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Impact of Farmer Field Schools on sustainable tea production in Kenya

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Impact of Farmer Field Schools on sustainable tea production in Kenya

Sabine Hiller, and André de Jager ¹

Abstract

LEI Wageningen UR conducted a study to evaluate the use of Farmer Field Schools (FFS) for sustainable tea production in Kenya.² The results are encouraging: there have been sustainability improvements for both the short and long term. Farmers' knowledge improved and there is more cooperation between the farmers. Based on these positive results, the implementing and certifying agencies (Lipton, Kenyan Tea Development Agency and Rainforest Alliance), decided to up-scale the project. We discuss how FFS can contribute to more sustainable agricultural production and present seven policy recommendations.

1. Introduction

What is the impact of FFS on sustainable tea production in Kenya and how can FFS contribute to higher adoption rates of sustainable practices? Answers to these questions will lead to policy recommendations for the implementation of participatory learning methods. This chapter is therefore relevant for policymakers and practitioners that address issues of sustainable sourcing.

Globally, the tea sector is under pressure. It faces many issues at the production side: rising production costs (labour, fuel and electricity), ageing tea bushes, high overhead costs, bad agricultural practices, low labour productivity, negative effects of climate change, frequent mismanagement and outdated infrastructures.³ At the market side, world prices of tea decreased by about 35% during the past 25 years.⁴ More so, tea production is increasingly in the spotlight for its negative impacts on the environment. Tea is known to threaten biodiversity: forest is converted into tea plantations, logging is not uncommon and there is an inappropriate use of chemicals.

Against this reality, multinationals are becoming more and more aware of their responsibility to produce in an environmentally sound way. Certified products can attract premium prices and enable smallholders to raise incomes, achieve a better quality of life and more sustainable standards of living.⁵ The question that arises is how certification schemes can be best implemented to reach these goals. This chapter describes FFS and evaluates how effective these have been for the adoption and certification of more sustainable practices among a group of smallholder tea producers in Kenya.

First, FFS are introduced as a means of disseminating knowledge and implementation of more sustainable production practices. We then describe and evaluate the FFS implemented

¹ Sabine Hiller and André de Jager work at LEI Wageningen UR.

² This project was funded by Lipton.

³ Van der Wal, S. (2008). *Sustainability issues in the tea sector: A comparative analysis of six leading producing countries*. SOMO.

⁴ Mulder, L. (2008). *Doing well by doing good*. PowerPoint presentation.

⁵ Rainforest Alliance, 2007.

in Kenya. The last section formulates the conclusions of the Kenyan experience which lead to the policy recommendations.

2. Farmer Field Schools: an alternative approach

FFS were first used in 1989 by the UN in Indonesia to help farmers discover the benefits of integrated pest management. Since then, governments, NGOs and international agencies have used FFS to promote improved agricultural practices. The FFS approach aims to empower farmers to be their own technical experts and to adapt potentially applicable technologies to their own particular conditions. FFS do this by enhancing farmers' knowledge and skills (technical, managerial and entrepreneurial), their decision making and problem solving skills and by stimulating collective action. Adoption of new agricultural practices through conventional extension service is low. Based on previous experiences in other agricultural sectors, in Kenya and elsewhere, FFS are considered powerful to attain large-scale adoption of new agricultural practices. The FFS curriculum is formulated in a participatory manner, typically including components such as field experiments, special topics sessions and group dynamic activities.

Field experiments are the first pillar of the FFS curriculum and provide opportunities for



farmers to make field observations, learn by doing and discover their own skills. A field trial typically consists of three treatments on small plots of land, including a control field (farmers' normal practice). Agro-ecosystem analysis is used to collect data, study the results and learn from these results. If there are more FFSs, participants debate in group discussions about the performance of the

various treatments, they exchange learning experiences and decide on required actions. Besides field experiments,

- *Special topic sessions* are the second pillar of the FFS curriculum. Important topics that are less suitable for experimentation are discussed with the FFS facilitator or external experts. Special topic sessions resemble traditional 'classroom' teaching and can deal with topics that are not land-bound or that exceed the time reserved for the FFS.
- *Group dynamic activities* in FFS can be team building exercises, exercises to build local group structures or communication skills, field days or study tours. Developing the FFS curriculum is the first activity that increases group dynamics. Each FFS holds group meetings to identify constraints, opportunities and gaps in farmer knowledge.

