



# Expanding Zambian Food Processing - One Entrepreneur's Story

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## Food Science in Action:

- ✓ Food Processing
- ✓ Nutrition
- ✓ Local Sourcing
- ✓ Quality Systems
- ✓ Product Development

Expanded Java Foods manufacturing capabilities in Zambia.

(Photo courtesy of Java Foods)

Java Foods has expanded Zambian food processing capabilities and capacity by investing in foundational assets and programs to produce fortified instant noodle and cereal products. This investment in food science, food processing, and quality systems establishes Java Foods as a driver of Zambian economic growth. Java Foods is led by Monica Musonda, who is a role model for African women entrepreneurs. Ms. Musonda recognized that instant noodle and cereal products could be produced locally using Zambian commodities. This supports economic development in the local community, through providing jobs and local markets for Zambian grown wheat. The instant noodle and cereal products also promote improved Zambian nutrition through fortification. Both the Zambian government and non-governmental organizations (NGOs) had studied micronutrient deficiencies in the Zambian population and documented their findings. Locally supplied ingredients, reduced shipping complexity, and increased production responsiveness to local consumer preferences also promote sustainability through a reduced carbon footprint and reduced food loss.

## Introduction

Java Foods was founded by Monica Musonda, as a response to what she saw as a lack of Zambian food production infrastructure, in spite of locally available raw materials (maize, wheat, and soybeans). Another driver was the inadequate nutrition of Zambians, despite a healthy agricultural sector. A form of undernutrition referred to as “hidden hunger” affects billions of people in sub-Saharan Africa. Caused by micronutrient deficiencies, it has been linked to numerous health and development issues.

Java Foods started out marketing “eeZee Instant Noodles”, which were co-packed by a manufacturer in China in 2012. In 2015, a production line for the instant cereal product, “eeZee Supa Cereal,” was established in a rented facility in China. By 2017, the demand for instant noodles had grown and Java Foods could no longer rely on imports to supply the local market. The new facility was built in 2019, and the instant noodle line was installed in 2020. In 2021, the cereal line was relocated to the new facility.

The first year of production of instant noodles was challenging, since the equipment manufacturer for the noodle line was in Wuhan, China. And the coronavirus pandemic during that period meant that the manufacturer could not provide onsite technical support for equipment installation and training, as per contract. Once the production equipment was online and the employees were trained in its operation, the cost to produce noodles locally was less than the cost to import them. Eighty percent of the raw materials used in production of the noodles are sourced locally.

Java Foods partnered with DSM Venture Partners and the Adolf H. Lundin Charitable Foundation (AHLCF), and has received support from the Alliance for Inclusive and Nutrition Food Processing (AINFP). AINFP is a partnership between USAID, TechnoServe, and Partners in Food Solutions. TechnoServe is a non-profit organization that creates business solutions by linking entrepreneurs like Musonda with technical support and capital. Partners in Food Solutions is a nonprofit organization working to strengthen food security, improve nutrition, and increase economic development across Africa. With the assistance of AINFP, Java Foods was able to establish a processing facility in Zambia.

The first product produced in the facility was an instant maize-soybean cereal called “Supa Cereal” (Figure 1). Production was expanded to include the instant noodle product which had previously been purchased from a manufacturer in China and rebranded for the Zambian market. The product line also included beef and chicken stew seasoning packets marketed under the “eeZee” brand (Figure 1) and a premium line of curry powders and pastes marketed under the “Maharaja Premium Spices” brand.

The target market for the instant cereal product was young children and families. The goal was to develop a nutritious, affordable instant cereal product to be marketed to Zambian families and school feeding programs. The Zambian population is described as young, looking for convenience and affordability. The goal of Java Foods is to boost the nutrition of these convenience foods, while educating the consumer about the importance of nutrition. Java Foods intends that these investments in consumer education will drive customer loyalty to their brand.

## Project Overview

The nutrition solution for the locally produced eeZee Supa Cereal was to provide a fortified product that would be convenient, affordable, and nutritious. Maize and soy, the primary ingredients in the product, are readily available in Zambia and economical for Java Foods to obtain. Food fortification is a proven, cost-effective strategy for addressing hidden hunger and helping people to access the nutrition they need, but many communities around the world lack access to fortified foods. Since fortified foods were not common in the local markets, Java Foods fortified their cereal product to differentiate it in the marketplace, as well as to address nutrient deficiencies in Zambian population. Both the Zambian government and NGOs had studied micronutrient deficiencies in Zambian population and documented their findings. Micronutrients delivered in the cereal include vitamins A, D3, E, K1, B1, B2, B3, B5, B6, B7, B9, B12, C, iodine,



**Figure 1.** Java Foods eeZee Noodle and Supa Cereal market products. (Photo courtesy of Java Foods)



**Figure 2.** A part of instant noodle production line at Java Foods. (Photo courtesy of Java Foods)

iron, selenium, and zinc. DSM provided the nutrient blend, while TechnoServe and Partners in Food Solutions were instrumental in the formulation process.

From a production perspective, Java Foods team installed the cereal production line in the Java Foods facility and later improved the flow of materials through the production line to enhance both food safety and maximize the use of space within the facility. A ribbon mixer was used to blend the nutrient powder with the precooked powdered porridge until homogeneity was achieved.

