

# The Effects of Quality Inspection in the Sierra Leone Cocoa Industry



## In brief

- The quality of Sierra Leone's cocoa is poor and receives poor prices in international markets. There are two possible reasons for the lack of investment in drying, fermenting and storage to improve quality: either the market does not “pay for quality” and is insufficiently high to justify investment, or there is limited access to technologies that improve quality.
- Policy makers have identified the absence of quality inspectors as a constraint on investment. Farmers must know the quality of cocoa to know whether to invest and to know if they are being underpaid the market rate for their quality of cocoa by traders.
- This study proposes an easily implementable low cost method to grade cocoa quality at the farm-gate. This intervention was tested in Kenama and Kailahun districts. However, there was no effect on prices. For inspections to work, inspectors must be trusted, permanent members of the community in order to have an impact on prices.
- Traders reported that fermentation and drying are the most important determinants of cocoa quality as wet cocoa rots in transit. Quality inspectors graded beans by counting the percentage of defective beans in a sample. However, there was no difference in prices transacted when the inspector certified quality and when he didn't. Traders and farmers may not have trusted the inspectors.
- The key policy recommendation from our findings is that using farmers groups and local community members to implement quality inspection is a potentially feasible model for a cocoa inspectorate, and not necessarily a roving inspector who travels between villages. Farmers appreciated being shown the quality of their cocoa as it helped them understand the areas in which they need to improve.

## Policy Motivation

*“Sierra Leone’s cocoa is of poor quality and receives poor prices in international markets”*

Sierra Leone’s cocoa is of poor quality and receives poor prices in international markets. Farmers and traders at the top of the supply chain must invest in drying, fermenting and storage before exporters can obtain the amount of good quality cocoa they need to win a higher price. Market participants could fail to make these investments for two reasons: (1) the market does not “pay for quality”—the price premium for quality is insufficiently high to justify investment—or (2) there is limited access to technologies that improve quality, and so farmers and traders cannot work to improve it even if the price premium is high. Policy makers have identified the absence of quality inspectors in the market as a key constraint on investment that functions through mechanism (1). If farmers are unable to assess the level of quality, but traders are, traders may be able to cheat farmers, paying them less than the market rate for quality cocoa in larger towns.

## Policy Impact

This project developed an easily implementable, low cost method to grade cocoa quality at the farm-gate. This design could be easily scaled up. When we experimentally introduce inspectors to villages in Kenema and Kailahun districts, however, we find no effect on the prices transacted. Our work suggests that for inspections to work, inspectors must be trusted, permanent fixtures of the community in order to affect on prices. We discuss a model of “village inspectors”, elected by farmers’ groups that has the potential to benefit farmers, at low cost.

## Audience

Members of the cocoa working group and others in the policy and business communities interested in cocoa.

## Policy Implications

### **Investments in fermentation and drying by the farmer are the most important determinants of cocoa quality**

*“A credible quality grade provided by inspectors might still improve the quality of output. We develop a simple and cheap method for inspection, which can be easily scaled in the field”*

Cocoa traders surveyed in Kailahun and Kenema districts broadly report knowledge that cocoa should be well fermented and dried in order for it to be of good quality. Moisture content in particular is the most important determinant of quality; Wet cocoa rots as it is transported, and so total output will be at its highest when all drying is done immediately after harvest at the farm, ensuring none is lost in transit.

### **Randomly sampling beans from bags is a cheap and effective method of grading quality**

Though traders and farmers can imperfectly grade moisture, fermentation and other defects, a credible quality grade provided by inspectors might still improve the quality of output. We develop a simple and cheap method for inspection, which can be easily scaled in the field without moisture meters, which are expensive: Inspectors

randomly sample 50 beans from a bag and count defective beans (e.g. those with mould, weevils, germination, slate, under-fermentation and other damage). They then translate this into a grade (A, B or C)<sup>1</sup>. A useful feature of our system is that our variables are well correlated with the most important determinant of quality, moisture.<sup>2</sup>

### **It is possible, however, that quality inspections will not affect transaction prices, and thus have no effect on output**

We study experimentally the effect of quality inspections on prices paid to farmers. We find no difference in the prices transacted when the inspector certified quality and when he did not. Discussions with farmers and our inspectors revealed two potential reasons why the inspections failed to have an effect:

*“The experiment and field work highlights the importance that inspectors, if hired, must be permanent fixtures of the community that can be trusted to report quality honestly”*

- Prices may already be fixed on the day of transaction. In our experiment, inspectors merely met farmers and traders at the farm-gate where they transacted. It may have been difficult for farmers and traders to change prices on the spot, even with new information on quality. This suggests that for inspectors to have an effect, they must become a permanent feature of the market, which can be relied upon, daily, to verify quality before farmers and traders agree on prices.
- Traders and farmers may not have trusted the inspectors. Indeed, in field interviews we encountered farmers who remember corruption among government inspectors before the war, and extortionary burnings of cocoa deemed to be of low quality. The experiment and field work highlights the importance that inspectors, if hired, must be permanent fixtures of the community that can be trusted to report quality honestly, and are reliably available to do so.

## **Implementation**

### **Using farmers groups to implement quality inspection is a potentially feasible organizational model for a cocoa inspectorate**

The findings above suggest that an appropriate model for inspections is not necessarily a roving inspector, who travels between villages on motorbike, but rather a member of the community itself. In our work, we piloted the logistics of an inspection model along these lines. In two villages we trained and monitored “village graders”, who were community members elected by the cocoa farmers of the village. We trained them in how to inspect cocoa using our bean sampling method. Two village graders would visit each farmer in the village approximately twice each week, and would also offer to grade farmers’ cocoa before it was sold to a trader. While a study involving many more villages would be required to determine

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1. In our implementation Grade A beans have no more than average 11.5% moisture, no more than 2% mould (1 bean of 50), and no less than 72% good beans (36 beans of 50). Grade B beans have no more than 22% moisture, 4% mould (2 beans of 50) and no less than 52% good beans (27 beans of 50).  
2. The correlation of our germination score with moisture is 0.32; with our under-fermentation score is 0.42.

whether these graders affect the prices farmers receive, discussions with farmers suggest a potential benefit. In interviews, farmers appreciated being shown the quality of their cocoa, as it helped them understand the areas in which they needed to improve. We are eager to evaluate the impact of a quality inspection program at the village level.

## Further Readings

Henning Ringholz (2011), “Cocoa Value Chain”, presentation prepared for GIZ.

## **About the authors**

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