Impact of UTZ certification on cocoa producers in Ghana, 2011 to 2014

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Preface

The cocoa sector is facing a great number of challenges related to smallholder production, such as low cocoa tree productivity, low income for farmers and workers, issues regarding labour conditions and environmental impact, such as deforestation. UTZ Certified and Solidaridad have initiated a cocoa programme in Ghana and Ivory Coast that aims to improve sustainability in the cocoa supply chain.

This programme supports cocoa farmers to implement better farming and management practices according to the UTZ Certified Code of Conduct. Stakeholders in the cocoa supply chain are actively engaged in the implementation of the programme. UTZ and Solidaridad expect that, by increasing the sustainability of cocoa cultivation and trade, cocoa production will become a more economically viable option for current and future cocoa farmers, thus enhancing their standard of living.

This study presents the impact evaluation of the UTZ-Solidaridad programme implemented in Ghana, analysing the change in performance over a time period of four years (2011–2014) of farmers connected to six cocoa support projects included in the programme. The research was commissioned by Solidaridad and UTZ Certified.

We hope that the findings of this study will help to strengthen the programmes currently being implemented and inform current and future debates on sustainable cocoa production and certification. We are greatly indebted to the farmers for their assistance and the information they have provided us with, as well as the implementing organisations and the hard work done by the survey personnel to collect the field data. We would not have been able to conduct this study without their efforts. We also wish to thank the Solidaridad and UTZ Certified team, who provided us with information on their training and certification approach in Ghana and feedback to the questionnaire and report.

The Hague, December 2015

Prof. dr. ir. J.G.A.J van der Vorst
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Executive summary

Supporting smallholder cocoa farmers in Ghana

UTZ Certified and Solidaridad have been partners in a cocoa programme in Ghana since 2010 with the collaboration of producer groups, licenced buying companies, traders and non-governmental organisations. They aim to improve smallholder cocoa productivity, incomes, working conditions and the environment. The programme started with training, then added inputs. The groups were certified for the first time between 2010 and 2012.

Evaluating the impact of the cocoa programme

This study evaluates the impact of the UTZ-Solidaridad cocoa programme , by comparing the situation of a sample of farmers from six projects in 2014 with their situation in 2011, and by comparing the development over time for certified and uncertified farmers. We also analysed the programme's inclusiveness and shed light on the effect of UTZ certification on hired labourers' working conditions.

Conclusions

Farmers are satisfied with the UTZ-Solidaridad programme's services, which have increased over time

Almost all farmers participating in the UTZ-Solidaridad programme have taken part in training sessions offered by the organisation they are member of. And more and more farmers are using an increasing number of the available services. Farmers are generally satisfied with the services provided by their organisations.

Inclusion is hampered by cultural norms and farmers' age

A balanced inclusion of men, women and youth in the programme is not possible because of prevailing cultural norms regarding farm ownership and membership, and the fact that farm managers are generally old. There is a risk of declining cocoa yields because of aging farm managers, as the average age of cocoa farm managers is 50 years, whereas the life expectancy in Ghana is 63. However, new managers may well maintain productivity levels as previous generations have done before them, but only if cocoa farming becomes a more attractive source of income compared to alternatives.

Enhanced knowledge is associated with improved implementation of GAPs and productivity increase, confirming the UTZ-Solidaridad programme's Theory of Change

Enhanced knowledge on a combined set of GAPs is associated with better implementation of the combined set of GAPs under review, as well as the implementation of production practices. Farmers who have improved the implementation of GAPs are more likely to also have improved productivity than farmers who have not, which is primarily due to improved production practices. Improvements in efficiency are associated with higher profitability per hectare and per kilogram. And increasing productivity per hectare is associated with more profitability per hectare and per kilogram, which is mainly due to the 2014 cocoa price increase. These associations have been calculated using regression analyses on the dataset, including certified and uncertified farmers, taking into account other factors that could influence the relationship between the variables.

The results are supportive of the assumption that training programmes are important instruments to improve yields, which forms the main rationale behind the UTZ-Solidaridad programme in Ghana. The level of knowledge on good agricultural practices is not directly correlated with an increased profitability, but each link in the intervention logic is significantly and positively correlated, confirming the UTZ-Solidaridad programme's Theory of Change.

Room for improvement: knowledge, implementation of good agricultural practices (GAPs), productivity and quality

Certified and uncertified farmers improved their knowledge and implementation of good agricultural practices by about 30%, but the levels

remain low. Productivity levels continue to be generally low for all farmers: on average 311 kg/ha for certified farmers in 2014. Adverse climatic conditions in 2014 have probably influenced productivity and quality levels. We neither found differences between certified and uncertified farmers regarding changes in productivity and quality over time.

Cocoa farming continues to generate low levels of income

Cocoa profitability increased per hectare for all farmers but decreased per day spent by family labour. The price increase in 2014 enhanced the profitability of cocoa production; it offset the rising costs of production (especially for hired labour) and increased cocoa profitability per hectare for all farmers. However, cocoa farming has become less attractive in terms of profit per day spent by family labour, as it decreased over time, also compared to wage levels for hired labour. No differences were found between certified and uncertified farmers. The impact of the price change will become truly apparent in 2015, as the price changed in October 2014, the year for which we collected data for this study. If the returns on family labour continue to diminish, and there are better options for farmers and workers to earn an income, they may decide to reduce their investments (time and money) in cocoa production. We have seen this happening in areas where mining companies operate.

Income from cocoa and total household income increased for all farmers but remains low

Both the income from cocoa and the total household income has increased over time, and we see similar increases for both certified and uncertified farmers. Per person, the income from cocoa is slightly lower than the USD 1.25 poverty line in 2014, while the total household income is slightly higher than this poverty line per household member (USD 1.40). The minor difference between income from cocoa and total household income indicates that cocoa farmers remain highly dependent on income from cocoa.

Positive impact on working conditions, awareness of child labour issues and health

Farmers and hired labourers usually make agreements about pay and time spent working on farm activities, and this is the case for both certified and uncertified farmers. Uncertified farmers have become less professional since 2011 in hiring farm workers regarding agreements about time spent working on the farm while certified farmers remained the same level of professionalisation. Generally, farmers have little knowledge on labour laws and complaints procedures.

Certified farmers are more aware of what children should not do on the farm, as well as the benefits of going to school, than uncertified farmers. Children did spend time on cocoa farm activities, but farmers stressed that their work on the farm is important so they can learn about cocoa production. Almost all children (97% of children aged 6-11 and 93% of children aged 12-17) go to school (in 2014). We see no difference over time for and between certified and uncertified farmers regarding school enrolment for both age groups.

During focus groups, certified farmers mentioned that the programme has had a positive effect on their health. Such changes were not mentioned by uncertified farmers in the focus groups.

A few certified farmers do not comply with the UTZ Code of Conduct regarding child labour

Children under the age of 18 of certified farmers work on average 1.6 days per year on cocoa production activities on the main farm. On 8% of the certified farms these children conducted hazardous tasks. In average for the whole group, this amounts to less than one day per year. Despite being minimal, these activities violate the UTZ Code of Conduct. Children under the age of 18 are not supposed to conduct hazardous tasks, such as pod breaking, pruning, applying fertiliser and transporting bags to the purchasing clerk. None of the children under the age of 18 were involved in pest or disease control. We see no difference over time between certified and uncertified farmers regarding the time children under the age of 18 spent on hazardous tasks.

We do not know whether farm activities were done by children instead of going to school. But as children work so few days on cocoa activities per year, and as children spend even less days on hazardous activities, child labour occurs incidentally, but is not an issue.

Four explanations for the contradictory findings on differences between certified and uncertified farmers over time

Other training programmes implemented in the area can explain the fact that there are few differences between the development of UTZ-certified and

uncertified farmers between 2011 and 2014. A range of training programmes have been implemented in the area, for example the World Cocoa Foundation's Cocoa Livelihoods Program and farmer business schools. Most probably, these programmes have affected the performance development of the uncertified farmers. The impact of the input services delivered to certified farmers has probably not left its mark yet, as not all farmers use these services yet, and it takes time for the use of fertiliser, but especially planting seedlings, to have an effect on productivity. All the farmers furthermore faced price increases and increased labour costs, as well as climatological challenges in 2014. These developments could explain the relative few differences found between certified and uncertified farmers in their performance development over time.

One methodological constraint in measuring differences between certified and uncertified farmers and over time

A relevant question is whether there have been improvements that were not measured. There is one methodological constraint to this study: the size of the sample is, with 352 farmers interviewed twice, too small to detect significant changes in productivity lower than 27% for the certified group.

We used a variety of methods and questions to test whether there was any bias in the results. With regard to bias in the results, the levels of change found over time and between certified and uncertified farmers do not appear to have been affected by the following:

1. Differences between certified and uncertified farmers. Analyses based on Propensity Score Matching do not show different results than difference-in-difference analyses.
2. The fact that some projects had already started at the time of the baseline study: Projects 3 and 4 represent a clean baseline, starting at the same time that the baseline study was conducted. The same is true for the analyses of the combined group of farmers from Projects 2, 3, 4 and 6, who we expect not to have had visible productivity increases yet at the time of the baseline study. These projects also show few significant changes compared to the uncertified group.
3. The time between the baseline survey and the endline survey. The endline study was planned taking into account the possibility that long-term programme effects may have manifested themselves, collecting data for the years 2011 and 2014. But it could be that the impact of input services was not yet known at the time of the endline study.

Recommendations

1. Take into account in the Theory of change other important factors influencing the performance of cocoa farmers.
2. Find out why farmers have not fully adopted the recommended practices.
3. Investigate how to offer different types of services to different types of farmers to maximise impact.
4. Improve farmers' satisfaction with some services, especially regarding the insurance system, access to credit, access to pesticides, seedling/pods and fertiliser. But also regarding commercial activities, relationships with the Ghana Cocoa Board (COCOBOD) and the licenced buying companies.
5. Support farmers to decrease production costs and increase labour efficiency.
6. Increase (farm) incomes by increasing farm sizes and diversifying sources of income.
7. Investigate why farmers from Project 1, decreased the implementation of GAPs and experienced a decrease in productivity and income.
8. Improve data quality and learning, by collecting real-time information from farmers on production details. This information should then be used for farmer-to-farmer learning in small groups. The data collected for this impact evaluation can also be used for farmer learning, but there are practical challenges in doing so as the dataset contains information from farmers dispersed over the project areas.

Mixed method analyses to evaluate the impact

Indicators for the evaluation were developed together with UTZ Certified and Solidaridad. We held interviews with farmers participating in the programme, as well as farmers not participating in the programme, farmer organisations implementing the programme, hired workers, the Cocoa Research Institute of Ghana and UTZ Certified and Solidaridad. Information was gathered either through a survey or in focus group discussions. Different statistical and qualitative analyses were used to gain insight into the programme's impact. The study design controls for different sources of bias. Results were discussed with project staff and local experts for clarification before the report was finalised.