To ensure the eeZee Instant Noodle product met the nutrient needs of the Zambian population, Java Foods worked closely with the AFNIP and DSM to customize the nutrient mix. The nutrients

delivered by the instant noodle product include vitamins A, E, B1, B3, B5, B6, B7, B9, B12, and C. Challenges were encountered with nutrient fortification, as the noodle frying process adversely impacted the vitamin content. The process was redesigned to incorporate the nutrient mix into the seasoning packet, instead of incorporating it into the raw noodle dough. The level of nutrients in the seasoning packet was optimized to ensure the nutrients would be delivered at the declared levels through the planned shelf life of the noodle product. Removing the nutrient mix from the dough did not alter the textural properties as it was extruded. A portion of the riboflavin remains in the dough formulation due to color delivery, while another small amount is included in the seasoning packet to account for any nutrient loss during processing.

As production was localized, the goal of incorporating locally sourced flours was achieved. The local teams recognized that Chinese wheat is typically winter and spring wheat, which is lighter in color than the Zambian hard red variety. The noodle being co-packed in China was well accepted by the local population, thus creating initial concern that the Zambian wheat product would not be as well-accepted. The instant noodle product produced using Zambian wheat was actually preferred by the local population when tested under Java Foods consumer sensory testing.



**Figure 3.** eeZee Noodle production at Java Foods facility in Zambia (Photo courtesy of Java Foods)

The eeZee Instant Noodle brand is offered in five flavors including Beef, Chicken, Spicy Chicken, Chicken Onion, and Vegetable. Palm oil is used for frying the noodles due to its stability at high temperatures. The raw oil is imported and refined locally. However, local packaging options in Zambia are limited. Java Foods has had to rely on regional and Chinese packaging companies.

Food safety is an important facet of the organizational culture (Figure 4). The production team currently numbers 33 people. As the organization grew, a documented and consistent food safety plan training program became increasingly important. The team began actively developing a Hazard Analysis and Critical Control Points (HACCP) program. HACCP is a systematic approach to consistent food safety by excluding hazards through analysis of the food production process. Control points are identified and monitored during production, to verify product safety. This foundation establishes food safety for the Zambian consumer, creates a model for all local food manufacturing, and positions Java Foods for growth.

To implement HACCP, a multidisciplinary team was established, which included staff from production, maintenance, warehouse, and quality control (Figure 5). A study was conducted to identify hazards and assess risks. Two critical control points were identified, critical limits were set, and a monitoring process established. Operational procedures were developed for cleaning, personal hygiene, waste management, pest control, training, raw material receiving and



**Figure 4.** Handwashing station at the factory entrance of Java Foods as a part of food safety practice. (Photo courtesy of Java Foods)

rework, supplier management, and equipment calibration and maintenance. Records management, which corresponds to the operating procedures, was established. The quality control team responsible for HACCP implementation reported directly to the CEO. The following changes were implemented as part of the HACCP program:

- Installation of metal detectors on the production line
- Addition of staff changing rooms inside the facility



**Figure 5.** Java Foods Manufacturing and Quality Systems teams. (Photo courtesy of Talmond)

- Installation of hand sanitizer dispensers at hand washing stations
- Hiring of pest control contractor and initiation of monthly treatment
- Procurement of food grade chemicals for cleaning and machine lubrication
- Initiation of a monthly deep clean activity
- Installation of additional extraction fans in the production facility
- Introduction of verification actions, including internal audits

The Java Foods team is committed to implementing food safety measures in accordance with requirements. They also recognize the broader impact of food safety on improved public health and overall economic improvement by opening up new trade markets for Zambian produced food products.

## Successes

Feedback on product success has been primarily through customer insights gathered by the Java Foods team. Since localizing the noodle production, sales have grown from less than 1 MM packages/month to over 2 MM packages/month. The products meet the evolving consumer demands for affordable, high quality, convenient, and nutritious foods available in local flavors. Local production means that Java Foods has been able to respond to local consumer demand by adjusting production schedules, thus allowing Java Foods to produce and resupply based on marketplace trends. This process represents a major improvement over the initial years when the eeZee Instant Noodle product was being imported.

To date, Java Foods continues as the only instant noodle factory in Southern Africa, excluding South Africa. They have also successfully expanded into Zimbabwe and Malawi markets through distribution partnerships.

## Looking Ahead

Java Foods' goal is to be a leading manufacturer in their region. Future plans for the processing facility include:

- Installing a metal detector and expanding HACCP training
- Expanding product lines by utilizing other locally available materials
- Broaden the Java Foods product portfolio through expanded focus on consumer and nutrition insights

Next steps for the eeZee Instant Noodle brand include determining (1) whether the product can be successfully fortified with fiber and other nutrients and (2) if the introduction of this fortified convenience food displaces other key nutrient dense products in the diet of the target user demographic.

Java Foods hopes to grow beyond Southern Africa, leveraging the expanded formulation and processing expertise, as well as solid food safety and quality systems programs. Java Foods intends to begin an internship program, to train the next generation of African food scientists and manufacturing professionals across industry and academia.



## Further Reading

About Us – Java Foods ([java-foods.com](http://java-foods.com))

Fill the Nutrient Gap Zambia - Summary Report (March 2021) - Zambia | ReliefWeb

Food Law Structure ([who.int](http://who.int))

Food Safety in Zambia: How Small Improvements Can Have Big Impact ([worldbank.org](http://worldbank.org))

Henry CJK & Massey D. Micronutrient changes during food processing and storage (2001)

Java Foods | Partners in Food Solutions

Java Foods exporting eeZee noodles into Zimbabwe, Malawi – Java Foods ([java-foods.com](http://java-foods.com))

Nutrition | UNICEF Zambia

Changing the Game for Food Fortification - TechnoServe

USAID/ZAMBIA Economic Development - Scaling Up Nutrition Learning and Evaluation (SUN LE) | Fact Sheet | Zambia | U.S. Agency for International Development

Riboflavin in Asian noodles: The impact of processing, storage and the efficacy of fortification of three product styles - ScienceDirect