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Decaffeinated? Situation, Trends and Prospects for Smallholder Coffee Production in Rwanda

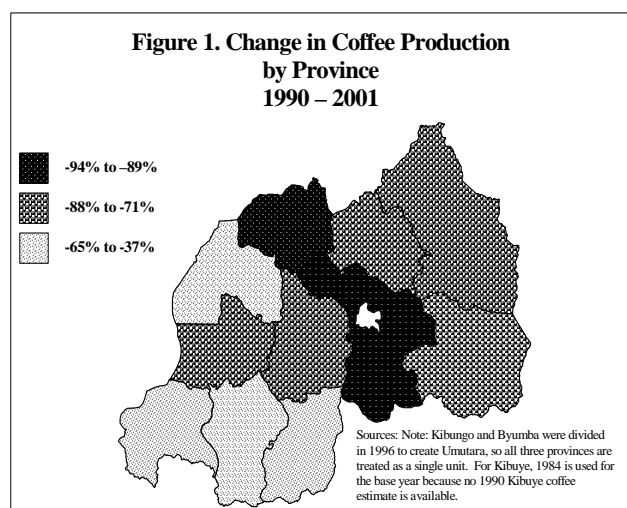
(Summary observations from a larger report by the same name)

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Introduction

Most Rwandan coffee is currently grown and processed the same way it was a decade ago. Consequently, Rwanda's coffee production and marketing system has not been able to keep up with changes in the global market for high quality coffee. Given world market gluts of relatively poor quality coffee, Rwanda is now exporting a product that fetches low prices. Figure 1 shows that farmers have responded to the price declines by decreasing production across all provinces to the extent that recent coffee exports have been less than half what they had been in the 1980s (Loveridge et al.)

Despite the challenges in coffee marketing and production, coffee remains one of Rwanda's most important official sources of foreign exchange and the drop in production is of major concern to both the public and private sectors. In an effort to assist decision makers in the coffee sector better understand factors affecting farmers' production decisions and their attitudes about coffee, the FSRP fielded a nationally representative survey in 2002. The survey, covering the 2001 coffee production year, included both coffee growers and non-growers; it replicates many of the questions posed by Rwalinda et al. (1992), thereby providing an excellent basis for evaluating changes in producer practices and attitudes during the past ten years.



The survey results show that the sector appears to be at a turning point—significant numbers of farmers have moved away from coffee with more seemingly on the cusp of removing more trees, or “decaffeinating” their fields.

While the overall picture presented in this report is one of decline, there are also some encouraging changes. Liberalization of coffee policies in the mid-1990s seems to have increased yields by taking the poorest fields out of production. Growing farmer interest in intercropping coffee with food crops suggests that there may be a means of stretching Rwanda's most limiting resource—land area—thereby enabling farmers to achieve a better combination of food and cash crops. Also, the fact that the coffee sector survives at all in the

face of numerous adversities is a weighty testament to its potential.

Growers and Non-Growers

The 1990s saw a large reduction in the proportion of farmers cultivating coffee fields—nationally 55% of smallholders grew coffee in 1991 versus only 30% in 2002. In absolute terms, the number of farmers with coffee fields dropped from 678,375 in 1991 to 437,196 in 2002—in other words, roughly a quarter million fewer households now engage in coffee production. Of those households not currently growing coffee, 18% (177,026 households) expressed interest in growing coffee in the future. Nationally, 18% of those who do not currently grow coffee have grown it in the past. Among non-growers with prior experience in coffee, the most frequently mentioned year for getting out of coffee production was 1994. Agro-climatic factors were a major reason for not growing coffee and of course coffee is not appropriate for all of Rwanda's zones. Lack of land was another of the primary reasons non-growers listed for not growing coffee. A substantial minority (10%) of non-growers felt coffee was just not worth the effort. The beer banana is still an important competitor with coffee as a cash crop, although down considerably from a decade earlier. In 1991, 40% of coffee-growing households listed banana beer as their most important cash crop, while in 2001 only 15% listed the beer banana as most important. It could be that those who thought bananas were the best cash crop were the ones who got out of coffee. The percentage of grower households mentioning coffee as their number one cash crop remained unchanged between 1991 and 2001 at 34%.

