



## TECHNICAL BRIEF: COMPLEMENTARY FOOD FOR AFRICA+DRIED FISH POWDER (COMFA+FISH) – SENSORY PANEL III RESULTS FOR TWO COMFA+FISH INSTANT PORRIDGES

Kathleen Ragsdale<sup>1</sup> Netsayi Mudege<sup>2</sup> Sylvia Banda<sup>3</sup> Mary Read-Wahidi<sup>1</sup> Lizzy Muzungaire<sup>2</sup> Robert Kolbila<sup>1</sup>

<sup>1</sup>Social Science Research Center, Mississippi State University <sup>2</sup>WorldFish Zambia <sup>3</sup>Sylva Food Solutions

### BACKGROUND

Although multiple micronutrient powders—globally standardized prepackaged vitamin/mineral sachets distributed by donors such as UNICEF—have helped reduce global rates of stunting and anemia among vulnerable children, they have had less impact on protein malnutrition. In contrast, dried small fish provide protein, fat, essential micronutrients, and vitamins A, C, B12, E, and D **even when consumed in small quantities**. Incorporating dried small fish into the daily meals of vulnerable 6-23 month-olds is **extremely promising**, as their gastric capacity can only accommodate small meals and, therefore, every meal should be nutrient-dense.

To help fill protein and micronutrient gaps among vulnerable children and other family members, FishFirst! Zambia conducted a nutrient analysis of Kapenta (*Limnothrissa miodon* and *Stolothrissa tanganicae*) dried fish powder and two sensory panels of dishes fortified with a locally sourced, high-quality dried fish-based protein/micronutrient blend we call **Complementary Food for Africa+Dried Fish Powder (ComFA+Fish)**. For Sensory Panel I, caregivers (N=42) evaluated seven attributes—aroma, appearance, texture, taste, sweetness, convenience, overall acceptability—of four ComFA+Fish dishes. For Sensory Panel II, caregivers evaluated acceptability among their 6-23 month-olds (N=42) of ComFA+Fish complementary maize porridge. For both panels, a majority of caregivers evaluated the dishes as **highly acceptable**. The nutrient analysis and Sensory Panels I-II results are available at <https://tinyurl.com/n77x8kwj>.



Sensory Panel II participants at Lake Kariba.  
Photo: A. Chileya, WorldFish Zambia

### SCALING COMFA+FISH

The FishFirst! Zambia team collaborated with **Sylva Food Solutions**—a multisectoral Zambian enterprise that mass-produces, brands, markets, and exports prepackaged foods for African and European markets—to provide dried fish powder and other locally sourced key ingredients, which they then used to produce two ComFA+Fish instant porridges for Sensory Panel III. This two-part sensory panel was incorporated into the FishFirst! Zambia Learning Event and Workshop held in Siavonga on June 6-7, 2023. The team engaged government officials, entrepreneurs, NGOs, Ministry of Health staff, Department of Fisheries staff, community health workers, and mothers from Gwembe, Siavonga, and Sinazongwe Districts, the majority of whom had participated in FishFirst! Zambia's Phase II in June 2022.

Over the 2-day FishFirst! Zambia Learning Event and Workshop, attendees participated in

- **Learning Event 1:** ComFA+Fish Sensory Panels I-II Results
- **Learning Event 2:** Household Hunger Scale II Results: Fisher Families and Food Insecurity
- **Learning Event 3:** Scaling Readiness Assessment for ComFA+Fish Instant Porridges
- **Launch:** Two Draft ComFA+Fish Recipe Booklets (English, Tonga)
- **Focus Group Discussions:** Perceptions of Dried Fish Powder for Child/Household Nutrition
- **Scaling Readiness Assessment:** Vanilla and Plain ComFA+Fish Instant Porridges
- **Sensory Panel III:** Evaluation of Vanilla and Plain ComFA+Fish Instant Porridges

