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IN MALAWI

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CHAPTER 4 : UNDERSTANDING THE PATHWAYS TO IMPROVED DIETS FROM THE PRODUCTION OF NUTRITIOUS AND MARKETABLE COMMODITIES

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Value chains and agricultural commercialization are increasingly being promoted as mechanisms for agricultural transformation, inclusive growth, and, more recently, improving food security and diets. Views of commercialization in agricultural development discourse have fluctuated over the years. Initially framed in terms of moving subsistence farmers into cash cropping and specialization, and subsequently criticized for exposing the poor to the high risk of engaging in commodity markets, the discourse shifted over a decade ago to include commercialization in terms of its effects on nutrition (Alderman 1987; Kennedy and Cogill 1987; Dewalt 1993; Peters and Herrera 1994; von Braun 1995). Theoretically, market-oriented production should allow farmers to increase their incomes and purchase more nutritious foods. However, there is very little empirical understanding of the pathways through which such production impacts diets and under what circumstances. What is clear is that there are a variety of constraints posed by commercial farming that can impede positive dietary changes. These include the tendency of men to control income from cash crops, the inherent price instability of cash crops, and the tendency to spend lumpy income (income based on few irregular payments in the year) on non-food items (DeWalt 1993).

Because Malawi's current development agenda increasingly focuses on measures to transform and commercialize a largely subsistence-based agricultural sector, the implications of commercialization for diets and nutrition is highly relevant for Malawi, especially when the country's extremely high rates of child stunting is considered.

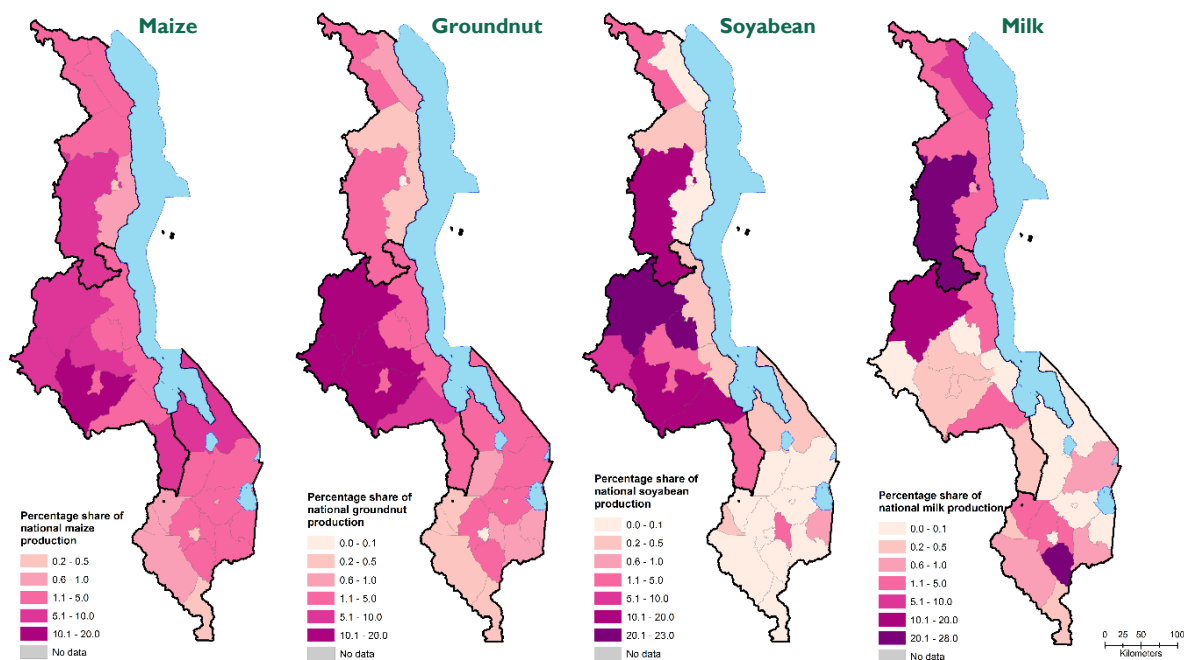
Maintenance of subsistence farming practices alongside cash crops can be viewed as a mechanism to minimize the inherent risks associated with volatile market prices (Gillespie, Harris, and Kadiyala 2012). Furthermore, crops that are both nutritious and commercially viable can overcome the inherent risks in engaging in markets because they can be consumed if market prices are not profitable. This type of approach can be viewed as promoting value chains with an emphasis on nutrition, or value chains for nutrition (VCN) (Gelli et al. 2015). VCN aim to increase the commercialization of agriculture, while simultaneously decreasing inherent risks, therein improving diet and nutrition outcomes (Hawkes and Ruel 2011)

