ECONOMICS OF TOBACCO CONTROL

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THE ECONOMICS OF TOBACCO FARMING IN ZAMBIA

Tobacco Farmers Survey Report 2019

American Cancer Society

SOURCES

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EXECUTIVE SUMMARY

TOBACCO IS A PRODUCT THAT WHEN USED AS SUGGESTED BY THE MANUFACTURERS IT WILL KILL MORE THAN HALF ITS USERS. REDUCING TOBACCO USE SHOULD THEREFORE BE A CORNERSTONE OF ANY GOVERNMENT'S PUBLIC HEALTH STRATEGY. YET TOBACCO CONTROL MEASURES CONSISTENTLY FACE ENORMOUS OPPOSITION, OFTEN FROM OPPONENTS USING ARGUMENTS WITH A SUPPOSED ECONOMIC LOGIC. OUR CONTINUING STUDY ON THE POLITICAL ECONOMY OF TOBACCO CONTROL AND TOBACCO FARMING IN ZAMBIA CHALLENGES THESE AGRUMENTS WITH SOLID EMPIRICAL EVIDENCE.

One dominant economic argument is the alleged harm to smallholder tobacco farmers from tobacco control policies. This argument has become one of the ubiquitous reasons promoted by the tobacco industry and its allies for governments to slow, stop, or even reverse tobacco control efforts. Moving beyond the well substantiated logic that demand for tobacco leaf is driven by global, not simply country-level, consumption – hence Zambia's tobacco control efforts are likely to have little short-run effects on tobacco farmers – it is becoming increasingly clear that tobacco farming is not a livelihood worth pursuing for Zambians. In this report, we utilize a representative survey of 515 tobacco farmers to examine these economic livelihoods rigorously. Building on previous research on tobacco farmers, this study also includes in the sample a large sub-sample of former tobacco farmers, which permits us to compare the livelihoods of the current and former farmers.

The findings show that growing tobacco generally compares poorly with other agricultural livelihoods for most smallholder farmers. Our research results demonstrate that most tobacco farmers who have signed contracts with leaf-buying companies to cultivate tobacco leaf are operating at a net loss. The farmers usually end up in debt to the leaf-buying company, compelling them to grow tobacco again the following season to pay back their debt, precipitating or continuing a long and generally losing annual cycle. To make this scenario even worse, tobacco growing appears to be the most labour-intensive agricultural crop. When incorporating a minimal economic value of unpaid family labour (an accepted method in agricultural economics to estimate the opportunity costs of any agricultural activity), nearly all Zambian smallholder tobacco farmers lose income by growing the crop. Most tobacco farmers would be better off putting their very hard work into other economic pursuits.

WHEN WE COMPARE CURRENT AND FORMER TOBACCO FARMERS, THERE IS A STARK DIFFERENCE. ON AVERAGE THE HOUSEHOLD RESOURCES OF THE FORMER TOBACCO FARMING HOUSEHOLDS WERE ALMOST 75 PERCENT HIGHER THE YEAR AFTER SWITCHING COMPARED TO THEIR NEIGHBOURS WHO HAD CONTINUED CULTIVATING TOBACCO LEAF. WHILE TOBACCO-FARMING HOUSEHOLDS' GROSS INCOMES WERE TYPICALLY HIGHER ON AVERAGE, THEIR COSTS, BOTH DIRECT AND HOUSEHOLD LABOUR, WERE SIGNIFICANTLY MORE THAN THE FARMERS WHO HAD SWITCHED TO NON-TOBACCO CROPS AND OTHER LIVELIHOODS. THE FORMER TOBACCO FARMERS WERE ALSO PRODUCING SIGNIFICANTLY MORE FOR THEIR HOUSEHOLD'S OWN CONSUMPTION– INCLUDING FOOD PRODUCTS– AVOIDING THE NEED FOR THESE HOUSEHOLDS TO PURCHASE THESE OFTEN COSTLY GOODS.

Zambia is a Party to the WHO Framework Convention on Tobacco Control (FCTC), which compels Parties to help tobacco farmers to find viable alternative livelihoods (Article 17). The results of this research suggest strongly that finding and promoting alternative livelihoods for tobacco farmers should be a development priority in the coming years. This comes in serious and troubling contrast to the recent 7th National Development Plan for Zambia, which specifically identified tobacco farming as a growth sector.

INTRODUCTION

Tobacco control remains one of the greatest public health challenges of the first half of the 21st century. Scholars estimate that the number of tobacco-attributable deaths in 2018 to be more than seven million [1], and is projected to grow to 8 million per year by 2030.[2] Worldwide, more than 1.1 billion people smoke and more than half of all regular cigarette smokers will eventually die from their habit — unless they quit.[3] Even in middle age, stopping smoking avoids most of the risk of being killed by tobacco, and stopping earlier avoids almost all of it. The Framework Convention on Tobacco Control (FCTC), the world's first public health treaty under the auspices of the World Health Organization, provides a highly effective set of interventions that will drive down consumption, including many demand-oriented measures such as raising tobacco taxes, graphic warning labels on tobacco packaging, and smoke-free public and work places. Furthermore, with widespread quitting, many more tobacco deaths will be avoided. The FCTC also emphasizes supply-focused measures such as moving tobacco farmers to other viable alternative livelihoods. This report speaks directly to these supply-side issues.

Many Zambians are under the gravely mistaken impression that tobacco use is not a significant public health challenge in Zambia. Key informant interviews conducted in November 2018 with 15 persons—from both within government and outside of it—who are engaged in some aspect of tobacco control, tobacco farming, or economic development policies consistently found that many continue to subscribe to the idea that only few Zambians smoked:

> "…the way I see Zambia, we're definitely not a smoking country. That you can write: we're definitely not a smoking country!" (P5)*

> "Smoking is going down. I have friends who used to smoke and they have stopped." (P15)

Many informants cited personal anecdotes of minimal tobacco use rather than scientific evidence to support their perception. Survey data present an entirely different picture. Tobacco use prevalence in Zambia in 2015 was 26.5% (adult males) and 4.6% (adult females).[4] Moreover, the most recent Global Youth Tobacco Survey (GYTS) (2011) and the most recent wave of the International Tobacco Control (ITC) survey both indicate that a higher proportion of girls than boys in Zambia now use tobacco products, suggesting a major and potentially catastrophic shift (GYTS 2011; ITC 2015). [5] [6] These percentages equate to more than one million adult smokers and more than 56,000 child and youth (<18 years) smokers (tobaccoatlas.org).

But tobacco use is not just a health issue, it is undoubtedly also a development one. In key informant interviews in 2015 and 2018, the role of tobacco in development is still seen in almost antithetical ways, even by many directly involved in efforts to spur economic development in Zambia. For informants active in the economic sectors of government, tobacco is considered an important cash crop, a source of livelihood for smallholder farmers, and an important source of foreign exchange (FOREX).

> "Tobacco is very important…it's one of the top ten products that we export." (P8)

> "For many small holder farmers, it's still seen or perceived largely as the one crop that brings you cash at the end of the year." (P4)

> "…there appears to be a scale up of tobacco growing across the value chain up to the final product of processing and selling. The government obviously feels that's the right way to go…to…bring in more foreign exchange, bring in more money." (P3)

Those working in the health sector view the development argument for tobacco quite differently, noting not only its role in creating enormous health risks but also in its economic and social development costs:

> "…if the people of Zambia are not healthy, then it becomes difficult for the country to achieve its [development] vision 2030." (P6)

> "Treating diseases caused by tobacco such as cancer and other health hazards are an added cost on Government revenue [so] the Government is in a 50-50 situation on the issue of tobacco: between raising revenue and treating the health of the people." (P13)

*Quotes are identified by anonymized participant (P) number only, to retain confidentiality.

Other studies back up the claim that tobacco creates a net economic cost rather than gain, at both personal and national levels. Buying tobacco instead of using resources to obtain other vital goods and services like healthcare, education, or healthy foods, for example, prevents families from rising out of poverty (Chelwa and Van Walbeek, 2014), thereby dampening economic development. To smoke daily 10 of the cheapest cigarettes available in Zambia, a Zambian of average income would have to spend nearly 20% of his or her income (tobaccoatlas.org). Tobacco use also increases illness in smokers, leading to loss in worker productivity, and imposes significant costs to the health system (both public and private) in treating tobacco-related diseases, costs which might otherwise be invested in healthier and more sustainable forms of economic development.

In 2008, Zambia became a Party to the WHO FCTC, which compels Parties to implement a number of control measures aimed at reducing tobacco use. As of early 2019, the Zambian government was considering enabling legislation that would help implement the treaty's provisions. Despite the WHO identifying tobacco control as a public health '"best buy" it continues to face stiff opposition in many countries, including Zambia. One of the most common arguments against tobacco control efforts is the alleged threat these efforts pose to the economic livelihoods of tobacco farmers. Even though it is well established empirically that demand for tobacco leaf is global and a country's tobacco control efforts are unlikely to affect tobacco farmers' livelihoods in the short term, this argument against tobacco control to resonate in political and policy circles.

> "…on the international market, the demand [for tobacco leaf] is slightly going down, mainly associated with some of those lobbying, the anti-tobacco laws." (P12)

> "Our friends in the tobacco sector have already gone to Agriculture and told them this [tobacco control] law is very bad, it's going to ruin the economy." (P9)

Recognizing that tobacco farmers' livelihoods must be taken into important account, the FCTC obligates governments to assist in supporting tobacco farmers to find viable alternative livelihoods (Article 17).

> *Provision of support for economically viable alternative activities Parties shall, in cooperation with each other and with competent international and regional intergovernmental organizations, promote, as appropriate, economically viable alternatives for tobacco workers, growers and, as the case may be, individual sellers.*

Fulfilling this obligation is much more than just complying with the government's legal commitment to this international treaty; it also addresses the Zambian government's commitment to a "healthy and skilled working population that can meet the demands and challenges of upper middle income development" as its most recent national development plan aims to achieve by 2030.[7] At present, there is only limited evidence-based information about tobacco farmers' livelihoods in most countries, which makes it harder for government policy-makers to counter the dominant narrative that tobacco is essential to the economic livelihoods of smallholder farmers. Building on our earlier 2015 survey and report,[8] this report presents findings from our second survey in 2017 of smallholder tobacco farmers, systematically examining their economic livelihoods.

