



YOU CAN'T SELL YOUR FISH AND EAT IT, TOO

How households prioritize nutrition and income outcomes in a nutrition sensitive market development program.

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Introduction

Good nutrition is essential to every person's physical and cognitive growth, resistance to disease and lifetime productivity. Nearly a billion people worldwide continue to experience under-nutrition,¹ making it a key underlying factor for persistent poverty around the world. Proven nutrition-specific interventions are effective at improving nutrition, but research shows they are insufficient on their own to end malnutrition.² To address a key root cause of ongoing vulnerability, Mercy Corps' programs in food insecure places need to embed nutrition-related issues throughout planning, implementation and evaluation. In other words, our programs must be nutrition sensitive.

Any activity can be nutrition sensitive, but the linkages between agriculture and nutrition are especially strong. Agriculture supplies the foods that contain critical nutrients, and nutrition provides the energy and health that farmers need to maximize their productivity. Agriculture also has the potential to worsen the nutrition status of vulnerable communities. When incomes increase without regard for local nutritional practices, additional income tends to go toward non-nutritional "status" foods, such as processed food and beverages that can worsen food and nutrition security and perpetuate vulnerability. A nutrition sensitive

approach to agriculture maximizes nutrition outcomes and minimizes any negative consequences of agricultural interventions on the poor. There are many ways that an agriculture program can link to nutritional outcomes, two of which involve a household using its production for food consumption and a household selling its production so that it can purchase food. By focusing on an agricultural value chain that both meets nutritional needs and that has income potential, a single development program can aim to influence both pathways.

Logical as it seems, this program design masks an inherent tension. Improving the nutrition of targeted producers through focus on a specific, nutritious value chain combines twin goals that are in natural opposition to each other. If a household sells its production to earn income, its members lose the nutritional benefits of consuming their production. Alternately, if they keep their production to eat, then they give up increased income. Achieving both means balancing these competing priorities by dividing smallholder production between consumption and marketing uses.

At the heart of this balance lie the choices households make about how they prioritize using their production. This tension is further exaggerated when a program targets especially vulnerable households whose improvements in yield during the typical project cycle may not be sufficient to meet both nutrition and income targets. The way households decide to use their production has direct consequences on the impact of programs designed around value chains that meet nutrition needs, including whether practitioners can expect to achieve income or nutrition aims first, and the degree to which they can expect either to change. We cannot assume that households will choose to balance the use of their production in ways that meet our program targets. We therefore need to understand how households make their decisions so we can incorporate those factors into program design so that activities best meet the multiple needs of the target population.

We undertook this case study to improve our understanding of how households participating in one nutrition-sensitive, market-based agriculture program in Timor-Leste prioritized the use of their production and the factors that influenced those decisions. This improved understanding will inform Mercy Corps' programming in Timor-Leste while also illuminate key considerations for any program that seeks to improve incomes and nutrition simultaneously through a single agricultural value chain.

Background

Fourteen years after becoming independent, Timor-Leste has made important strides in improving the well-being of its population. Political stability has reduced violence, infant and child mortality rates have fallen substantially, and health and education services are much more accessible. Despite these gains, the country has one of the highest rates of chronic malnutrition in the world, with stunting affecting more than half (50.2%) of children younger than five years old.



Photo: Timor-Leste – C. Bergman/Mercy Corps

Mercy Corps' team in Timor-Leste began increasing the nutrition sensitivity of its development programs three years ago. The *Combatting Malnutrition and Poverty through Aquaculture in Timor-Leste* (COMPAC-

TL) program, funded by the Royal Norwegian Embassy, was our first market-based agriculture program in the country to incorporate nutrition components from the initial program design, integrating the twin objectives of increased incomes and improved nutritional status.