Grower Categories, Potential Crop Shifts, Prices, and Cultural Practices

Even the largest coffee farm in the survey responses—1350 trees—is small by any international scale. The average grower tends 155 trees, down only slightly from the 177 reported by Rwalinda et al. for 1991. An analysis that looks only at average behavior can miss important patterns. By developing

categories of farmers, substantial differences in practices and attitudes are discernable. The analysis broke the sample into four categories of farmers according to the number of trees they reported having on their fields. Each category represents twenty to thirty percent of coffee growers in Rwanda. Cyangugu stands out immediately when the sample is broken down in this way—15% of national production comes from large farmers in this province. No other province has such a concentration of large growers. Nationally, 54% of total production comes from the 30% of growers who fall into the “large” category. Nationally, productivity per tree declines across the grower categories, with growers who tend fewer trees enjoying higher production per tree. Cyangugu is again exceptional—growers in the large category report output per tree at 0.44 kilos—nearly double the national average for large growers. Overall, Gisenyi and Cyangugu report outputs per tree much higher than the national average of 0.35 kilos. While this is an improvement over the national average of 0.27 kilos per tree reported by Rwalinda et al. for the 1991 season, it is still well below regional yield standards, which are on the order of 0.77 to 1.15 kilos per tree.

Land is an increasingly scarce resource in Rwanda and total land area managed by the household (all uses) correlates positively with the number of trees growers tend. Growers were asked what they intend to do with their coffee fields over the next year if prices stay at their current levels. Over 9% said they would be removing trees; another 25% said they would begin intercropping their coffee with other crops. Nationally, about 55% of growers said they would not change their area in coffee. Cyangugu again differs substantially from the national picture—only 17% of growers in Cyangugu said they would maintain the current allocation of their land, while 63% said they would begin intercropping. Among growers intending to reduce their coffee acreage, beans and bananas were by far the most preferred crops for replacement. Beans are the number one choice for intercropping.

Table 1 shows that despite lower yields per tree, growers more heavily invested in trees are in

general more likely to engage in various activities to increase yields. The lower yields among larger growers might be due to more recent tree plantings, bigger stands, lower soil fertility, or less labor available to undertake each yield enhancing activity. The proportion of growers using pesticide is down compared to 1991.

Table 1. Types of Care Given to Trees by Grower Category in 2001 and Comparison to 1991

Type of Coffee Tree Care	Grower Category (number of trees)				All Growers in 2001	All Growers in 1991
	5 to 49	50 to 97	100 to 198	200 to 1350		
Weeding	80.4%	92.1%	85.5%	93.2%	88.3%	76%
Pruning	73.6%	80.3%	91.4%	95.3%	86.3%	92%
Mulching	46.7%	77.8%	72.4%	76.6%	69.5%	96%
Compost during planting	45.2%	43.9%	58.1%	70.0%	55.8%	*
Compost after planting	14.1%	9.8%	11.5%	15.4%	12.8%	10%
Chemical Fertilizer	6.9%	12.3%	9.7%	10.4%	9.9%	2%
Pesticide	38.5%	50.8%	60.1%	72.2%	57.1%	96%

*"Compost during planting" not reported by Rwalinda et al.

Mulching is also down--as expected since Rwanda no longer requires farmers to mulch coffee. A slightly larger proportion of farmers attempt to improve soil fertility through organic or inorganic methods than was the case in 1991. Despite official concerns about farmers possibly redirecting subsidized coffee inputs to other crops, less than 8% of growers admitted using pesticides intended for coffee on other crops. Growers rated effectiveness of pesticides lower than they had in the 1991 study. A detailed analysis of coffee production and processing practices is available in Loveridge et al. (forthcoming).

The average farm gate price for all coffee sold by farmers in the 2001 season was 175 francs per kilo with considerable variation among provinces. Enumerators asked coffee growers a series of questions about future prices. They asked the price at which growers would uproot trees due to low prices, the price at which the grower would stop maintaining the fields, the price at which the compensation for the grower's effort would be "fair", and the price at

which the grower would be motivated to plant additional trees. In three provinces—Gisenyi, Kibuye, and Umutara—the average price in 2001 was within the range of the average "abandon fields" threshold for producer prices. In no case was the average provincial 2001 price anywhere near the level of the average that growers reported for "fair compensation" or the average reported price that would lead them to increase the size of their coffee stands. In addition to average responses, the analysis considered "tipping points"—points at which substantial percentages of farmers would shift behavior. The analysis revealed the following tipping points. **Increased coffee tree plantings at: 300, 400, and 500 frw/kg. Uprooting of trees at: 150 and 100 frw/kg. Abandoning tree (maintenance and harvest) at: 200, 150, and 100 frw/kg.** It should be noted that under current marketing conditions, farmers typically receive a price for average quality coffee; there is no system for providing higher prices for higher quality coffee. If higher prices are offered for high quality coffee without concurrent systems to help farmers raise overall quality, then a likely scenario is sorting of coffee into different grades without raising overall average prices much.