CONTEXT

The Zambian economy continues to experience a shift away from agriculture as its main engine of growth. Agriculture, in general, makes only a small contribution to Zambia's Gross Domestic Product (GDP), estimated at just 4.8% in 2017, [9] down from 8.5% in 2014 and from 16% in 2001.[10] Not only has agriculture's contribution to GDP declined precipitously, so has its value-added labour contribution to the Zambian economy (IAPRI 2017). These declines represent broader structural changes in the economy. These structural changes, however, have not led to increased growth in manufacturing or value-added production (which is one of the key economic development goals of the present Zambian government), but rather a transition from rural agriculture to low-paying and insecure service sector work in urban centers. This phenomenon is not unique to Zambia and is broadly characteristic of many African countries. Importantly, however, and despite the declining economic importance of agriculture to the Zambian economy, almost half (48.9%) of the population's livelihoods in 2016 were still based on agriculture.[11]

It is estimated that 10,000 – 12,000 smallholder farmers continue to grow tobacco as a cash crop. Given an average household size of approximately 6.7 people, 67,000 to 80,400 Zambians have some measure of direct reliance on tobacco farming, bearing in mind that most tobacco farmers also grow other crops. Economic activities in one sector are known to have 'ripple effects' in other sectors (backwards and forwards linkages), or multipliers, often measured as 'social accountability matrices' (SAMs). No estimates of SAMs for Zambia exist, however, making it difficult to assess claims of the total number of individuals whose livelihoods depend to some extent on tobacco farming or manufacturing; although recent increases in cigarette manufacturing in Zambia claim to provide over 170 new jobs.[12] [13]

Although tobacco continues to contribute to the value of agricultural exports, it remains quite low in its overall economic contribution. Despite recent comments by the Chair of the Tobacco Board of Zambia (TBZ) that tobacco contributes 3% to Zambia's GDP (based on the peak year of tobacco sales in 2013), more recent data estimate its contributions at between 0.3% and 0.4% (P11, P12). The value of tobacco exports is only marginally more than the value of tobacco imports, with tobacco export earnings outpacing value of the tobacco imports by a margin of less than 10% in 2016 and 2017.[14] This calls into question the oft-stated economic argument of tobacco's importance in generating FOREX made by many of our key informants working in the Zambian tobacco industry (P4, P5, P8, P9), since the FOREX value of tobacco imports essentially cancels out the FOREX value of tobacco exports.

Publicly-stated government policy continues to promote the narrative that tobacco growing is essential to the livelihoods of smallholder farmers and a necessary element in poverty reduction. Indeed, it is presented as such in the latest Zambian economic development plan, which foresees increases in both tobacco leaf production and value-added leaf processing and cigarette manufacturing. In the absence of good empirical data for these claims, we originally set out in 2015 to examine tobacco farmer livelihoods using a major individual-level economic survey. Our first survey wave was implemented in 2015 and found that smallholder tobacco farmers were either losing income, or not earning enough to justify its continuing cultivation. Both to validate and build upon these findings, we conducted a follow-up second wave survey in 2017. Both surveys were led by researchers at the University of Zambia's School of Medicine, in collabouration with the American Cancer Society. Our 2015 survey sample was 497 farmers. In the follow-up 2017 survey, we interviewed 515 from the same tobacco-growing districts that we visited in 2014. We interviewed both farmers who were continuing to grow tobacco (335) and those who had stopped growing tobacco (180). Data collection interviews with 515 farmers were conducted during the period, March/April, 2017. Training in data collection for 10 research assistants was conducted for 3 days prior to the fieldwork. The training included a field pre-test component after which the survey instrument was modified to account for concerns raised.

As illustrated in Figure 1, the study was conducted in six districts of Zambia where tobacco is mostly grown by small- to medium-scale farmers: Chipata and Lundazi in Eastern Province; Mkushi and Serenje in Central Province; and Kalomo and Choma in Southern Province.

As we did with our previous survey, we also convened focus group discussions (FGDs) with tobacco farmers in four of Zambia's tobacco-growing regions, in which 57 farmers participated. Some of their comments are included in this report's key findings.

Figure 1 – Tobacco Farming Survey Study Sites

TOBACCO PROMOTION OR TOBACCO CONTROL?

In 2017, the Zambian government released its Seventh National Development Plan, with the goal of achieving World Bank upper-middle income country status by 2030, primarily by diversifying away from copper to greater value-addition in its agricultural exports. The plan identifies tobacco production as "a very lucrative investment opportunity in the country because of its profitability compared to other agricultural crops. It further states that tobacco "has great potential to contribute to the growth of the economy through employment and wealth," although no references or studies are cited for these claims. One of its proposed "strategic interventions" is to "Provide an enabling policy environment to facilitate involvement of the private sector in the marketing and processing of tobacco" (REF 7th NDP p.137). The reference to marketing of tobacco (considering efforts to legislate tobacco control efforts) is of some concern given that in 2018 two new cigarette manufacturing plants opened in the Lusaka Multi-Facility Economic Zone. These plants took advantage of Zambian government incentives (zero percent tax for five years) that, during the opening of one of the plants, officials explained were "in line with the Seventh National Development Plan."[15] The British American Tobacco Zambia factory is estimated to produce 5 million cigarettes daily; the Zambian-owned Roland Imperial Tobacco Company states that it will produce 20 million cigarettes daily. While much of the output will be exported to neighboring countries, both companies are also targeting, with the intent of growing, the domestic market. Any value in the 170 new jobs created in cigarettemanufacturing will be quickly overwhelmed by the health and economic damages created by increased domestic tobacco use.[16]

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLD HEAD SURVERY RESPONDENTS

Table 1 presents many of the key background characteristics of the household head of the interviewed tobacco-farming and former tobacco-farming households. Most of the household head interviewed were male. It is important to note, however, that farming is most commonly a family activity, in which both males and females participate; the preponderance of male respondents therefore does not accurately represent the proportion more broadly of who work on tobacco farms. Most respondents were married, between 36 and 60 years old, and had primary schooling. Only 25 respondents indicated work outside of their farms, indicative that the most common primary occupation of respondents was crop and livestock farming. Although these characteristics are roughly similar to those from our earlier survey, there are some differences. A higher proportion of household head in our second wave survey are male (93% vs 80%), more likely to be 36 years or older (76% vs. 60%), and less likely to be single (5% vs. 11.5%). The notable difference in reported age coheres with the narrative from one of our informants that youth are less likely to continue farming (P1), leaving an aging cohort of active smallholder farmers. An addition to our second wave survey distinguished current from former tobacco farmers to allow us to explore why some farmers stop growing tobacco.

T1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLD HEAD SURVERY RESPONDENTS

TABLE 1
Socio-Demographic Characteristics of Household Head Survey Respondents*

CHARACTERISTICS	CURRENT (N=335)		FORMER (N=180)		TOTAL (N=515)	
PROVINCE						
Central	46	13.7%	53	29.4%	99	19.2%
Eastern	114	34.0%	94	52.2%	208	40.4%
Southern	175	52.2%	33	18.3%	208	40.4%
GENDER						
Male	292	92.4%	150	94.3%	436	93.2%
Female	24	7.6%	9	5.7%	32	6.8%
AGE (YEARS)						
< 21	2	0.6%	3	1.9%	5	1.1%
21-35	82	26.6%	29	18.2%	111	23.7%
36-60	205	64.9%	108	67.9%	313	65.9%
61+	27	8.5%	19	12.0%	46	9.7%
MARITAL STATUS						
Single	19	6.6%	3	2.0%	22	5.2%
Married	256	88.9%	136	90.7%	392	89.8%
Others	13	4.5%	11	7.3%	24	5.5%
EDUCATION						
Not yet or no schooling	26	8.2%	14	8.8%	40	8.4%
Primary	175	55.4%	105	66.0%	280	59.0%
Secondary	109	34.4%	38	23.9%	147	31.0%
College or University	6	1.9%	2	1.3%	8	1.7%

*Numbers indicate total responses to each category of question. Not all surveyed farm households provided answers to rcentages are based on total responses for each category of data, and not on the total sample.

76%
OF TOBACCO FARMERS WERE ON CONTRACT WITH A LEAF-BUYING COMPANY.

CONTRACT VS. INDEPENDENT TOBACCO FARMERS

The majority of current tobacco farmers in the survey (269 out of 354, or 76%) were on contract with a leaf-buying company. This figure is similar to that found in our previous survey (73.6%). Notably, the Tobacco Board of Zambia reports that the figure is closer to 90 percent. The contract arrangement provides farmers with the required agricultural inputs at the start of the season with no up-front payment, and a guaranteed buyer for their product at the end of the season, although not a guaranteed price or specified quantity to be purchased. The costs of these inputs are deducted from the value of their sales at the end of the season. Three quarters of our surveyed contract farmers (156 out of 208 who answered this question) reported that they were adequately informed about their contract.

A slightly lower percentage (68% or 239 out of 354) reported having a written contract, though only 177 (50%) of those had a copy. In terms of the type of tobacco cultivated, 54.2% (13 out of 24) of independent farmers and 68.7% (101 out of 147) of contract tobacco farmers grew Virginia tobacco. All but 39 of the remaining contract and 10 independent farmers grew Burley tobacco. On average, it took both types of farmers a little more than 8 months to produce the tobacco.