For instance, groundnut and soyabean are both nutritious foods that, in Malawi, are (1) eaten raw or as a minimally-processed food by households, (2) exported raw regionally or internationally, (3) sold for medium- or large-scale domestic processing into higher-value products for human or animal consumption, or (4) processed on a small-scale at the village level for human consumption. As such, groundnut and soyabean in Malawi are high-potential commodities for VCN, as they play an important role for livelihoods development, risk reduction, private-sector development, and improvement of diet quality. (See Figure 4.1 for maps on district-level production of several commodities discussed in this chapter)

However, the effectiveness of the VCN approach for improving diets is mediated by social norms about preferred foods and appropriate intra-household allocation; control over decisionmaking for farm activities and use of income; and knowledge about nutrition and willingness to pay for nutritious foods (Gelli et al. 2015). All of these are closely linked to gender relations in the household.

This chapter presents findings from a qualitative study of social drivers (or limiters) that influence how the production of nutrient-dense, commercially-viable foods affects diets in rural Malawi. Gendered household preferences and decisionmaking dynamics related to the production, consumption, and sale of nutritious commodities are emphasized. The findings are based on information obtained through a series of individual interviews with cohabitating women and men from a sample of households in Balaka, Karonga, and Ntchisi districts of Malawi.

Figure 4.1—District-level production of maize, groundnut, soyabean, and milk in Malawi, by percentage of national production share, 2010



Source: Analysis by M. Kedir, IFPRI, of IHS3 data.

Note: Annual national production level estimates based on weighted analysis of household production data reported by IHS3 respondents are maize: 1,684,000 mt; groundnut: 235,000 mt; soyabean: 30,000 mt; and milk: 31,000 mt.

4.1— Plausible impact pathways

Adding a nutrition lens to the commercialization discussion provides several potential benefits. The possible impact pathways include the traditional benefits of commercialization as well as the possible benefits of increasing own consumption of nutritious commodities. This is the most direct impact pathway, wherein increased production ostensibly for commercial purposes could increase the quantity and diversity of food consumed by individuals within the household. The second pathway is through the sale of crops. Increased income from commercial sales can be used to purchase higher quality nutrient-dense foods for household consumption, if the foods are available in the market and acceptable to or preferred by family members. Third, the increased production of nutritious foods can increase their availability in markets, making it easier and more affordable for people to access them.

The final pathway is through impacts of commercialization of agricultural production on women's time and decisionmaking power. Commercialization may increase household income, but the degree to which women have the ability to influence decisions about how to spend that income or how much of the nutritious commodities produced by the household they will keep, will mediate the degree to which any improvements to diets will be achieved. In addition, the impact of commercial activities on the time commitments women face can either free up or further constrain the time required for the feeding and care of household members. Central to the impact this pathway has on nutritional outcomes are the prevailing social and cultural norms at play that determine the role of women—traditionally the primary caretakers in the household—in commercialization.

The empirical evidence is not conclusive in terms of the relative effectiveness of these pathways, globally or in Malawi. An evaluation conducted in Kenya in 1987 found that households participating in a sugarcane out-growers scheme had greater calorie consumption but no improvement in child nutrition outcomes, compared to non-participating households (Kennedy and Cogill 1987). A study in Malawi showed that, while cash-cropping families had higher incomes, the lumpiness and seasonality of their incomes mitigated the effects on household food intake (Masangala 2005). And, while a 1994 study on tobacco producers found income source had no effect on stunting in children

(Peters and Herrera 1994), a more recent study found that, when faced with an income shock, children in tobacco-producing families fared worse in terms of stunting (Wood and Nelson 2013).

