Food Fortification: Part 2

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START CENTER
STRATEGIC ANALYSIS,
RESEARCH & TRAINING CENTER

TEAM OVERVIEW

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START OVERVIEW

Leverages leading content expertise from across the University of Washington

Provides high quality research and analytic support to the Bill & Melinda Gates Foundation and global and public health decision-makers

Provides structured mentorship and training to University of Washington graduate research assistants

AGENDA

- Background
- Project Overview
- Overall KII Themes
- Country-Specific KII Findings
    - Costa Rica
    - Guatemala
- Risk-Based Monitoring
- Enablers
- Questions and Discussion

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BACKGROUND

PHASE 1 RECAP

Key Findings

01 Legislation mandates fortification for *all human consumption* products and is *comprehensive*

02 Monitoring and compliance is centralized at MoH; and they serve as a coordinating agency for sampling and reporting

03 Monitoring and compliance funding is national and consistent

04 Sampling is occurring at different levels which makes us think that coordination and reporting is more important than procedures

PROJECT OVERVIEW

PHASE 2: UNDERSTAND INDUSTRY THROUGH KIIs

6 Key Informant Interviews, 10 participants				
1	Maria Alexandra Sancho	Head of QA Operations	MASECA Flour Industry	Costa Rica
2	Jessie Usaga	Professor	University of CR Academia	Costa Rica
3	Elba Cubero-Castillo Karolina Sanchez Alan Carolina Cortes	Professor Researcher, Chemist Professor	University of CR, UCIMED Academia	Costa Rica
4	Carolina Martinez	Laboratory Lead	Institute of Nutrition Central America, Panama Academia	Guatemala
5	Eugenia Ruiz Oliver Tello	Lawyer Engineer, QA Manager	Sugar Producer Association of GT Sugar Industry	Guatemala
6	Evelyn Meneses Natalia Espinal	Nutritionist Nutritionist	Ministry of Health Government	Guatemala

LEARNING TO ENABLE STRONG QA/QC AT THE FOOD PRODUCER LEVEL

Describe current QA/QC practices through KIIs with a focus on industry and regulatory stakeholders

Understand coordination and cooperation between stakeholders; How industry, academia, and government work together to enable fortification

Help **inform what can be done to improve compliance** in the Latin American market

OVERALL KII THEMES

KII THEME 1

Large established industry players say their compliance is voluntary, intrinsically motivated, and sanctions are not strictly enforced

"The truth is that it is a privilege to be able to help the population."
-Eugenia Ruiz, Sugar Producer Association (SPA), GT

"We don't have that level of control (over industries) and because of that, in many cases, what we do in industry, it depends on ethics. Just what the company knows that they have to do (in good faith)."
-Jessie Usaga, University of Costa Rica (UCR), CR

KII THEME 2

The industry takes a proactive approach to monitor food fortification compliance, and engaging in collaboration with suppliers & other non-government stakeholders

“We seek advice both abroad and here in Guatemala; currently, only INCAP is available, but we are always in search of overcoming the gaps that still exist.”
-Oliver Tello, Maquinas Exactas (ME), GT

"(The supplier) gives me the recommendation for the…doses that I have to make per kilo of flour, per ton of flour to comply with the fortification regulation...Monthly we look at the records to see the trends we are having and if any preventive or corrective action needs to be taken”
-Maria Sancho, MASECA, CR

KII THEME 3

Monitoring of food fortification compliance is constrained by limited testing resources, both material and human

"[Private testing is] faster for sure than [the University of Costa Rica], a public institution. But they're going to be more expensive...depends on what you need and what you can pay for, especially for…small companies."

-Jessie Usaga, UCR, CR

"The problem we have is time…in 1 hour our production quantity is very high, so we are currently testing other methodologies that are a little faster, but the cost is very high."

-Oliver Tello, ME, GT

COUNTRY-SPECIFIC KII FINDINGS

KII QUESTIONS AIMED TO UNCOVER INDUSTRY PRACTICES

In hour-long interviews, we inquired about:

- Fortification **Testing Methods** and Procedures
- **Technical Assistance** Provided to Industry
- **Risk-Based Monitoring** Practices
- **Innovations** in Fortification
- The **Enablement and Sustainability** of Fortification

KII FINDINGS: COSTA RICA

Testing Practices, Technical Assistance

COSTA RICAN TESTING PRACTICES

Industry	• Does not always perform in-house quantitative testing • Sends samples to government or private laboratories (e.g. Maseca sends samples to the US) • Performs more frequent tests than recommended by government
Government	• Regulations in place to assist industry with streamlining testing processes • Sends samples to UCR for blind testing • Monitors at sale sites • Penalties and corrective actions against failure to comply with fortification and labeling laws
Academia	• UCR provides testing services to industries • Industry serves as a client and all data/reports are confidential

"In many cases, our companies are running more testing than the government (recommends) is because of resources (in the) country. We don't have as many resources as you may think. So, in many, cases, industry is running way, more testing, than what they need (to comply with regulations)."