Farmers, facilitators and researchers propose technologies for field trials, addressing the prioritised themes or constraints. The different proposals are discussed and ranked, resulting in a consolidated choice for the technologies for field trials. FFS groups agree upon the trial objectives, treatments, trial lay-out, replication and indicators for monitoring, frequency of monitoring and duration of trials.

3. Research methodology

Kenya was the largest exporter of black tea in the world in 2007. Smallholders account for about 62% of total tea production. Smallholders' tea-plots are on average 0.25ha.⁶ The tea sector supports livelihoods for more than 10% of Kenya's population.⁷

In 2006, the Kenya Tea Development Agency (KTDA) and Lipton decided to use FFS as a way to introduce sustainable tea production for smallholders. The aim of FFS was to encourage tea growers to apply sustainable production methods and to help generate more income. They launched a trial with four FFS in the areas of four tea factories in Kenya, in the Thika, Embu, Nyamira, and Kericho districts.

Following the formation of the FFS, the sustainability of tea production was assessed together with FFS participants, using a survey that captured (i) baseline survey and (ii) an assessment based on indicators developed by Lipton. The survey involved a diagnosis of farmer's current farm management practices and provided quantitative and qualitative information on the level of sustainability of smallholder tea production.

After randomly selecting 15 FFS and 15 non-FFS farmers in each factory area, a total of 120 farmers were interviewed: 60 farmers who participated in the FFS and 60 farmers who did not. For the FFS farmers, data on their 'before' situation were available from the baseline survey. For the non-FFS farmers, some recall questions were included in the questionnaire.

Results of FFS assessment

FFS increased the use of sustainable tea practices

Data analysis showed that FFS significantly increased the knowledge of the FFS farmers. Also, a high level of dissemination of information on certification schemes from FFS members to non-members was observed. This indicates that knowledge invested in the FFS by KTDA/LIPTON reaches more than only FFS farmers. About 30% of the interviewed non-FFS farmers implemented new tea management practices as a result of information received from FFS farmers. However, Table 1 shows that FFS members have implemented more sustainable practices in the last two years than the non-FFS farmers and are hence producing in a more sustainable manner.

⁶ Kamau D.M., J.H.J. Spiertz, O. Oenema and P.O. Owour (2008). *Productivity and nitrogen use of tea plantations in relation to age and genotype*. Field crops research, Volume 108, issue 1, p.p 60-70.

⁷ Tea Board of Kenya (2008). *Kenya tea: Uniquely refreshing and exceptionally healthy*.

Table 1 Share (%) of farmers who implemented sustainable tea practices				
Management practices	Implementation 2007		Implementation 2005	
	FFS	Non-FFS	FFS	Non-FFS
Retain prunings in field	100	87	40	62
Prune at 20 inches	97	57	30	35
Soil conservation	92	63	53	48
Tipping-in at 4-6 inches	90	57	30	32
7-8 day plucking intervals	82	45	29	10
Infilling	83	53	32	37
Rain storage	80	60	48	52
Record keeping	75	20	32	18
Manure application	35	14	18	4
Use protective equipment	34	29	20	23

Farmers perceive increase in tea yield

On average, there was an increase of 5-10% in tea productivity, based on the production data collected by the tea factories. Farmers with the weakest techniques before the FFS experienced the biggest increase. However, this increase was not significant. The farmers were also asked if their tea production, and other indicators, 'increased', 'remained stable' or 'decreased' over the last two years. Table 2 presents the results: FFS farmers are very positive on all indicators. 98% of FFS farmers observe increased tea incomes over the last two years, compared to 62% in the control group.