Recent studies examining crop diversification in Malawi show that as farming families' incomes rise and they engage in markets, they tend to increase household calorie consumption and household dietary diversity (Jones, Shrinivas, and Bezner-Kerr 2014; Snapp and Fisher 2014). Similarly, a study on the commercialization of cassava in southeastern Africa documents the food-security benefits of cassava production. Cassava was seen as both insurance against a failed maize crop and a marketable commodity (Haggblade et al. 2012). This may point to the effectiveness of crop diversification in improving food security through overcoming the barriers of income lumpiness discussed above, although these studies did not examine effects on individual diets or nutrition outcomes.

When farm households produce nutritious commodities, the commodities may be used to augment diets or may be sold in the market. An early study of dairy cooperatives in India found that the nutrient consumption of commercialized farmers increases, but not through own-consumption (as they do not consume more milk), but rather through purchasing other nutritious foods in the market (Alderman 1987). Value chains studies on groundnut, soyabean, and pigeonpea in Malawi show a complex household decisionmaking process over consumption and sale of some of the harvest (Cook et al. 2014; Makoka 2009). Pigeonpea is largely consumed by the producing household, though some is sold domestically and internationally (Makoka, 2009). However, soyabean and groundnut fluctuate between being cash-crops and own-consumption crops depending on the local context, such as the gender dynamics, profitability, and need for inputs (Cook et al 2014).

4.2—Methods

This is an inductive analytical study that seeks to contribute to a clearer understanding of how the production of nutrient-dense, commercially-marketable foods affects diets in rural Malawi. In particular, we are interested in better recognizing the social drivers (or limiters) of the possible impact pathways, already clearly defined in the conceptual literature. Because women's time use and decisionmaking power mediate all of the possible impact pathways from production of nutrition commodities to improved diets, we primarily examine the gendered household preferences and decisionmaking dynamics related to production, consumption, and sale of these commodities.

In particular, we examine

- social norms and perceptions about preferred foods and eating patterns, including how social norms influence intra-household allocation and food substitution when sufficient preferred foods are not available;
- perceptions about what is consumed and what is sold, including perceptions about which crops are purely cash crops or too valuable for own-consumption, even if they are culturally acceptable or preferable to eat;
- social norms about gender relations, because they affect control over farm decisionmaking and the use of income from sold commodities; and
- knowledge of nutrition, because it can influence demand for nutritious foods and feeding practices.

While we highlighted three commodities of interest for their nutritious and marketable qualities, during interviews we allowed respondents to define what they considered to be nutritious commercial crops. Generally, when asked what commercial crops they produce, respondents included all crops that can be sold in the market. The commodities we focused on were soyabean, groundnut, and cow's milk.

Soyabean, while not widely considered a locally preferred food, is highly nutritious in terms of protein, fiber, and micronutrients; is in high demand by domestic processors and the regional export market; and has positive impacts on soil quality through biological nitrogen fixation. Soyabean uses in Malawi include large-scale oil pressing and processing the resultant soyabean cake into chicken feed or for export. Typical food uses include processing into flour for porridge or into soy pieces, a meat substitute. Ntchisi was targeted as a high soyabean production district.

Secondly, groundnut is in high demand as a locally-marketed and consumed food. In addition, there is local processing of peanut butter, other snack products, and ready-to-use-therapeutic-foods (RUTF) for moderately and severely wasted children. There is also very high demand regionally and from high-value markets, such as Europe and South Africa. Access of Malawian producers to these markets is currently impeded by the high-aflatoxin levels of domestic groundnut. In fact, the nutritional benefits of consuming groundnut must be weighed against the negative effects of high aflatoxin levels. Balaka was targeted as a high groundnut production district.