Together with its partners, Hivos and World Fish, Mercy Corps implemented COMPAC-TL from December 2013 to July 2016 in six rural municipalities in Timor-Leste. The program implemented a market-based set of interventions focused on fish farming integrated with livestock and crop production, targeting 1,553 poor and vulnerable rural households. The nutrition sensitive aspect of the program emphasized increased the dietary diversity of the same households. Mercy Corps and Hivos selected a focus on fish production and value chain development in light of the findings of a Mercy Corps 2012 study that showed a high demand for fresh fish among rural consumers but very limited supply in local markets. The choice was also in line with the Timor-Leste National Aquaculture Development strategy, which identified inland aquaculture as an ideal intervention to simultaneously address persistent poverty and low protein consumption. The COMPAC-TL program's main activities included:

- technical training in aquaculture (including pond construction, stocking, maintenance, feeding and harvesting) and integrated production practices (including poultry, pigs, vegetables and rice);
- building capacity among value chain actors through business training for entrepreneurs and enhancing fish value through cold chain and processing;
- facilitating increased familiarity among producers, traders, retailers, and institutional consumers; and
- promoting specific behaviors including weekly fish consumption among pregnant and lactating women and young children.

COMPAC-TL's final evaluation found that the program made good progress against its targets by reducing poverty while improving nutrition status. Specifically, it showed that fish production shot up from only 4.6 kg to 21.2 kg, that incomes improved by an average of 66%, and that individual dietary diversity scores improved. Further analysis of the data uncovers a lot of nuance to these results, finding that achieving balance at the household level is still an ongoing process. While most producers intended to both consume and sell their fish, only 22% actually sold any of their production. Sales in integrated production (crops and livestock) contributed to much of the increase in income, as did other non-program effects, such as increased pensions and opportunities for wage labor. Meanwhile, fish consumption increased, with the number of survey respondents reporting that they never eat fish decreasing from 72% at the start of the program to 16% at the end. The source of this fish was overwhelmingly the respondents' own pond.

WHY AQUACULTURE?

Mercy Corps and its partners chose to support aquaculture and the production of tilapia for the following reasons:

- *The geography is conducive to fish farming;*
 - *Substantial unmet demand;*
 - *Fish is affordable and not viewed as a significant asset as are other animal protein sources such as chickens, pigs and cattle which are normally reserved for special occasions;*
 - *Fish do not pose significant food safety concerns as they are consumed shortly after harvest and rarely stored;*
 - *Fish is a highly acceptable food, meets urgent needs for more protein in local diets, and generally not covered by any cultural or food taboos; and*
 - *Tilapia have a high protein content, large size, mature rapidly and is among the easiest fish to farm due to its omnivorous diet and tolerance of high stocking density.*
 - *The impact of climate-related shocks, such as El Niño, is smaller on aquaculture as compared to food crop production.*
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Methodology

This case study was prepared using qualitative research methods and supplements learning from COMPAC-TL's final evaluation. Research methods included semi-structured interviews with project staff from Mercy Corps, Hivos and local partners Fraterna and Prospek, as well as a series of focus group discussions (FGD) in communities where the program had been active.

The staff interviews took place in English with consecutive translation in Tetum where necessary and community FGDs were carried out in Tetum, with additional consecutive translation into local dialects when necessary. We recorded each FGD, and created transcriptions through translation. In total, we carried out twelve single-sex focus groups, six each of men and women, evenly divided between areas where Mercy Corps led implementation and where Hivos led implementation. Analysis of the FGDs was carried out through open coding, based on the major themes that participants raised during each conversation, allowing us to draw out the factors that influenced household decision-making on how to use their fish production. Limitations of the study lie primarily in the small sample size of the data and the informal mode of translation.

Key Findings

The study focused on the use of fish by participant households with an emphasis on what influenced people to prioritize the consumption or sale of mature fish and if families were influenced by the program's deliberate effort to promote fish as a nutritious food for children. We also explored social norms and considered critical factors influencing utilization.

Utilization of Fish

The vast majority of FGD participants, both men and women, indicated that they prefer to consume the fish they had raised. They were influenced by their desire to eat fish, which seemed to be universally liked for its flavor, their understanding that fish is nutritious, the convenience of the fish for harvest, and savings resulting from not having to purchase fish or some other of protein. At the same time, they seemed to perceive their fishponds as an extension of their regular household/homestead food production designated for consumption rather than as a means of generating a major portion of the household's income. Participant responses also indicated that the limited production capacity of the ponds, the market risk (in terms of not being sure fish would sell), and expense (in terms of both time and money) involved in accessing markets was not conducive to marketing fish.