The survey asked growers for suggestions on improving Rwanda's coffee sector. The top two responses were to: improve prices or stop decline of prices (76% of growers) and improve or provide pesticides (52% of growers).

Despite their dissatisfaction with prices and inputs, there is some evidence that coffee farmers are still better off than their non-coffee producing peers. By combining the coffee study survey results with the national living standards survey done on a shared sample, a weak positive association between growing coffee and overall measures of household consumption (an indicator of household income and well-being) can be observed. As in prior studies, households growing coffee appear to be better off than those who do not, but the relationship is perhaps weaker than it has been in the past.

Conclusions

The coffee sector in Rwanda appears to be at a turning point. Substantial percentages of producers have stopped growing coffee in recent years. More are considering changes that will place emphasis on alternative crops, notably beans and bananas. A decrease of 25 Frw (14%) from the 2001 average price will bring even more coffee growers to the “tipping point” where they uproot their coffee. If overall production continues to decline, systems currently in place to support coffee production and marketing will also inevitably begin to fail.

The survey results suggest two areas of agronomic research that could contribute to increases in coffee production. **First**, many farmers are clearly interested in intercropping coffee and other crops. Principal among these crops is beans. Agronomic research into how best to harmonize intercropped beans and coffee could help reduce coffee-grower costs by effectively reducing the land area required by coffee and perhaps economizing on fertilizers. If beans can be grown without much negative effect on coffee yields, food availability and income might both be enhanced. Research is needed to establish methods where food and coffee can be intercropped in sustainable ways that make economic sense at prevailing prices. One could even conceive of a flexible system in which growers respond to variable world prices—when coffee prices are high, putting more labor into improving coffee quality and dropping beans; when prices are low, putting the labor into intercropping beans and coffee. If beans compete with coffee in a way that is economically or agronomically unsustainable, then efforts to teach farmers about the fertility and yield consequences of this practice are needed soon.

The **second** area of agronomic research priority is the further investigation of farmers’ experiences with pesticides. The comparison with the 1991 survey results on pesticide effectiveness is worrying if the trend continues. Is the decline due to increased resistance or poor farmer application practices?

Results of this study highlight Cyangugu as a province deserving of special attention in future coffee production and marketing enhancement efforts. The reasons for a focus on Cyangugu are the following. 1. A high concentration of larger growers; these smallholders in general are more apt to use inputs. Larger growers may also be relatively easier to work with in establishing processing facilities to improve coffee quality. 2. High yield per tree relative to other areas of the country. 3. Many Cyangugu growers are considering altering the use of fields now dedicated to coffee. 4. For non-growers, the modal year of leaving coffee production (2001) was more recent than other provinces, so it may be easier to bring some of these growers back to coffee. 5. Given that high quality coffee must be washed within eight hours of picking, washing stations may be more profitably located close to areas with highly concentrated production. Washing stations in these areas are more likely to attract significant volumes of high quality coffee within the eight-hour radius needed for technical reasons.

The Butare washing station established by the UNR/PEARL project is a bold experiment in assessing the technical feasibility of bringing high quality coffee to the international market. Efforts to improve processing and marketing of coffee must be complemented with research and extension work geared towards improving the quality of the average bean harvested from Rwandan trees. If overall quality is not improved, the effect of better processing for the high quality market on farmer incomes may be less than desired. Beans may simply be sorted and priced by grade, with little effect on average prices.

Efforts to complement the Butare washing station experience are also needed. The Butare work will help establish costs and benefits for a station with a certain tonnage of processing capacity. It is important to explore costs and benefits of various scales of washing stations. In some countries, growers all wash their own coffee on their own plantations with mini-washing stations. This eliminates a major bottleneck with larger scale systems—the need to get the coffee washed within eight hours of picking the cherries. But do Rwanda’s small-

scale growers—even those in the larger categories—grow enough coffee to make these mini-stations work?

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