Enhancing sustainability in cocoa production

1

Enhancing sustainability in cocoa production

Supporting smallholder cocoa farmers in Ghana

UTZ Certified and Solidaridad have partnered with local stakeholders in a cocoa programme in Ghana since 2010 to improve smallholder cocoa productivity, incomes, working conditions and the environment. Developed and implemented with stakeholders from the cocoa supply chain, this programme encourages cocoa farmers to use better farming and management practices that comply with the UTZ Certified Code of Conduct. UTZ certification was introduced at the farm level through activities provided by producer groups and licensed buying companies. 235 farmers, members of organisations associated with UTZ Certified, were interviewed twice, in March/April 2012 and in April 2015. They form a representative selection of five member farmer organisations in six projects, as shown in Table 1 on the next page. For more information on the groups and the cocoa programme, see Waarts et al. (2013).

The programme started with training, then added inputs

The organisations adhering to the UTZ Certified Code of Conduct also offer their members other services. They have been conducting training sessions, for example, which rapidly increased the numbers of farmers reached. The organisations began by training farmers on certification and introducing demo-plots. Then they set up Farmer Field Schools, gender training and business schools. From the start, the organisations also offered their members market information and information from the internal control system. Increasingly, members could also benefit from other services offered by their organisation, including visits by pesticide and spraying gangs,[1] cocoa seedlings and, more recently, fertiliser.

Figure 1.1 % of programme farmers trained yearly

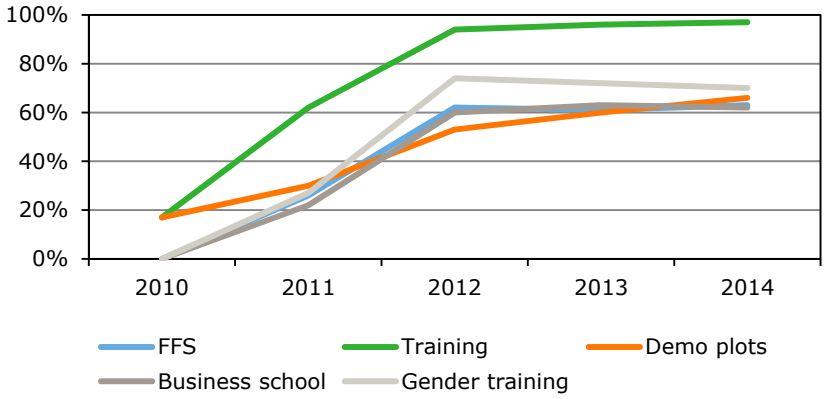
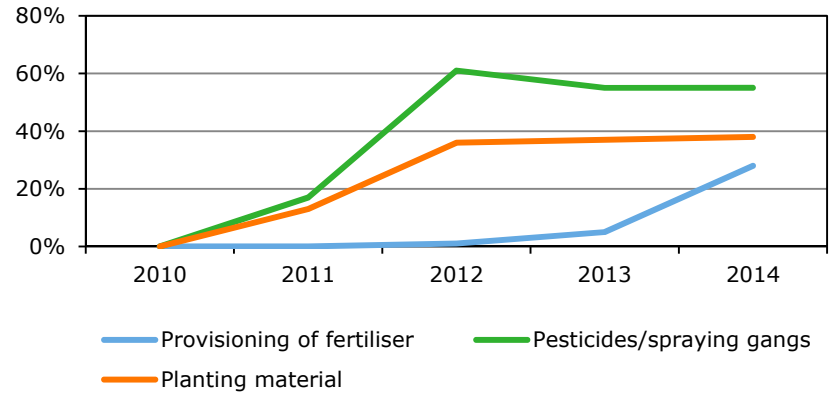


Figure 1.2 % of farmers using services yearly



[1] Groups of professional pest and disease managers visiting farms on call.

All groups were certified by 2012

The different organisations became UTZ Certified according to their own appropriate pace. One became certified in 2010, for example, while the others became certified in 2011 and 2012. All have maintained their UTZ certification status since. One of the organisations has also been certified Organic since 2008. This different history of training and certification means that at the moment of the baseline survey in 2012 the interventions were already underway in 4 of the 6 projects analysed.

Table 1.1 The six participating projects in the UTZ-Solidaridad cocoa programme in Ghana under review

Project number	Region	Project start	UTZ certification date	Model*
Project 1	Ashanti	2009	March 2010	PG
Project 2	Eastern	2011	May 2012	LBC
Project 3	Ashanti	2012	September 2012	LBC
Project 4	Western	2012	September 2012	LBC
Project 5	Western	2010	November 2011	PG
Project 6	Eastern	2011	September 2011	LBC

* PG = Producer group, LBC = Licensed buying company

Evaluating the impact of the cocoa programme

This study evaluates the impact of the UTZ-Solidaridad cocoa programme to analyse the programme's inclusiveness and the net effects of UTZ certification. It also sheds light on the effect that UTZ certification has had on hired labourers' working conditions. To control for external influences (not related to the programme interventions) that also may affect the performance of farmers, 'impact' is defined as the difference in performance development between certified and uncertified farmers, between 2011 and 2014.

Indicators developed with UTZ and Solidaridad

The indicators used for the evaluation are based on the programme's Theory of Change and were developed together with UTZ and Solidaridad. They are divided into outcomes and impact indicators:

Table 1.2 Expected outcomes and impacts

Expected outcomes	Expected long-term impacts
1. Inclusive programme	1. Farmers are more resilient
2. Stable producer groups providing better and reliable services	2. Farmers make a decent income
3. Greater professionalism	3. Farmers, farm workers and their families have a decent standard of living
4. Improved farm efficiency	4. Farmers, farm workers and their families enjoy better health
5. Increased productivity	6. Children do not do hazardous work and are able to go to school
6. Quality meets market demand	
7. Respect for labour rights	
8. No child labour (ILO convention 182 and 138)	
9. Healthy and safe living and working conditions	
10. Maintained and improved quality of water and soil	
11. Effective waste management and waste reduction per unit of produce	

See Waarts et al. (2013) for more information on how these indicators were measured.

Mixed method analyses to evaluate impact

2

Mixed method analyses to evaluate impact

Farmers, organisations and workers interviewed

The mixed method approach bases its conclusions regarding the programme's impact on quantitative and qualitative information from cocoa farmers, organisations participating in the UTZ-Solidaridad programme, cocoa farm workers and experts. The main body of data was collected during farmers' surveys conducted in early 2012 and early 2015. To contextualise the study, results and the programme's impact, developments in the Ghanaian cocoa sector were discussed with the Cocoa Research Institute of Ghana and COCOBOD.

Certified and uncertified farmers interviewed

This evaluation compares the change in performance over time between farmers who participated in the UTZ-Solidaridad programme and farmers who did not, the comparison group. The programme participants live in three regions in Ghana (Ashanti, Eastern Region and Western Region), and became certified between 2010 and 2012. The comparison group consists of uncertified farmers, who have maintained their uncertified status over time and who are situated in the same regions as the programme participants.

We interviewed a total of 385 farmers in 2012, and 353 of them again in 2015, asking them about their performance in the preceding year. The number of farmers interviewed in 2015 is lower than 2012 because we could not retrace all of the farmers in 2015. Some lived elsewhere by 2015, having sold their farms. The sampling procedure is described in Waarts et al. (2013).

Focus groups and implementing organisations interviewed

In 2015, we also interviewed Solidaridad and the five organisations running the six projects to capture their perception of the programme's impact. In addition, we held eight focus group discussions: six with groups of participating farmers (one for each group) and three with comparison group farmers, one in each region.

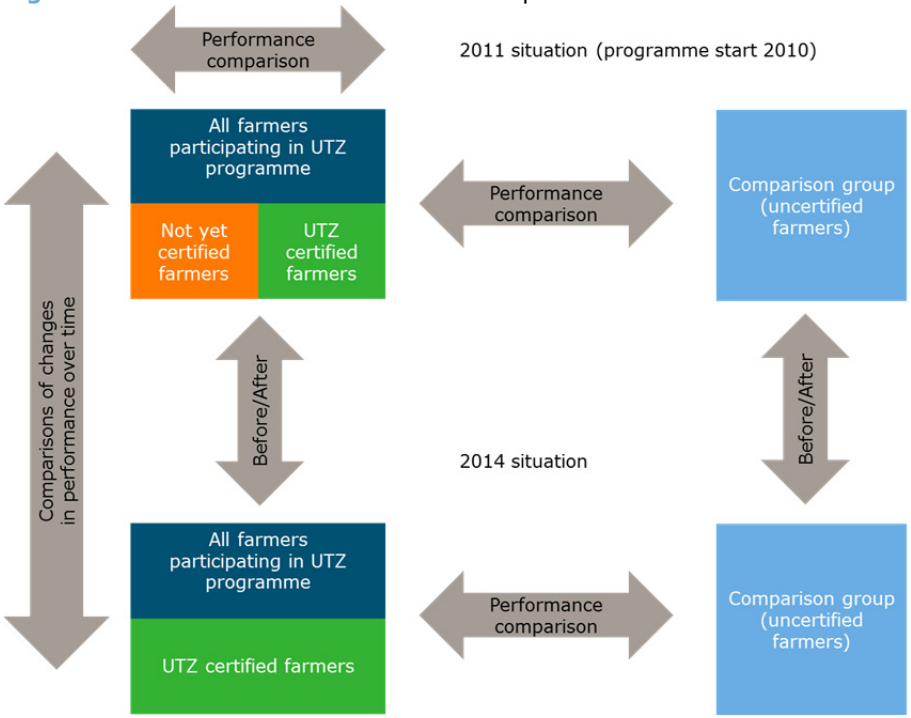
Table 2.1 Number of farmers interviewed

Project number	Number of farmers interviewed		Region
Period studied	2011	2014	
Project 1	42	38	Ashanti
Project 2	41	41	Eastern
Project 3	44	38	Ashanti
Project 4	41	34	Western
Project 5	43	43	Western
Project 6	47	41	Eastern
Subtotal project farmers	258	235	
Comparison	43	40	Ashanti
Comparison	43	39	Eastern
Comparison	41	38	Western
Subtotal comparison farmers	127	117	
Total number of farmers	385	352	

Discussions with cocoa farm workers

To learn more about the working conditions of cocoa farm workers, 16 cocoa farm workers were interviewed in 2015 in the same three regions in which farmers were interviewed. Twelve workers worked at UTZ-certified farms, while the other four worked at uncertified cocoa farms. We also present a summary of the findings from an MSc thesis by Selten (2015) on 'certification and wage labour in the cocoa sector in Ghana'. This additional research was commissioned by UTZ to gain more insight into the conditions of hired labourers, and was carried out under supervision of LEI Wageningen UR.

