

Drug Crops and Food Security: The Effects of Khat on Lives and Livelihoods in Northern Madagascar

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Abstract

Khat is a bushy plant whose leaves are chewed for their stimulant effect. Although khat has been a boon to the local economy, a suspected disadvantage is that there has been a decrease of land dedicated to rice and vegetable crops. Concerns about khat stem from genuine issues of food security but also from a moral panic targeted at this recreational drug crop. The major finding is that a decrease in vegetable production has not been primarily caused by khat but instead by a decline in the market for vegetables and decayed local infrastructure supporting vegetable production and transport. We also found that most farmers prefer to grow food crops alongside their khat, and many grow khat on marginal lands. Furthermore, khat helps many individual farmers increase food security because of the income it provides. The general significance is to point out that drug crops have a unique place in discussions of food security because of both the high amount that buyers are willing to pay and because of public condemnation of recreational drugs. [food security, drugs, livelihoods, Madagascar, khat, vegetables]

Introduction

In the fertile, volcanic soils on the slopes of Amber Mountain in northern Madagascar, farmers have increasingly been planting khat over the last 20 years. Khat, which has natural amphetamine-like characteristics (Kennedy et al. 1980, 1983), arrived in Madagascar with Yemeni dock workers in the early part of the 20th century. The bushy plant, whose leaves are chewed for its stimulant effect, grows well

in the cool temperatures of the Amber Mountain region in northern Madagascar. Its growing local popularity has meant a significant increase in revenues for farmers and economic opportunities for traders over the last 20 years.

Although khat has been a boon to the local economy, some surmise that there has been a price to pay—the decrease of land dedicated to food crops. Critics believe that khat is so much easier to farm and provides such a higher return that farmers are abandoning their traditional rice and vegetable crops. This is a familiar concern: khat has been singled out for a similar trespass in Yemen and Ethiopia, which are two of the major centers of khat production in the world (Gebissa 2010a; Weir 1985). These claims are exaggerated and mask complex issues related to food production, distribution, and consumption. I argue that food security is a real concern but that khat could perhaps be seen as part of a solution rather than as the problem because it allows for income diversification and results in lowered economic household risk.

Food security is a concern at international, national, household, and individual levels. At the international level, rising commodity prices are a problem especially to importing nations (e.g., the global price of wheat more than doubled in 2007), and decreasing total food storage globally makes the entire world more vulnerable to natural and political disasters (Gao 2010). This influences national-level decisions about the extent to which to encourage food crop production, as opposed to investing in industry or nonfood crops (Gao 2010). Many analyses of food security currently focus on the household as a way to understand local-level access to food.

The U.S. Agency for International Development defines food security similarly to the World Bank and the Food and Agriculture Organization of the United Nations as “access by all people at all times to sufficient food for an active, healthy life” (Maxwell and Wiebe 1999:828). The outcome is biomedical

nutritional status, although the path to getting there is multifaceted and includes such factors as agriculture, ecological systems, and politics. Those investigating food security note that it is composed of several dimensions, including availability of food (production), access to food (distribution), absorption of food in the body (contingent upon factors such as clean water) (nutrition), vulnerability to temporary hunger because of interruptions in food supply (politics and biophysical environment), and ecological sustainability of production. They also noted the importance to food security of nonfood factors, such as political conditions, livelihood opportunities, education, and general access to health care (Oluyole et al. 2009:8; Thiengkamol 2011:163). There is no simple cause of food insecurity either in Madagascar or elsewhere in the world.

In focusing on production, Maxwell and Wiebe (1999) underscored the importance of an analysis that links the mutually reinforcing links between land resources and food security. Land tenure, for example, is a critical variable in analyzing food security. Implicit are notions of sustainability and vulnerability in the domain of food production. Food systems must be durable over the long haul. Based on her study in Kenya, Mikalitsa (2010) pointed out that access to land, productive assets, income to exchange for food, credit for obtaining inputs, and extension services can form opportunities for or barriers to food security at the household level.

The case of khat in Madagascar points to the effects of a drug crop on food security. Drug crops provide a unique set of challenges and opportunities. They take up arable land, but they are not food crops. They tend to be associated with high demand and high willingness to pay—and hence high returns for farmers, resulting in increased household economic flexibility. On the other hand, their status is often tenuous because of their legal standing and general social acceptability. Additionally, on a national or subnational level, they can result in weakened food security because of a decline in food production.