Finally, consumption of milk is extremely low in Malawi, as is cattle ownership. While per capita production has increased moderately over the last decade, it is still among the lowest in the world at 4.3 kg annually in 2011 (FAO 2015). However, milk could provide critical nutrients that are missing from a staple-heavy Malawian diet. While lack of adequate cold-chains makes export of milk products challenging, initiatives to promote local storage and marketing of milk could have significant impacts on diet quality. Because the northern region of Malawi has a relatively higher level of cattle ownership, Karonga was targeted as a milk-producing district.

We took a purposive sampling approach, starting with targeting districts that are producing the products of interest for the study. Then we relied on the government agricultural extension staff in the target districts to guide us on the choice of an appropriate study village based on two criteria: (1) that many village members produce one or more of the crops of interest and (2) that they are located within 5 km of a major daily market. The second criterion allows us to take the focus off market access constraints—which are usually greater for women than for men, but are not the focus of this study—and allow us to discuss in-depth other factors related to the decision to market their products. Three communities were targeted using these criteria and 12–15 households within each community were sampled for in-depth individual interviews, with a total of 80 individuals interviewed (39 men and 41 women).

Interviews were digitally recorded, transcribed, and translated from Chichewa and Chitumbuka to English. Transcriptions were thematically coded using NVivo software. An initial coding pass was used to determine the main concepts arising from the interviews, which were used to augment and enrich an a priori, deductive coding schema. Interviews were then systematically coded against this list. A range of code- and text-based search protocols, including both Boolean and proximity searches, was then applied to extract findings on each topic of interest, prior to writing-up.

Ethical clearance was obtained from IFPRI's Institutional Review Board. Respondent confidentiality was assured at all times by removing any reference to personal names from written results and safeguarding recordings and transcripts at all times. Field research staff members were provided with orientation in ethical compliance, appropriate behavior in the field, and concepts of informed consent, which was obtained prior to every interview in the study.

4.3—Findings

4.3.1—PREFERRED FOODS AND EATING PATTERNS

Although the study districts were purposively selected to capture production of soyabean (Ntchisi), groundnut (Balaka), and milk (Karonga), accounts of foods consumed at home were quite similar. With the exception of dairy products which were most intensively consumed in Karonga, aggregate dietary patterns in the study households exhibited little convincing variation by either district or household.

Nsima (maize meal polenta) is the starch par excellence in these areas. Breakfasts are often porridges made from maize or other starches, cakes or sweet fritters, and occasionally tea with or without milk and sugar. Meals taken at midday and in the evening are *nsima* accompanied by 'relish'. Relish is any food item that accompanies *nsima* and almost always includes green vegetables such as okra; pumpkin leaves; and *Brassic*as, such as rape, mustard greens, and cabbage; and tomatoes and onions if available. In Karonga only, *chambiko*, or soured milk, is highly appreciated as a relish to accompany *nsima* or other starchy foods. If cooking oil can be afforded, the relish is cooked with oil. Relish may also include protein foods such as legumes (pigeonpea, cowpea, and other beans), soyabean, groundnut (pounded and added to leafy vegetable stews), small dried fish (*matemba* or

bonya), chicken, eggs, and more rarely, meat (typically goat or occasionally beef; pork and rodents are generally tabooed, and bushmeat was not mentioned). Chicken and eggs are popular and widely appreciated; both are kept for food consumption, but may be sold when money is needed. Duck meat is more complicated: several respondents asserted that it produced an allergic skin reaction, while others stated that duck was prohibited under halal dietary laws (in fact, duck is considered to be halal if it has been slaughtered in accordance with halal rules).