Figure 2.1 Difference-in-difference setup of the evaluation



Different analyses used to gain insight into impacts

A difference-in-difference setup compares the change in the performance of the outcome indicators between 2011 and 2014 (the first difference) for UTZ-certified farmers to the change in the same time period among farmers who did not participate in the certification project (the second difference). A t-test was used to verify the statistical significance of the difference between years and the difference-in-difference between UTZ certified and uncertified farmer groups.

For each indicator, different types of statistical analyses were conducted to examine the impact, to test whether the impact might be attributed to different factors and to gain insight into the robustness of the results:

1. The difference over time for certified and uncertified farmers.
2. A comparison of the differences over time between certified and uncertified farmers by t-tests and regression analyses.
3. Three types of Propensity Score Matching tests (Kernel Matching, Nearest Neighbour and Stratification methods).
4. A comparison of the differences over time between certified and uncertified farmers from the same region for Projects 3 and 4 (see Table 1.1.) as these started at the time that the baseline study was conducted and thus represent a 'clean' baseline.
5. A comparison of the differences over time between certified and uncertified farmers from the same region for Projects 2, 3, 4 and 6, as Projects 1 and 5 had started their activities well before the baseline study and thus the programme could already have impacted on productivity and income when the baseline study was conducted. For these four projects, which include the 2 'clean baseline' projects, we expect that productivity impacts caused by the project did not materialise yet at the time of the baseline survey.
6. A comparison of the differences over time between certified and uncertified farmers for all individual projects.
7. The influence of specific programme-related variables: whether farmers participated in the programme-related trainings, the total number of trainings they participated in, and whether or not farmers are lead farmers in the programme.
8. The influence of the fact that farmers from the same community tend to be more similar than farmers in different communities. This was done by clustering standard errors in the regression analyses. This affected 4 indicators. Information on these effects is reported in the text where applicable.

All analyses are based on the individual farm household level. This means that farmers whose data is missing for either year were not included in the statistical analyses. Please find more information on the study methodology in Appendix 1.

Sample sizes in this study, and the effect sizes that can be proven as statistically significant

The sample size has an direct influence on the effect size (difference over time per group and between the groups) that can be proven as statistically significant. Generally, the higher the sample, the smaller the effect sizes that can be proven to be 'statistically significant'. In Table 2.2 below, it is indicated per key indicator how much change we can minimally prove as significant based on statistical power calculations. This is done for the three analysis

groups: the whole sample, the 4 projects that started latest in 2011 for which we do not expect productivity impacts to have materialised at the time of the baseline study, and the 'clean baseline' group of projects which started after the baseline study in 2012.

Before we conducted the baseline study, however, we did not conduct statistical power calculations; We sampled on the basis of 'a rule-of-thumb' of 30[2] respondents, which, taking into account attrition, led to over 40 farmers per project interviewed. See for more information on sampling and effect sizes Appendix 1.

Table 2.2 Farmer groups analysed, and how much effect can be minimally proven as statistically significant

Group analysed	Knowledge level	Adoption of GAPs	Productivity
Whole sample, including comparison groups (352 farmers)	8%	9.8%	27.4%
Farmers from project 2, 3, 4 and 6, and the comparison groups in their Region (271 farmers)	9.8%	11.6%	32.8%
Farmers from project 3 and 4, who started after baseline study and their comparison groups (150 farmers) in their Region	12.4%	14.9%	42%

The design controls for different sources of bias

Differences in results might be the consequence of factors other than UTZ certification or programme implementation. Two alternative sources of influence are generally acknowledged in this type of study. First, farmers may differ in terms of observable characteristics such as education, age or gender. These factors are controlled for using a mix of advanced statistical models (see above).

[2] Creevey, L. and M. Ndiaye, 2008. Common problems in impact assessment research. Impact Assessment Primer Series #7, USAID, Washington DC, USA. In Ton, G., S. Vellema, M. de Ruyter de Wildt (2011). Development impacts of value chain interventions: how to collect credible evidence and draw valid conclusions in impact evaluations? Journal on Chain and Network Science 2011; 11(1): 69-84

Second, differences could be explained by unobserved differences in farmer characteristics, such as motivation to work on the cocoa farm or the fact that farmers might have been better or worse off to start with. This source of bias is accounted for by a combination of a strong methodological design and the difference-in-difference design.

One of the types of selection bias that could affect the impacts is that some of the organisations had already started the implementation of the programme prior to the baseline study. The baseline study on the state of affairs of the respondents in the year 2011 indicates that there is a potential bias as farmers who perform better (in terms of income and practices) were included in the programme, compared to the farmers in the comparison group. However, there are three reasons why this is unlikely to have influenced our results:

1. The combined impact of Projects 3 and 4 was analysed separately as these represent a clean baseline; these projects started their activities in 2012, after the baseline study was conducted.
2. The combined impact of Projects 2, 3, 4 and 6 was analysed separately, as no effect from the programme on productivity and income was expected at the time of the baseline study for these projects as they started in 2011 or 2012
3. Even if this was the case, it could not have interfered with long-term impacts (e.g. productivity), which only leave their mark after a few years.
4. The Theory of Change (ToC) is based on continued improvement. So even if the results were biased because the baseline was not 'clean', increases over time should still be higher among UTZ-certified farmers than among uncertified farmers.

Many uncertified farmers have also participated in trainings similar to the trainings in the UTZ-Solidaridad programme

Twenty-seven percent and 29% of the comparison group farmers participated in trainings in 2011 and 2014, respectively. Many of the farmers who participated in trainings in 2011 also participated in 2014. Thus, around 40% of all comparison group farmers participated in trainings in these years.

On average, comparison group farmers participated in almost 1 training in 2011 and almost 4 trainings in 2014. Trainings participated in were related to cocoa production, farm management and business schools, chemical application, health & safety, and environmental protection.

Farmer training programmes have been rolled out in Ghana since the baseline study was conducted. The national programme for the elimination of child labour has been implemented in Eastern and Western Region between 2008 and 2014 and farm business schools have been implemented in Western Region and Ashanti from 2011 to date. Finally, the World Cocoa Foundation's Cocoa Livelihoods Program operated in the study area in 2012 and 2014. When comparison group farmers participated in such trainings, this is included in the data for 2011 and 2014 and in the impact evaluation analyses.

But it could be that they also participated in such trainings in 2012 and 2013. For these years, we have obtained information on trainings offered in comparison group communities via UTZ Certified. In 36% of the comparison group communities, trainings on child labour were given to farmers between 2008 and 2014. In 57% of the comparison group communities, farmer business school trainings were offered from 2011 to date. And in 21% of the communities, the Cocoa Livelihoods Program has been active in 2012 and 2014.

The interpretation of study findings take into account the influence of trainings on the performance of uncertified group farmers

As the comparison group consists of farmers who have participated in trainings similar to the UTZ-Solidaridad programme, and thus may have been affected by such trainings, we have taken this into account in the interpretation of the findings. The certified and comparison group farmers in this study are still representative for the cocoa sector in Ghana. As many training programmes have rolled out in the Ghanaian cocoa sector in the last years, it would have been extremely difficult to find comparison group farmers who would not have participated in trainings. Such farmers also might not be similar in their characteristics to farmers participating in the UTZ-Solidaridad programme.

Results discussed with project staff and local experts

In 2012, the results were shared and validated during a workshop with representatives from Solidaridad, the licenced buying companies and NGOs implementing the projects, farmers, CRIG, the Ghanaian government cocoa agency COCOBOD and the University of Ghana. The results were also presented and discussed in 2015 during a meeting with representatives from UTZ Certified, Solidaridad, COCOBOD, the organisations implementing the projects and the University of Ghana. The discussions were used to interpret and validate the findings.

Towards an inclusive programme

3

Towards an inclusive programme

Reaching youth and women has been a challenge

Participants in the UTZ-Solidaridad programme are typically older, male landowners with primary school education. Around 1% of the farmers can be considered as youths, aged between 18 and 25 years old. Thirteen per cent of the farmers are female. The average age is 50 years.

The characteristics of farmers participating in the programme are similar to other farmers in the Ghanaian cocoa sector (Hainmueller et al., 2011 and validation workshops 2012 and 2015). Women and youths have generally not been directly included in the programme.

As activities have targeted registered members who own or sharecrop farms, female farmers and youths did not form a large proportion of programme participants. Usually, (older) men inherit cocoa farms from their parents; men are also more likely to be given credit facilities to maintain/manage a cocoa farm.

This partly explains why women and youths are not generally involved in the programme even though they are actively involved in various cocoa production activities. In 2014, Solidaridad launched a new strategy in their implementation programmes, 'in particular addressing young farmers' (Solidaridad, 2014), but this is not yet reflected in our respondents. However, certified farmers in our sample are more often female than uncertified farmers (20% compared to 13%).

Figure 3.1 Most respondents are between 26 and 69 years old, hardly any youth

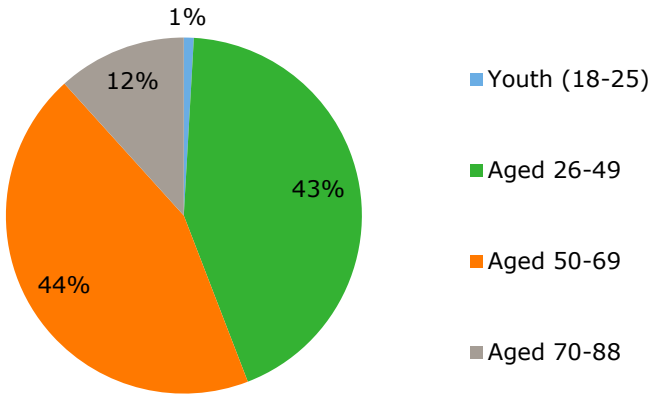
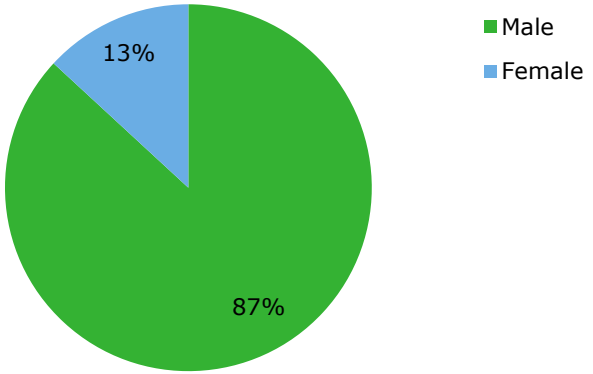


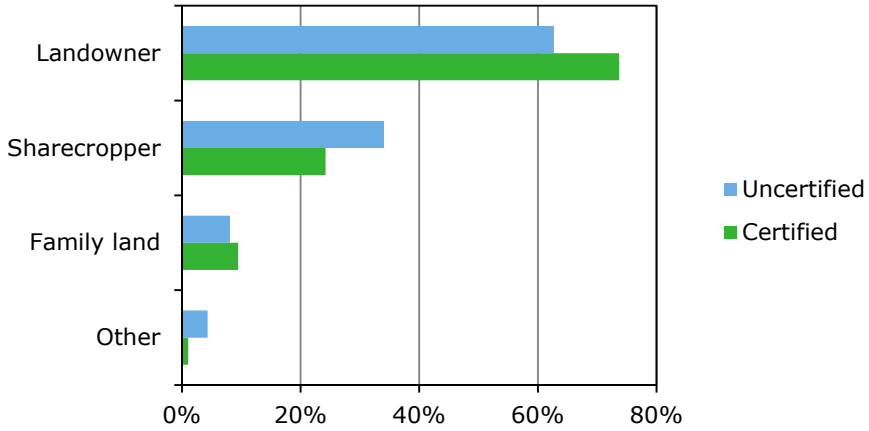
Figure 3.2 Most respondents are male



Most respondents are land owners; certified farmers are more often land owners and less often sharecroppers than uncertified farmers

Sixty-six percent of all farmers are land owners, and about 25% is a sharecropper. Nine percent of the farmers farm on family land. Most sharecroppers are *Abunu* sharecroppers (24%), who receive half of the crops produced (Ghana Districts, 2014), followed by *Abusa* (7%), who receive two-thirds of the crops produced for his/her management work.