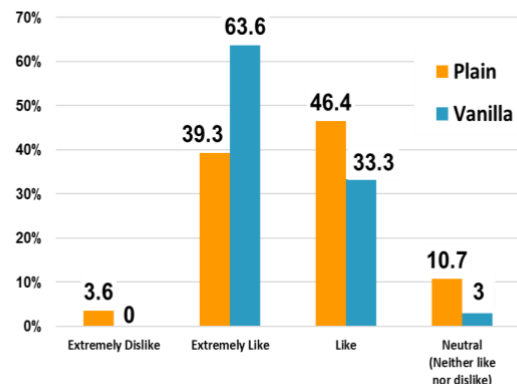
## RESULTS: PLAIN AND VANILLA COMFA+FISH INSTANT PORRIDGES

The protocol for **Sensory Panel III** followed the same protocol as for Sensory Panel I. The graphs here present the results side-by-side for the plain (N=40) and vanilla ComFA+Fish instant porridges (N=38) using the same seven attributes from Sensory Panel I. Between 85–100% of respondents extremely liked or liked the aroma, appearance, texture, flavor, sweetness, convenience, and overall acceptability of the vanilla porridge. Responses were similarly positive for all attributes of the plain porridge with the exception of flavor, which 79% of respondents extremely liked or liked (as compared to 91% for the vanilla porridge).

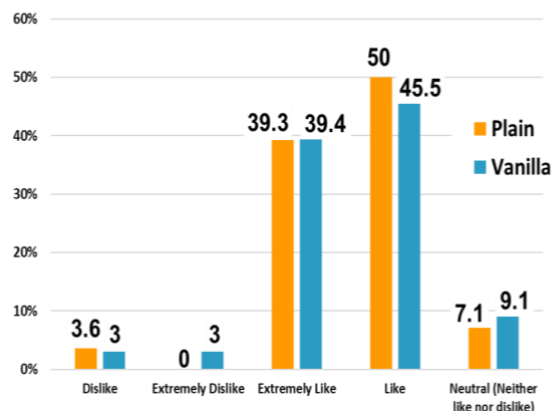
## CONCLUSIONS

The **overwhelmingly positive** evaluations of both porridges are further evidence that **ComFA+Fish** is **strategically well-placed** to address protein and micronutrient gaps among vulnerable 6-23 month-olds and other family members across Zambia and sub-Saharan Africa. This is particularly important for low-resource households that lack dietary diversity and rely on high-phytate maize-based diets, which increases vulnerability to nutrient deficiencies. That both porridges received high convenience and overall acceptability scores suggests they have the **potential for wide-scale adoption** in Zambia and across sub-Saharan Africa. Testing two different flavors of porridge was important, as some consumers—particularly infants and young children—may prefer one flavor over another.