"Fish is delicious and we like to eat it. We only ate it rarely before, but now we can have it more often and we enjoy it." – Female participant, Bahamori

"I don't sell my fish because I only produce just enough to eat and I don't want to sell." – Male participant, Bahamori

"Eating the fish means we don't spend money buying fish, so that's like having more income." – Male participant, Parlamento

In general, immediate demand influenced the sale of mature fish, more than the desire or need for additional income. Most of those who reported having sold mature fish did so rarely and only in response to demand – selling to fish to neighbors and relatives who came to producers' houses with specific requests to make a purchase. Some sold to local fish traders who visited their households with the intention to purchase fish, but this happened rarely among respondents. We did not find any examples of producers reaching out, either individually or in production groups, to seek traders interested in fish. Many participants cited that they did not attempt to sell fish unless there was explicit and expressed demand.

“We definitely don’t sell our fish unless someone comes to us and asks. We sell fish mostly from our houses when someone comes to ask for it.” – Female participant, Bahamori

Many who sold mature fish indicated they only generated a modest income this way, given the few fish they are willing to sell. They used this income to purchase small items for the household such as salt, sugar, rice, or cooking oil or to support the education of their children – for partial private school fees, uniforms, school supplies, etc.

While respondents predominantly chose to eat their fish and sales tended to be limited, they appreciated the potential for aquaculture to increase their incomes. In practice, low levels of fish production stymied the effective balance of these two goals, since few producers were able to produce enough fish to meet both their consumption and income goals. Project staff generally agreed that low production levels were a result of fish producers practicing for a year or less and not yet mastering the techniques. In addition, many households had limited land availability and their ponds were necessarily small to avoid displacing their crop production. Many mentioned aspiring to sell more fish in the future once they achieved more production.

“If we produce more, we can sell more, but if not, we will just eat the fish.” – Female participant, Sorulaka

Influence of Social Norms

Social norms, including gender norms, influenced how households decided to use their fish, as did participation in the project itself – from preparation of the ponds, maintenance of the ponds and fish, harvesting, sale, and preparing fish for consumption.

While there were some differences observed in different communities, for the most part the FGDs indicated that men and women feel accountable to one another, as community members as well as to their immediate and extended families. This is in line with the final evaluation, which generally saw shared decision-making among men and women over most household assets. Men and women mentioned collaboration and shared decision-making about their participation in the project as well as in the prioritization of fish sales and consumption.³ Several participants mentioned that because everyone had a role in fish farming, everyone

GENERATING INCOME

While respondents overwhelmingly indicated that they primarily consumed their fish, there were instances of households choosing to prioritize increasing their income with their fish production. In most groups, there were respondents who reported selling more than eating, even if the general trend in the group was to prioritize consumption. Where substantial sales take place, producers have been selling the fingerlings they raise. We only found one community, Parlamento, where the majority of producers prioritized selling fish over consuming it, and in this case, their sales consisted primarily of fingerlings. Once fish mature, producers tend to keep them for their household’s use, and selling them only occasionally and in small quantities when neighbors or family wanted to buy their fish.

For those households selling fingerlings, this became a primary income strategy, earning participants anywhere from \$60 to \$1,575 in revenue. Fingerling consumers include community members, who have adopted fish farming, as well as international NGOs, including the COMPAC-TL partners and World Vision.

had the right to consume the fish, and that joint-decision making among husbands and wives stemmed from their rights gained through their respective contributions to the family fish farm. Many respondents described discussing the use of their fish with their partners before taking any action to use fish. In most cases, men and women agreed on this process, but this equity was not universal. Several female participants throughout different FGDs stated that as women, that they were not involved in decisions to harvest fish for consumption or sale – that this was the role of their husbands or older sons.

“If I’d like to sell, I tell my wife, and she advises me whether some should be reserved for the children’s consumption.” – Male participant, Karbulau

“If my husband decides that we’ll eat fish, then we eat it, but if not, then no.” – Female participant, Telituku

The value that parents placed on the well-being of their children influenced many to say that they wanted to make sure their children ate fish as often as possible, a behavior that COMPAC-TL actively encouraged. Children’s own preferences were also important influences on their parents’ decisions about using fish. Most groups emphasized that their children adore the taste of fish and enjoyed eating fish from their ponds. Both men and women agreed on this point. Often, respondents indicated that their children ate fish more often than the adults in the household.