Khat and Food Security

As a crop, khat raises two kinds of concern. First, as a nonfood crop, it brings up important issues of cash versus subsistence production and food versus nonfood crops. The production of food is critical for household subsistence. Often, the production of cash

crops correlates with food insecurity. In their study of food security in Nigeria, economists found that over half of cacao-producing households in Nigeria were food insecure, with the most insecure households being larger, female-headed households, and with lower monthly income (Oluyole et al. 2009). A qualitative study of crop substitution in Brazil illustrates the process through which food insecurity comes about. Daniel R. Gross (1971) found that sisal (from which rope is made) was introduced to this drought-ridden region in the 1950s as a way to both increase national exports and to protect farmers from cyclical drought periods. When the price of sisal plummeted in the early 1960s, the majority of the farmers became impoverished. Gross found that nutritional levels had decreased for all but a wealthy few.

A second concern derives from khat's status as a drug. As such, it receives a different kind of scrutiny than other crops—one that is often tinged with what Warfa et al. (2007) call "moral panic" due to fears of its effects on individual and social health. It is worth noting, however, that khat farmers have been spared the havoc that the war on drugs has wreaked on the lives of countless peasants in Southeast Asia and South America growing coca and poppies. Nevertheless, khat still tends to be singled out for scrutiny based on emotional reactions against its status as a recreational drug. Many people—especially those with a relatively high amount of Western education, those from a different part of the country, or the relatively wealthy—disdain khat. An unsubstantiated, though commonly stated, rumor had it that the former president himself condemned khat consumption as a barrier to the nation's economic development.

Khat is officially legal to produce and consume in Madagascar unlike in the United States and France, where it is illegal to do so. In Madagascar, interviews and casual conversations revealed that many people are either unclear about khat's legal status or concerned that its legal status may change. At the international level, Western nations are not in agreement on the need to control it. Khat is legal in the United Kingdom, although there are ongoing discussions about whether or not to make it illegal (Anderson and Carrier 2011). The Netherlands announced a ban on khat in early 2011. Khat is legal in much of Africa, but there is vocal opposition to it in many places (Anderson et al. 2007). Opposition to it and even outright prohibition of it characterized the British colonial period in northeast Africa and Yemen (Gezon 2012).

No matter what its legal status, wherever it is grown or chewed, it is the subject of much discussion as to its value as a produced or consumed substance (see, e.g., Beckerleg 2006, Armstrong 2008). In writing about khat in northeast Africa, Cassanelli (1986) called it “quasilegal” because its legal status is often challenged or awkwardly tolerated.

Disapproval of khat as a drug that is suspected to cause social harm has contributed to its unique configuration in food security and legalization debates. A task of this analysis is to sort out moral panic about drugs from genuine threats to food security. Local concern about food security, however, was not based solely in moral panic as concerns about regional food supply are legitimate. This became particularly apparent during the political crisis of 2002, during the civil upset surrounding a presidential election (Marcus and Razafindrakoto 2003). People explained that during the crisis, the road from the capital city, which is the center of mass food production of the country, was blocked. They realized then the extent of their dependency on the capital when few vegetables and many other nonfood products could be found in the markets (other products come directly to the harbor of Diego Suarez, including imported rice). The north is a major producer of rice, but it is not self-sufficient. European vegetables have been grown on the slopes of Amber Mountain since the colonial era. Observing the transition from food crops (rice and vegetables) to khat alarmed northern political and civic leaders, and for good reason: they experienced a period of classic political vulnerability and realized the importance of local production to sustainable, long-term stability in food availability. Listening to local people express their concern, I decided to pursue this as a research question. What I found was that income from khat lowered risk for many farming and trading households by providing cash for purchases. While khat did indeed replace some food crop production, many other significant factors also contribute to lowered food production.

Methods

This research project began as an inquiry into the causes of land cover change around the Amber Mountain National Park, located about 30 miles south of the city and regional capital of Diego Suarez. It was an extension of my interests in the micropolitics of park-people relations in the nearby Ankarana protected

area (Gezon 2006). Preliminary research in the early 2000s revealed that an expansion of khat production was the most dramatic change in the region. My research focus shifted, and khat itself became my central interest. Preliminary research in 2003 revealed deep concern over food security issues because of khat expansion. What had once been a region rich with rice and a major supplier of vegetables to the region was becoming increasingly dominated by khat production. When investigating this issue, my working hypothesis mirrored the concerns I had heard voiced, that khat expansion had displaced food production and was therefore responsible for weakening the food security of the north by making it reliant on imports from other parts of the country and from abroad. I set out to discover whether people were indeed substituting khat for vegetables as a cash crop and whether people were planting khat on former rice fields, thereby replacing this subsistence-oriented food crop with khat and growing less and less rice. If people were making these changes, I wanted to understand the reasons. Questions of food security formed a part of my larger study of khat, which included inquiry into khat distribution and consumption practices (Gezon 2012).