This meal format is ubiquitous to the point of universality. Other starches such as cassava, bread, and rice are mentioned in interviews, but the archetypal meal is based around *nsima*. This is not unusual; staple starches often occupy a very dominant position in food repertoires internationally; in such cases, the inclusion of a staple may be a defining criterion of what constitutes a meal. Certainly in these districts, our household respondents' (largely shared) concept of a proper meal took the form of *nsima* with relish. As one informant from Balaka explained, "Relish only or *nsima* only does not make a meal. In that case, you do not have food." The preference for *nsima* was explained on the grounds that it is "satisfying", but also by allusion to tradition or upbringing—*nsima* is the main food that everyone has grown up with. Following Bourdieu (1977), it may be considered to be part of the *quotidian habitus* of the people composing the study population. As one Balaka respondent noted, "the reasons why it's ideal is we grew up used to these foods. We did not grow up used to other foods. I feel good, satisfied, and it tastes good. The meals that we eat in most cases are *nsima* with vegetables like cabbage, pumpkin leaves, and mustard greens." Fruits such as mango, papaya, banana, citrus, apple, and pineapple were also mentioned in interviews, chiefly as purchased items, since people do not tend to cultivate them in their gardens. Market availability of these items is seasonal. In a very small number of Ntchisi households, respondents stated that they made soy milk for home consumption, but this does not appear to be at all common, even in this district which was chosen based on its soyabean focus. Even in these soy milk producing households, respondents complained about the lengthy processing required to make soy milk. In one Balaka household, the respondent noted that she would like to consume soy milk, but did not have any.

Maize is a critically important cultivar and there is a clear prioritization of keeping it for food security rather than selling it—some respondents made the point that it did not make sense to sell one's maize crop, only to have to purchase maize later on in the year. That said, maize is sold, and at times purchased, but there is certainly a widespread concern that enough should be kept to avoid running out later in the season. Many other foodstuffs are bought, however, at local markets when money and produce are simultaneously available. These include protein items, such as fish, meat, beans, soyabean and groundnut; vegetables, including greens, *Brassic*as, tomatoes, and onions; and occasionally other starches, such as rice, potatoes, and cassava. Market purchasing is periodically subject to various constraints, the most-frequently mentioned of which is financial – when respondents articulated desires to eat "aspirational" foods, such as more meat, rice, chicken, cooking oil, milk (fresh or fermented), sugar, eggs, soy products, or simply more-frequent *nsima*-and-relish based meals, the most common constraint was money. Respondents explained their choices of aspirational foods with reference to satisfaction, better nutritional quality, and tastiness. In addition to financial constraints on obtaining desired foodstuffs, respondents flagged distances to markets—in spite of the fact that communities were purposefully chosen to be within 5km of a major daily market—and the limited availability of a wider range of foods in the markets.



Malawian family substitutes mangos for *nsima* during the hunger season

It is instructive to examine responses to a line of questions about substitution—what do people do when they do not have access to key foodstuffs? It is clear that the choices available are often

limited. It is also evident that the absence or shortage that most concerns people is not relish, but *nsima* – when asked about substitutions, informants focused principally on explaining what they did if they did not have *nsima*.

One strategy mentioned by several informants is to substitute porridge for *nsima*. In effect, this means increasing the proportion of water to maize flour, so that a given amount of starch—maize meal or other—feeds more people. Another approach is to increase the amount of gathered fruit in the diet (especially mangoes, which may be boiled). This is considered to be a particularly poor substitution, in the event that no starch is available. Interestingly, rice is mentioned as a potential substitute for *nsima*, which seems contradictory, given the frequency with which it is mentioned as an aspirational food – in the latter category, rice is an object of desire, while in the former, it is a second choice if *nsima* is unavailable. Cassava is also regarded as a potential substitute for maize meal *nsima*.

4.3.2—CONSUMPTION AND SALE

Box 4.1—Priorities guiding sales of food crops

I had one and a half pails of soyabean, but sold one pail because of a problem of school fees for the child, and I am remaining with half pail. I kept half a pail for consumption, and there was no influence from any organization. I just keep some soyabean for porridge at home. On the part of maize, I did not sell any of the 22 bags I produced, because it is the main food for the home, but I also expected some money from the soyabean that were submitted for sale, so there was no pressure to sell maize. As for beans, I produced 60 kg, and it was all sold in August, but the money is not yet received. I just kept a little beans, about 2.5 kg for consumption. Otherwise, we are not allowed to keep any of it if it is a contract. I also produced 2 bags of cowpea. It was all sold at K300 per kg in August, I did not keep any following the contract terms. Groundnut produced six unshelled bags, and I sold three bags in August, I kept some for consumption by adding to relish, but also for roasting, as it provided nutrition to the body.