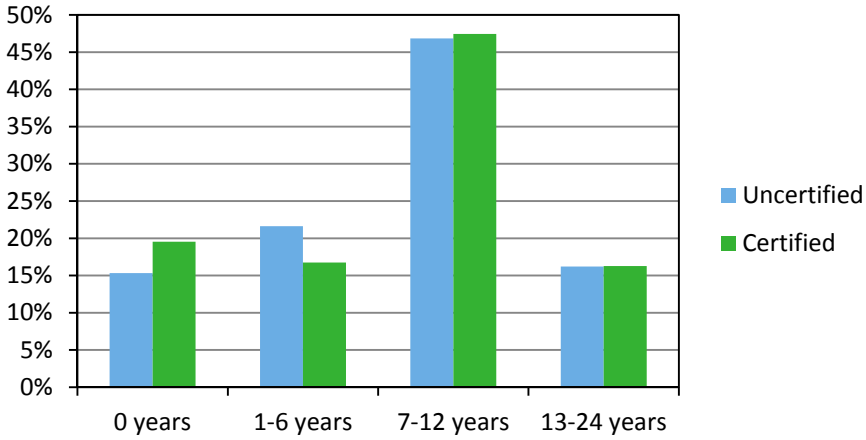
Figure 3.3 Type of cocoa farmer



Farmers have received almost eight years of education on average

Almost half of the farmers received between 7 and 12 years of education, while between 15 and 20% of the farmers did not receive any eduction. There is no difference between uncertified and certified farmers with regard to years of education.

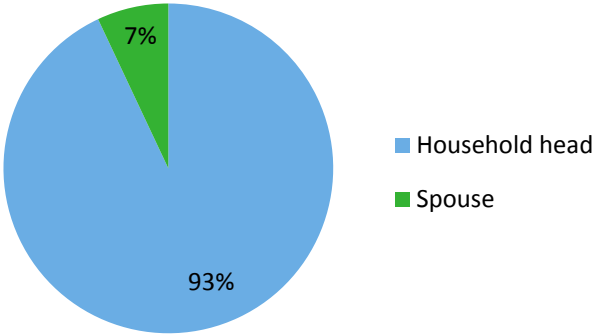
Figure 3.4 Respondents' education level



Most respondents are household head

Almost all respondents (93%) are household head, 7% is the spouse in the household. Certified and uncertified farmers do not differ in this respect.

Figure 3.5 Position in the household




Increasing
service
delivery
4

Increasing service delivery

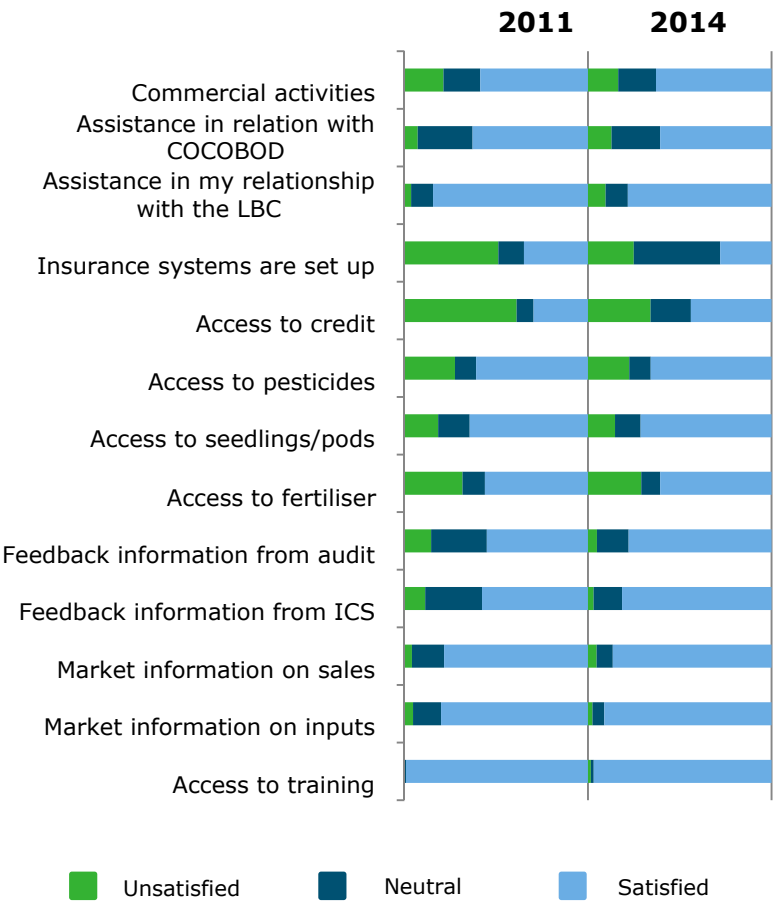
About 70% of UTZ farmers receive support additional to training

In 2011, 61% of UTZ farmers indicated that their producer organisation provided at least one additional service other than buying cocoa; in 2015 this increased to 67%. This increase is not statically significant (see Figure 1). Information from the organisations implementing the programme indicates that service delivery, in terms of the number of services and the number of farmers using them, has increased over time, but that not all farmers use the services every year (see Figure 4.1).

More farmers satisfied with some services provided by organisations

In 2011 farmers indicated they were satisfied with the services delivered by their organisation. Their satisfaction score was 0.59 on average on a scale of -1, indicating unsatisfied, to +1, indicating satisfied. In 2015 the average score increased to 0.60, but the difference is not statistically significant. However, satisfaction with some specific services did improve significantly. Such positive changes are registered as 'feedback information from the ICS' and 'feedback information from audit'. In addition, farmers are less dissatisfied with the credit they received and the available insurance systems. Finally, all farmers are satisfied with their access to training in both 2011 and 2014.

Figure 4.1 In 2015, farmers were more satisfied with several available services




5
Professionalisation

Professionalisation

Certified and uncertified farmers have increased their knowledge on good agricultural practices by about 28%

The average knowledge level of UTZ farmers increased from 0.41 in 2011 to 0.52 in 2014 (a 29% increase), but uncertified farmers showed a similar increase (28%). The increases were thus the same for all farmers.[3]

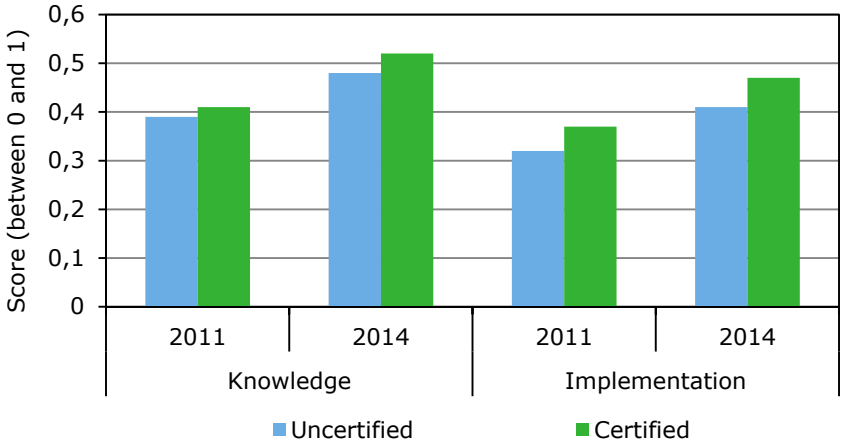
Certified and uncertified farmers improved the implementation of good agricultural practices by about 27%

Farmers also improved the implementation of good agricultural practices over time. The average overall practice score for certified farmers increased from 0.37 in 2011 to 0.47 in 2014 (a 27% increase). There were similar trends for the implementation of production, environmental and social practices. Overall, certified farmers had higher scores compared to uncertified farmers in 2011, a trend which continued in 2015. While uncertified farmers started at a slightly lower level (0.32), their implementation of good agricultural practices increased at the same pace to 0.41 (28%).[4]

Uncertified farmers have learnt from certified farmers and from other training programmes in the study area

Farmers in the focus groups reported that they shared their knowledge with uncertified farmers. Furthermore, 13% of the certified farmers sometimes work as hired labour at other farms and may have practiced lessons learnt on these possibly uncertified farms. Finally, various training programmes have been implemented in the study area in 2012 and 2013 and could thus have influenced uncertified farmers' levels of knowledge and adoption and thus productivity levels. See for more information Chapter 2.

Figure 5.1 Levels of knowledge and implementation of GAPs



Farmers in different projects show different results for agricultural practices

Certified farmers in some of the projects show significantly higher levels of improvement compared to uncertified farmers: certified farmers in Project 6 improved their implementation of environmental practices more than uncertified farmers, while certified farmers from Project 4 show significantly more improvement in social practices than their comparison group. Farmers in some of the six projects show significantly less improvement in practices over time than uncertified farmers, with farmers in Project 1 scoring lower on production, environmental and social practices. This could be explained by the fact that Project 1 had already been running for two years before the baseline study was carried out. Project 3 farmers show an unexpected decline in the implementation of environmental practices compared to their comparison group. We do not know why this is the case.

[3] See Waarts et al. (2013) for more information on how knowledge levels were measured.
[4] See Waarts et al. (2013) for more information on how implementation levels were measured.

Improving working conditions

6

Improving working conditions

Characteristics of hired cocoa farm workers in Ghana

Eighty per cent of the cocoa farmers hire workers. The typical worker hired is Ghanaian, male, 38 years old, a household head, with no (38%) or a primary (31%) level of education, who has moved to the area to work on a cocoa farm. Hired workers typically travel by foot to the farms they work on. Their journey lasts an average of 45 minutes, ranging from 20 to 120 minutes. A typical work day is 5 hours long, but can range from 2 to 10 hours. Certified and uncertified farmers hire workers for the same number of hours a day, which was confirmed by the workers we spoke to.