I conducted ethnographic research in the region of Diego Suarez for six months in 2004, with follow-up visits in 2005, 2007, and 2010, using multiple methods for investigating these questions (Gezon 2010). I examined urban consumption of vegetables in Diego Suarez in 2004–2005 in order to better understand claims that khat was displacing vegetable production in part because of lowered urban demand for exotic vegetables. I studied this through both in-depth interviews with consumers and more casual visits to the local markets to talk with vegetable vendors. I identified 13 key informants and conducted two lengthy semi-structured interviews in their homes. Between the interviews, informants filled out food diaries for approximately one month.

To gather information about the khat commodity chain, I and my research team, which included Malagasy research associates and students at the Université d’Antsirananana, developed three sets of questions for structured interviews on the production, distribution, and consumption of khat in Diego Suarez and in the major khat production areas. We administered these in 2007 (Gezon and Totomarovario 2008). Throughout the course of the nearly eight years of this study (including five separate field seasons and

ten months combined of field time), I observed continuously and engaged in casual conversations with many people. I also conducted approximately 20 semi-structured interviews with community and political leaders, including presidents of the villages, the mayor of Diego Suarez, the governor of the province, members of the chamber of commerce, a priest, and a judge.

In the next sections, I give a brief overview of khat globally and then shift to analyze khat versus food production in Madagascar. Following this, I draw a parallel with concerns about khat in Yemen and Ethiopia, suggesting that khat is subject to similar scrutiny in other productive contexts in part because of its status as a drug crop. Finally, I will call for a holistic response to the concern about food security and encourage nonmoralistic analysis of the role of drug crops in an economy.

Khat in Global Context

There are debates as to whether khat originated in Ethiopia, Yemen, or elsewhere in central Asia (Kennedy 1987). Evidence suggests that khat has been chewed recreationally in Yemen and Ethiopia since the 12th century and that it had become common by the 14th century. In the contemporary era, khat is mainly consumed in Yemen and the horn of Africa in the countries of Ethiopia, Kenya, Djibouti, and Somalia. It has also followed Somali immigrants to where they have settled in the United Kingdom, Australia, and the United States (Anderson and Carrier 2011). Khat has held a central place in religious, social, and political ritual for hundreds of years in places in Ethiopia, Yemen, and Kenya (Carrier and Gezon 2009). Wherever it is chewed, it carries symbolic significance for the identity of the chewers—generally marking their participation in a particular religious practice, ethnicity, nationality, gender, or age category (Carrier 2005; Kennedy 1987; Wedeen 2008; Weir 1985).

The main centers of production and export in the world today are in Ethiopia and Kenya. No khat is produced in Djibouti and little in Somalia—two major centers of consumption that import it from Ethiopia and Kenya. The development of khat as a cash crop in Ethiopia emerged intentionally when Ethiopian Airways was first established in the 1950s and could transport khat efficiently to Aden in Yemen (Gebissa 2010b). Khat's active property, cathinone, transforms into the less potent cathine within 24–48 hours, and so

well-organized and rapid transport is critical. Production has increased dramatically in Ethiopia since the 1950s. The Harerge highlands of eastern Ethiopia in particular saw an increase from 2,996 hectares in khat production in 1954 to 112,206 in 2000 (Gebissa 2010d:103).

Yemen is also a major producer, with most production located in former North Yemen. Most of its consumption is internal. Khat production began to increase when coffee exports were interrupted during the revolution of 1962 (Cassanelli 1986). Another factor contributing to the rise in Yemeni production was greater demand within Yemen. In the 1970s, Yemenis who went to work in oil-rich Arab countries sent back remittances, increasing the disposable income of many (Weir 1985).

Yemeni dock workers brought khat to Madagascar around the turn of the 20th century during the French colonial era. Those who settled in Madagascar began planting it in kitchen gardens for personal use. Demand increased as the Yemeni and Yemeni-descended population grew, and enterprising farmers began to plant it commercially on the fertile foothills to the northeast and east of Amber Mountain. Local interviews reveal that the first to grow it as a cash crop were not Yemenis but farmers of French descent who had settled in Madagascar and are called Creoles. Gradually, khat production caught on and others grew it, too, mainly for sale to the Yemeni-descended population, who had acquired a local identity as *arabou*. In the mid-1970s, nearly all the French left amidst a socialist revolution, abandoning or selling their land to people who remained. Currently, one of the oldest khat farms with the best reputation is owned by people of mixed Creole, Yemeni, and Malagasy descent, who bought it from a Creole family in the 1970s.