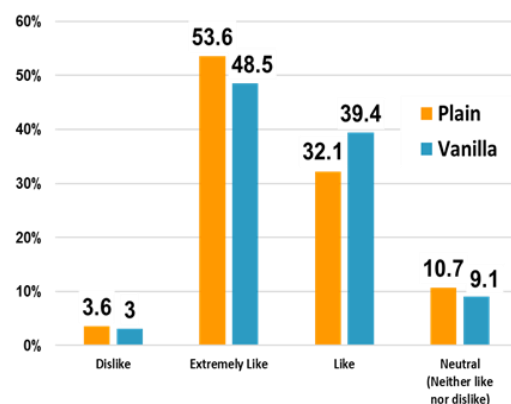
### INSTANT PORRIDGES RESULTS AROMA



### INSTANT PORRIDGES RESULTS APPEARANCE

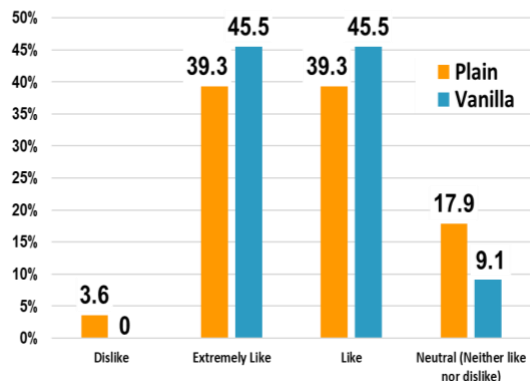


### INSTANT PORRIDGES RESULTS TEXTURE

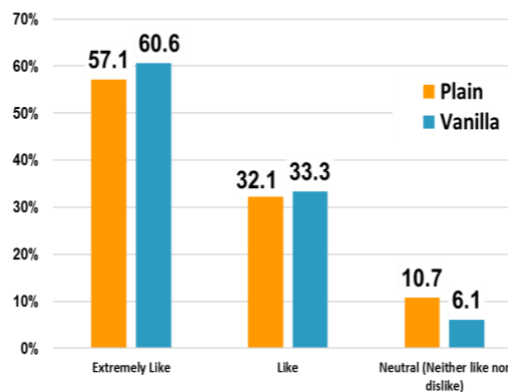


Sensory Panel III results for plain and vanilla ComFA+Fish instant porridge.

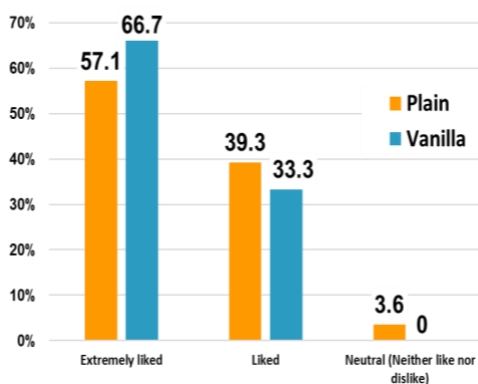
## INSTANT PORRIDGES RESULTS FLAVOR



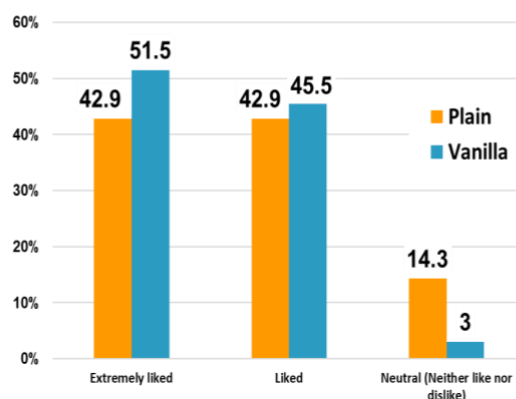
## INSTANT PORRIDGES RESULTS SWEETNESS



## INSTANT PORRIDGES RESULTS CONVENIENCE



## INSTANT PORRIDGES RESULTS OVERALL ACCEPTABILITY



Sensory Panel III results for plain and vanilla ComFA+Fish instant porridge.

Having determined **high acceptability** of both porridges, the next steps are: 1) Complete a shelf-life study of Kapenta dried fish powder (underway); 2) Adjust the recipes as needed to ensure recommended serving sizes meet recommended Dietary Reference Intake values without compromising flavor, etc.; and 3) Continue to forge collaborations with tiered in-country partners to scale ComFA+Fish instant porridges at national (e.g., school feeding programs), regional (entrepreneurs), and village levels across Zambia and sub-Saharan Africa.

### NOTES

The USAID and Feed the Future Innovation Lab for Soybean's **Innovation to Impact (i2i) initiative** selected ComFA+Fish as an innovation/technology with scaling potential. FishFirst! Zambia is collaborating with Sylvia Banda and **Sylva Food Solutions** of Zambia as our in-country **first-tier ComFA+Fish scaling partner**.

### ABOUT THE FISH INNOVATION LAB

The Fish Innovation Lab supports the United States Agency for International Development's agricultural research and capacity building work under Feed the Future, the U.S. Government's global hunger and food security initiative. Mississippi State University is the program's management entity. The University of Rhode Island, Texas State University, Washington University in St. Louis, and RTI International serve as management partners.

[www.fishinnovationlab.msstate.edu](http://www.fishinnovationlab.msstate.edu)

*This brief was made possible by the generous support of the American people through the U.S. Agency for International Development (USAID) under the Feed the Future initiative. The contents are the responsibility of the Feed the Future Innovation Lab for Fish and do not necessarily reflect the views of USAID or the United States Government.*