Hired workers have previously worked for an average of eight other farmers, ranging from 1 to 20. The workers either have no specific relationship with the farmer (44%) or are a relative (38%) or friend (13%). Workers are usually professional farmhands. Besides cocoa farms, around half of the workers also work on cassava, plantain, banana and maize farms.

Farm workers can be divided into three categories:

1. Cocoa farm owners who sometimes hire themselves out as a worker. This was the case for about 10% of all the farmers in this study
2. Hired labourers who also own their own cocoa farm. Fifty percent of the workers interviewed have their own cocoa farm. This is a a much lower percentage than the 93% reported by Selten (2015)
3. Hired labourers who do not have their own cocoa farm. Fifty percent of the workers we interviewed did not have their own cocoa farm, but may have land with other crops.

Most hired workers are temporary

Most hired labour is casual labour, and only 10 workers (4%) are permanently employed. We found no difference between certified and uncertified farmers. All 10 permanent workers are part of the Social Security and National Insurance Trust according to the farmers, and two of them are part of the National Health Insurance Scheme.

Uncertified farmers show decreased professionalism in agreements on time to be spent by workers compared to certified farmers

Almost all farmers say they make a prior agreement with their workers about how to compensate them for their work. There was no difference between certified and uncertified farmers when it comes to making agreements about the amount of time spent working: more often than not, they made an agreement before the actual work started. If the workers spent more time working than initially agreed, most farmers paid extra compensation. There was no difference between certified and uncertified farmers in that respect. However, uncertified farmers showed a negative change between 2011 and 2014 compared to certified farmers when it comes to making agreements about the amount of time spent working: they decreased agreeing about time to be spent before the work was to be undertaken while certified farmers maintained did not.

Farmers and workers experience contractual arrangements differently

Most (94%) of all 16 workers we interviewed had not made prior agreements before starting to work, and 83% said they did *not* receive additional payment for working longer than the agreed hours. There are several potential reasons for the discrepancy between the farmers' and the workers' answers. First, it is possible that the 16 workers we interviewed are not representative of the worker group studied. Second, the farmers could be giving socially acceptable answers instead of indicating what they do in reality.

Another explanation is that the norm for working conditions is established informally and generally respected, so there may not be a need for it to be renegotiated for each new work activity. Perhaps the farmers we interviewed perceived the question differently than the workers. If so, the UTZ-certified farmers have become more professional over time compared to uncertified farmers in making prior agreements about work time. A final reason could be that in most cocoa-growing areas, the cost of an activity is usually not based

on time but rather on completed output. If a farmer wants a particular parcel weeded, he pays for that parcel to be weeded, not for the time it takes to get the job done.

Wages have increased 150% since 2011 in nominal terms, and on average 78% in real terms (adjusted for inflation)

The cost of labour has increased since 2011 by 100% to 150% nominally, i.e. from 4 to 10 to 15 or even 40 Ghanaian cedis (GHS) a day (in areas where mining companies operate), well above the daily national minimum wage of GHS 6. The average wage paid in 2014 was GHS 14 per day (GHS 9.95 adjusted for inflation)[5], with uncertified farmers paying workers more than certified farmers in 2014 (GHS 3.4 more per day, 25%). The workers we interviewed confirmed this. Interestingly, Selten (2015) found that certified and uncertified farmers paid their labourers the same daily wage (GHS 15).

The reasons for increased wages are: more demand for labour in general, the increasing age of farmers combined with the inability of older farmers to complete heavy tasks, and the heavier workload on certified farms. More labour demand means farmers now pay workers directly after they have completed the work. Farmers indicated that higher wages have also made it more attractive for farmers to work as hired labour on other farms – but this may be a glimpse into the future as the data indicates that farmers did not work more frequently on other farms between 2011 and 2014.

Low level of knowledge on complaints procedures

Half of the UTZ-certified farmers who are sometimes hired as workers also know about complaint procedures when labour agreements are not respected, compared to a third of uncertified farmers. About 10 farmers who work as hired labour for other farmers have used the complaints procedure when they were hired as a worker. This constitutes 30% of all farmers who also work on other farms as a labourer. Few workers (19%) indicated that they knew of a complaints procedure if a farmer does not respect their agreement and even fewer of them have experienced a work-related conflict or grievance (6%).

Limited knowledge on labour laws

Fifty-three per cent of certified farmers have knowledge about labour laws; There is no difference with uncertified farmers in this respect in 2014 (we only asked about this in the second survey). Uncertified farmers are more familiar with minimum wage regulations (36% versus 23%). About one-third of all farmers knows about labour rights including working hours.

[5] Real values were calculated using 9.92%, 11.6% and 15.5% inflation rates for 2012, 2013 and 2014 respectively. Source: http://www.indexmundi.com

In 2014, fewer children on certified farms under the age of 14 conducted hazardous activities than on uncertified farms

Farmers emphasize that children need to work on the farm to learn about cocoa production. Certified farmers are more aware of what children should not do on the farm, as well as the benefits of going to school, compared to uncertified farmers. Some uncertified farmers are not aware of child labour issues, while others have received information or have had training. Almost all children of certified farmers go to school: 98% of children aged 6-11 go to school in 2014 as well as 92% of children aged 12-17 (in 2014). We see no difference over time for and between certified and uncertified farmers regarding school enrolment for both age groups.

In 2014, children of certified farmers under the age of 14 worked significantly fewer days doing hazardous work than children of uncertified farmers from the same age group, though the number of days for both groups is extremely limited: 0.15 days versus 0.60 days per year on average. None of the children under the age of 14 had to deal with pest or disease control, but some pruned cocoa trees, applied fertiliser or transported cocoa to purchasing clerks. The difference between the groups can be attributed to pod-breaking activities, in which the cocoa pods are broken open to extract the cocoa beans from the pod, often with a machete: children of certified farmers help to break open pods less frequently than children of uncertified farmers.

No change in the low number of days children under the age of 18 work on hazardous farm activities

Children under the age of 18 of certified farmers work less than 1.5 days per year on cocoa production activities on the main farm. They sometimes do hazardous work, but the number of children involved in hazardous activities is very limited. On 8% of the certified farms these children conducted hazardous tasks in 2014. In average for the whole group, this amounts to less than one day per year for the main farm. Pod breaking, transporting cocoa to the purchasing clerk, pruning, applying fertiliser and pest or disease control are considered hazardous activities. Neither in 2011 nor in 2014 did children work on pest or disease control. Because children spend so few days working on cocoa production, there were no differences between certified and uncertified farmers in 2011 and 2014, nor was there a noticeable change over time.

Fewer accidents on cocoa farms than in 2014

There have been fewer accidents on cocoa farms with either certified or uncertified farmers (-20% and -7% respectively), but the difference is not significant. Generally one adult household member is involved in an accident per year, and there are few accidents with hired workers, communal workers or youths between 15-17 years old. Accidents at both certified and uncertified farms are usually treated by health workers (74%).

Positive health effects reported

Despite few differences over time in the use of personal protective equipment (PPE) or storing chemicals, most certified farmers attributed positive changes in their health to better health and safety practices, particularly chemical use, waste management and PPE. 'We were taught not to leave the empty containers lying around. Sometimes people used to clean their machines in the water bodies. Now we have stopped all these things so our water is good,' says a certified farmer from Eastern Region. Uncertified farmers did not notice a change in living and working conditions, and when mentioned, indicated that any changes were the result of external influences, for example the National Health Insurance Scheme and schools.

Poor access to respirators

One reason why there does not seem to be a noticeable difference in the use of PPE over time in the survey is poor access to respirators, as mentioned by focus group participants. 'We all know that we need to protect ourselves, but the issue is that not all of us have the protective gear,' a certified farmer from Western Region told us.

But low risk of chemical exposure

Most focus group participants continue to use spraying gangs and most (75%) workers said they have not been exposed to chemicals at work. Only workers on certified farms said that they had been exposed. Thirteen per cent of workers knew about the types of chemicals used and their associated risks, and 25% and 17% of workers on certified and uncertified farms, respectively, have received training on health and safety issues.

Information on wage labour in the cocoa sector in Ghana

Summary of the findings by Selten (2015)

Farm worker characteristics and tasks performed

As in our study, workers are generally men. They are employed for specific tasks on a daily basis. Males more often conduct the more heavy and dangerous tasks. Men usually clear the land, weed, apply pesticides, harvest and break the pods. Women collect the pods and carry the beans.

Contractual arrangements: work on daily basis or sharecropping

Workers usually work for the same farmer. Apart from daily specific tasks for which workers are paid, workers are also often sharecroppers. In such a relationship with the farmers they received part of the yields at the end of the harvesting period.

Average income earned is USD 1.25 - USD 1.35 per day

Wage workers spent more days in 2014 on certified farmers than workers performing tasks for uncertified farms, but they earn the same daily wage (GHS 15). Therefore, workers earned on average GHS 1,342 or USD 490 and GHS 1,251 USD 457 per year at certified and uncertified farms respectively in 2014. Per day, this is the same or slightly higher than the USD 1.25 poverty line.

Certified farmers and workers more often have protective equipment

Because of the UTZ-Solidaridad programme, certified farmers more often had protective equipment than uncertified farmers. These certified farmers provided such equipment to their workers.

Research methodology and data collection

For this thesis, Mrs. Selten interviewed 120 wage workers, 60 workers of certified farmers and 60 workers of uncertified farmers. Furthermore, 41 cocoa farmers and 9 other stakeholders from the cocoa sector were interviewed.

Improving cocoa productivity and quality

7

Improving cocoa productivity and quality

Farmers and project staff report increased productivity

Farmers and project staff have seen an increase in productivity since obtaining the UTZ certificate. According to project staff, the organisations that have been certified the longest are 'far ahead' of more recently certified organisations. Of the certified survey respondents, 19% mentioned an increase in yield as one of the benefits of UTZ certification. Certified focus group participants have seen increases in yield of between 22% and 87%, while uncertified focus group participants have not seen their productivity increase, due to 'a lack of chemicals'.