THE ECONOMICS OF GROWING TOBACCO

In this section, we examine the central dynamics of tobacco farmers' economic lives. We begin with an examination of their income. Note that income alone is an insufficient economic indicator because it does not always accurately reflect the overall economic situation of the farming households. This is largely because there are typically significant costs to tobacco farming. Thus, it is imperative to generate accurate cost calculations to combine with the income calculations. Major costs include not just the obvious physical inputs such as seeds, fertilizers, and agricultural chemicals, but also the large amount of labour necessary to cultivate the crop. It is therefore critical to move beyond simple income calculations and consider both the revenue generated by selling tobacco leaf and the total costs of production.

TABLE 2

Mean Production, Price and Income, Excluding Extreme Outliers

		QUANTITY SOLD (KG)	AVERAGE PRICE (ZMW)	REPORTED TOBACCO INCOME(ZMW)
Contract Framer	n	129	125	129
	mean	1699.7	25.9	14465.9
	meadian	1068	23	10000
Independent Farmer	n	21	21	21
	mean	822.7	22.7	8391.4
	meadian	700	23.6	4800
Total	n	150	146	150
	mean	1576.9	25.5	13615.5
	meadian	1000	23	8820

THE RESULTS DEMONSTRATE THAT CONTRACT FARMERS WERE TYPICALLY SELLING MORE TOBACCO THAN THEIR INDEPENDENT COUNTERPARTS IN TERMS OF WEIGHT AND SALES VALUE

Table 2 presents data on the mean and median quantity sold, price per kilogram, and the sales for the full prior growing season, amongst those farmers who provided these figures, after removing the extreme outliers (n=150). We show these figures for both contract and independent tobacco farmers. The results demonstrate that mean and median contract farmers were typically selling more tobacco than their independent counterparts in terms of weight and sales value. The mean contract farmer sold 14,465 ZMW worth of tobacco leaf, significantly more than the mean independent farmer who sold 8,391 ZMW worth of leaf.. T 2. MEAN PRODUCTION, PRICE AND INCOME, EXCLUDING EXTREME OUTLIERS

COSTS OF TOBACCO FARMING

NON-LABOUR COSTS

It is well established in the literature that tobacco farming is both input- and labour-intensive. Accordingly, we examine these dynamics in depth. Farmers' non-labour costs are presented in Tables 3 and 4. Note that the input costs included are the principal variable costs such as tools, fertilizer, herbicide, pesticide and seeds, but not the fixed cost such as land rental, although land rental was not a large part of most farmers' production.

In Table 3, the first column identifies the non-labour input item, and the second column the number of observations (farmers who provided information on each cost item). The third column is the median cost and the final column is the mean (average) cost of farmers who acquired the item. There is a further 2 percent levy from the government on tobacco leaf sales. This overall amount is above what an average small-scale tobacco farmer can afford as working capital to venture into tobacco farming, which accounts for the attractiveness of entering into a contract.

T 3. MOST OF NON-LABOUR INPUTS

Table 4 examines the cost of inputs per kilogram of tobacco leaf produced. The results are striking: despite the attractiveness of contracts because they provide a form of credit to the farmers, the non-labour input costs per kilogram of tobacco are substantially higher for contract than for independent farmers. T 4. MEDIAN NON-LABOUR INPUT COSTS, CONTRACT VS. INDEPENDENT FARMER

TABLE 3

Cost of Non-Labour Inputs

ITEM	TOTAL NUMBER OF OBSERVATIONS	MEDIAN OF TOTAL COST OF THE AMOUNT USED (ZMW)	MEAN OF TOTAL COST OF THE AMOUNT USED (ZMW)
Seed	132	3243	204
Water Cans	190	80	88
Pesticides (chemicals)	88	225	289
Herbicides	6	208	218
Fertilizer	167	2160	2617
Hoes	215	80	108
Flue Curing Wood	141	300	325

TABLE 4

Median Non-Labour Input Costs, Contract vs. Independent Farmer

	n	QUANTITY SOLD (KG)	INPUT COST PER KG (ZMW)
Contract Farmer	130	1699.7	18.9
Independent Farmer	20	822.7	3.9

TOBACCO FARMING IS BOTH INPUT- AND LABOUR-INTENSIVE

Despite three quarters of the surveyed contract farmers stating that they were adequately informed about their contracts, a large number of these farmers were unable to tell us the price of the inputs, most of which would have been provided by the leaf-buying companies. Less than half of the contract farmers (133 of 269) knew the price of their pesticides, and only 33 knew the price of their herbicides. This dynamic is significant and problematic since these are two of the costliest inputs according to those farmers who did know the prices (Table 3). Although not all tobacco farmers in our focus groups thought their input prices were unreasonable, most complained that the costs charged by the companies were too high, that "retailers…sell chemicals…cheaper than those offered by tobacco companies." Others complained that "for chemicals we don't know [the prices]," or that "certain deductions remain hidden until the time of sales," leading one farmer to conclude simply that "it is difficult to know how much money you have spent growing the tobacco." None of the farmers in one of our focus groups had read or knew the contents of their contract, and complained that if one of the farmers in their tobacco cooperative defaults on paying the cost of their inputs, this liability is passed on to other members of their cooperative. Notably, the leaf-buy companies are setting up these groups, which is essentially transferring all of the risk of cultivating tobacco to the farmers, while the leaf-buying companies have little or no risk.

> "[T]hey (the companies) do not tell us those things. They only tell us [these things] after we've grown the tobacco."

LABOUR COSTS

To determine more accurately farmers' costs and therefore their profits, it is critical to examine their labour costs. There are two main sources of labour costs: hired and household. We begin with hired labour costs..

HIRED LABOUR COST

Among current tobacco farmers, 68% of contract farmers and 59% of independent farmers used hired labour for tobacco farming, while only 30% of them hired labour for farming other crops. This last figure is the same (30%) as the number of former tobacco farmers who similarly hired labour to help farm their non-tobacco crops.

These figures suggest that tobacco growing is labour intensive, and are consistent with other research findings,[17] and also with how the tobacco farmers in Zambia themselves describe their efforts:

> "labour is too much," "growing tobacco…is too demanding," "it is a heavy job," "is very demanding, requires a lot of labour."

Unlike contract farmers, independent farmers, having to cover the costs of their own start-of-season inputs, may be more reluctant to expend as much on hired labour, which could account for the reported difference between the two groups. The difference between the two groups is more striking when we consider hired labour in terms of average number of days, or average number of hours per kg of tobacco. Contract farmers averaged 378 (S.E.=211) days of hired labour, or 5.1 hours per kg; while independent farmers averaged only 146 (S.E.=27) days of hired labour, or 1.2 hours per kg. The difference is statistically significant. However, tobacco extension officers note the relationship between this lower level of labour intensity and the comparatively poor quality and yield of the tobacco from many independent farmers.

What is also important to note is tobacco farming, relative to farming other crops, has very high input costs, even before considering the value of household labour. Our survey found that tobacco farmers spent an average of 3,958.3 ZMW on farming all crops including tobacco, while former tobacco farmers only spent an average of 1,399.8 ZMW on farming their non-tobacco crops.

"LABOUR IS TO MUCH" "GROWING TOBACCO...IS TOO DEMANDING"

HOUSEHOLD LABOUR COST

It is often argued that household labour should not be considered a 'cost' since family farms have historically often relied upon family labour. But it is now widely accepted that family labour can also represent an opportunity cost in terms of alternative earning possibilities (which admittedly may be limited in some rural Zambian communities) and, at a minimum and given the extent of labour involved in tobacco farming, is a legitimate measure of a farming household's net return on investment.[18] [19] [20] The results presented in Table 5 suggest that the number of hours of household labour to produce a kilogram of tobacco leaf is high at more than 10.4 hours for contract farmers (less for independent farmers, though this difference is not statistically significant). Incorporating household labour costs into the equation renders a bad economic situation for tobacco farmers much worse. T 5. HOUSEHOLD LABOUR, CONTRACT & INDEPENDENT TOBACCO FARMERS

TABLE 5

Household Labour, Contract & Independent Tobacco Farmers

	MONTHS OF DURATION	HOURS PER HOUSEHOLD	HOURS PER KG
Contract	8.8	4701.569	10.4
Independent	7.7	4495.439	6.7
Total	8.4	4667.764	9.9

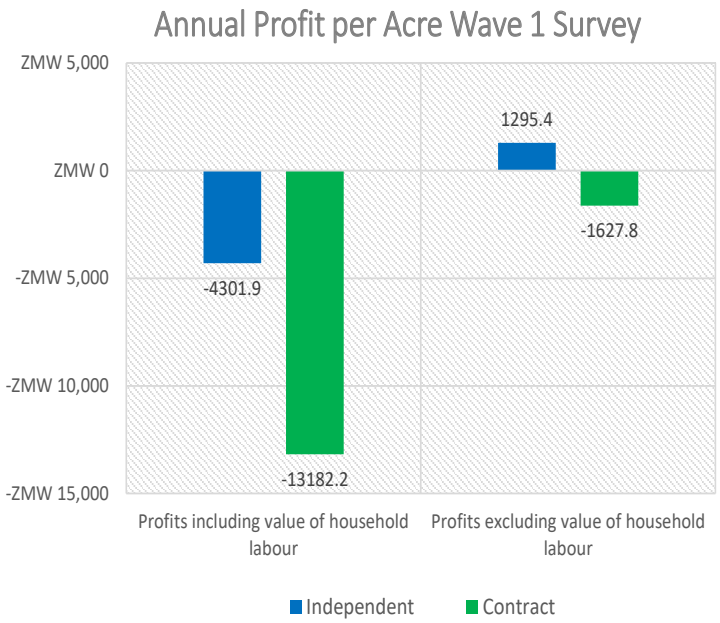
"LABOUR IS TOO MUCH," "GROWING TOBACCO...IS TOO DEMANDING," "IT IS A HEAVY JOB," "IS VERY DEMANDING, REQUIRES A LOT OF LABOUR."

