



Extracting seeds from tomatoes in the field.



Tomato dealer at Arusha's main tomato market.

Photos: AVRDC

## Processing tomatoes in Tanzania: a tale of seeds and ketchup

An ingenious combination of plant breeding, contract farming and processing has enabled smallholder tomato growers to tap new markets in Tanzania's Arusha Region. Two improved tomato cultivars released from AVRDC lines are at the centre of this success story.

Just like in many other African regions, it was not easy for the tomato producers in Tanzania's Arusha region to find a market for their produce for a long time. A major portion of the highly perishable fruit ended up on the rubbish tip because it had gone bad during storage or transportation or no buyers could be found. Or the farmers had to underprice their goods. But since a young entrepreneur set up a processing factory in the late 1990s, the entire sector has been in the ascendant.

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### ■ Looking for the perfect tomato

The origins of this success story go back to the early 1990s. This was when AVRDC – The World Vegetable Center embarked on a project to develop tropical tomatoes for Africa with resistance to viruses, late blight and other diseases. These disease-resistant lines would need to tolerate hot, humid conditions; yield well; and have improved shipping qualities and shelf life to survive transport on rough roads.

By 1997, AVRDC had developed two open-pollinated tomato lines that were released by the Tanzanian Horticultural Research and Training Institute (HORTI-Tengeru) under the commercial names 'Tanya' and 'Tengeru 97'. The new cultivars produced full-fleshed, juicy fruit suitable for eating fresh or cooked. The tomatoes had thicker skins than conventional cultivars, which allowed the fruit to last up to three weeks at room temperature, unlike the commonly grown but poorly adapted hybrid cultivars.

AVRDC, in collaboration with HORTI-Tengeru, produced breeder and foundation seed of the two cultivars. A mechanical seed extractor imported from Taiwan significantly improved the efficiency of seed extraction. The two institutions trained farmers in improved cultivation practices, and distributed seed kits for on-farm testing and demonstration. This activity generated interest in the new tomatoes and demand for seed among more farmers in Tanzania. However, it is the local seed companies that ultimately made the improved cultivars available, when they began to scale up production to meet the rising demand. One of those companies was Alpha Seed, based in Moshi, Tanzania, who were the first to commercialise the two varieties. Owners Hussein and Mariam Mongi promoted the advantages of 'Tanya' and 'Tengeru 97' to farmers: the new cultivars produced a 36 per cent higher yield than old cultivars, and, thanks to less fertiliser/pesticides needed, had 17 per cent lower production costs. These advantages resulted in a 39 per cent increase in income. In addition,

it quickly became apparent that the tomato went down well with the consumers thanks to its good flavour.

## ■ Spotting a market niche

At the same time when 'Tanya' and 'Tengeru' were slowly starting to energise the tomato market in and around Arusha, Darsh Industries launched its activities. The company, founded in the industrial area of the city of Arusha in Northern Tanzania in 1990, had discovered a market niche and was the first enterprise to introduce tomato ketchup and paste processed from the two cultivars to the Tanzanian markets. With its firmness, taste and long shelf life, the cultivar 'Tanya' had exactly the right characteristics for processing.

In order to procure the raw materials it requires, the company operates as part of a joint venture with several local seed companies. The seed companies use farmer outgrowers in and around Arusha, which produce mainly 'Tanya' under contract. The tomatoes are collected in recyclable plastic crates and shipped off to the Darsh processing plant in Arusha, where the pulp is separated from the seeds. Extracted seed is passed on to the local seed companies, while the pulp becomes a 'Red Gold' product. Today Darsh is the country's biggest tomato processor, producing between 50 and 100 tons per day of tomato ketchup and paste. More than 60 dealers throughout all of Tanzania's regions distribute the products under the label 'Red Gold', which is a very familiar sight on most restaurant and home kitchen tables. Also, juice jams, pickles

and canned fruits are sold under the brand.

## ■ Further research required

In order to source enough tomatoes to keep its production lines open, Darsh Industries is obliged to import 70 per cent of its tomato pulp from China. One way to step up local production would be to improve crop tolerance to flooding during the hot-wet season in Tanzania. For this purpose, AVRDC is working to promote grafting tomatoes onto resistant or tolerant tomato and eggplant rootstock lines in order to minimise problems caused by soil-borne diseases and flooding. It is looking for the right scion-rootstock combination that will allow farmers to grow 'Tanya' or other processing and fresh type commercial tomato cultivars during wet periods or in areas otherwise not possible. Success in countries like Korea, Japan, Taiwan and Vietnam give cause to be optimistic about the implementation of grafting in Tanzania and other countries to increase farmers' income and job opportunities.

In November 2013, Darsh Industries began to establish a new tomato processing facility in Iringa, located in central Tanzania. The new plant is to double the company's production capacity. To supply the new facility, Darsh Industries plans to source the cultivar 'Tanya' grown by approximately 3,800 smallholder farmers – 40 per cent of whom are women – in the irrigated land of Tanzania's Babab ecozone. The hope is that in a couple of years, tomatoes that make up 'Red Gold' will be sourced entirely from Tanzania's farmers.

## A boost for the regional economy

Today, Arusha is a hub for seed companies, and most of them sell 'Tanya' and 'Tengeru 97' throughout the region, and also market the cultivars in Malawi, Zambia, Mozambique, South Sudan, and Zimbabwe. In 2012, East African Seed Co. produced about nine tons of seed of each cultivar. Alpha Seed Company produced and sold 3–4 tons of seed of each tomato. Africasia Seed, Company, only established in November 2012, produced 2.5 tons of 'Tanya' and 4.5 tons of 'Tengeru 97' in their first year. By April 2014, they estimated sales in 2013–14 at 5 tons, and project that sales will double in 2015. At a sowing rate of 150 g of seeds per hectare, combined sales of these three seed companies alone translates to approximately 130,000 to 150,000 hectares of land in Eastern and Southern Africa planted with the cultivars developed from AVRDC lines.

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