



Innovate UK
KTN



Business Case Studies:

Underutilised African Crops

Underutilised crops could be key to better food security, nutrition and livelihoods around the world.



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[KTN-UK.org](https://www.ktn-uk.org)

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Introduction

Diversifying the crops we grow and use globally could help improve food security, nutrition and livelihoods for many around the world and reduce our reliance on a small number of plant species.

Neglected or underutilised crops often play an important role in providing nutrition to rural or indigenous communities but they have historically received low investment in terms of research, and they aren't used to their full potential.

We have developed four case studies that showcase innovative ways businesses are accessing the untapped opportunities these crops offer.

These case studies help identify ways to increase the reach and impact of these crops and accelerate responsible innovation.

This case study series is part of [AgriFood Africa Connect](#).

[AgriFood Africa Connect](#) is all about helping people make valuable connections to fast track their innovation, and increasing their chance of getting funding.

How could we help you?

If you are working on an innovation around neglected or underutilised crops, or would like to explore doing so, we'd like to hear from you so we can support you and connect you with others.

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1. Case Studies Overview

The table below looks at some of the common challenges of operating within neglected and underutilised crop value chains and the strategies companies are using to address them.

Crop	Company Name	Crop Use	Challenges	Approach Taken
Sorghum	CSIR Impilo Products (Pty) Ltd	Food	<p>Production: Ensuring a quality supply of raw materials from a large number of small producers</p> <p>Product Development: Funding new product development and testing of processing methods</p> <p>Marketing: Marketing a traditional crop to wealthier consumers</p>	<ul style="list-style-type: none"> – Supply seed direct to farmers to ensure quality – Advise farmers of good agricultural practices to ensure good raw material. – Use public research funding to support initial product development
Kalahari melon	African Origin Oils	Cosmetics	<p>Processing: Establishing efficient processing mechanisms for a novel product</p> <p>Marketing: Marketing a novel crop product internationally</p>	<ul style="list-style-type: none"> – Invest in R&D with the support of public funding – Establish a new brand/ supply company in a relevant new market
Teff	Tobia Teff	Food	<p>Production: Sourcing a certified or quality assured product to meet the demands of a new market; Sourcing locally and ethically from smallholder farmers</p>	<ul style="list-style-type: none"> – Explore supply chains where required regulation and volumes of a product can be met.
Teff	Kofo Wholefoods Ltd	Food	<p>Production: Sourcing locally and ethically from smallholder farmers</p> <p>Processing: Establishing efficient processing with a new product</p> <p>Product Development: Attracting investment for product design for a brand new market and consumer</p>	<ul style="list-style-type: none"> – Source raw materials from an alternative location – Explore options for research support for product development outside of the company itself

Commercialising high-protein sorghum porridge for rural communities

South African government funded research at CSIR enabled the development of a nutritious sorghum based food product for rural communities. Commercialisation by South African company Impilo Products (Pty) Limited through offering training and quality seed to smallholder farmers strengthened the sorghum supply chain.

Crop

Sorghum is a tropical cereal grass originating from northeast Africa. In 2019 nearly 60 million tonnes of sorghum were produced worldwide, with almost 50% of this being produced in Africa. Sorghum is largely a subsistence food crop often grown due to its drought tolerance. Sorghum is marketed for food production (malt for beer and sorghum meal) and animal feed.



Product Development

The Council for Scientific and Industrial Research in South Africa (CSIR) developed a nutrient-rich, gluten-free sorghum porridge with a high protein content. The product consists of the dry ground porridge and the clean water required to mix this before eating. It includes soy as a protein source but they are looking at using Bambara Groundnut as an alternative to this.

Product development was completed by CSIR, funded by the South African government. The aim of this government research programme is to support the use of indigenous products and improve access to nutritious foods by supporting research which commercial companies would not have undertaken otherwise. CSIR then advertised for a company to commercialise the product, and Impilo Products and other interested parties will be issued a non-exclusive license to market the product.

Crop

Sorghum



Source Country

South Africa



Organisations

CSIR and Impilo Products (Pty) Limited



Product

Ready-to-eat sorghum porridge



Key Challenges

Production: Ensuring a quality supply of raw materials from a large number of small producers

Product Development: Funding new product development and testing of processing methods

Marketing: Market a traditional crop to wealthier consumers



Market/Customer

Local market. Sold to other businesses for distribution.