PROFIT: PERCEIVED AND ADJUSTED

While gross income and costs are vital measures, putting the two together to examine profits is arguably more useful in terms of understanding the overall state of farmers' livelihoods. In our Wave 1 survey we had accurate data on the size of farms for both contract and independent farmers. We were able to combine the revenue and input cost data to calculate average profits per acre, effectively the total cash revenues from selling tobacco leaf minus all input costs. We estimated these profits for two scenarios, in the first (the perceived profit) we excluded household labour while in the second (adjusted profit) we monetized the household labour as an input cost, using the government's official wage for domestic workers. There is no official government agricultural minimum wage, but we argue that the domestic wage is a reasonable proxy because the skill level of these two categories of jobs is similar and because there is ample evidence that many rural workers have recently migrated to towns and cities for precisely these types of jobs.[21] In the original report, we used a shorter work month (23 days), which translated into a higher minimum wage) and reported the profits in US, but in this report we recalculated using the hourly wage 3.646 Zambia Kwacha in the legislation, and report in Zambian Kwacha (ZMW). In Figure 2, we observe that in the 2015 growing season, before including household labour, independent tobacco farmers on average were making a small profit of 1,295 ZMW per acre while contract farmers on average were facing a small loss of 1,627.80 ZMW per acre. When we incorporated household labour, both sets of farmers on average were losing significantly: 4,301.9 ZMW per acre for independent farmers and 13,182.2 ZMW per acre for contract farmers. FIG 2. ANNUAL PROFIT PER ACRE - WAVE 1 SURVEY.

FIGURE 2

Annual Profit per Acre - Wave 1 Survey



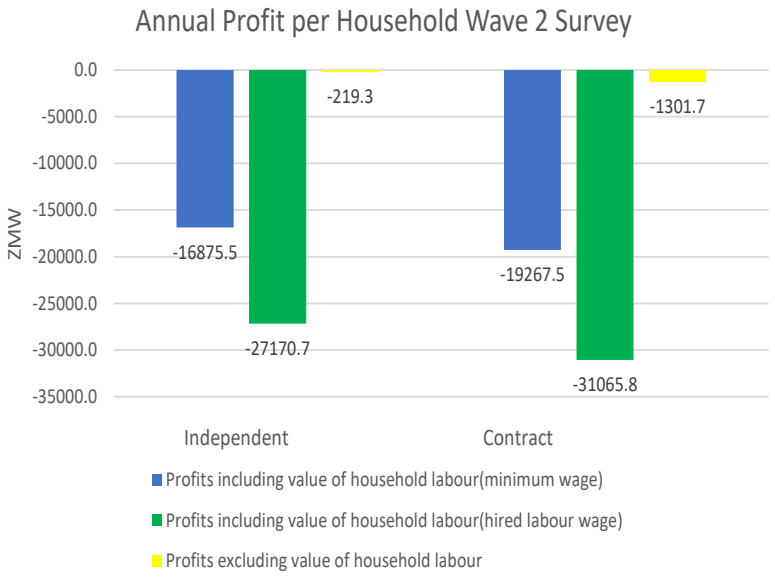
WHEN WE INCORPORATED HOUSEHOLD LABOUR, BOTH SETS OF FARMERS (INDEPENDENT AND CONTRACT) ON AVERAGE WERE LOSING SIGNIFICANTLY.

As we noted in our Wave 1 survey report, these figures differ from the gross margins reported by Tembo and Sitko,[22] which used different years than our own study (including years when tobacco did well in both quantity produced and overall sales values) and also incorporated data from medium- and some large-scale producers. Our study focused only on smallholder tobacco farmers. When accounting for the family labour cost of tobacco, farmers' income losses are striking; but even considering only direct input costs, contract farmers lose income (despite the cash they might receive at some point in the contract relationship with the leaf-buying company) while independent farmers make only a tiny profit.

We were unable to estimate farm acreage in our Wave 2 survey and could not undertake the same per acre analysis. We were able to make a similar estimation, however, based on profit per farming household, and per kilogram of tobacco. We again compare contract and independent tobacco farmers. In Figure 3, we observe that for both contract and independent tobacco farming households, without incorporating a value of household labour, the average household does a little worse than breaking even (-1,301.7 and -219.3 ZMW respectively). As we discuss above for the Wave 1 survey, in addition to these gross margins, we also recalculate profits assigning reasonable values for household labour. As we did above, we first use the minimum wage of a domestic worker and the losses per household are significant: -19,267.5 ZMW for contract farmers and -16,875.5 ZMW for independent farmers. Because the minimum wage for domestic workers had not been adjusted since 2012, we expect this is a significant undervaluation of the farmers' labour, so we recalculated using the average wage paid by the surveyed farmers to their hired farm help. In other words, this value would approximate almost perfectly what a farmer could have made if they had instead worked on a neighbouring farm. The farmers were paying their help more than the 2012 minimum wage. When we recalculated the independent farmers were losing 27,170 ZMW per household on average, whereas the contract farmers were losing slightly more at 31,065.8 ZMW per household on average. FIG 3. ANNUAL PROFIT PER HOUSEHOLD - 2017 GROWING SEASON.

FIGURE 3

Annual Profit per Household - 2017 Growing Season



WHEN ACCOUNTING FOR THE FAMILY LABOUR COST OF TOBACCO, FARMERS' INCOME LOSSES ARE STRIKING.

Figure 4 presents a similar scenario for profits per kilogram. Without incorporating household labour, independent farmers are making a very small profit (0.3 ZMW per kg) whereas contract farmers are losing some (-7.3 ZMW per kg). Again, like we observe above for per household calculations, the losses are much greater when we include household labour. Using the very conservative 2012 domestic worker minimum wage, the losses are -26.6 ZMW/kg for independent farmers and -74.5 ZMW/kg for contract farmers. Using the more accurate measure of what the farmers were paying their own hired farm help, the losses are -44.4 ZMW/kg for independent farmers and -119.3 ZMW/kg for contract farmers. FIG 4. ANNUAL PROFIT PER KILOGRAM - 2017 GROWING SEASON -

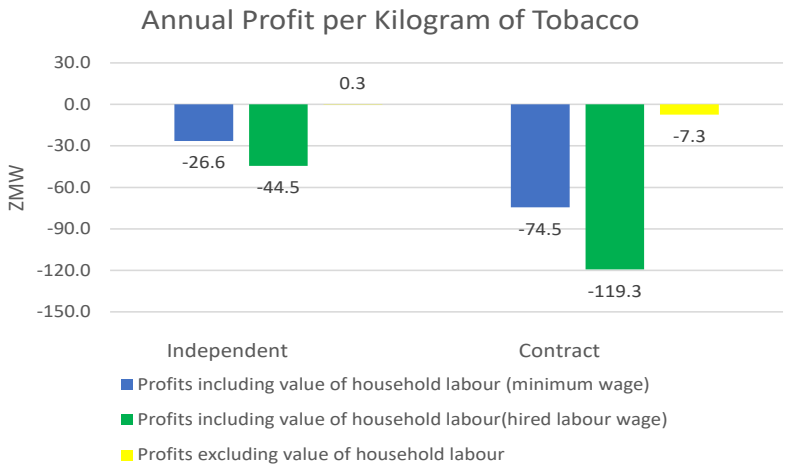
Although the actual amounts (in ZMW) are not directly comparable between the two survey waves, or between the two different estimations in Wave 2, what is consistent is that most tobacco farmers appear to be operating at a net loss, and notably so when considering household labour, no matter how we calculate it. A possible criticism of our use of monetized household labour in both survey waves is that, while an accepted estimation practice, it assumes the presence of alternative income sources for household members (i.e., "opportunity costs" in economics). As one of our focus group farmers in Wave 2 noted, a comment shared by several focus group participants:

> "We have no jobs in Zambia. Therefore we have gone into tobacco."

But there is widespread and varied agricultural activity throughout the country and at very least finding casual farm employment on larger farms is a reliable possibility for smallholder farmers. Furthermore, the potential earnings from non-tobacco crops (described below) and the continued involvement of children as part of household labour in tobacco cultivation (also described later) certainly challenge the dominant poverty-reduction narrative of tobacco farming. Given excluding household labour, tobacco growing reprents, on average, a net loss for most tobacco farmers, contradicting empirically the dominant tobacco narrative expressed by the tobacco companies, some government officials, and even some tobacco farmers themselves. Such evidence also begs the question: if returns from tobacco farming are so low as to even be negative, and especially so when considering the opportunity costs of household labour, why do farmer still grow the crop? This is a question we explore two sections below.

FIGURE 4

Annual Profit per Kilogram - 2017 Growing Season



TOBACCO, OTHER CROPS, AND OFF-FARM ECONOMIC ACTIVITIES

Tobacco is rarely, if ever, the single crop grown by smallholder farmers, as one of our informants noted of farmers' decision-making:

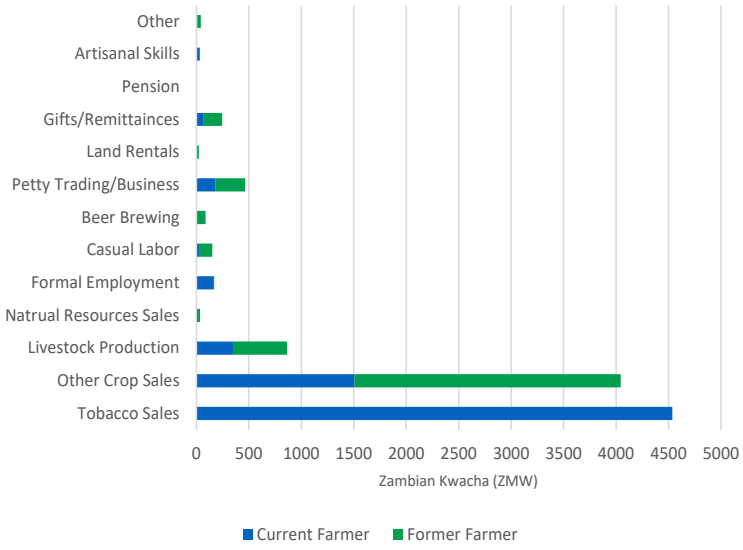
> "…how do I actually fare in terms of tobacco? How do I fare in terms pomegranate, [or] in terms of blueberries? I need to not rely on one particular aspect [crop]." (P8)

In fact, cultivating other crops is a crucial economic component of most households' wellbeing both in terms of crops to sell and also crops to consume by the household. Similarly, many farmers participate in off-farm economic activities such as non-agricultural businesses and paid employment. These dynamics are often overlooked by analysts examining rural livelihoods in Zambia, but our research demonstrates unequivocally that they are often crucial parts of farming households' economic lives.

