



Improving environmental practices in agricultural supply chains: The role of company-led standards



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ABSTRACT

Food retailers and manufacturers are increasingly committing to address agricultural sustainability issues in their supply chains. In place of using established eco-certifications, many companies define their own supply chain sustainability standards. Scholars remain divided on whether we should expect such company-led programs to affect change. We use a major food retailer as a critical case to evaluate the effectiveness of a company-led supply chain standard in improving environmental farm management practices. We find that the company-led standard increases the adoption of most environmental best management practices among the company's fruit, vegetable and flower growers in South Africa. This result is robust across two identification strategies: a panel analysis of over 950 farm audits and a cross-sectional matching analysis using original survey data. In-depth interviews suggest that the program's unique focus on capacity building through audit visits by highly trained staff, coupled with a close business relationship between the retailer and their growers help to explain the increased effectiveness of the program as compared to other private environmental standards. Contrary to the argument that company-led initiatives are mere window dressing, this study provides a critical example of the positive role private governance mechanisms can play in improving environmental farm management practices globally.

1. Introduction

Firms are increasingly being called to take responsibility for the social and environmental impacts of their operations, as exhibited by the inclusion of the private sector as a key partner in reaching the United Nations' Sustainable Development Goals. Yet often, the largest environmental impacts of a company's operations are concentrated in the raw material production (Roy et al., 2009). Agriculture alone represents upwards of 30% of our planet's greenhouse gas emissions, has led to expansive dead zones from nitrogen runoff, and is one of the primary drivers of deforestation (Foley et al., 2011; Gibbs et al., 2010; Henders et al., 2015).

Companies have committed to ameliorate the social and environmental impacts of their own operations as part of their corporate social responsibility (CSR) strategies for many years (Dauvergne and Lister, 2013; Vogel, 2005). Yet it is only in the last two decades that food retailers and manufacturers have begun to engage deeply around issues of sustainability in their supply chains. This rise in private and hybrid governance of environmental issues has been well documented in the

literature (Beghin et al., 2015; Lemos and Agrawal, 2006; Newell et al., 2012; Waldman and Kerr, 2014). For example, Unilever has committed to 100% sustainably sourced raw materials by 2020, while Hershey promises to only use third-party certified sustainable cocoa in the same time period (Unilever, 2016; The Hershey Company, 2016). Green (2014) estimates that 90% of private environmental standards have been introduced since 1990, with the majority in the food and textile sectors.

A variety of tools have emerged to address environmental governance in supply chains, ranging from individual firm efforts to non-government organization (NGO)-led certification and industry standards (Auld et al., 2008). Among these approaches, NGO and multi-stakeholder certification schemes, such as FairTrade or the Forest Stewardship Council, are the most frequently studied (DeFries et al., 2017; Rueda et al., 2017; Tallontire, 2007). But supply chain standards developed by individual companies are the most commonly used sustainable sourcing strategy firms employ to deal with social and environmental issues (Barrientos and Smith, 2007; Lee et al., 2012; Miller, 2015). In 2008, over 90% of the world's top 250 businesses employed a

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company-led standard to regulate their suppliers' behaviors (KPMG International, 2008). Individual company supply chain standards (henceforth referred to as 'company-led standards') are set by individual companies to address social and/or environmental practices of their suppliers and can be monitored by first, second or third party actors.¹

Understanding company-led standards' impact on improving environmental practices in agriculture supply chains is necessary both because of their prevalence, but also because of tension over whether or not such company-directed efforts can drive real change in supplier practices. Some scholars argue that company-led standards implemented by powerful firms are capable of influencing suppliers' practices as often suppliers are dependent on the lead firm for business (Andersen and Skjoett-Larsen, 2009; Mayer and Gereffi, 2010). For example, buying firms can encourage their suppliers' compliance through volume or price incentives or threats to terminate contracts (Porteous et al., 2015). In contrast, there is concern by some actors that company-led standards will not be effective because, by companies' profit-maximizing nature, they are not incentivized to ensure their environmental commitments are translated into change on the ground (Elder et al., 2014). Instead, these standards are used either as mere window dressing by companies (Alves, 2009; Delmas and Burbano, 2011) or to avoid more stringent government regulation or negative publicity that could harm their reputation (Baron, 2001; Khanna and Brouhle, 2009; Segerson, 2013). As governments, civil society and consumers increasingly rely on companies for assurance of sustainable natural resource use, it is necessary to better understand if such company-led initiatives are delivering the impact they purport to achieve (Chaplin-Kramer et al., 2015; Miller, 2015).