(Male respondent in Ntchisi).

The majority of food cultivars which are sold in these districts are also used for household consumption, although the converse is not true. These include maize, pigeonpea, and other beans; groundnut; and soyabean. Sesame, cultivated in Karonga, is technically a consumable crop, but in practice, it is not consumed; instead, it is treated as a non-food cash crop like cotton. In better-off households, livestock is kept: cattle, pigs, goats, ducks, and chickens. Cows produce milk and work as draught animals at home or rented out for extra income, while also serving as insurance policies in the event of serious income shocks. *Chambiko*, or soured milk, a popular food in Karonga, is generally either bought in the market or made from milk that is produced by family cows. It is only made from cow's milk; goat milk being reserved for drinking. Only three of the 15 Karonga households mentioned selling their *chambiko*; on the whole, in Karonga, *chambiko* is more often consumed than sold. Chicken and eggs are kept for both household consumption and for cash sale, though slaughter and consumption of chicken is less common than keeping the birds for sale.

Small livestock are often used as a way of saving cash, though perhaps not large amounts. When a household needs money, a smaller animal may be slaughtered and sold. They might also be used for home consumption.

Households in our study communities give careful thought to balancing consumption and sale; this is important given that the foods grown do dual duty as foods and as commodities. Study participants explained in interviews that they took a range of factors into account when making decisions about what or how much to sell. This is an especially relevant point when considering a VCN approach because it demonstrates that a population mainly composed of subsistence horticulturalists is accustomed to evaluating a broad range of factors before selling nutritious food commodities. In terms of programming implications, this means that much of the educational groundwork is already in place—people have a good understanding of how to make decisions based on assessments of competing

priorities. In other words, while some priorities might need to be reassessed (for example, the very heavy focus on *nsima*), in the light of limited nutrition knowledge, the analytical apparatus, in fact, is present.

Key issues which are taken into consideration in decisionmaking about food sale and consumption include:

- **Food security:** This is the first-and-foremost factor to consider. People are very unwilling to jeopardize their household food security, particularly as it relates to maize. As one Balaka informant explained, “It is always expensive to buy maize, especially knowing that you had it and you sold it. It is only due to a lack of income that makes us sell our maize...”. The food security argument is not only relevant to maize – indeed, people are careful to keep some of all their cash crops for consumption. But maize is certainly the commodity that people feel most strongly about. Informants also noted that a household which found itself without maize would need to engage in piecework to earn money in order to buy maize.
- **Financial needs:** Families require cash for a range of household needs, such as school items, building materials, soap, relish ingredients, medical items, and productive assets, such as tools and fertilizer. Once food security has been taken into account, families consider these needs and make decisions about sales. Note that in cases where families hire labor, another requirement is paying the pieceworkers, either in cash obtained from commodity sales or in maize meal.
- **Quantity:** Related to the discussion of food security above, if harvest quantities are too low, selling is not considered a viable option.
- **Seed banking:** As subsistence horticulturalists, residents of these districts understand the need for making their seed supplies sustainable. In particular, quantities of peas and beans are held back from both sale and consumption in order to sow fields again the following season.
- **Pricing:** Particularly in relation to maize, respondents noted that they were strategic about when to sell their production. If prices are too low, maize can be stored until prices rise again. This principle also applies to other commodities. We do not have direct responses on this, but it may be the case that in situations where maize prices are unattractive for sale, people respond to more immediate financial needs by slaughtering and selling livestock.
- **Social:** Feeding needier relatives is culturally important. Households take this into consideration, particularly after ensuring that their own food security is adequate.
- **Insurance:** As noted above, livestock ownership may serve as both a device for saving money and as an insurance policy against severe income shocks.

4.3.3—GENDER AND DECISIONMAKING

“But the ones I control are like useless crops because they are kitchen crops” (woman in Karonga).

Our data shows great, though largely unpatterned, variation in responses to a line of questioning which sought to explore the relationship between gender and decisionmaking in production and sale of crops as well as on expenditures made with the proceeds of such sales. This variation principally revolves around the question of who makes decisions in the household and is evident not only between households but within them, given that in many cases both husbands and wives within households were interviewed:

Wife, Balaka:

Q: Are there any decisions that you are supposed to make because you are a woman?