In Figure 5, we report on how sources of income differed between current and former tobacco farmers. Based only on the income received by the time of the survey implementation and including only those incomes that averaged greater than 50 ZMW, on average, former tobacco farmers reported almost twice as much average income from non-tobacco crops as current farmers, and about 20% more income from livestock. Perhaps surprisingly, considering how labour-intensive tobacco farming is, current tobacco farmers reported an average of almost 5 times more income from casual labour compared to former tobacco farmers, but less than a third earned from business or petty trading. Evidence from Focus Group Discussions suggests that tobacco farmers often work on each other's farms during busy times (both paid and in-kind exchanges), which might help to explain this dynamic. Former tobacco farmers received proportionately more gifts and remittances, as well as from beer brewing. We urge caution in interpreting the significance of these differences, since the reported earnings at the time of the survey do not necessarily include all annual income, since some tobacco and other crop earnings were not realized until after the survey. It does suggest, however, that former tobacco farmers are increasing the diversity of their revenue streams more than farmers who continue to grow tobacco. FIG 5. SOURCES OF INCOME (ZMW) - FORMER VS. CURRENT TOBACCO FARMERS-

FIGURE 5

Sources of Income (ZMW) – Former vs. Current Tobacco Farmers



FORMER TOBACCO FARMERS ARE INCREASING THE DIVERSITY OF THEIR REVENUE STREAM MORE THAN FARMERS WHO CONTINUE TO GROW TOBACCO.

Our second wave survey found that almost all farmers (97.3%) are growing other crops, a figure almost identical to that of farmers in our first wave survey who indicated crops other than tobacco as important sources of their livelihoods (96.4%). Maize still tops the list of livelihood crops, for both current and former tobacco farmers. Tobacco ranks second, followed by soy beans.

We attempted to further our understanding of these crop and income dynamics with a crude analysis of average sales, repeating the caveat from the discussion above that sales do not incorporate costs, which is vital to understanding the farmers' overall livelihoods. When asked to estimate revenue from all crops in the previous year, notable differences emerge between current and former tobacco farmers, particularly when disaggregating by province (Table 6). In all three provinces, tobacco farmers on average sold more non-tobacco crops than their former tobacco farming neighbors. We speculate that this was often in large part due to land size with larger landholders "hedging" by growing tobacco and a wide portfolio of other crops. T 6. AVERAGE SALES FOR TOBACCO AND OTHER CROPS (ZMW) – FORMER AND CURRENT TOBACCO FARMER BY PROVINCE

Both former and current tobacco farmers have wide crop portfolios with many farmers cultivating multiple crops in a growing season. Depending on the region, former tobacco farmers have taken to several major crops to sustain their livelihoods. Table 7 examines these dynamics, wherein a positive value indicates how much more, on average, a former tobacco farmer is growing of a certain crop compared to current tobacco farmer average (or those who grow); a negative value indicates how much more the average current tobacco farmer is growing of a certain crop. In Central Province, non-tobacco sales for former tobacco farmer were mostly driven by switching to sugarcane and vegetables, followed by sunflower and soybeans. In Eastern province the predominant non-tobacco crop was cotton, followed (somewhat distantly) by soybeans, but notably, it was largely tobacco farmers who were also growing this crop. In Southern province, it was maize and cotton, but again cultivation was dominated by farmers who were also growing tobacco. T 7. MEAN DIFFERENCE IN NON-TOBACCO CROP SALES (ZMW), FORMER TOBACCO FARMERS.

TABLE 6

Average Sales for Tobacco and Other Crops (ZMW) – Former and Current Tobacco Farmer by Province

	CURRENT FARMER		FORMER FARMER
Region	Other Crops	Tobacco	Other Crops
Central	7449.4	4648.8	5376.0
Eastern	7354.6	4459.5	3134.4
South	5169.6	5648.4	3234.7
Total	6453.5	4947.3	3875.9

TABLE 7

Mean Difference in Non-Tobacco Crop Sales (ZMW), Former Tobacco Farmers

	CENTRAL (N=97)	EASTERN (N=188)	SOUTHERN (N=188)
Maize	240.4	-910.9	-18025.3
Groundnuts	87.5	308.1	3393.8
Soybeans	487.5	1660.6	
Sweet potatoes	2775		-333.3
Cassava	-957.5		-525
Pigeon peas			-1200
Banana	-3800		
Beans	1700	-1000	-600
Sunflower	4000	-1595	1935.7
Sugarcane	13000		
Popcorn	713		
Vegetables	8000		
Tomatoes	-366.7		-487.5
Cotton		-11774.3	-6750

To compare tobacco and non-tobacco farming households' economic livelihoods more meaningfully, in Table 8, we introduce an examination of overall household resources. The household resource allocation is arguably a more sophisticated measure of household economic activity in low- and middle-income countries (LMICs) because it permits us to examine household own-consumption. Economists have long acknowledged that many LMIC households, particularly rural ones, produce significantly for the household's own consumption, which means that they do not need to purchase the goods or services they are consuming.[23] Because households not producing for own-consumption must purchase such goods or services, it is therefore critical to assign an appropriate value to these goods and services and incorporate them into the calculation of the household's broader economic production. Accordingly, total resource is the income from all crops sold (tobacco and other) plus any wages earned, plus the value of crops harvested and consumed by the household ("own" consumption), less the costs of the physical and other major direct inputs (e.g., seeds, fertilizer, agricultural chemicals and hired labour). In brief, former tobacco farmers' household resources exceeded those of current farmers, sometimes by a wide margin. The average household resources across all former tobacco farmers was 3,552.9 ZMW compared to 2,070.1 ZMW for current tobacco farmers. Note, too, that the household resource calculation does not include the opportunity (monetized) costs of household labour, which means that if they were to be included, the gap between the tobacco-growing and non-tobacco households due to the far larger household labour demands of tobacco cultivation would almost certainly be even larger. There is considerable variation across the three provinces. In Eastern province, average household resources between current and former tobacco farmers was about even. In Southern, former tobacco farming households' average resources with about 40 percent more than current tobacco farmers. In Central province, however, the former tobacco farmers' average resources nearly seven times greater than the current tobacco farmers. These findings cast serious doubt on the narrative that tobacco farming is a superior economic livelihood for most smallholder farmers. T 8. AVERAGE HOUSEHOLD RESOURCES (ZMW) – CURRENT AND FORMER TOBACCO FARMER, BY PROVINCE

TABLE 8

Average Household Resources (ZMW) – Current and Former Tobacco Farmer, by Province

	CURRENT FARMER		FORMER FARMER	
Region	n	Mean	n	Mean
Central	16	740.6	43	5045.3
Eastern	14	2095.1	71	2166.7
South	19	3171.4	25	4922.6
Total	49	2070.1	139	3552.9

THESE FINDINGS CAST SERIOUS DOUBT ON THE NARRATIVE THAT TOBACCO FARMING IS A SUPERIOR LIVELIHOOD FOR MOST SMALLHOLDER FARMERS.

WHY FARMERS GROW TOBACCO

In each of our survey waves we explored the reasons farmers themselves give for continuing to grow and/or why they started growing tobacco. Figures 6 and 7 chart the frequency of the answers current tobacco farmers provided in Wave 2 by rank order. Both figures indicate an overwhelming perception that tobacco has a ready market, is the only viable crop, is highly lucrative, and comes with incentives from tobacco companies. Other tobacco producers (presumably their farming neighbours) also exert some influence. These findings are not novel; and while the top three reasons for growing tobacco are the same in Wave 2 as in Wave 1, the emphasis is different. In our earlier survey the most frequently cited reason was "only viable crop," followed by "lucrative industry" and "ready market."

In Wave 2 the "ready market" trumps the other two reasons, and the perception that tobacco as a 'highly lucrative enterprise' slips in the rankings. Since the questions in the two waves were asked slightly differently, we are cautious in drawing too much inference from these differences. The prominence of a "ready market" and less emphasis on tobacco's "lucrative enterprise" in Wave 2, however, may signal a shift in how the tobacco farming market is perceived by farmers. This finding is consistent with the research team's recent field visits to the tobacco-growing regions where tobacco farmers continue to underscore above all other dynamics that they prefer the relative assurance of a market for their tobacco crop regardless of the ultimate price paid to them for it.