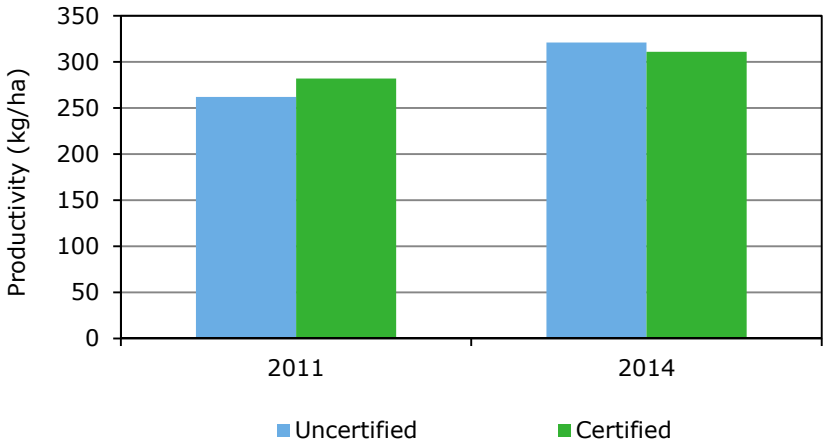
Survey data does not confirm these increases

The survey data show that certified farmers have not experienced significant larger changes in productivity over time than uncertified farmers. Their productivity did increase on average by almost 29 kg/ha between 2011 and 2014 (to 311 kg/ha, a 10% increase), but the increase was not statistically significant, probably because with the current sample sizes we cannot detect significant productivity increases for the certified group of less than 27%. Uncertified farmers did significantly increase their productivity over time, by almost 59 kg/ha (to 321 kg/ha, a 22% increase). This may well be explained by the fact that many uncertified farmers also participated in trainings (see Chapter 2). In sum, the difference in productivity change over time between the certified and uncertified farmers was not significant. The results from the Propensity Score Matching, regression and the 'reduced sample' analyses (see page 16) confirm these results. However, certified farmers and project implementers did perceive productivity to have increased between 2011 and 2014, which is confirmed for individual farmers in our study but not for the whole group. The factors influencing productivity levels reveal that farmers who hire labour and farmers with larger farms are more likely to show a higher increase in productivity over time.

Unfavourable climate for cocoa production in 2014

While the climatic conditions for cocoa production were favourable in 2011, they were unfavourable in 2014 according to project staff and focus group participants in four of the projects. Either because there was too much sun or because of unfavourable rains. The latter caused pods to rot before they could be harvested and increased the risk of black pod disease, which sometimes reduced yields by as much as 50%. However, we do see that in general productivity increased between 2011 and 2014; the question is how much effect the climate has had on cocoa productivity; we cannot estimate this based on our data. We assume that these climatic conditions also affected uncertified farmers in the same regions, so we cannot conclude that the climatic conditions have disproportionally affected increases in productivity for certified farmers. Some farmers may have understated actual yields.

Figure 7.1 Productivity improvements over time



One of the striking issues that came up in the analyses is that farmers connected to one of the organisations (Project 1, see Table 1) have seen an atypical, significant decrease in productivity between 2011 and 2014. The organisation has indicated that because farmers are contractually obliged to sell all their cocoa to the organisation (but in reality also sell to others), they most likely based their yield estimates only on the cocoa they sold to the organisation. This was especially apparent in 2014, when the farmers hoarded their cocoa in anticipation of the government's announcement that the price of cocoa would increase that October. When the price increase was announced, the licensed buying company purchasing the cocoa did not have sufficient funds to buy all the cocoa, so farmers looked for buyers elsewhere so they could continue to pay for essentials, such as school fees. This is the reason given by the organisation for the gap between farmers' actual and stated yields.

However, Solidaridad believes that this could have been the case with farmers connected to the other projects as well, and also that farmers are more honest about their yield figures if the person asking about the figures is not connected to the licensed buying company they have a contract with. We have collected the data with our local partner, the University of Ghana, who indicated that the information farmers share with us would be collected anonymously. As a result, we cannot assume that farmers connected to Project 1 would have behaved differently from other certified farmers, or even the comparison group, so we are not treating the information from farmers connected to Project 1 any differently than information from farmers connected to the other organisations.

Deterioration of quality for all farmers

There has been a deterioration of quality over time for all farmers concerned. More certified and uncertified farmers received a lower price per bag of cocoa because of bad quality in 2014 compared to 2011. Interestingly, certified farmers did not see an increase in the number of kilos deducted from their bags to calculate the lower price, whereas the number of kilos deducted for uncertified farmers did increase. But the change over time for certified farmers was not different from the change for uncertified farmers, neither in terms of the number of farmers receiving a lower price nor the number of kilos deducted. The deterioration of quality was probably due to unfavourable climatic conditions in 2014.

Improving profitability and income

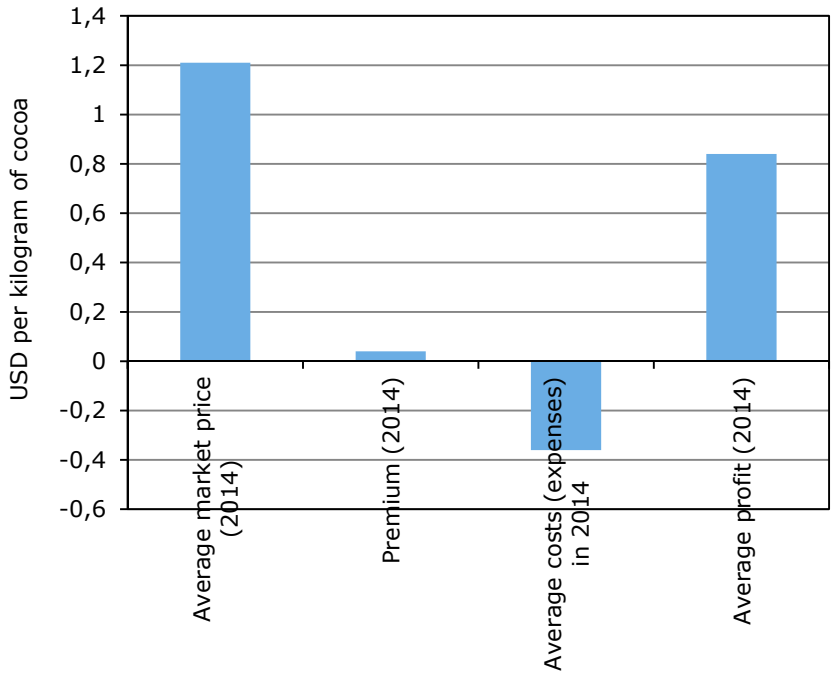
8

Improving profitability and income

All cocoa farmers faced increased production costs

Farmers experienced a statistically significant increase in total production costs per hectare and per kilogram of cocoa produced between 2011 and 2014. The increase in both types of production costs was the same for certified and uncertified farmers. This increase can be attributed to the significant increase in the cost for labour: in 2011 a worker cost GHS 4 a day on average, in 2014 we used an average wage of GHS 10 for the cost calculations, which amounts to GHS 7.10 in 2011 price levels (adjusted for inflation).

Figure 8.1 Market price, premium, costs (expenses), profit, USD/kg cocoa.



On average, farmers spent a total of GHS 436 per hectare and GHS 1.38 per kilogram of cocoa produced in 2014. The following costs were taken into account in our calculations: hired labour, and inputs such as fertiliser, seedlings and pesticides. We did not include the cost of own labour by the farmer or any household members in our calculations. It would be difficult to set a price for such labour as it may be that farmers do not have the opportunity to conduct paid work elsewhere. We thus did not value the price of family labour with the price of hired labour. Instead we used days spent by family labour to calculate a farmers' profit per day spent on farm activities, see below.

Factors affecting cocoa production costs

We found that the older the farmer, the higher their production costs. This was attributed to the fact that older farmers are less able to perform certain tasks, e.g. pruning, for which they then hire wage labour. Old age was an important issue in the focus group discussions, especially because the cost of hiring workers has increased in the last few years. We also found that the larger the farm, the lower the production costs per hectare. The reasons for this may be that farmers can only focus their energy and available funds on specific parts of their farm and so have relatively lower costs per hectare when their farms are larger.

Improved production and labour efficiency for all farms

We observed generally improved production and labour efficiency over time. Although cocoa production costs increased per kilogram since 2011, farmers spent less money and less time per kilogram of cocoa produced in 2014 than in 2011. There were no differences between certified and uncertified farmers. Interestingly, we found that the shorter the time a farmer spends travelling to their farm, the better the production efficiency, but no such relationship was found for labour efficiency. This could be explained by farmers hiring more labour to work on fields far from home while the family focuses on working on fields close to home.

Significant price increases between 2011 and 2014

Cocoa prices increased by 47% between 2011 and 2014. Farm-gate prices set by the Ghana Cocoa Board increased from GHS 3.13 per kilogram in 2011 to an average of GHS 4.61 in 2014. In 2011, the Ghana Cocoa Board set the farm-gate cocoa price at GHS 200 per bag of cocoa (64 kg) and then changed it to GHS 205 per bag in October 2011. In October 2014, the price changed from GHS 212 to GH S350 per bag. An average price of GHS 294.8 GHS per bag was used to calculate income in 2014, based on 40% of production being sold in between January to September and 60% in the period October to December. The price thus increased by almost 48% between 2011 and 2014.

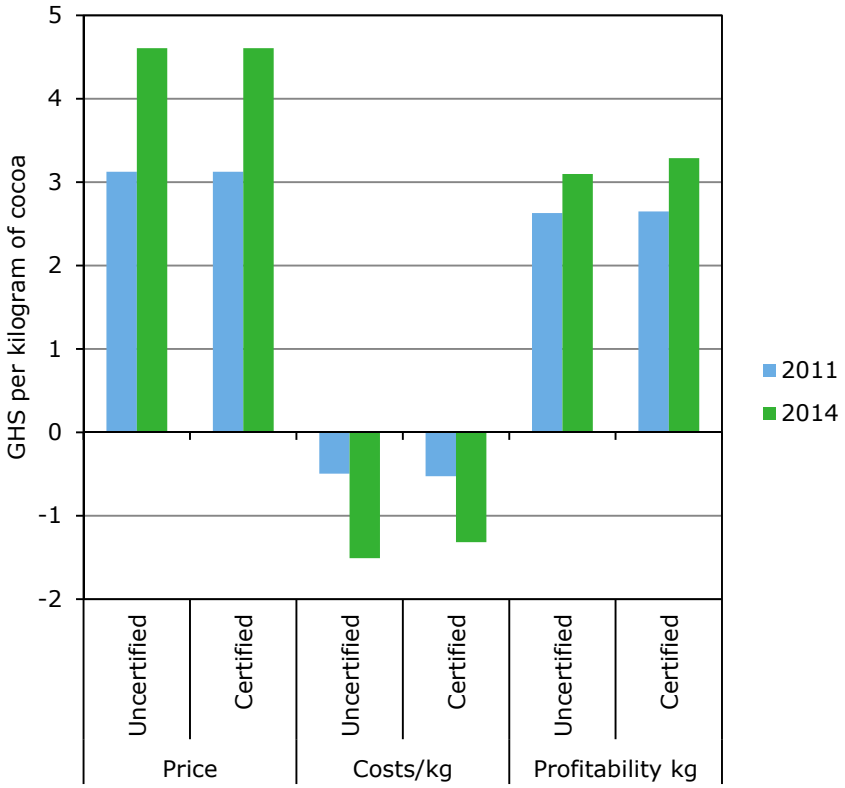
Premium for certified cocoa increased cocoa prices by 3%-6%

Five out of six projects paid a premium to farmers for certified cocoa in 2014, generally GHS 10 per bag of 64 kilos, or USD 0.04 per kilogram. If all certified cocoa had been sold with a premium, then the price per bag paid to the farmer would have increased by 3% to 6%. As we do not know how much certified cocoa was actually sold as certified with a premium paid to our respondents in 2014, premium payments have not been included in profitability calculations. We understand that the average percentage of certified cocoa sold as such was around 45% in Ghana. This means that the profitability figures in this report underestimate the profitability for certified farmers; if the premium would have been taken into account, on average farmers would have earned about 2% extra income when they would have sold 45% of their cocoa as UTZ certified cocoa with a premium.

