundled combinations sold:



Each bundle has a cumulative effect, further increasing dairy cattle production and health. To be eligible for a prize, competitors must sell inputs with advisory services to at least 200 SHF.

Table1: Allowable Inputs and Their Prize Amount Per Sales Period

Input Type	Inputs Provided	Prize Per Bundle Sales Period 1-2	Prize Per Bundle Sales Period 3	Prize Per Bundle Sales Period 4	Estimated Productivity Gain
Parasite Control	Acaricides, Anthelminthics	$6	$4	$3	13-23%
Nutrition	Fodder/Hay requirements + Minerals	$27	$20	$13	62-82%
Vaccines	Min. of 2 Vaccines; estimate includes ECF	$5	$3	$2	23-33%
AI	AI + Minerals (w/ conception rate of 50%)	$22	$17	$10	16-26%

A Transformation of the Input Supplier Model Driven by Pay-for-Results

The Project is not only meeting its objectives but going beyond and catalyzing transformational change in the dairy sector in areas serviced by the contest. Competing input suppliers are witnessing how the inputs and advisory services they provide are directly translating into tangible improvements for SHF and their livestock as well as strengthening their agrivet businesses.

A field visit in August 2022 validated the much broader impacts the Project is driving such as:

- Improved milk and dairy production
- A shift from reactive sales to a proactive sales model combined with extension services
- Expanded geographic reach
- Diversified inputs and increased sales via ‘bundled’ inputs
- Additional cash flow for competitors which is frequently invested into businesses
- Enhanced relationships between input suppliers and wholesalers
- Generated employement for professionals, especially women
- Improved record keeping and customer tracking

The following sections explore these areas and explain how input suppliers are redesigning their operating models and positioning themselves for long-term growth in the dairy sector.

Improved Milk and Dairy Production

Competitors uniformly indicated that the contest has produced increases of between 2-5 liters of milk per day/ household. This is significant since it represents an additional 1,000 to 2,500 Tanzanian shillings per day (US$0.40 – 1.10) that they did not have. One processor indicated a 25% increase in milk supply in the region. This increase has brought new milk off takers into the trading market and the reliable demand for milk and dairy products has made a significant contribution to farmer's ability to effectively manage production. Another key advantage of increased milk and dairy production at the household level is that it has led to women participating in the management of the dairy cows and involvement in downstream products (like yogurt) which is impacting livelihoods and household dairy consumption.

Proactive Extension Services

Competitors have seen the value in extension services and attribute the success of the project to its role in their businesses. Previously, input suppliers only sold over-the-counter sales (apart from vaccines and AI which were a small component of their business). Now, input suppliers have shifted their models to provide consistent on-farm visits and provisions of bundled services, leaving the passive order taking model behind. Additionally, more and more competitors are acquiring new tools to provide services such as pregnancy testing equipment and sexed semen which has improved conception rates and the genetic quality of the herds.

Although AI has been challenging to incorporate into farming practices in the past, SHF now receive guidance on how to implement AI based on agro-ecological zones which has led to more efficient and productive cows. Smallholder farmers have reported the benefits on improved animal health and reduced mortality because of their effective vaccine use as directed by the input suppliers' advisory services.

Expanded Geographic Reach

Incentivized by prizes and increased sales, several suppliers have expanded their geographic footprint outside of areas they have traditionally worked into previously underserved regions. The competition has served as a pilot to prove the financial and business value of reaching remote areas which competitors have agreed they will continue to service after the project.

Diversified Inputs and Increased Sales via 'Bundled' Inputs

In the past, some input providers only supplied acaricides and vaccines. Now they provide a full spectrum of services including nutrition and AI which has broadened the scope of what they can offer to smallholder farmers. Their unique bundles are designed to work collectively and have created an even greater impact on the dairy cattle's health and productivity.

Additional Cash Flow

Of the competitors interviewed, those that received prizes have reinvested their winnings to expand their inventory, acquire equipment (motor bikes, computer, silage equipment, and vehicles), and increase their staff of extension agents. One competitor noted self-investment into the supply chain and cold storage equipment and many have invested into new outlets to improve brand recognition.