–Jessie Usaga, UCR, CR

UNIVERSIDAD DE COSTA RICA

COSTA RICAN FLOUR INDUSTRY

AIDED BY FOREIGN LABS AND CERTIFICATIONS

Add Fortificants

Maseca suppliers in Mexico create fortificant mixes based on established recipes including thiamine, riboflavin, iron, folic acid and more.

Suppliers recommend the dosage.

Internal QC Tests

Internal lab testing every 2 hours, by iron sport test, a low-precision gauge of fortification.

External QC Testing

For more precise testing, external labs are used.

MASECA tests in the USA, because local labs are not as experienced, not able to do all the tests needed at a high level of quality.

Document Data

Measurements recorded and viewed monthly to see trends.

A motivator here is maintaining compliance with SQF certification - Safe Quality Food institute is a third-party certification body.

Distribute

Package product and distribute; product arrives to distributors and wholesalers.

Feedback Loops

Careful attribution during distribution in order to track any product problems.

Also have a customer service line, but rarely hear anything about fortification.

SUPPLIERS ARE KEY STAKEHOLDERS PROVIDING TECHNICAL ASSISTANCE

Stakeholders	• Suppliers play a main role in providing technical assistance for industry • INCAP provides training and guidance in the Central American region • Other institutions: UNICEF, USAID, GAIN, etc.
Training	• Suppliers provide training to their clients • Training is offered sporadically by the MoH • Smaller producers have limited access to training
Certifications	• Costa Rica has fortification certifications for different products. • The process is accessible for producers • Producers who receive the seal are subject to supervision
Technology	• Use Safe Quality Food (SQF) Protocol

KII FINDINGS: GUATEMALA

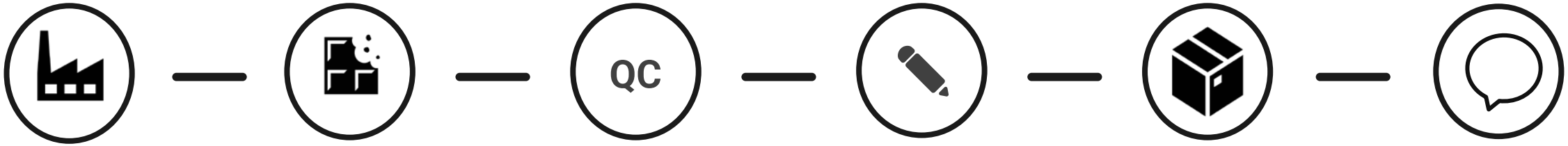
Testing Practices, Technical Assistance

GUATEMALAN TESTING PRACTICES

INCAP	• Developed innovative and cost-effective methods: o e.g., spectrophotometric method with UV detection for Vit A • Analyzes samples sent by the industry, government, and other institutions (but not individuals)	*" We function as a reference laboratory for some analyses…we receive samples from all the countries the region and beyond South America… from Asia, from Africa."* - Carolina Martinez, INCAP, GT
Industry	• Sugar fortification levels done on site, with INCAP method • Performs more frequent analyzes than by the government • Reports to CONAFOR every 3 months	*"We have a quality analysis laboratory...specifically for vitamin A, we carry out more or less on average 144 daily analyzes through the spectrophotometric method."* - Oliver Tello, ME, GT
Government	• Their manuals of operating procedures encompass sampling schemes for the four mandatory fortified foods • Testing at production sites and sales points • Samples are sent to National Health Laboratory (NHL)	*"Through the students of the supervised professional practice…they contribute to commercial monitoring, so it is the way in which we measure or have an indicator of how these fortified foods are reaching these communities and help us expand coverage."* - Natalia Espinal, MoH, GT
Academia	• Students collect samples in the community and bring them to the NHL, expanding monitoring efforts	

GUATEMALAN SUGAR INDUSTRY:

AIDED BY SUPPLIERS, INCAP, AND CONAFOR



Receive Raw Sugar

Raw Product produced in two mills, one in the south and one in the west.

Add Fortificants

Pre-mixed Fortificants imported and then added via gravimetric feeder based on weight.

Internal QC Tests

Used INCAP-developed methods with spectrophotometric technology to ensure levels are calibrated to internationally-agreed upon measures.

Document Data

Tests can take an hour, are done regularly throughout the day, and data is tracked in an Excel sheet. It's crucial to have simple schemes for testing.

Distribute

Package product and distribute; product arrives to distributors and retailers fortified.

Report Data

Share data at CONAFOR meetings, ensure it is within proper ranges, when it's out of range, it's often due to a technical issue. Industry wishes ranges were more flexible.