Profitability: price increase offsets cost increase

As all farmers receive the same price per bag and kilogram of cocoa, the analyses on the developments over time between certified and uncertified farmers with regard to profitability is not influenced by the price received. It is only influenced by the change in productivity and production costs, as they can differ between certified and uncertified farmers. In 2014, the profit per hectare was GHS 1,326 and GHS 3.23 per kilogram of cocoa. Cocoa profitability per hectare and per kilogram for both certified and uncertified farmers increased between 2011 and 2014, with no differences between certified and uncertified farmers.[6] Profit per kilogram increased with 24% for certified farmers and 18% for uncertified farmers. Similar to the reported changes in productivity, farmers from Project 1 saw their profit per hectare decrease significantly.

Figure 8.2 Profitability of cocoa production in GHS per kilogram



[6] Uncertified farmers register a higher increase per hectare, though not per kilogram, than certified farmers in this period if we consider the full sample, but this is not the case when we look at the matched sample (using PSM) or at farmers connected to the projects that started in 2011 or 2012 (Projects 2, 3, 4 and 6). We base our conclusions only on the latter analyses.

More cocoa farmers incurred losses

About 5% of the cocoa farmers incurred a loss with their cocoa production in 2014, whereas in 2011 less than 2% incurred a loss. These losses occurred because farmers' costs were higher than their income per hectare or per kilogram, and because the costs of production, especially of hired labour, increased over time. The percentage of farmers with losses would have been even greater if the time spent by the farmer and their household on the farm had been included. The question remains whether all the production and cost figures are fully accurate since it is difficult to imagine why farmers would continue farming cocoa if they are not making a net profit.

Decrease of profit per day spent by household labour

Higher prices and improved labour efficiency (yield/number of days spent on cocoa production activities) did not increase net profits as production costs also increased substantially. This means that farmers earned significantly less per day for each day they or household members spent on cocoa production activities in 2014 than in 2011. On average registered profits declined from GHS 52 (2011) to GHS 31 (2014) per day for the whole sample, a 40% decline. Both certified and uncertified famers experienced similar diminishing returns per day. Apparently, the 2014 increase in the price of cocoa has not yet compensated for the increased cost of cocoa production. However, farmers still earn more per day than hired workers, although the difference in earnings per day has decreased greatly over time, from 12 times as much in 2011 to three times as much in 2014.

Farmers cocoa income increased to GHS 5,300 in 2014

On average, farmers earned a net income from cocoa in 2014 of about GHS 5,300, the equivalent of USD 1,936 or USD 5.30 per day. This amount does not include the cost of household labour for cocoa production. Net income from cocoa per farmer was calculated by multiplying the net income per hectare earned by farmers on their main farm by four, as the average farmer has four hectares of land with cocoa trees. As net income per farmer is based on the net income per hectare, similar changes were apparent over time: all farmers increased their net income over time. There is also no difference between uncertified and certified farmers regarding income from cocoa per household member.

Income from cocoa per person increases to GHS 1,187

All farmers' incomes from cocoa per household member increased between 2011 and 2014. In 2011, the average income was GHS 737, which increased to GHS 1,187 in 2014, an equivalent of USD 434 per year and USD 1.19 per day.

Farmers remain highly dependent on cocoa production

Fewer farmers reported other sources of income in 2014 than in 2011, and those who did, had less sources than in 2011. More farmers depended entirely on cocoa in 2014 than in 2011. No difference was found in the change in average income earned from other sources for certified and uncertified farmers between 2011 and 2014. Dependency on cocoa-based income is high, as 45% of all farmers depend completely on income from cocoa, with no difference found between the groups with regard to the share of income from cocoa in total income. The share of income from cocoa in total household income increased from 86% to 88% over time for certified farmers, mainly due to the cocoa price increase in October 2014.

Total household income increased to GHS 5,934

Farmers' average total household income (from cocoa and other sources) was GHS 4,170 in 2011, which increased significantly to GHS 5,934 in 2014, an increase of 30% (or USD 2,168 in total and USD 5.94 per day). Per household member, the total average income earned was GHS 1,403 or USD 1.40 per day in 2014. On average cocoa farming household members have a slightly higher amount available per person than the USD1.25 poverty line and higher than the Ghanaian yearly poverty line level of GHS 792.05 (GSS, 2014). Uncertified and certified farmers experienced similar increases in total household income levels over time.

9 Conclusions

Conclusions

Farmers are satisfied with services delivered by the UTZ-Solidaridad programme

Certified farmers have used more services since 2011

All farmers participating in the UTZ-Solidaridad programme have taken part in training sessions offered by the organisation they are member of. The number of services offered has grown since the start of the programme, ranging from different types of training to access to inputs such as fertiliser. Also, the number of farmers using these services has increased over time.

High satisfaction with most services provided

Farmers are generally satisfied with the services provided by their organisations. All farmers are satisfied with the training provided by the programme, both in 2011 and 2014. Satisfaction has increased for 'feedback from the ICS' and 'feedback from audits'. In addition, farmers are less dissatisfied in 2014 with the credit they received and insurance systems than in 2011.

Inclusion hampered by cultural norms and farmers' age

Inclusion of women and youth remains a challenge

A balanced inclusion of men, women and youth in the programme is not possible because of prevailing cultural norms regarding farm ownership and membership, and the fact that farm managers are generally old. Women and youth are underrepresented as members of producer organisations and consequently direct programme participants, because women do not usually own farms and are thus not a member of an organisation through which the cocoa programme is implemented. In addition, farm managers, whether certified or not, are generally older men of about 50 years of age.

Risk of declining cocoa yields because of aging farm managers

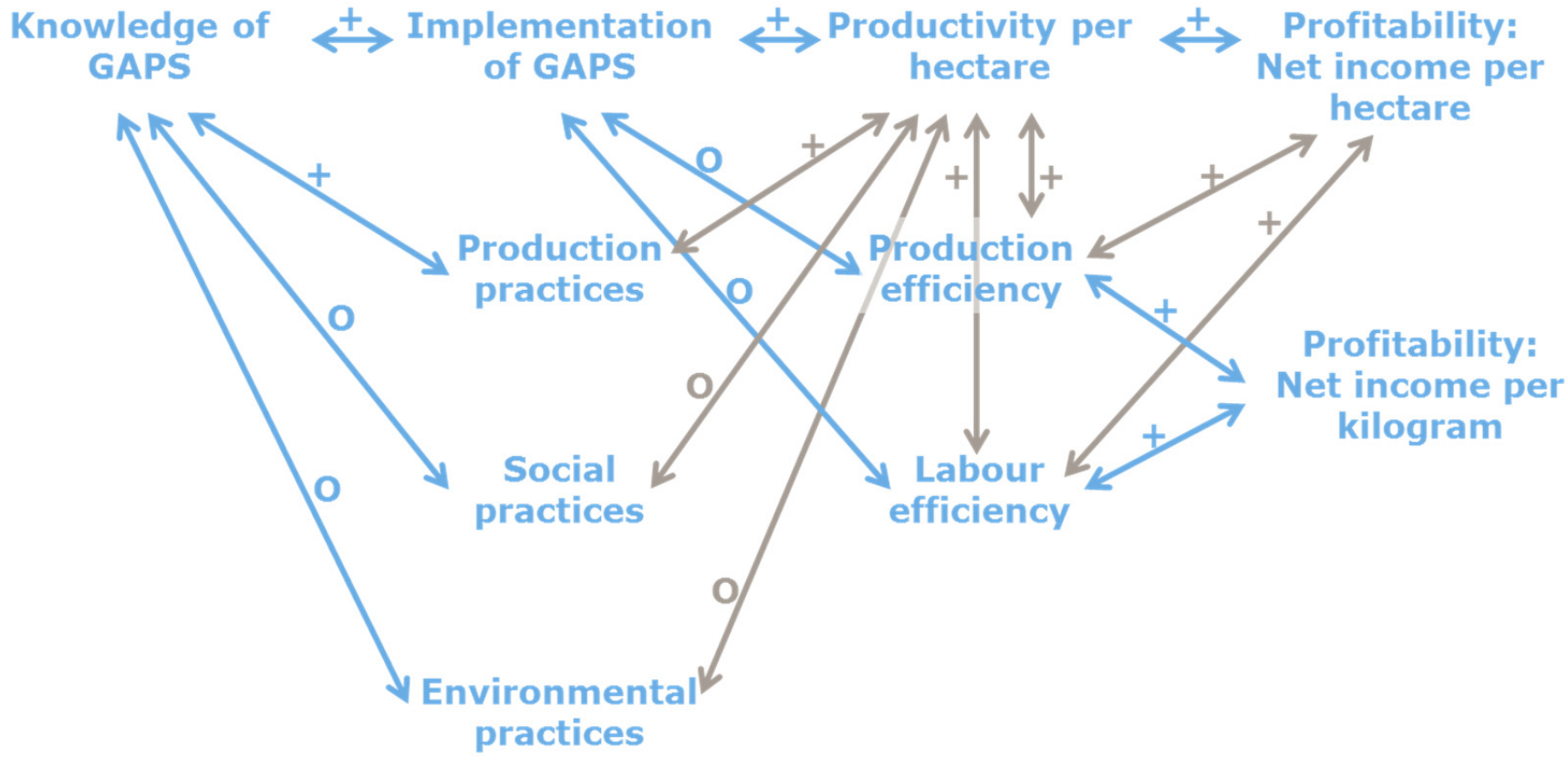
With a life expectancy of 63 years for men in Ghana,[7] and the limited involvement of youth and women in cocoa farm management, there is a likelihood that cocoa productivity will decline once the older generation of cocoa farmers disappears. However, new managers may well maintain productivity levels as previous generations have done before them, but only if cocoa farming becomes an attractive source of income compared to alternatives.