Around the 1990s, consumption of khat began to spread to the general local Malagasy population. Most agree that the first to chew it regularly were taxi drivers, who used it to keep themselves awake during their long hours of work. Gradually, other laborers began to chew it as well as minimally employed youth. Today, most formal sector places of employment forbid khat chewing, and it has become a central part of an emerging youth identity (Mbima 2006).

Khat versus Food?

Amber Mountain is renowned for its fertile soils in which rice and vegetables grow well. While rice is

grown throughout the north, there are fewer areas dedicated to vegetable production—and the northeast slope is the most important local supplier to the city. While exact figures recording land under production of various crops are not available, interviews and ground observations reveal that khat production is increasing in the region, and vegetable and rice production are decreasing. The decline of food production is a concern for food security in the region as well as for the individual farming households. Studies of food security often focus solely on farming households (Mikalitsa 2010) or on national supply and demand ledgers (Gao 2010) without following the commodity chain to consider the impact of fluctuations in food production on nonfarm-based food consumers.

In northern Madagascar, the market for the food crops is local, and understanding food security requires examining both producers and consumers. The concern about khat is that it is displacing rice and, more importantly, vegetables because it is easier to grow and has significantly higher returns on the investment. I studied this phenomenon over the course of several field seasons. The most focused study occurred in the summer of 2007, when I and a team composed of a research associate, Louis-Philippe d'Arvisenet, and students from the Université d'Antsiranana, conducted structured interviews with 55 farmers living in Antsalaka and Joffreville. While it was not a true random sample, we sought out people who lived in various sections of the village and with varying socioeconomic statuses within the village. Structured interviews were followed by open-ended discussion of the conditions of production. We also conducted open-ended interviews with local community leaders.

With regard to rice, we found that in one of the two main centers of production, few people actually convert rice fields because of the cultural value they place on food crops. In the other center, some people did indeed convert irrigated rice fields to khat. This may be because there were more outsiders who had come into the area to farm and also because irrigated land was more abundant. According to observations and interviews, farmers were growing fewer vegetables than before on all the land around Amber Mountain. The reasons for abandoning vegetable farming are complex and reveal deeper threats to the economy of food production than are posed by khat itself. Problem areas include declining local demand

for vegetables and poor conditions of production and distribution.

Market Constraints on Vegetables

Colonial history provides an important context for understanding the current place of khat and vegetables on the slopes of Amber Mountain. In precolonial times, people grew rice and had small kitchen gardens. They dug canals that they owned and maintained through a system of common law. They also used nonirrigated land to grow crops such as manioc, sweet potatoes, and corn. After the French established formal control over Madagascar in 1896, the French government, in an attempt at making Madagascar a settler colony, granted concessions to French farmers, many of whom came over from Reunion Island, another French colony. One of their goals was to make the Diego Suarez region, where there was a major military base and a significant settler population, increasingly self-sufficient in foodstuffs. To that end, some of the concessions were intended to produce cash crops for export (*la grande culture*), while others were set up to produce vegetables for the needs of the French population in the region (*la petite culture*). Thus, the production of exotic vegetables such as carrots, cabbage, green pepper, green beans, eggplant, beets, or potatoes was established (Gezon 2012). When nearly all the French left the country in the mid-1970s, so did much of the market for the vegetables (see also Minquoy 2006).

During interviews, farmers complained that the demand for vegetables had decreased significantly. Their primary market is still local, but the quantity of vegetable consumption has decreased. During one interview, a vegetable farmer exclaimed, "Bah! Malagasy people don't eat vegetables. They only like greens. It is *vazaha* (white people/foreigners) who eat vegetables." Another farmer revealed that the price of vegetables has consistently gone down, and even with the lower prices, it is often hard to unload all one's produce. He used the example of carrots, saying that he never used to have a problem selling three large bags of them, but this is no longer true. Many even claim that there is a real risk of loss when growing vegetables. Quantitative figures verifying this decline in price are not available since no official statistics are kept at the governmental level and no economic analysis has been completed.

Vegetable sellers in Diego Suarez corroborated the perspective of the farmers. They also complained

about losing money or breaking even on their vegetable sales. One woman provided some insight into local diets by explaining how her vegetable sales are directly tied to the availability of tuna. Local people prefer to eat vegetables with beef and not with tuna. When a load of tuna arrives, sellers can predict that their vegetables will not sell. Another kind of seller buys produce in the central market and resells it in a small stand in her neighborhood. People who do not want to make the trip to the market will pay a little extra for the convenience. An interview with one of these sellers was revealing. She explained that she sells items that are most basic to the local diet, including greens, tomatoes, eggs, onions, garlic, dried fish, dried beans, ginger, and pimento. Those ingredients are sufficient for basic common Malagasy meals since many people do not consume fresh meat every day. She told me that she does not buy exotic vegetables because she knows they will not sell.