FIG 6. RANKED ORDER OF REASONS FOR GROWING TOBACCO

FIG 7. RECRUITMENT INTO TOBACCO FARMING

FIGURE 6

Ranked Order of Reasons for Growing Tobacco

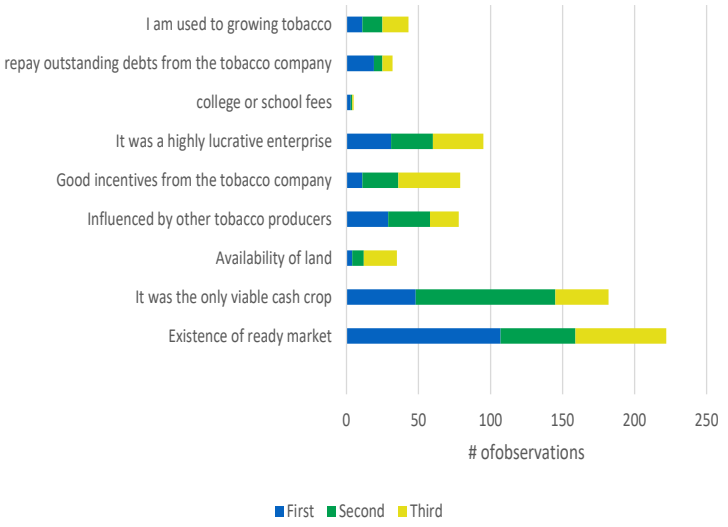
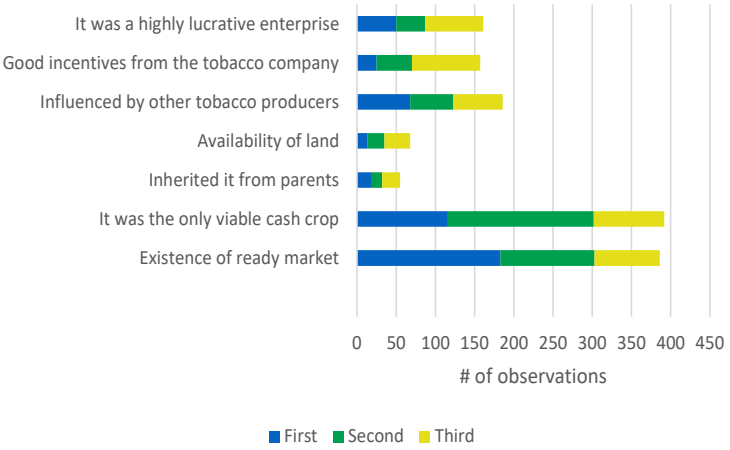


FIGURE 7

Recruitment into Tobacco Farming



As with our first wave study, many of the tobacco farmers in our focus groups maintained that, of all cash crops, "number one is tobacco", "no crop can beat tobacco", and "tobacco has money." As one of our key informants explained, this is largely because "small-scale farmers lack an understanding of what their labour value is" (P3) and need to be taught the importance of incorporating their own labour into their budgeting to get a more accurate account of their production costs compared to other, non-tobacco crops.

What remains relatively unique about tobacco is the ready market, the near guarantee of some cash at the end of the season, and sometimes, as part of their contract at the beginning or part way through the growing season. Tobacco farmers in both the survey and the focus groups report that the cash they receive at the end of the season is essential to cover school fees, children's school uniforms, loans undertaken for new inputs during the growing season (even for contract farmers who often run out of company-provided inputs), the cost of hired labour, or the purchase of new livestock or equipment. Current tobacco farmers, in general, for example, report more farming assets than former farmers, while independent tobacco farmers report the greatest diversification in such assets, perhaps anticipating their usefulness for if (or when) they choose to cease growing tobacco.

"SMALL-SCALE FARMERS LACK AN UNDERSTANDING OF WHAT THEIR LABOUR VALUE IS."

- SENIOR AGRICULTURAL OFFICAL

Even as several farmers in our focus groups maintained the importance of tobacco as the "only viable cash crop" due to it having a "ready market," most complained loudly that the price paid, the input charges and levies, and the income eventually earned, are far below what they need:

> "There are some farmers who still owe from the previous farming seasons [and] the creditors don't give you a chance, they simply unleash bailiffs to recover the money."

Whether this farmer is describing private creditors or the leaf-buying companies with which they enter into contract is not clear. Since few farmers reported successfully securing loans from private creditors outside of tobacco companies, we assume it is likely the latter. Nevertheless, what is evident, and consistent with our own profit findings above, is that tobacco farmers often end up in debt, sometimes owing money to the leaf-buyers, and are then "forced by the company to grow the tobacco [the next year] so that [they] repay the debt."

> "The issue of repaying the debt. That is a big problem."

Tobacco farmers' many complaints above do not mean that they are necessarily prepared to give up growing it. For many, tobacco is still seen as the one crop that brings cash at the end of the year, the one crop upon which they can rely. But their own experiences recounted in our focus groups hardly stand as a resounding endorsement of tobacco as a poverty-reducing and livelihood-promoting practice for most smallholder farmers. It also questions the longer-term viability of tobacco farming.

SATISFACTION WITH TOBACCO MARKETS

Our previous survey (Wave 1) reported a high level of dissatisfaction with several aspects of the market economics of tobacco faming. One-third of the contract farmers in the earlier study complained of not being accurately informed of what was expected of them from the contract. Most tobacco farmers (whether contract or independent) were not satisfied with their leaf grading, or with the final pricing. We attributed this to the monopsonist (one buyer, many sellers) market structure of the contract-driven leaf-buying system in Zambia, which gives farmers poor to no leverage when negotiating price with the buyer.[24]

The Wave 2 results in Figure 8 still show high levels of dissatisfaction, but with some nuances. Most contract farmers, for example, report dissatisfaction with their negotiating position when they decide on a new or renewed contract (58.8%), and only a few farmers state they are negotiating from a position of strength. Their satisfaction increases, however, once the arrangements are confirmed within a contract, with 34% of those answering the question still reporting dissatisfaction with the contract terms, compared with 159 (56%) reporting at least some degree of satisfaction, and only 10% reporting being "very satisfied". Similar proportions of satisfaction/dissatisfaction are found for both contract and independent tobacco farmers, and for both tobacco leaf grading and sales, marking a considerable improvement in satisfaction levels over our Wave 1 findings and likely due to the comparatively higher prices being paid in this growing season. As with our Wave 1 findings, however, contract farmers are less likely to report being 'very satisfied' with their leaf grading. This may reflect that, given the high cost of their inputs deducted at the end of the season, they rationally expected their tobacco leaf to be graded higher than it was.

Farmers participating in our focus groups were often very blunt about their dissatisfaction with how the leaf-growing/leaf-buying 'system' is still not working in their favour:

On contracts:

> "The contracts we sign with the tobacco companies are not clear. As a result of not understanding the terms, farmers have become destitute."

On grading:

> "We're being cheated on the grading of tobacco."

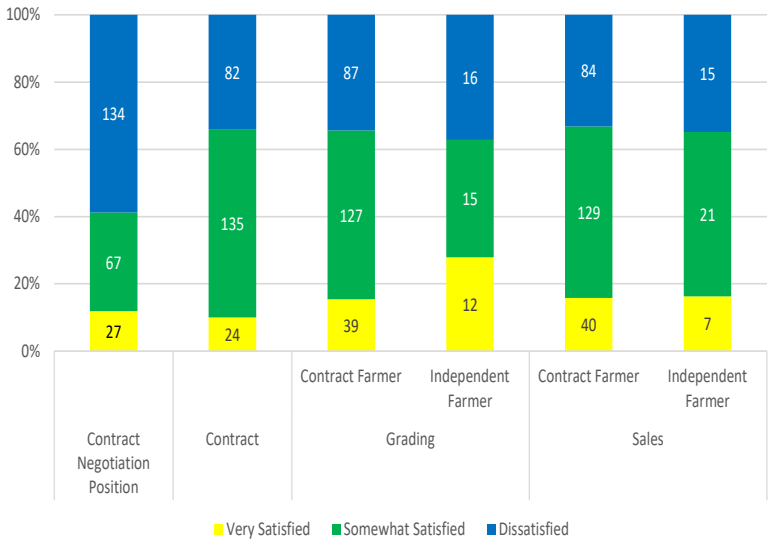
On selling price:

> "Selling price is too low."

One reason for some contract farmers' dissatisfaction is that the inputs they receive at the start of the season are recorded in US dollars, but the tobacco leaf they sell is priced in Zambian kwachas (ZMW) making them vulnerable to currency fluctuations (usually not in their favour). As one farmer captured the general mood (and findings) across the four groups: FIG 8. TSATISFACTION WITH TOBACCO SELLING

FIGURE 8

Satisfaction with tobacco selling



FOOD SECURITY

Although Zambia continues to regularly generate agricultural staple food surpluses (notably for maize), it records a very high level of food insecurity, especially among its rural population. Some 37% of the population is estimated to be experiencing hunger, considered to be an "alarming" rate and amongst the highest of the world's countries for which data on a Global Hunger Index exist.[25] Rates of childhood malnutrition (stunted, wasted, and underweight) have fell between 2001 and 2014, but remain high with around 40% of children in the most recent demographic health survey found to be underweight.[26] The general recommendation to reduce these levels of food insecurity is to "promote diversified agricultural production at smallholder and commercial level to increase availability and affordability of nutritious foods for all."[27] Survey results in Table 9 indicate that almost all current and former tobacco farmers produce their own food. Current tobacco farmers, however, on average report slightly higher levels of food security, and are less likely to report always or sometimes lacking food. One possible explanation is that in the circumstance of food crop failure or low performance, some tobacco farmers might possess some cash to purchase food from the marketplace depending upon where in the production cycle they are. For example, some farmers reported receiving a cash advance upon signing a contract, which would occur at the beginning of the growing season and a more likely time to be low on food that was grown in the previous growing season. Tobacco farmers in our focus groups give a more mixed assessment of food security, noting, for example, that

> "sometimes there is [food] shortage," and that "there are certain years when we have enough food and others when we don't."

Curiously, given the survey results, tobacco farmers in three of our four focus groups stated that non-tobacco farmers were more food secure than themselves, although as one noted:

> "both non-tobacco and tobacco farmers struggle when it comes to food."