Production and Processing

Accessing a consistent supply of quality grain is a major constraint. To support the supply chain Impilo Products supplies sorghum seed to growers and then buys back the grain. The quality of grain produced by small growers has improved since the development of the product, however training on good agricultural practices will continue. The process for aggregation of the sorghum grain also needs optimisation to support the sourcing and processing of larger volumes.

Marketing

Currently, the sorghum porridge is targeted at local rural communities, via supermarkets, schools, prisons and mines, but there is potential for sorghum to enter international export markets as a gluten free, nutritious grain. Sorghum is not commonly seen as a desirable food, however, it is planned that products designed to appeal to wealthier consumers will be developed in the future.

Government policies affect the use of local cereals as subsidised wheat flour and other products are often cheaper than local grains. As a consequence, the relatively higher cost and lower quality of local grains make it difficult to market sorghum products.

Environmental and Social Impact

The development and sale of this product has created a new market for sorghum and allows smallholder farmers to access this. This will help to boost the supply of sorghum creating new opportunities and improving nutrition within rural communities.

Turning an underutilised crop into Kalahari Melon Seed Oil for the cosmetic industry

British-South African company [African Origin Oils](#) has turned a crop and an area of land that have both been underutilised into an efficient process that brings profit to the local area.

Crop

The Kalahari melon is an annual, creeping weed which self-seeds, and grows well under arid conditions and on marginal or lower quality land. It is widely considered a 'weed' or pest by farmers trying to grow other traditional crops on the fringes of the Kalahari in South Africa. However, it has also been used as a source of water and the seeds can be eaten by people.



Product Development

[African Origin Oils received Agri-Tech Catalyst funding](#) in 2020 to conduct research into their production processes and the efficacy of the oil, with a view to industrialising the raw material and developing its market. In addition to the Agri-Tech Catalyst project, the company is also exploring the development of novel products using the waste resulting from the oil production.

Production and Processing

The product supply chain is wholly managed by African Origin Oils. This includes managing the seed bank, cultivating and harvesting enough of the crop to ensure robust supply, cold-pressing and packaging the oil. In order to meet unpredictable demand and short timelines, African Origin Oils store the seed and press the oil to order.

Crop

Kalahari Melon



Source Country

South Africa



Organisations

African Origin Oils (UK / South Africa)



Product

Processed oil for cosmetic applications



Key Challenges

Processing:
Establishing novel processing mechanisms

Marketing:
Marketing a novel crop internationally



Market/Customer

International market. Sold to both other businesses or direct to consumers.





Marketing

African Origin Oils focuses on the international export market for personal care products. The industry is constantly on the lookout for new and innovative ingredients, but introducing a new product is not without challenges. Multiple factors must align for success: the end-product development cycle (which can take up to two years), seasonal availability of the raw material, and industry certification to gain market acceptance (organic status etc).

Being established and present in the industry for a number of years has helped African Origin Oils build trust with business-to-business customers. They have also conducted [efficacy](#) and [safety studies](#) as well as product analyses, satisfying regulatory requirements worldwide.

The operation relies on two businesses, registered in South Africa and the UK. The South African company manages the production and supply, and the UK business handles the marketing and sales on behalf of the group.

They sell the ingredient as a raw material to personal care brands, distributors and manufacturers, and they've also recently launched a direct-to-consumer brand, Nêô Sephiri. African Origin Oils is in the process of registering as a B Corp company and their Kalahari Melon Oil is certified as organic.

Environmental and Social Impact

African Origin Oils operates in a remote part of Africa where climate change is leading to vast numbers of job losses in traditional agriculture. African Origin Oils harvest very ripe/near rotting melons, and return 96% of the organic matter from the harvested melons to the land, after extracting only the seeds. This means the decomposition of the melon fruit happens almost as it would have naturally, keeping the company's environmental impact to a minimum. The company is also exploring partnership with other local farmers facing similar climate challenges.

The company follows the [Nagoya Protocol](#), which provides a framework for the fair and equitable sharing of benefits arising out of the utilisation of genetic resources. They have established a benefit sharing agreement with the South Africa San Council, which represents the first indigenous peoples of Africa, to deliver an equitable return on the indigenous knowledge.

Supplying organic teff to support gluten-free diets

UK-based Tobia Teff has developed novel gluten-free products sourcing teff from Spain working around challenges in importing organic ingredients from Ethiopia.

Crop

Originating from Ethiopia/ Eritrea, teff is a cereal crop. Teff is the most widely grown crop in Ethiopia and is also one of the major crops grown in Eritrea. At its origin teff flour is used to make a staple flat bread ('injera'), pancakes, porridge, alcoholic beverages, and the straw is used as forage and to reinforce mud when constructing huts.