In addition to interviewing farmers and sellers about the demand for vegetables, I investigated consumer behavior through semi-structured interviews and a food diary that I distributed to 13 individuals living in the *quartiers populaires* (working-class neighborhoods). These informants were identified through the social network of a key informant, who also served as a research assistant and who had contacts throughout the city. Socioeconomically, the informants represented a range of income and household composition. Among the wealthier was a man who tended to his mother's large, impressive cement construction house (*tranovato*) in her absence but who had no significant income of his own. Another was a single woman who owned a successful neighborhood convenience store (called a *boutique*). On the lower end, one informant was a disabled woman, her minimally employed husband, and their three children. Another was a young man who had recently married and did not have a stable income.

I asked each of the 13 individuals to record what they ate for each meal each day in a food diary that they kept for between 22 and 47 days during the months of November and December 2004. I explained to them that I am interested in understanding more about Malagasy diets without revealing my interest in vegetables, per se. Thirteen respondents do not represent enough cases to draw reliable statistical generalizations, and there are methodological problems with regard to standardization since they did not all keep a diary for the same number of days. Neverthe-

less, the results do point to some general trends. As for a note on local terminology and perceptions, people tend to refer to exotic vegetables as "vegetables," or *légumes*, adopting the French word. Greens and tomatoes are not generally considered *légumes* because they are well integrated into everyday local diets.

The results reveal that *légumes* are not an important part of the diet of common northern Malagasy people and that higher income correlates with consumption of *légumes*. Everyone ate greens, and two-thirds of them ate them at least every other day. All but one respondent ate tomatoes, and half of them ate them nearly every day. As for *légumes*, over 20 percent (three out of 13) never ate them during the time reported. The most commonly consumed were potatoes (seven out of ten) but only one ate them more than four times, or a maximum of about 10 percent of the meals reported. The next most common was lettuce (six out of ten consumed it), and with one exception, the most anyone ate it was once. Three ate carrots, but not more than four times, two ate cabbage twice each during the time reported, and one ate green beans five times. The one who ate the most *légumes* was the successful, single boutique owner, and she did so significantly more often than the others. She ate them a total of 32 times, on 13 out of the 34, or 38 percent, of the days reported.

A revealing result comes from a man who misunderstood the instructions. Instead of writing down his meals each day, he wrote a general explanation of Malagasy eating habits. He explained that foods consumed when people have money include beef, poultry, and fruit. Common food includes greens, tomatoes, beans, and dried fish. The place of vegetables was invisible in his account as he did not mention it as either every day or special occasion food.

In sum, investigation throughout the commodity chain, including farmers, sellers, and consumers, upholds the claim that the local consumer market for vegetables is small and getting smaller. What about nonlocal markets or other opportunities for wholesale vending? It would seem logical for farmers to seek out opportunities to sell to local ship chandlers as the port is active and stocks up on supplies locally. Given the increase in tourism, there are also numerous hotels and restaurants that would be potential buyers. However, consistent supply is the obstacle to this as it is for small-scale farmers around the world. Farmers

harvest in relatively small quantities and can only supply products when they are in season. Hotels and ships buy from well-established suppliers arriving regularly and predictably (except during a political crisis such as the one in 2002) from the capital city of Antananarivo. Farmers and buyers alike would need to adjust their strategies for this market to become open to local producers: farmers may need to form associations and buyers would need to be able to negotiate flexibly what they buy from whom. This is a specific area where coordinated development efforts could be launched between, for example, agricultural extension services and chambers of commerce.

In sum, the lack of a market for vegetables makes their production risky. Farmers who abandoned vegetables did not do so merely because they are labor-intensive: The arrival of khat provided a welcome and timely crop substitute for farmers who were realizing diminishing profits from farming vegetables.

Constraints on Vegetable Production

Other problems with vegetables have to do with various aspects of their production. Farmers identified several constraints. For one, farmers noted that seeds and starter plants for *légume* crops are very expensive, not locally available, and often are not of good quality. In addition, a lack of access to the means of production provides a significant barrier. Neither credit nor cash is available to farmers who could use tractors, beasts of burden, and plows to help till the soil and ox carts to transport their harvest. Without this ability to intensify production, farmers can only grow small quantities.