A: Yes, especially on maize and other edible crops. Mostly men are never home, so if you put all the control on a man, he can disappoint you when he has gone out. Sometimes they go

away for weeks; it is better that I should have my own input as a woman. A woman is the one who prepares food for the family compared to men.

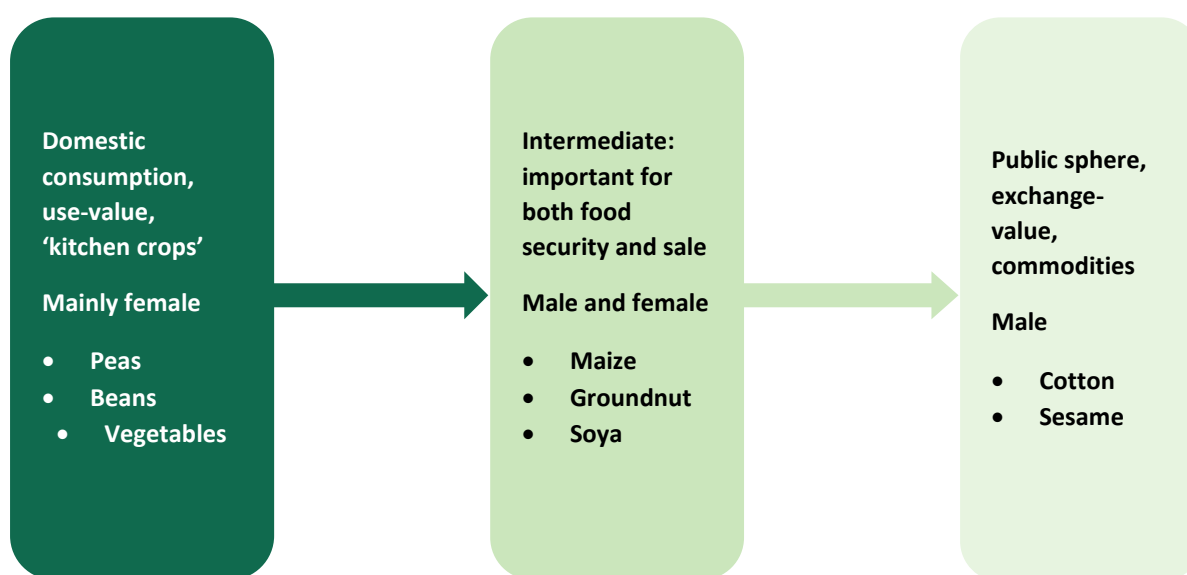
Husband, same household, Balaka:

Q: Who made a decision on selling the crops that you sold?

A: On sales, I was the one who decided to sell maize. I made that decision and told my wife and she obeyed. I did the same with pigeonpea.

In spite of this variation, it is possible to discern a basic overall pattern of decisionmaking. This pattern evokes the highly-critiqued concept of domestic (female) and public (male) spheres and references the quotation at the beginning of this section—on the whole, men have more decisionmaking weight around crops where exchange-value dominates use-value, that is, with crops which engage more closely with the public sphere of exchange. Women, on the other hand, have more decisionmaking power around crops whose use-value dimension is stronger, that is, with crops which tend to be conceptualized as occupying the domestic sphere of consumption. While informants tended to reject ideas about “women’s crops” and “men’s crops”, this is, in effect, the operative division. Beans, pigeonpea, vegetables, and cowpea fall into the former category, while non-food crops, such as sesame and cotton, occupy the “men’s crops” end of the spectrum. Soyabean, groundnut, and maize occupy a middle ground because of their important dual roles as key items for household consumption and as a market commodity. This is illustrated in Figure 4.2.

Figure 4.2—Role of key commodities among Malawian farm households



Source: Authors

While this model is quite dominant among the study households, it is also important to note that in a significant number of households, reference was made to collective decisionmaking and discussion. The key message for any contemplated VCN programme would be that, with the exception of non-food cash crops, most of the crops produced by the study households exhibit some degree of duality in terms of male and female decision-making. That said, there are certainly cultivars which tend to be gendered.