“The children eat the fish the most. We heard from the project that this is healthy for them, so we give fish to them first.” – Female participant, Parlamento

“The children force me to eat the fish. They like it so much that they demand it often. As soon as fish start to get big and as soon as the children see them in the pond, they demand to eat them. Once children start asking for fish, there’s no choice, we must give them fish.” – Male participant, Bahamori

At the same time, however, having enough fish to share among household members equitably appears to be another significant influencing factor in when households decide to consume their fish. Many reported that they only harvested fish when the number of mature fish is adequate to feed the entire family. Men were most likely to indicate the logic used to determine when fish were ready for harvest and how many mature fish they required to meet the needs of the family.

“If there are ten people, I need to have ten fish. We don’t consume regularly so if the kids want to eat more of the fish, I accept that.” – Male participant, Brigada

Participants, particularly women, often mentioned the arrival of guests as an impetus for fish harvest and preparation. It emerged as an important theme in several FGDs, indicating that they consider fish a valuable food suitable for guests, and that the arrival of guests was one of the only reasons that a woman could harvest and prepare fish without consulting her husband.

Sustainability

The research did not purposefully pursue sustainability as a theme, but it emerged in the FGDs and interviews, particularly when participants spoke about their motivations to participate and how their success has influenced others in the community. The most obvious indication of the potential for continuation of fish farming beyond the end of the program is that there seems to be a sizeable demand for fingerlings among community members. Moreover, many of those who participated in the program from early stages became fingerling suppliers as well as proponents of fish farming, providing guidance to other community members

as how to establish and maintain a fish farm. This study did not explore the motivations or intentions of those who purchased fingerlings around how they will prioritize selling fish and consuming it.

Even though there are indications that fish farming will continue and even grow after the end of COMPAC-TL, program staff commented that they had seen a few producers give up fish farming during the program's implementation. Insufficient water supplies were a major reason for these instances. Mercy Corps staff also expressed concerns about on-going extension. While the government of Timor-Leste is committed to promoting aquaculture, the budget allocation for aquaculture extension is a small fraction of the already minimal resources of the Ministry of Agriculture and Fisheries. Further, the existing extension service primarily supports food crops, and there is only a single aquaculture officer per municipality. As a result, outreach has been minimal. Local expertise and focus on aquaculture remains limited in spite of the efforts of COMPAC-TL.

NUTRITION SENSITIVE APPROACHES

The COMPAC-TL program sought to incorporate nutrition sensitivity by focusing on fish production, consumption and marketing among a population with low protein consumption. This focus on value chains of nutritionally dense foods that meet local nutrient deficits is just one way for a market-based agriculture program to be nutrition sensitive. Other ways include adding nutrient-rich crops or livestock to production; introducing biofortified crops; improving storage and processing to maintain the nutritional content of food; nutrition education campaigns; empowering women as producers and decision-makers; and increasing demand for locally produced nutritious foods.

Mercy Corps has developed a tool kit for incorporating these approaches into market-based agriculture programs. Guidance is designed for non-nutrition specialists, and it helps agriculture programs avoid unintentionally harming the nutritional status of target households and boost nutrition whenever possible. It is publically available to download at mercycorps.org.

Staff also felt that some of those who participated in program activities would sustain fish farming but that others participated to receive free fingerlings and may not maintain their ponds over the long term. Hivos staff specifically commented on participants' reticence to apply key practices, particularly concerning pond maintenance and the regular harvesting of fish, that may jeopardize the sustainability of results. More time is required to instill behavior change around these production practices.