To date, there has been very limited empirical evidence of the impact of company-led standards on environmental practices, particularly in the agri-food space (Beghin et al., 2015; Fuchs and Kalfagianni, 2010). A few studies have examined company-led standards' impact on social issues, primarily in textile supply chains (Distelhorst et al., 2015; Frenkel and Scott, 2002; Locke, 2013b). Of the limited studies in the agri-food space, Ruben and Zuniga (2011) find that Starbucks' CAFÉ program increases the uptake of good agricultural practices as compared to an NGO-led certification scheme. A qualitative study of Walmart's Direct Farm program in Nicaragua questions the benefits of the company's sustainability program in improving good agriculture practice uptake (Elder and Dauvergne, 2015). Expanding to industry-led initiatives, Lockie et al. (2014) find that adherence to GlobalGAP certification does not increase producers' adherence to national environmental laws in the Philippines. Similarly, Mengistie et al. (2017) find no significant effect of industry and NGO-led certification schemes on horticulture farms' adoption of environmental practices in Kenya.

In contrast, there is a stronger literature in the agri-food space on the effectiveness of multi-stakeholder and NGO-led certification schemes on promoting environmental practices (Blackman and Rivera, 2011; DeFries et al., 2017; Waldman and Kerr, 2014). A number of rigorous studies suggest that Rainforest Alliance or organic standards improve the adoption of environmental best management practices among farmers (Blackman and Naranjo, 2012; Ibanez and Blackman, 2016; Rueda et al., 2014). In contrast, DeFries et al. (2017)'s meta-study of voluntary certification's effect on small-holder producers find that only 36% of environmental response variables improve with certification. These studies suggest that standard-based programs created by credible third parties can have some effect on the adoption of environmental management practices, but results vary by context.

Our paper contributes to the gap of rigorous empirical analyses of company-led programs by examining how Woolworths Holding Ltd.'s (Woolworths) supply chain standard affects the uptake of

environmental best management practices among their fruit, vegetable and flower growers in South Africa. We use quantitative evidence from two identification strategies. First, we conduct a panel analysis of the program's impact using over 950 third-party audits across 228 farms and seven years. Second, we draw on an original cross-sectional survey of treated and control farms, where control farms are subject to an industry-led environmental standard. Finally, we conducted over 90 in-depth interviews with farmers, auditors and Woolworths staff to corroborate our findings and explore the mechanisms by which the program affects change.

In the ideal research case, we would link the adoption of best management practices observed in this study to the environmental outcomes of interest (soil erosion levels, reduced nitrogen load in waterways, etc.). However, due to the cost, complexity and scale of projects required to detect changes in landscape-level environmental outcomes, we use the adoption of best management practice as an early indicator of improved environmental outcomes (Bockstaller et al., 1997; Holland, 2004). In particular, we focus on environmental best management practices relevant to South Africa's most pressing environmental challenges, including water scarcity, invasive species management and soil erosion (Blignaut et al., 2009; Goldblatt, 2011).

We chose the Woolworths' program as a potential critical case among company-led supply chain standards. A critical case is one in which the outcome of interest is expected to be most (or least) likely to occur (Flyvbjerg, 2006; Yin, 2013). In short, if the Woolworths program does not create change among farmers, it is less likely that we will observe changes in less robust company-led standards. By studying a critical case, our findings can help to inform the myriad other company-led standards in reaching their pronounced goals of improving environmental management of key natural resources.

This study contributes to better understanding private environmental governance in a number of ways. First, company-led standards are rarely studied, likely in part due to the proprietary nature of much of this information (Beghin et al., 2015; Chaplin-Kramer et al., 2015). Second, our panel analysis of 228 farms using both farm and time period fixed effects allows us to remove the confounding effects of time invariant unobserved factors and common shocks, thereby addressing many of the methodological shortcomings of cross-sectional analyses commonly used for impact evaluation (Angrist and Pischke, 2009; Blackman and Rivera, 2011). Third, we examine changes in specific environmental practices among farmers. Many studies only examine changes in summary environmental scores among suppliers, making it difficult to assess the potential impact on specific environmental practices (Distelhorst et al., 2016; Short et al., 2016). Finally, we move beyond the binary question of effectiveness to examine the mechanisms by which Woolworths' company-led standard drives change among farmers.

2. Study description

Woolworths Holdings, Ltd. is a high-end grocery and clothing chain based in South Africa and is one of the five largest retailers in the country (Piatti and Shand, 2015). In 2009, Woolworths launched a company-led standard program, Farming for the Future (FFF), to improve the environmental practices of the fruit, vegetable and flower farms that they source from. The goal of the FFF program is to "radically improve soil and plant health, preserve resources like water and soil and protect biodiversity" (Woolworths Holdings Ltd, 2009). Woolworths developed the standards in collaboration with a third-party environmental consulting firm, with feedback from farmers and the non-governmental organization WWF-South Africa. The FFF program provides a baseline evaluation and annual third-party audits of farming practices. Each year, farmers receive an audit score and recommendations to improve farm management practices by trained third-party agronomists and environmental scientists. All growers are required to enroll in the program and are expected to show continuous

¹ First party audits refer to self-audits conducted by the supplier; second-party audits are conducted by the buying firm; third-party audits are conducted by an external party.

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