4.3.4—NUTRITION KNOWLEDGE

Respondents were asked a series of questions about nutritious diets. Nutrition knowledge is generally quite good in the study sample, although we note that different respondents tended to emphasize different aspects. We also note that informants were not asked about specific infant and young child feeding practices, even though suboptimal young child feeding practices and lack of understanding of their specific, rapidly changing nutrition requirements are considered to be a major contributor to child undernutrition. Rather, the focus was simply on their knowledge about nutritious foods and concepts of nutrition in general. Key points raised were:

- The importance of dietary diversity—Respondents mentioned a wide range of foods, including starches, legumes, meat, fish, chicken, vegetables, dairy, fruits, and fats, and stressed the importance of varying these in the diet and producing mixed and balanced meals.
- The role of good nutrition in resisting disease, building and repairing the body, and providing energy—Several respondents were able to associate these qualities with vitamins, proteins, and carbohydrates and fats, respectively.
- The importance of proper food preparation to maximize nutrient access.
- The importance of good hand washing and sanitation practices to avoid illness.

4.4—Discussion

Respondents had a relatively good understanding of nutrition; however, it was not seen as a priority issue compared to other criteria underlying their food decisions. Food security was top-most and was largely reflected in concerns about maintaining sufficient supplies of maize for *nsima*. Needs for cash are numerous and important, but people avoid selling food crops if they do not feel they can meet their immediate food needs with their stocks. Holding on to food stocks may also serve as a means of hedging, waiting for a better price, or holding it as a store of assets in case of an income shock or unexpected major expense.

While financial barriers were the most commonly mentioned barriers to purchasing preferred or nutritious foods in the market, lack of availability was also a major barrier. As such, it is possible that specific VCN approaches could effectively combine nutrition trainings—promoting consumer demand of key commodities—with value chains approaches to decrease price and increase availability. Many nutritious crops that households produce are both consumed and sold. Decisions about what or how much to sell are based on consideration of a range of factors.

Regarding specific commodities, many legumes and grains, in particular soyabean, groundnut, and maize, are both sold and consumed and thus have potential for responding to VCN approaches to improve their impact on nutrition through increased productivity, nutrition training to increase consumption, or linking producing households to nutrition-enhancing supply chains. Because fruit does not tend to be produced at home, but purchased in the market, there may be an opportunity to promote more household fruit production as well as improved linkages to nutrition-enhancing supply chains for farm households producing fruit.

A common deficiency in Malawian diets is the lack of animal-sourced foods, including meat, poultry, and dairy (Government of Malawi 2009). Unfortunately, livestock and poultry are more often viewed as banks of wealth rather than as a food source. Fresh milk and, more importantly, homemade *chambiko* that has a longer shelf-life and is used as relish, may be exceptions, particularly in Karonga. Milk and *chambiko* consumption are very low in the other two study districts and, as discussed above, do not make up a central part of typical diets there. However, it is possible that a combination of nutrition training and promoting supply-chain linkages for milk and dairy products to decrease prices may increase demand marginally. In fact, there is evidence that *chambiko* consumption increases when its price goes down; whereas, fresh milk consumption increases only in response to an income increase (Akaichi and Revoredo-Giha 2012).

Past research has documented shifts in gendered control over crops like groundnut and soyabean when commodity commercialization programs moved such crops from largely being under the control of women to under the control of men (Cook et al. 2014; Quisumbing et al. 2014). Our research shows that household decisionmaking dynamics between women and men are more diverse and complex than that. Respondents tended to reject the idea of men's and women's crops; however, on the whole, they tended to conform to stereotypical gendered roles in terms of men having more power over crops with high exchange value rather than those produced primarily for consumption. Soyabean, groundnut, and maize fit into a unique category as they play an important dual role for household consumption and as commodities and, thus, a dual role in terms of gendered control. These crops are also more likely to be the focus of intra-household, cross-gender discussion and debate over whether they should be sold or consumed.

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