Table 2 Estimation of change in farm-level indicators between 2005 and 2007						
	FFS (n=60)			Non-FFS (n=60)		
	% of farmers increased	% of farmers stable	% of farmers decreased	% of farmers increased	% of farmers stable	% of farmers decreased
Tea yield	98	0	2	68	10	22
Income from tea	98	0	2	62	13	25
Labour other activities	52	45	3	25	65	10
Income other activities	78	18	3	57	28	15
Total farm income	98	2	0	68	15	17

Other income generating activities

It is important to take a holistic approach when assessing the effects of FFS for the sustainability of tea production. Two issues come to mind here: are other income-generating activities neglected, due to increased tea production efforts?; and, are other income-generating activities also benefitting from the increased capacity of the farmers due to the FFS? Table 2 shows that farmers still have enough time left for other income-generating activities, even after implementing sustainable tea practices. 'Income other activities' shows that besides the increase in tea income, farmers experienced more income from other

activities. This suggests that increased group cohesion, empowerment and learning ability positively impact beyond tea production.

Improved livelihoods

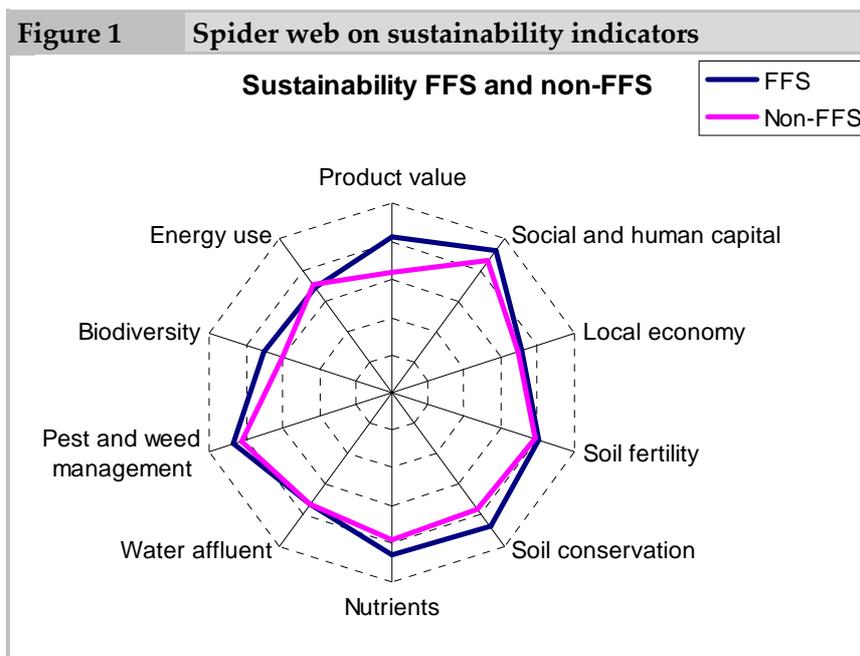
Although both FFS and non-FFS farmers were positive about the change in the different aspects of their livelihood, FFS farmers are considerably more positive about these changes and believe that this is due to FFS activities. In most cases, welfare increased as a result of having a wider variety of income-generating activities, better farm management practices, a higher income and a more diverse diet. The influence of FFS on the welfare of participating farmers can be ascribed to the information provided on sustainable tea practices. Nonetheless, FFS also contributed to better relationships in the family and a more diverse cropping pattern.

FFS farmers produce more sustainable

Farmers that participated in FFS show better sustainability scores than non-FFS farmers. Figure 1 shows the scores of FFS and non-FFS farmers on 10 sustainability indicators of tea production. FFS score significantly better on product value (implementing practices that increase quality and quantity), social and human capital (contracts and agreements), soil conservation, use of nutrients and other biodiversity indicators (e.g. renewable energy use).

Ongoing certification progress

No empirical data exist on the role of FFS in the certification process, in this case executed by Rainforest Alliance. This process is fully ongoing. However, based on the above-mentioned results of adopting sustainable practices in the FFS pilots, KTDA decided to mainstream FFS for extension and support in all 55 factories. KTDA, jointly with Lipton and Rainforest Alliance is working to introduce and implement FFS into the certification process.