Enhanced Relationships Between Suppliers and Wholesalers

Due to increased sale volumes, wholesalers are opening supplier credit lines with most of the input suppliers — some of whom are passing this on to SHFs.

Generated Employment for Professionals, Especially Women

Increased demand for quality services by smallholder farmers, especially on AI, nutrition, and vaccinations has created employment opportunities for livestock professionals. A significant number of extension agents (more than 50) have been hired as staff or freelance agents by the competitors. This has provided opportunities for young veterinarians and animal scientists, both men and women, to insert themselves into the dairy value chain. Most of these are receiving bonuses or incentives based on their sales, training, and success rates. Women have also been substantially impacted. Due to the increased demand for services and increased sales, competitors feel women have the integrity and commitment to ensure transactions occur and follow up to confirm services are delivered. Employment opportunities for women have increased not only as extension agents working for input suppliers but across all aspects of the value chains. One competitor for example, Vetfarm, originally had 2 women employees – now they have 8 (even the IT champion is a woman). Another, Kile, has more than doubled their employees since the competition launched (from 20 to 45 employees, 20 being women).

Improved Recordkeeping and Customer Tracking

AgResults competitions often use Information and Communications Technologies (ICT) to verify that competing actors are eligible for monetary prizes based on their sales and/or outputs. Beyond helping accurately distribute prizes, a well-designed and tailored ICT solution can help actors in a value chain capture and share data. If data is accessible, it makes transactions easier and builds trust. This trust is crucial for AgResults because it encourages new and inclusive relationships between the private sector and smallholder farmers. In this context, ICT systematically incorporates new practices and behaviors into an agricultural value chain and/or market system, while also increasing transparency and accountability.

In Tanzania, AgResults partnered with CropIn to build an ICT tool named the Data Collection and Tracking System (DCTS) to help competitors track dairy input sales and delivery while also improving farmers' access to market information. Competitors must use DCTS to qualify for a prize. Suppliers in the competition witness the value of improved record keeping and use the database to see the geographic distribution of their clients, call them, and systematically follow up with them. DCTS has helped competitors track their farmers as clients and anticipate future inventory needs.

Recognizing its usefulness, suppliers have adopted and integrated the tool into their operating models. Prior to the competition, some competitors either lacked a system entirely or used systems that were much less robust. Vetfarm had an initial system but it had limited tracking capabilities compared to DCTS. Both Vetfarm and Kile agreed they would like to use DCTS moving forward, and Kile noted adopting DCTS will help them understand and scale their business.

DCTS is strengthening linkages and improving access to information – both of which have economic and inclusive benefits. In terms of strengthening linkages, competitors are using data from the DCTS to send automated SMS messages about new inputs and extension services to SHF, even in remote areas, which has increased sales. This is enabling farmers to receive information via their phone and has led to improved animal husbandry, feed and waste management, udder health and hygiene, vaccination scheduling and proper input use/storage.

In terms of improving access to information, competitors are using DCTS to track their inventory and sales and improve their business models accordingly. Through SMS data-sharing, farmers have better access to milk prices and other market data, providing an entry point to formalized

markets, especially among those who were previously marginalized. Both famers and suppliers in the dairy value chain are better positioned for success due to the mutually beneficial interactions on the platform and access to better information.

Leadership Spotlight: How Competitors Are Employing New Practices to Increase Sales

VETFARM – Dr Emmanuel Swai

- Started in AI, Vaccine, Parasite control. added Nutrition
- Total Prize amount: $39,434
- Added 20 fulltime and 20 part-time employees
- Expanded business into three regions from baseline, including non-AgResults geography.
- Invested into six new outlets
- Active with B2B partnerships (wholesalers and input businesses) to meet bundle requirement

KILE - Dr. Petro Lema

- Started in Parasite, Vaccines, added AI and Nutrition
- Added 14 full-time employees
- Expanded business into six regions from baseline, including non-AgResults geography
- Invested into four new outlets
- Focus has been self-investment to improve their supply chain.