Furthermore, the decay of local infrastructure limits production and trade. According to interviews, the canal structure dates to the colonial era and has become inefficient over the lands it covers. There are additional lands that could also become irrigated with the proper attention. Also, overland transportation makes it difficult for farmers to get their produce from the fields to main roads where it can be sent to market. Fragile crops such as tomatoes risk ruin over rocky lanes only passable by ox cart, and even for sturdy crops, there is a high opportunity cost in navigating barely passable paths over boulders and through streams. In addition, many farmers do not own ox carts and must rent one, which raises production costs for them. It is in this context that the preference for khat must be analyzed. Khat is by far easier to transport because it is light and can be

carried on one's back to vehicles that can transport it further. This leaves many undercapitalized farmers with little choice in what to produce.

There are indeed also distinct advantages to khat that farmers consider when making planting decisions. One is that khat provides an income for a longer period of the year than do vegetables. For irrigated khat—typically, fields that have been converted from rice or vegetable production—one can get money all year-round, including the dry season when the price of khat is high. Even nonirrigated khat provides an income during the entire rainy season. Vegetables only bring in money every three to six months, when the crops are ripe. They are also more vulnerable to fluctuations in rainfall, and many find that they are more susceptible to pest infestations.

Return on the investment in khat is greater for many farmers as vegetables require more labor and bring in less income relative to the amount invested. Two farmers explained that they chose to grow khat because of how much money they could make with it. One man had been growing bananas within the boundaries of the national protected area. He needed to find a substitute due to more stringent enforcement of activities permitted within the park. He chose to grow khat on his nonirrigated land and had not regretted it. A wealthy older man originally from the south of Madagascar had originally planted root crops such as sweet potatoes, taro, and cassava but in the mid-1990s, at the very beginning of the khat boom, converted to khat. In sum, farmers take both potential income, labor requirements, and risk into consideration when deciding what to plant.

It is worth noting that despite the dramatic increase in khat production, most farmers grow food crops in addition to khat, and feel strongly about the importance of this diversity. In our structured interviews of 55 farmers in 2007, the research team found that 51 (92 percent) grew at least some khat. The other four grew only rice and vegetables. We also found that almost half of the khat farmers (26, or 47 percent) also grew rice, 24 (43 percent) also grew vegetables, and 35 (63 percent) also grew bananas and/or lychees (Gezon 2012). Many farmers grow their khat bushes only on nonirrigated hillsides that are unsuitable for vegetable or rice production. Farmers expressed the need for diversity in crop production as an economic safety net, as a continuous source of income throughout the year as different crops mature at different times, and to meet different kinds of subsistence

needs—including cash for purchases and food for household consumption.

Despite the money they earn from khat, they would prefer not to purchase rice, especially when they notice the price of rice continuously increasing. They also recognize the value of getting a large influx of money when food crops are harvested and sold. One wealthy and land-rich woman expressed local perspectives well when explaining why she grows vegetables in addition to khat despite the added labor of vegetable production. She said *"samy am fotoany"* or "everything in its own time." Because she has the means to do so, she grows vegetables in the early rainy season, when the prices are high. Those without such means lament the lack of capital, land, or water to have such a diverse crop portfolio.

Drawbacks of Khat Production

Growing khat also has some disadvantages that are easily masked by the returns it provides for so many. These become particularly clear when considering rural stratification and the difference between those with and those without ample land and irrigation. Khat is reputed to be nearly labor-free, and many urbanites scoff at rural people, accusing them of being lazy and taking the easy way out. However, many farmers noted that khat's returns are significantly higher when it is watered, weeded, when the bushes are trimmed properly, and the pests managed. Unattended khat produces enough khat to be marketable, but the quantity is far less than with well-tended khat. In addition, all khat farmers need to harvest and many find the need to guard their khat bushes against theft. Wealthier farmers can hire these tasks out and pay for expensive inputs such as pesticides (though there is much concern about health consequences), while poorer ones cannot. In addition, the increase in khat production over the past couple of decades has resulted in an increasingly saturated market, leading to lower prices, especially during the rainy season when everyone's khat is abundant. As a result, most farmers need additional crops besides khat.

The labor requirements combined with the ever-increasing supply of khat (and hence lower prices) explain why more people have not, in fact, shifted fully to khat production, and why some farmers do not grow it at all. Although khat has filled a significant void for many farmers due to the decrease in the viability of vegetable crops, the reality is that most farmers have not actually abandoned food produc-

tion. In 2001, the Plan Communal de Development, a report written to strategize donor funding priorities, estimated that 450 out of a total of 2,423 hectares are in rice cultivation, 256 in tomatoes, and 150 hectares in corn; whereas 170 were dedicated to khat production. These numbers reveal that in terms of overall acreage, farmers were still planting more food crops than khat a decade ago. While numbers are not available for more recent years, it is reasonable to assume, given ground observations and interviews, that khat is the most attention-grabbing crop, but that it still does not occupy the majority of land cultivated.