4. Conclusion

What is the impact of FFS in the specific case of sustainable tea production in Kenya?

Although both FFS and non-FFS farmers were positive about the change in the different aspects of their livelihood, FFS farmers are considerably more positive about the changes. They attribute this to FFS activities. In most cases, welfare increased as a result of better farm management practices, a more diverse diet and a higher income.

Did FFS increase tea productivity?

The last two years, both FFS and non-FFS farmers realised a considerable increase in productivity. Most FFS farmers responded to have intensified tea production and perceived an increase in income from tea. The production data from the tea factory, however, does not show significant increases in tea production yet. Based on increases in the implementation of sustainable practices and the perceived increase in production from the farmers, we expect the increase in production to become significant in the coming year.

Did FFS participants produce more sustainably?

Results are encouraging. Awareness, with respect to sustainability, has increased due to the FFS and the newly acquired knowledge has been put into practice. FFS participants produce more sustainably. Especially product value, biodiversity and soil loss are aspects where FFS farmers are more sustainable than non-FFS farmers. In short, participation has led to more sustainable tea production.

Can new FFS achieve the same results?

Various factors, besides FFS, influenced the results of this experience. The market has been the major driving force, initiating the described changes in the tea value chain. Lipton was looking for added value and market niches through certification of smallholders' sourced tea. Once the incentives for the smallholder producers were made clear during the pilot, interest among KTDA producers to join the FFS and certification process was high. FFS will now be applied on a large scale by KTDA and Rainforest Alliance in order to certify sustainable tea produced by smallholders. Another influential aspect has been that FFS participation was voluntary. Participants are therefore likely to be the more innovative farmers. More innovative farmers will learn more from FFS than farmers who are less eager to join the FFS.

How can FFS contribute to more sustainable agricultural production in general?

The well-defined participatory approach, FFS's distinctive feature, has great potential to improve the adoption rate of more sustainable production methods. It has led to higher acceptance of promoted practices than conventional extension services. Learning-by-doing offers farmers more insight into the materials. Conventional approaches offer little guidance in applying new knowledge to farmers' own fields. FFS does not tell farmers how to produce, it lets the farmer experiment with good practices and certificates. Farmers therefore see and experience the benefits of different production methodologies.



Can FFS contribute to the dissemination of good practices?

The fields of farmers participating in FFS have better appearance, better group cohesion and strengthened learning capacities. FFS also have an impact on the surrounding farmers: non-participating farmers in the area are also producing in a more sustainable way. Around 30% of non-participating farmers in the study were

using sustainable tea practices, learned from FFS farmers. Farmers are positive about the usefulness of the different aspects of the FFS and expect their FFS to continue in the future.

5. Policy recommendations for more sustainable production

- 1 Emphasise experience-based learning. Do not tell farmers how to produce but let them experience themselves. If farmers see the effect of different production methods they can take better informed decisions.
- 2 Stimulate farmers to experiment with different production practices, also outside the FFS. It motivates farmers to increase control over their crops, now and in the future. The FFS in Kenya showed that, after some time in the FFS, farmers started to experiment, individually or in groups, with bananas and biogas-installations.
- 3 Make group cohesion, family relations and leadership skills a compulsory part of FFS. Farmers value these subject very high and these aspects are important for the future existence of farmer groups.
- 4 Help the Farmers to share and practice new knowledge with their neighbours. A much larger group can so benefit from FFS insights. The farmers that are most active in sharing their knowledge will be rewarded by recognition from their community.
- 5 If desirable, FFS farmers can be further trained to become facilitators of new FFS. This offers additional opportunities for farmers and makes it easier to find suitable facilitators at the right time and place.
- 6 The prospect of a higher production stimulates farmers to implement more sustainable practices on their plots.
- 7 Give the farmers regular feedback on their results. Mutual comparison stimulates farmers to increase their efforts and continue with the FFS.

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