"Part of the problem with balancing objectives is that households are waiting a long time for tilapia to get bigger... If people would eat the smaller fish more, there would be less congestion in the ponds and help increase production even without bigger or additional ponds. This would help increase the number of fish that could be sold while still maintaining the gains in consumption that we achieved." – Hivos staff

Recommendations

- *Sequencing achievement of targets:* In the face of limited fish resources, nearly every respondent in our sample prioritized consumption over selling their fish. Yet every group also appreciated the potential for both income and nutrition-related benefits of fish farming. This could indicate that, in future programming in this cultural context, we can expect that household decision-making about using fish will favor the achievement of nutrition goals earlier, while income goals may take longer to accomplish. Achieving income goals will require longer-term activities to consolidate and further increase production levels and improve market linkages to meet income expectations after households satisfy their consumption preferences.

- *Targeting program participants:* The enthusiasm for consuming fish speaks to the scale of unmet demand for inexpensive fish in inland Timor-Leste and raises the possibility that, if participants had only increased their incomes, whether they might purchase a similar amount of fish they ultimately consumed from their own production. The COMPAC-TL program targeted smallholder producers for its activities. Including an additional focus on more market-oriented producers in future programming may help supply inland markets with fish faster than a single smallholder focus. This would introduce another aspect of nutrition-sensitive agriculture programming, namely ensuring that the components of a healthy diet are available to and affordable for vulnerable households. In addition, to ensure that fish consumption improves the well-being of those most vulnerable to malnutrition, future projects may align interventions with the first 1,000 days approach, prioritizing the specific nutritional needs of children aged 6-23 months, pregnant and lactating women.
- *Behavior change:* COMPAC-TL staff effectively used social and behavior change (SBC) approaches to promote fish consumption, emphasizing the healthy growth and development of children. The Timorese readily adopted behaviors to support improving child welfare such as feeding fish to children more regularly, as well as using the income generated to purchase household necessities and pay for school fees. This may prove more challenging in other countries/cultures that are less oriented toward prioritizing children.

That said, respondents were not able to quantify the nutritional benefits that their children accrued by eating fish more regularly, though they could easily report exact figures indicating how much they had earned from the sale of fingerlings and mature fish. While they expressed trust in the program staff who told them that eating fish was good for nutrition and the healthy development of their children, respondents were less concrete about the benefits they experienced from eating more fish. To avoid potential loss of that trust, future programming should make a deliberate effort to provide program participants with tangible means to assess the nutritional impact of their fish consumption so that they nutritional improvements and are convinced of the effectiveness of their actions.

- *Equal consumption versus favoring child consumption:* Many focus group participants described a social norm for all household members to eat together and that each household member is entitled to equal portions of fish. This is beneficial for the dietary diversity of entire households, but it also has implications for how often families are able to eat their fish, since large household sizes mean that substantial amounts of fish must be available before it can be consumed. At the same time, many respondents indicated that they feed their children fish first, and especially when fish quantities are limited, that adults often forgo fish consumption. This may be a result of the behavior change activities emphasizing the nutritional benefit of fish consumption in children, or it may reflect regional or other differences in norms for equitable consumption. Future programming in Timor-Leste should re-examine this dynamic more carefully to ensure a thorough understanding of how it influences household nutrition. In other countries, this finding underlines the importance of understanding the intra-household allocation of food in all food security programming so that behavior change strategies and activity implementation can best promote food access for all people.
- Program implementers and participants expressed appreciation of the integrated production system that allowed farmers to prepare fish food easily without cost. Participants also frequently mentioned that a main benefit of their fish production is that they spend less on purchasing fish or meat in the markets. This society seems very motivated to expand household production of foodstuffs and limit their expenditures. This is a positive and a negative, and the tendency to depend on foods produced

by the household rather than purchase food is a consideration for other nutrition programs. An assessment about what people are willing to purchase (rice, sugar, salt) and what they perceive to be luxury goods or unnecessary will inform further nutrition sensitive value chain programs in Timor-Leste.

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About Mercy Corps

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¹ Food and Agriculture Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD), & World Food Programme (WFP). (2015). The state of food insecurity in the world 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress. Rome: FAO.

² Ruel, Marie T et al. "Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?" The Lancet, Volume 382, Issue 9891, 536-551.

³ While the FGDs took place in areas separated from the general community, they were never fully private, and it is possible female participants may have answered this question (and others) based on how they believed their husbands or other family members would want them to answer.