Targeting khat as the cause of lowered vegetable production obscures local level issues. Ignoring these will only further impoverish farmers and will not resolve larger issues of food security. The negative stereotypes held by khat's detractors about the farmers on the east side of the Amber Mountain—that they want easy money and are unwilling to put in the work required for growing vegetables if they can avoid it—do not hold up generally, even if there are some individual cases that support them. Similar to all stereotypes, they are oversimplified generalizations of a few cases that fit with a larger narrative. The farmers of this area in general work hard to diversify production that is limited by structural constraints.

Comparative Anxieties

Examining khat on a global scale reveals that reactions to it in Madagascar bear some resemblance to attitudes toward it in other contexts of production—namely, Ethiopia and Yemen. A comparative review reveals some common issues facing khat as a drug crop that has a high willingness to pay, relatively (or reputedly, in any case) lower work requirements than other crops, and often provides relatively high profit margins for farmers. In every locale, khat faces similar challenges in that it is a nonfood crop that requires arable land and water resources and therefore competes with other crops—and other political and economic interests in those crops.

Fears about khat's role in supplanting other cash and food crops also exist in Ethiopia and Yemen. One concern is that khat displaces cash crops (in particular, coffee) that provide export earnings. This is particularly the case in Yemen, where most khat is chewed internally and not sold internationally. Although it has been reported that farmers often prefer khat

because it requires less work and yields a much higher profit than coffee (Varisco 1997; Weir 1985), Kennedy (1987) argued effectively that khat has not displaced coffee in Yemen. He explained that coffee and khat occupy different microecological zones (see also Ward 1999) and so one does not easily substitute for the other. Coffee production had indeed declined but not because khat has replaced it. Similar to the situation in Madagascar, khat has been an easy target for agricultural troubles.

In Ethiopia, on the other hand, khat has been an important source of governmental revenue. Between 1999 and 2004, the price of coffee fell from U.S. \$3 per kilogram to U.S. \$0.86. Ethiopia's earnings from coffee went from 70 percent of exports to 35 percent of exports. During that same period, khat production doubled and became 13 percent of the gross domestic product (GDP). The price of khat rose to about \$8 per kilogram, making it the logical choice of many farmers (Hailu 2010:129). In Madagascar, khat is neither exported nor even taxed (except within one municipality) by the government internally and so it has no appeal at the national level as a boost to the overall economy.

Despite its contribution to Ethiopia's GDP, khat has been identified as a threat to food production there. The same accusation has been made for Yemen. Weir (1985:34–37) acknowledged that while khat did not displace coffee, it is likely to have replaced some grain farming. Because of high costs associated with grain production, farmers had little incentive to grow them. Gebissa's (2010a) edited volume is dedicated to examining the relationship between food and khat in Ethiopia. He and his contributors pointed out some important reasons why many farmers have been both pushed and pulled into farming khat in Ethiopia. First, similar to Madagascar, khat provided a solution to a local problem. In Ethiopia's case, it was land scarcity associated with population increase and land concentration (Gebissa 2004:66–70, 2010b). Second, khat is well adapted to local environmental conditions. It can stand a certain amount of frost and drought, and its root system is useful in preventing erosion. Furthermore, while khat is growing to maturity, it permits intercropping, allowing farmers to earn a livelihood in the transitional period (Tefera and Start 2010:174). Third, regional demand for khat increased as transportation networks improved, and global demand for khat increased as Somali immigrants traveled abroad. Finally, similar to Madagascar,

khat provides cash that farmers need in order to purchase food year-round and to invest in the food production they do undertake, thereby contributing to food security at the household level. As in Madagascar, the reasons for a move away from food production are complex, and it would be simplistic and unproductive to blame khat without examining the larger context of this transition.

Despite the attractions of khat, Ethiopian farmers would prefer diversity in their farming portfolio. Gebissa (2010c) explained that it has been only recently that farmers in the most intensive khat-producing regions have shifted to monocrop khat cultivation, and that is because they have felt the pressure of land scarcity and intensification. Before that, they felt it important to grow vegetables and grain crops and to keep small livestock. Farmers are also well aware that khat does have drawbacks, including some vulnerability to frost and fluctuating market prices (Tefera and Start 2010). As with khat everywhere, it also reduces their flexibility to adopt different crops because of the perennial nature of the khat bush. National and international level planners also call attention to concerns about the effects of pesticides used (Date et al. 2004) and the effects of water use on irrigated khat (Milich and Al-Sabbry 1995; Ward 1999).