Though widely used at its origin, Teff has recently gained international recognition, in part due to the demand for gluten free grains. The potential for teff to replace gluten containing cereals in making pasta, beer, bread, cookies, and other baked goods is being explored and new products are starting to appear in international markets.

Product Development

Tobia Teff supplies teff flour, as well as processed teff goods, such as bread, injera (a traditional Ethiopian flat-bread) and snack bars which are produced in the UK. All product development has been completed in-house in the UK.

Crop

Teff



Source Country

Spain



Organisations

Tobia Teff (UK)



Product

Teff flour and processed teff goods



Key Challenges

Processing:
Sourcing at an appropriate scale

Marketing:
Quality and certification



Market/Customer

International market. Sold to both other businesses or direct to consumers.





Production and Processing

Despite being a crop of Ethiopian origin, Tobia Teff sources teff for their products from southern Spain. This region has an appropriate climate for growing teff within the EU. Poor chemical controls on teff grown in Ethiopia has driven the company to source organic certified flour and teff flakes from outside of Ethiopia.

An additional challenge with sourcing teff from Ethiopia is that Ethiopia banned the export of raw teff grain in 2006 due to rising local market prices causing challenges for consumers. Ethiopia's government is beginning to establish routes to export the grain as production volumes increase.

Marketing

Tobia Teff's primary market is to health-conscious consumers via an online shop and health food stores. Tobia Teff products are available to those requiring a gluten-free diet on prescription in the UK via the NHS and through Private Health Care providers. Tobia Teff was a finalist in the '[Free From](#)' awards boosting awareness of the brand. There is increasing awareness of its potential health benefits and a growing customer base, including those advised to eat teff during pregnancy due to its high folic acid content.

Environmental and Social Impact

Tobia Teff is owned by a British-Ethiopian entrepreneurial family whose ambition was to run a business which has positive impacts on Ethiopian smallholder farmers. However, the challenge around the control of chemicals used by teff growers in Ethiopia make the purchase of organic Ethiopian teff for an export market difficult.

Developing new teff gluten-free products for the UK market

UK based company Kofo Wholefoods Ltd plans a new product range to encourage customers to try teff and build a supply chain with a positive impact in Ethiopia..

Crop

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Product Development

Kofo Wholefoods imports different types of teff flour into the UK under the brand Birkuta. Milling and packaging in an environment that allows gluten-free certification is important.

Kofo Wholefoods are currently looking for partners to develop further value-added teff products such as dehydrated flour mixes, breakfast cereals, pasta and other fusion products to expand the range of products they offer.

Crop

Teff



Source Country

South Africa



Organisations

Kofo Wholefoods Ltd (UK)



Product

Birkuta Teff Flour



Key Challenges

Processing:
Establishing efficient sourcing and processing routes with a new product



Development:
Investing in product design to attract new customers to try teff

Market/Customer

Sold to both other businesses or direct to consumers.direct to consumers.





Production and Processing

Kofo Wholefoods requires low-volume gluten-free milling, and the ability to package the flour in small volumes. Due to these requirements the product is milled, certified, and packed in South Africa before being imported to the UK. In Ethiopia, to ensure that the internal market is not depleted of this staple grain, only a few commercial farmers are currently authorised to export.

Kofo Wholefoods has established the necessary contacts and licenses to import large volumes of pre-milled Ethiopian Teff grain into the UK. However, to be able to do this they need to first build a supply chain which will enable the import and processing of larger volumes of teff. They are also looking to partner with a suitable millers in the UK to process the Ethiopian grain in certified gluten-free conditions.

Marketing

The main market for Birkuta teff is into restaurants in the UK, however during the pandemic Kofo Wholefoods shifted their focus to use an e-commerce platform for direct sales to customers. Kofo Wholefoods plans to continue to diversify their market beyond the Ethiopian and Eritrean diaspora to reach health conscious consumers.

With this market segment in mind Kofo Wholefoods has established a new brand, Tefforama. With Tefforama, Kofo Wholefoods will also supply recipes to educate consumers on how to use teff as a substitute for other flours.

Environmental and Social Impact

Kofo Wholefoods currently imports from a South African supplier that works with a number of farms and processes and packages the flour in a commercial facility.

However Kofo Wholefoods' main aim is to support smallholder farmers/cooperatives in Ethiopia by buying their grain and providing them access into international markets to improve livelihoods.



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Positive Change.**