THE MAIN SOURCES OF TECHNICAL ASSISTANCE FOR THE INDUSTRY ARE NON-GOVERNMENT INSTITUTIONS

INCAP	• Provides training and technical assistance to the industry • Spectrophotometric method is the most common and cost-effective method for internal QA • Is working in a fortification certification for the upcoming year
Premix suppliers	• Pre-mix suppliers provide technical advice to the industry
Government (MoH)	• Training is offered sporadically • Provides safety certifications

Sugar producers association

Máquinas Exactas

KII FINDINGS: RISK-BASED MONITORING

Data Tracking, Data Sharing, Collaboration for Compliance

RISK BASED MONITORING PRACTICES BY PRODUCERS

- In large companies, monitoring is incorporated in the producers' QA processes. The collected information is used to report to regulatory institutions

- Testing needs to be continuous and adapted to the required regulations. Changes in premix providers or other productions methods are a motivating factor for reassessment

- INCAP promotes that monitoring should be compatible with the variability and magnitude of the fortification process

"If we are going up in concentrations, if we are pushing the lower limits, if something is happening with the quality of the product we have to adjust."
- Maria Sancho, MASECA, CR

"If the producers change premix providers the fortification levels need to be reassessed."
- Carolina Cortes, UCR, CR

"*It is a sampling scheme based in the variability of the process…in the past 100 samples were taken and for a bad result they were given the same fine if they took 5 samples, so now to make a decision there is a minimum number of samples that have to be taken…to say it complies or does not comply.*"
- Carolina Martinez, INCAP, GT

RISK BASED MONITORING BY THE GUATEMALAN GOVERNMMENT

- Each import of fortified food that enters, by law, must go through a release process that depends on the results of the NHL, non-compliance is subject to sanctions

- If an imported good has a history of one year of compliance, it is eligible for exoneration of the process of monitoring

- Risk-based monitoring is restricted by the available resources

"The supermarket chains are organized and agree to give us the 12 sugar samples that we normally take, the 5 salt samples, the 5 wheat flour samples, and the 5 corn flour samples per batch."
- Natalia Espinal, MoH, GT

"There is room for improvement in terms of personnel capacity, more equipment in the laboratory…an attempt has been made to increase the number of weekly analyses carried out on fortified foods."
- Natalia Espinal, MoH, GT

GUATEMALAN DATA MONITORING IS A STRONG MODEL FOR COLLABORATION

"Currently, we have our databases basically in Excel, but we do use statistical software for interpretation to adjust our process…it is fully available as required by the Government."
– Eugenia Ruiz, SPA, GT

"[Our ministry of health has] information for sugar, for example, data from internal monitoring, we have data because…[industry] presents reports [to CONAFOR] every 3 months on the results of monitoring."
- Carolina Martinez, INCAP, GT

COSTA RICAN INDUSTRY DATA SHARING WITH GOVERNMENT IS MORE AD HOC

"There's no communication...between the specific industries and the government. If there is noncompliance…detected, it just stays within the company."
- Jessie Usaga, UCR, CR

"Years ago, the relationship [between industry and government] was very close...because that issue of fortification was being defined. Now, basically the relationship that exists is mostly one of verification...they verify annually if we are complying. As for advice or technical support...It's very little."
- Maria Sancho, MASECA, CR

KII FINDINGS: ENABLEMENT

Fortification Barriers, Facilitators, Innovation & Evolution

BARRIERS AND FACILITATORS TO SUSTAINABLE FOOD FORTIFICATION

BARRIERS

- Fortification processes have variability
- Scientific studies on nutritional needs lag behind
- Testing methods are costly

FACILITATORS

- Central America has a common regulation for LSFF
- Large producers are self-reliant for QA/QC
- Pre-mix suppliers are incentivized to innovate

"We need ranges, which they have in Guatemala, but not here in Costa Rica."
- Maria Sancho, MASECA, CR

INNOVATIVE FORTIFICATION STRATEGIES

Costa Rica

- Academic partners are exploring the **addition of new fortificants** to the food supply and the associated costs and benefits
- Fortificant suppliers and food producers are **developing new techniques** in fortification equipment

Guatemala

- **Students are involved** in the collection of samples monitored for compliance, providing more testing bandwidth
- Government stakeholders are participating in a **regional workshop** to return to the issue of food fortification monitoring

- HPLC (High performance Liquid Chromatography) is a **faster testing method,** but is expensive and requires training. Research into cheap, fast testing is ongoing

CONSIDERATIONS FOR SUPPORTING AND EVOLVING FORTIFICATION

- Facilitate cross-border information sharing
- Balance trust in voluntary compliance with government enforcement
- Fund studies to proactively iterate fortificants and their levels
- Consider fortificant suppliers as key stakeholders and innovators
- Enable academic institutions that provide local testing services
- Model successful collaboration between industry, government, academia and international agencies after CONAFOR

RECOMMENDED FURTHER RESEARCH

RECOMMENDED FURTHER RESEARCH

01 Perspective of the Government of Costa Rica

02 Perspective of Chilean Stakeholders

03 Speaking with small and medium food producers

04 Speaking with fortificant producers and importers

THANK YOU!

Questions and Discussion