In Ethiopia, the move away from food production has been a major governmental concern. It introduced substantial assistance to farmers to encourage them to grow food crops. This included including extension services, improved seeds, and subsidized credit. Nevertheless, few farmers have chosen to replace their khat with food crops. Khat production, however, has not received similar governmental assistance. Gebissa (2010b) noted that despite the large-scale attention to agriculture in Ethiopia, khat has received virtually no consideration. This is also the case in Yemen and Madagascar. In writing about Yemen, Milich and Al-Sabbry (1995) noted that even though donor nations have not sought eradication, as has been the case for coca in South America, donors have not developed initiatives to improve khat production. In Madagascar, there is frequent nongovernmental organization activity, often with governmental partnership, targeting individual farmers in promoting such activities as bee keeping and improved fruit and vegetable growing. There are no efforts, however, at developing more efficient khat production or in facing the more macroscale infrastructural (roads and canals)

and market issues associated with overall national and regional food security.

Although khat is not a food crop, it is an important part of household food security for many households. Regional and national food security initiatives need to consider the economic value of khat while working to ameliorate food production challenges. As scholars such as Oluyole et al. (2009), Thiengkamol (2011), and Maxwell and Wiebe (1999) have pointed out, growing subsistence crops is only one piece of food security. Having a source of income with a high willingness to pay, such as a recreational drug like khat, can be a critical component in providing cash for investing in food production in a balanced agricultural portfolio. While conditions are different in each country, similarities may be due to khat's status as a recreational drug. A review of the literature on khat in other contexts of production reveals that the issues in Madagascar are not unique to that setting. The commonalities point not to any essential characteristic of khat, per se, but to challenges faced by a quasilegal drug crop that is profitable at the local level to farmers and traders.

Conclusion

Concerns about khat as a substitute for preferred crops exist wherever it is grown. A careful examination of the evidence, however, reveals that khat production has made rational sense given the need to intensify production generally as well as to earn cash for both farming inputs and for the purchase of cheaply available food. In this light, khat can be seen as a partial relief from food insecurity, given that it provides household income for purchasing food. Part of the reason for this is, in fact, because it is a drug for which there exists a high willingness to pay.

In Madagascar, many smaller-scale khat farmers do not abandon food production but, instead, plant it on nonirrigated hillsides and other marginal lands to supplement rice and vegetable growing. For those who do convert existing fields, it makes sense to grow khat as a substitute for a declining vegetable market and a way of coping with a decayed agricultural infrastructure. When it comes to rice, farmers balance the prices and choose that which gives them the highest return. Although this seems logical, it defies stereotypes of farmers as too lazy to put the work into growing anything but khat. First, while khat does not require much work merely to survive and yield a

limited return, profitable khat comes as a result of a significant amount of weeding, trimming, and tending. Furthermore, farmers are not afraid of the work involved in rice production and would gladly grow it if the price were right. In fact, as the price of rice went up, the farmers I talked with in 2007 began to imagine tearing out the khat bushes and reverting back to rice. To this extent, the perennial nature of khat is a disadvantage to individual farmers and to overall food security.

As this analysis has pointed out, khat is vulnerable to criticism for many good reasons in a discussion of food security because of the arable land and water it requires. Yet morally based emotional reactions against it can obscure the ways in which khat may actually be an important part of a total package of food security wherever it is grown. As Maxwell and Wiebe (1999:830) pointed out, although nutritional status is the outcome in an analysis of food security, there are many factors that go into determining it, including resources, production, prices, income, and consumption. For farmers, growing a cash crop makes sense if the price is stable and it can be used to purchase other needs, including food, and to invest in food production.

Assessing food security requires interdisciplinary and multisector rigor because of the breadth of the relevant issues. Addressing problems related to food security in northern Madagascar will require paying attention to the ways in which a cash crop such as khat can both enhance and take away from opportunities at the household and regional level. It will also require examining vegetable and rice production in its own right. Stereotypes of khat (or any other drug) as bad and of farmers as lazy detract from the ability to face the critical need of nutritional sufficiency.

This analysis contributes to discussions of the role of drug crops in food security in other contexts, even in North America, where cannabis provides income in economically depressed areas. There and in other cases of drug production—such as poppies in Southeast Asia and coca in South America, questions of legal prohibition and international drug wars add dimensions that are beyond the scope of this analysis but that are critical to an assessment of food security. Drug crops are distinct both because of the relatively high willingness to pay by consumers and because of the moral (and sometimes legal) condemnation that tends to be associated with them. These factors make them both advantageous as crops and subject to

condemnation, creating both benefits and costs. Recognizing the unique qualities of drug crops will enhance analysts' ability to recognize and address pressing questions of nutritional sufficiency globally.

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