TABLE 9 FOOD SECURITY - FORMER AND CURRENT TOBACCO FARMER

TABLE 9

Food Security – Former and Current Tobacco Farmer

Region /Farmer	Central	Eastern	Southern	Central	Eastern	Southern	Central	Eastern	Southern
Former or current	Former	Former	Former	Current	Current	Current	All	All	All
Staple food of the family	Maize (98.11%)	Maize (97.87%)	Maize (100%)	Maize (100%)	Maize (95.61%)	Maize (93.71%)	Maize (98.99%)	Maize (96.63%)	Maize (94.71%)
% who produce their own food	98.08%	100%	100%	100%	100%	99.39%	98.98%	100%	99.49%
Level of household food security (average)	3.38	2.9	3	3.59	3.17	3.22	3.47	3.05	3.19
1. Always lacks food	5.66%	0%	0%	0%	0%	0%	3.03%	0%	0%
2. Sometime lacks food	5.66%	29.03%	18.18%	8.70%	14.04%	14.37%	7.07%	20.77%	14.98%
3. Usually has sufficient food	33.96%	51.61%	63.64%	23.91%	55.26%	48.85%	29.29%	53.62%	51.21%
4. Always has sufficient food	54.72%	19.35%	18.18%	67.39%	30.70%	36.78%	60.61%	25.60%	33.82%

CHILD LABOUR

There have been concerted efforts to reduce child labour in tobacco farming, both to diminish the exposure to nicotine and resulting green tobacco sickness, and to maintain their presence in school. Zambia's Education Act requires the government to provide free education up to the seventh grade, and makes school attendance compulsory for children of "school going age."[28] There are too few inspectors and no accurate records of investigations, violations, or prosecutions.[29] This has particular salience for tobacco farming; as one of our key informants noted, "…about 90% of child farm labour is in the tobacco sector" (P3). The International Labour Organization, sometimes in collaboration with tobacco firms such as JTI (Japan Tobacco International), offers education and inspection services. In late 2018, the ILO, under pressure from health and related groups, ended its engagement with and minimal funding (around USD 15 million) from tobacco firms, which violated FCTC obligations and UN model policy regarding relationships with tobacco companies. The central logic is sound: the tobacco industry should not be involved in activities that provide an (inadequate) solution to a problem that is largely of the tobacco companies' own doing – farmers not being paid enough for their tobacco leaf to hire adult labour.

Our survey identified 59 instances where tobacco farmers described children working in production, with 30 instances where this labour occurred during school time in violation of Zambian education and child labour policies (see Table 10). We strongly suspect that this number is a significant under-report because there is serious social stigma attached to child labour and some farmers were likely embarrassed to report to the enumerator that they were using their children to help cultivate tobacco. The most disturbing findings were the number of households that had children handling chemicals, including inorganic fertilizer, and tobacco. Handling tobacco with no protection causes children to absorb harmful levels of nicotine through their skin.

T 10. CHILD LABOUR IN THE ZAMBIAN TOBACCO SECTOR

TABLE 10

Child Labour in the Zambian Tobacco Sector

TASKS RELATED TO TOBACCO CULTIVATION	TOTAL CASES– HELP OF CHILDREN (N=59)	TOTAL CASES– DURING SCHOOL TIME (N=30)
Harvesting	79.7%	37.3%
Weeding	81.4%	40.7%
Watering of Nursery	76.3%	45.8%
Planting	76.3%	40.7%
Land Preparation	40.7%	16.9%
Fertilizer application - Nursey	28.8%	8.5%
Nursery Preparation	32.2%	11.9%
Nursery Sowing	30.5%	10.2%
Banding	55.9%	18.6%
Fertilizer Application 2	44.1%	13.6%
Baling/Packaging	37.3%	13.6%
Fertiliser Application-1	44.1%	15.3%
Grading	33.9%	10.2%
Drying shed preparation	33.9%	13.6%
Drying/Curing	37.3%	13.6%
Chemical Application - Nursey	22.0%	6.8%
Chemical Application	23.7%	8.5%

NEARLY 1/2 OF CHILDREN WORKING IN TOBACCO FIELDS HANDLED INORGANIC FERTILIZERS. AND 1/4 HANDLED DANGEROUS CHEMICALS

In the focus groups, some tobacco farmers emphasized that school children might "help in the maize fields" but never in tobacco production, where "we only work with children who do not go to school and have grown up." Others stated that children "work only weekends when they are not going to school," clarifying that "we are not allowed to ask school children to assist in tobacco farming. Still other farmers were straightforward in acknowledging that "yes, children are engaged in tobacco farming and in some cases don't even go to school." One farmer admitted:

> "Children are deeply involved in tobacco growing because farmers are trying to save on labour wages. In certain cases the children work even harder than adults."

Assuming like other tobacco farmers that these focus group participants knew this was not what they were supposed to be doing, the reason they gave was simple: "we have no choice but to work our children in the fields," further legitimized by rationalizing that "this is how we impart farming skills in our children."

THE HARMS FROM CURING TOBACCO

Curing tobacco presents a major additional harm to both most Zambian tobacco farming households and the environment more broadly. On a positive note, although not true for all tobacco farmers, most reported keeping their children away from the tobacco curing barns for health reasons. But curing represents a major source of harm for farmers more broadly. Most tobacco farmers report curing their leaf before selling it, with the majority using oven or fire curing. The health risks of such curing are well known,[30] including to the farmers themselves: "my health was at risk because of…curing tobacco," "it's a risk with temperatures up to 180 degrees, we are so fatigued."

One of key informants was more emphatic, "they want to show you where they're curing their tobacco, [but] they don't realize they're killing [themselves]…" (P8). Tobacco farmers are also aware of how the need for firewood for curing, even with tobacco company schemes to initiate reforestation, is causing deforestation.[31] Some farmers are even concerned that with deforestation there are climate-level effects: "there is no rain because of tobacco." Several of our key informants similarly expressed concern over the pace of deforestation in Zambia, partly due to tobacco production and wood-fired curing (P1, P4); and that the tobacco company reforestation programs just introduced fast-growing tree species, thus reducing biodiversity.

FUTURE OF TOBACCO GROWING

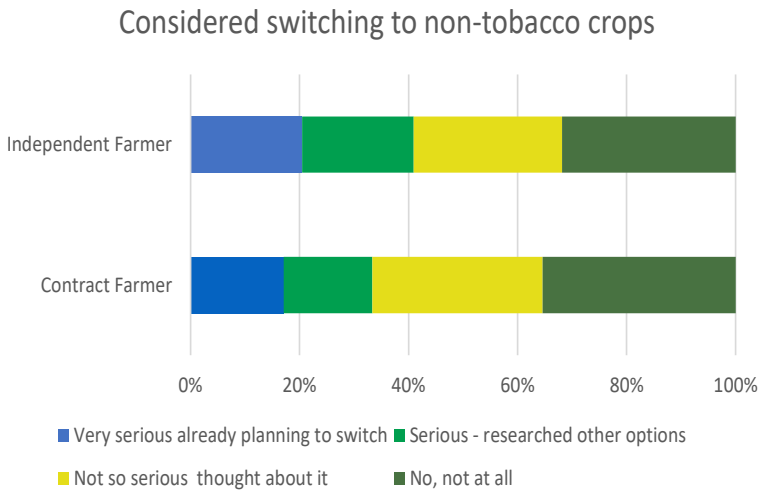
On the one hand, as one focus group participant expressed, "no one should ban the growing of tobacco," a perspective shared by the authors of this study. On the other hand, tobacco farmers themselves are quite mixed about how they see their own future with the crop. In our second wave survey we were interested to know how often tobacco farmers made decisions to forego production, at least for a year or longer (that is, becoming 'former' tobacco farmers). We asked farmers about whether they were growing tobacco over three points in time: the current year of the second wave survey (2016/2017), and the two previous grown seasons (2015/2016, and 2014/2015). Of the 330 respondents who answered this question, 92.7% grew tobacco in 2014/2015 but only 66.1% in 2015/2016 and 67.6% in 2016/2017. The larger number in active tobacco farming in 2014/2015, and subsequent decline, possibly reflects farmers' optimism for that growing season, given the robust market for Zambian tobacco leaf in 2013 (its peak year of production and overall revenue). The subsequent decline in tobacco leaf production (hence also farming) is also attributed to "a lack of buyers in the market" (P12), the result of tobacco leaf buying companies pulling out of Zambia.

We were also interested in knowing the future intentions of current tobacco farmers. Figure 9 shows the frequency of responses of current tobacco farmers to the question of switching to other crops. Although the majority have not given this any, or any serious, thought, 38% have, with almost half of those already planning to switch in the next season. Of the total who answered this question, slightly more independent farmers (20%) than contract farmers (17%) were already planning to switch.

FIG 9. FARMERS CONSIDERING SWITCHING TO NON-TOBACCO CROPS

FIGURE 9

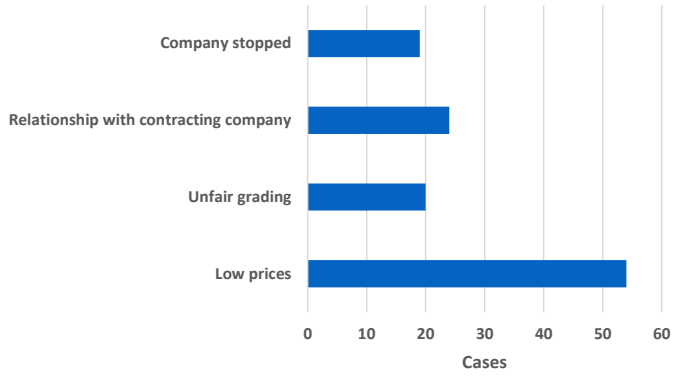
Farmers Considering Switching to Non-Tobacco Crops



In Figure 10, we examine former tobacco farmers who had already switched, and find that the main reason for doing so was low prices for the product. Similarly, in a related answer, many farmers reported that the grading process was unfair. Another consistent answer was the farmer's relationship with the leaf-buying company, which could mean a wide range of issues, though price and grading are likely to factor into this answer, too. Finally, some farmers complained that tobacco companies simply stopped contracting in a particular district, which farmers found difficult to predict. If a farmer had planned to cultivate tobacco in a given season, they found this lack of predictability stressful. FIG 10 - TOP REASONS FOR SWITCHING FROM TOBACCO CROPS