DAMIAN – William Nzaro

- Started in Vaccines, Parasite, added AI and Nutrition
- Total Prize Amount: $140,000
- Added 15 part-time employees (Vets)
- Invested into three new outlets
- Focus has been self-investment into their supply chain, e.g., cold storage.

Conclusion

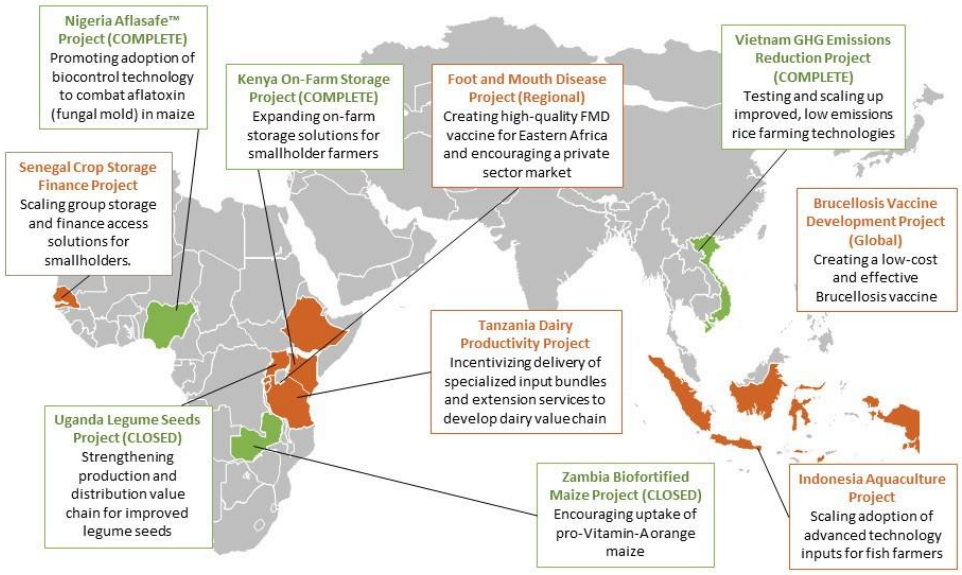
The AgResults project is motivating the private sector and helping the input supplier operating model in Tanzania undergo a major transformation, with both input suppliers and smallholder farmers reaping the rewards. Many notable shifts include improved dairy cow performance, adoption of better record keeping practices, strengthened customer relationships, increased numbers of sales agents and outlets, and improved delivery of embedded extension and advisory services for farmers. Competitors have become more effective and efficient in bundling inputs in Activity Year 3. The project outlook remains positive as competitors continue to build on and gain new experience, further increasing their impact on the local markets. The project is driving competition among input suppliers who aim to capture market share by offering high quality inputs and practical advisory services to meet consumer preferences and develop a strong customer base of smallholder farmers. Due to the project's early impacts and AgResults desire to include additional competitors, the upcoming year will be even more telling for how this project will have a sustained impact on smallholder farmers and the Tanzania dairy sector.

About AgResults

AgResults is a $152 million collaborative program between the governments of Australia, Canada, the United Kingdom, the United States, and the Bill & Melinda Gates Foundation that funds agricultural Pay- for-Results prize competitions. Since 2013, AgResults has designed and implemented these competitions to incentivize the private sector to overcome specific market barriers and solve food security challenges
— particularly for people living in poverty. AgResults competitions fall into one of two categories: 1) prizes that incentivize the Research and Development (R&D) of a new solution or product to address a market failure; and 2) prizes that encourage the development of innovative delivery models and encourage smallholder farmers to adopt an existing product or service at scale.

For more information on AgResults' approach, as well as its current portfolio and suite of learning products, please visit https://agresults.org/

Our Portfolio



Our Impact

133 Competitors Engaged

394,362 Smallholder Farmers Reached

$12.9 million Prize Funds Awarded

For more information, check out the Learning Library on the AgResults website: http://www.agresults.org/learning

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INNOVATION IN RESEARCH AND DELIVERY

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