FIGURE 10

Top Reasons for Switching from Tobacco-Crops

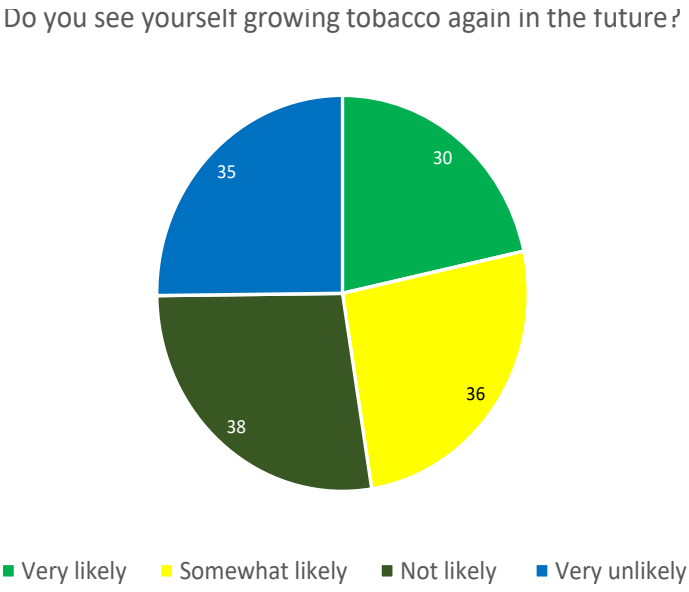


The findings here speak to the fact that, just as one facet of the economics of tobacco largely determines why farmers grow it (ready cash at the end of the season), other facets of the same tobacco economics largely determine whether farmers will continue growing the crop. Somewhat paradoxically, this means that the continued low-income potential or unfair grading that tobacco farmers experience is likely to continue to drive them away from tobacco growing, creating an incentive to switch to alternatives. Improving the livelihoods of tobacco farmers by ensuring fairer prices and tobacco leaf-buying and grading practices may serve to keep them involved in tobacco farming, at least in the near term.

At the same time, when asked if they saw themselves likely to grow tobacco in the future, a surprising number of current tobacco farmers did not, as reported in Figure 11. Although 47.5% of the tobacco farmers report at least some likelihood of growing tobacco in the near future, over half (52.5%) are unlikely to do so, with fully a quarter reporting they are 'very unlikely' to be doing so. This demonstrates a high probability of tobacco farmers being open to switching to other crops. FIG 11. FARMERS SELF-REPORTED LIKELIHOOD OF FUTURE TOBACCO GROWING

FIGURE 11

Farmers Self-Reported Likelihood of Future Tobacco Growing



Echoing the main reason why former tobacco farmers have switched to other crops, one of the focus group farmers was blunt about why so many tobacco farmers may now be considering doing likewise:

> "We will not be growing because we will not be making a profit [and] need to change to a crop that will give us a profit and no hard labour."

Other of our focus group participants nuance the oft-stated role of tobacco as 'the' cash crop by noting that it only becomes profitable "if the farmer does not grow other crops…because tobacco requires a lot of concentration."

Over the course of two waves of surveys, our research team has concluded that total "switching" from tobacco to other crops and/or livelihoods is often too dramatic a proposition for farmers as they assess their opportunities and challenges. Perhaps a more realistic change to expect and promote would be helping farmers to reduce their land and resources allocated to tobacco leaf cultivation, and then reallocating the balance to growing other crops and other economic activities. This is potentially less risky for the farmers, more likely to sound more reasonable to them, and permits the government and other actors seeking to help with transitions to other livelihoods to enhance the conditions that engender the success of those non-tobacco endeavours.

ALTERNATIVES TO TOBACCO

Considering that more than half of current tobacco farmers see themselves as unlikely to grow tobacco in the future, it is critical to examine the alternatives that they are considering. Of the 276 current tobacco farmers who answered that survey question:

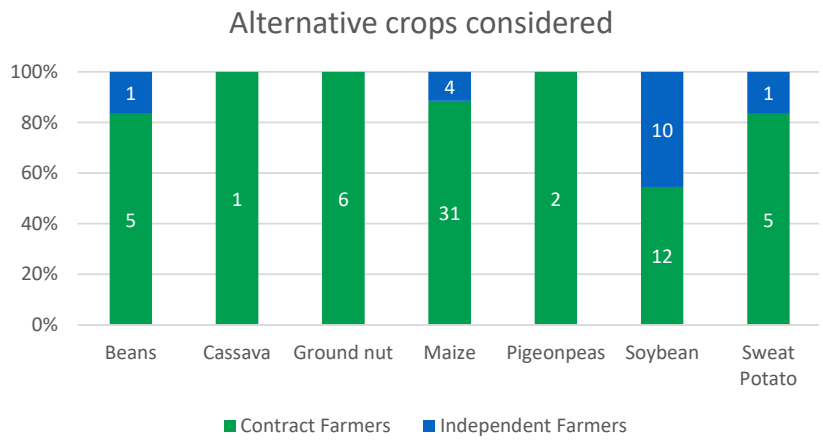
- 99 haven't given it any consideration (36%)
- 89 have given it serious or very serious consideration (32%)
- 88 have 'thought about it' (32%)

Of the 89 who reported serious or very serious consideration, 81 listed the crops to which they would be likely to switch, as shown in Figure 12.

FIG 12 ALTERNATIVE CROPS CONSIDERED

FIGURE 12

Alternative Crops Considered



MORE THAN 1/2 OF FARMERS REPORTED THAT THEY'RE NOT LIKELY TO GROW TOBACCO AGAIN.

The choice of alternatives varies greatly on the province in which farmers are located, likely reflecting potential markets and supply chains, or at least perceptions thereof. Beyond Zambia's staple crop, maize, a perhaps obvious choice, soybean comes a close second. Some of our tobacco farmer focus group participants were enthusiastic about its prospects, but only "if there can be some sort of loan scheme like…for tobacco, it is a crop we would want to grow." "We can replace tobacco with soya beans, it is not so labour intensive." Although not figuring prominently in the survey data, other crops mentioned by focus group participants included "cotton, or tomato, or even water melons."

Our key informants similarly identified several alternative crops with a potentially viable future, including groundnuts (with value-added processing) in Eastern Province; soya bean and sunflower processing in Central Province; cashew nuts in Western Province; and cassava in Northwestern Province where it is being used to process copper (P1, P3). Almost always, there is a quaifier form the farmer, that:

> "We need more processing plants as an incentive for farmers to get paid quickly for their alternative crops" (P1).

CONCLUSION

"NO ONE HAS SENSITIZED [TOBACCO FARMERS] THAT UNDER THE VEIL OF WHAT THEY FEEL THAT THEY ARE BEING EMPOWERED, THEY FARMERS ARE ACTUALLY BEING IMPOVERISHED" (P4).

Findings of our Wave 2 study affirm many of those from our earlier survey and reinforce the observation above from one of the study's key informants. Tobacco farming is neither a very profitable farming venture nor a viable economic livelihood for many smallholder farmers. It is challenging for the majority who are contract farmers, who may not have the requisite capital to go it alone into tobacco farming. The contract they enter into as a legal agreement— the details of which they often remain ill-informed, can trap them in a cycle of perpetual debt, creating difficulty for them to move to a different pursuit that is both healthier for them and their family, and potentially more prosperous for them as farmers.

In contrast, one of the reasons that farmers choose to contract is the perceived availability of credit (i.e., not needing cash to pay for inputs at the beginning of the season) and the certainty of being able to sell at the end of the season, even if it turns out that the terms of the sale are very poor and that the costs of their inputs higher than for independent tobacco farmers. Most independent farmers, however, and despite reporting lower input costs and labour hours per kilogram of tobacco than contract farmers, are also scratching out a living that is rarely better than other crops, and often worse. For both types of farmer, their commitment to the crop comes at the expense of their health and land, since tobacco growing can cause green tobacco sickness and the cultivation of tobacco is very fertilizer-, pesticide- and herbicide-intensive, which puts enormous strain on the land and surrounding environment. Despite efforts to curb child labour in tobacco production, it remains commonplace in Zambia.

At a broader scale, the dominant tobacco narrative that the crop is important for poverty reduction, agricultural development, and foreign exchange earning does stand up well under close empirical scrutiny. Yet it remains a narrative so well entrenched that it persists in official government policy (such as the Seventh National Development Plan) and continues to suffuse the opinions of many of our Wave 2 key informants, even if some recognize that overall demand for tobacco leaf will likely diminish in the near to medium term.

In terms of gross income and farming assets, current tobacco farmers may be doing better than the former tobacco farmers who have stopped cultivating the crop, and whom we added in our 2017 survey sample. Former tobacco farmers may also be slightly less food secure, a reflection, perhaps, of less income or cash security whilst not necessarily growing all food items needed by their family. When we incorporate even basic costs of cultivating, we see these gains disappear, and in fact, turn to losses for most households. These comparative findings also do not account for either the physical or economic costs of tobacco's high labour demands relative to other crops, a frequent complaint made by current tobacco farmers. Moreover, when we calculate total household resources, a more accurate measure for capturing total economic activity, we observe that in two of the three provinces, former tobacco farmers are doing considerably better than their peers who continue to grow tobacco.

The proportion of current tobacco farmers seriously considering switching is considerable. These farmers, and many of our key informants, were able to identify alternative crops with potential profitability and long-term viability. As we found in our 2015 Wave 1 survey, the largest impediment to switching away from tobacco is the absence of a cash-ready supply chain similar to the one created by transnational tobacco companies, with the caveat that the tobacco supply chain is problematic in that it typically ultimately leads to loss and even persistent debt.

Given the high probability of a long-term, downward trend in tobacco leaf demand, the low returns (if any at all) for smallholder tobacco farmers, the marginal contribution tobacco makes to Zambian revenue streams (including foreign exchange earnings), and the rising rates of tobacco use and associated health harms and costs in Zambia, this is an opportune moment for the government to take action on at least five fronts:

1. Reduce domestic tobacco demand through tough, new tobacco control legislation.

2. Reduce tobacco supply by ending all forms of public subsidies (direct or indirect) to the tobacco sector.

3. Create new incentives for alternative crop supply chains so that farmers can have reliable markets for selling.

4. Develop viable farmer loans systems so that farmers do not feel the need to rely on the tobacco industry for inputs.

5. Allocate resources to extension services to promote non-tobacco crops.

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