Enhanced knowledge is associated with improved implementation of GAPs and productivity increase, confirming the UTZ-Solidaridad programme's Theory of Change

Enhanced knowledge on a combined set of GAPs is associated with better implementation of the combined set of GAPs under review, as well as the implementation of production practices. Farmers who have improved the implementation of GAPs are more likely to also have improved productivity than farmers who have not, which is primarily due to improved production practices. Improvements in efficiency are associated with higher profitability per hectare and per kilogram. And increasing productivity per hectare is associated with more profitability per hectare and per kilogram, which is mainly due to the 2014 cocoa price increase. These associations have been calculated using regression analyses on the dataset, including certified and uncertified farmers, taking into account other factors that could influence the relationship between the variables. See Figure 9.1 on the next page. The results are supportive of the assumption that training programmes are important instruments to improve yields, which forms the main rationale behind the UTZ-Solidaridad programme in Ghana. The level of knowledge on good agricultural practices is not directly correlated with an increased profitability, but each link in the intervention logic is significantly and positively correlated, confirming the UTZ-Solidaridad programme's Theory of Change.

[7] Index Mundi based on CIA the World Fact Book (http://www.indexmundi.com/ghana/demographics_profile.html).

Figure 9.1 Theory of Change tested (based on the whole dataset, α=0.10)



Room for improvement: knowledge, implementation of GAPs, productivity and quality

Both certified and uncertified farmers improved their knowledge and implementation of good agricultural practices by about 28% between 2011 and 2014

Certified farmers have not increased their knowledge and implementation levels more than uncertified farmers. Even though knowledge and implementation levels increased, there is still room for improvement, as in 2014 the average score for knowledge and implementation did not exceed 0.53 (on a scale from 0 to 1). One of the challenges mentioned by project facilitators and experts is the fact that the some farmers do not have the money, tools or strength (because of old age) to adopt new practices. This underlines the need to make cocoa farming attractive to a younger generation.

Productivity levels continue to be low, and quality has deteriorated for all

Whereas certified producers declare that the programme has helped to improve their productivity, the survey data show no differences between certified and uncertified farmers in changes in productivity over time. This is

most probably because many of the uncertified farmers were also trained between 2011 and 2014.

Productivity per hectare continues to be low with a mean productivity of 311 kg/ha in 2014 for certified farmers. The majority of the cocoa farmers thus continue to be part of the 'low productivity class' of cocoa producers, indicating a high yield gap (see Baah, 2009). Interestingly, some smallholder farmers do have high productivity levels, up to 1,420 kg/ha in 2014; therefore, high productivity levels are possible in Ghana. Farmers who hire labour and farmers with larger cocoa farms increase their productivity more over time than other farmers. The quality of cocoa has deteriorated since 2011 for all farmers, probably because of unfavourable climatic conditions in 2014.

Training of uncertified farmers in 2012 and 2013 has probably resulted in developments similar to those experienced by certified farmers

On most aspects, uncertified farmers have experienced similar developments as certified farmers because, most probably, many of them participated in other cocoa support programmes in 2012 and 2013. We say 'most probably' because we do not have specific information on which kind of training the comparison group participated in during these two years. We do have information on the number of trainings certified and uncertified farmers participated in in 2011 and 2014. Certified farmers participated in more training programmes than uncertified farmers in these years. We do know that in 36% of the comparison group communities, trainings on child labour were given to farmers between 2008 and 2014. In 57% of the comparison group communities, farmer business school trainings were offered from 2011 to date. And in 21% of the communities, the Cocoa Livelihoods Program has been active in 2012 and 2014. These training programmes could have improved uncertified farmers' knowledge and implementation of practices, and increased their productivity.

Too early to gauge impact of better access to inputs?

It could also be that the effects of having better access to inputs through the programme, especially fertilisers and cocoa seedlings, had not yet left their mark in 2014. The UTZ Code of Conduct does not require organisations to provide their members with inputs. Such input services were added to the programme generally a year after the start of the projects, and have been scaled up recently, reaching between 28% and 55% of all farmers in 2014. The impact of input services has probably not left its mark yet, as not all farmers use these services, and it takes time for the use of fertiliser, but especially planting seedlings, to have an effect on productivity.

Unfavourable climate in 2014 hampered productivity for all

Farmers, project staff and experts indicate that highly unfavourable climatic conditions for cocoa production in 2014 were the reason why productivity levels were low that year; indeed, productivity might well have increased more if climatic conditions had been as favourable in 2014 as in 2011. However, this would have affected both certified and uncertified farmers and does not explain the lack of difference between the two groups of farmers.

Cocoa farming continues to generate low levels of income

Profitability increased per hectare for all farmers...

The price increases in 2014 enhanced the profitability of cocoa production; it offset the rising costs of production (especially for hired labour) and increased cocoa profitability per hectare for all farmers. No differences were found between certified and uncertified farmers in this respect. The impact of the price increase will become truly apparent in 2015, as the price changed in October 2014, the year for which we collected data for this study.

...but decreased per day spent by family labour

However, cocoa farming has become less attractive in terms of profit per day spent by family labour, as it decreased over time, also compared to wage levels for hired labour. Instead of earning 12 times as much as hired farm hands in 2011, farmers earned three times as much in 2014. Certified farmers have seen similar diminishing returns per day as uncertified farmers. If these returns continue to diminish, and there are better options for farmers and workers to earn an income, they may decide to reduce their investments (time and money) in cocoa production. We have seen this happening in areas where mining companies operate.

Income from cocoa and total household income increased for all farmers but remains low

Both the income from cocoa, and the total household income has increased over time, and we see similar increases for both certified and uncertified farmers. Per person, the income from cocoa is slightly lower than the USD 1.25 poverty line, while the total household income is slightly higher than this poverty line per household member (USD 1.40). The minor difference between income from cocoa and total household income indicates cocoa farmers' continued high dependency on income from cocoa.

Positive impacts on working conditions, awareness of child labour issues and health

Agreements are usually made between farmers and hired labourers on pay and time to be spent on farm activities

Most hired labourers are casual labourers and make prior agreements with farmers about pay and activities to be undertaken. No differences were found between certified and uncertified farmers.

Uncertified farmers have become less professional in hiring farm workers regarding agreements about work time compared to certified farmers

Uncertified farmers showed a negative change between 2011 and 2014 compared to certified farmers when it comes to making agreements about the amount of time spent working: uncertified farmers decreased agreeing about time to be spent before the work was to be undertaken significantly more often than certified farmers.

Certified farmers are more aware of what children should not do on the farm, as well as the benefits of going to school

Children spent time on cocoa farm activities; farmers stressed that the activities children undertake on the cocoa farm is important so they can learn about cocoa production. Almost all children of certified farmers go to school: 98% of children aged 6-11 go to school as well as 92% of children aged 12-17 (in 2014). We see no difference over time for and between certified and uncertified farmers regarding school enrolment for both age groups. We did see that certified farmers had a higher awareness of appropriate farm activities for children and the benefits of going to school than uncertified farmers.

Positive health effects reported by certified farmers

Despite similar changes over time in the use of personal protective equipment (PPE) and storing chemicals between certified and uncertified farmers, certified farmers attributed positive changes in their health to better health and safety practices, particularly chemical use, waste management and PPE in focus group discussions. Such changes were not reported by uncertified farmers in the focus groups.

Limited knowledge of labour laws and complaints procedures

Knowledge of labour laws and complaints procedures is generally limited, and no differences were found between certified and uncertified farmers over time.

A few certified farmers do not comply with the UTZ Code of Conduct regarding child labour

Children under 18 of certified farmers worked on average 1.6 day in 2014 on cocoa farm activities on the main farm while children of uncertified farmers worked 3 days. A few certified farmers do not comply with the UTZ Code of Conduct regarding children doing hazardous tasks, which constitutes a violation of the UTZ Certified Code of Conduct. That said, such activities are very minimal: children under the age of 18 spend on average less than one day per year conducting hazardous activities, such as pod breaking, pruning, applying fertiliser and transporting bags to the purchasing clerk. None of the children under the age of 18 were involved in pest or disease control in either 2011 or 2014. We see no difference over time between certified and uncertified farmers for the number of days children under 18 work on the cocoa farm. We do not know whether farm activities were done by children instead of going to school. But as children work so few days on cocoa activities per year, and as children spend even less time on hazardous activities, child labour occurs incidentally, but is not an issue.

Fewer children under the age of 14 on certified farms conducted hazardous activities in 2014 than on uncertified farms

Children of certified farmers under the age of 14 spent less time on hazardous activities than children of uncertified farmers in 2014, although the total yearly time spent is very low for both groups, 0.15 days versus 0.60 days per year on average respectively.

Four explanations for the contradictory findings on differences between certified and uncertified farmers over time

The methodological design proposed to analyse the differences in key indicators between a treatment group (certified farmers) and a comparison group (uncertified farmers). This design has been properly implemented. However, the assumption behind the design is that net-effect can be measured by subtracting the registered changes in time in each of the groups. The results of the analysis, however, indicate clearly that this assumption did not hold. Other training programmes worked in the areas where the comparison group was located and most likely affected the knowledge about and implementation of good agricultural practices. Due to this 'contamination' of the comparison group, net-effect estimates using the method of difference-in-difference are inconclusive. The effects of UTZ-Solidaridad training are underestimated by the computation used.

In addition, the impact of the input services delivered to certified farmers has probably not left its mark yet, as not all farmers use these services yet, and it takes time for the use of fertiliser, but especially planting seedlings, to have an effect on productivity. All the farmers furthermore faced price increases and increased labour costs, as well as climatological challenges in 2014. These developments could explain the relative few differences found between certified and uncertified farmers in their performance development over time.

One methodological constraint for measuring differences between certified and uncertified farmers and over time

A relevant question is whether there have been improvements that were not measured. There is one methodological constraint to this study: the size of the sample is, with 352 farmers interviewed twice, too small to detect significant changes in productivity lower than 27% for the certified group.

We used a variety of methods and questions to test whether there was any bias in the results. There may be a bias as a result of the way in which the farmers were selected for the survey. However, the design of the study (comparing UTZ-certified and uncertified farmers, both in the same year and over time), aims to minimise bias. There may be a bias in how the farmers were selected to participate in the UTZ-Solidaridad programme. For instance, it is likely that more innovative farmers self-selected themselves into the programme. But if this was the case, the results would be biased more positively. Also, the uncertified farmers appear to remain a valid comparison group, with few (6) having become certified since 2011 and sharing many of the same (not statistically significant) differences in farmer, worker or farm characteristics.

In addition, the levels of change found over time and between certified and uncertified farmers do not appear to have been affected by the following:

1. Differences between certified and uncertified farmers. Some differences between certified and uncertified farmers were already clear at the time of the baseline survey in 2011. Many of these trends continue to be apparent in 2014 but analyses based on Propensity Score Matching do not show different results than difference-in-difference analyses.
2. The fact that some projects had already started at the time of the baseline study:
   a. Projects 3 and 4 represent a clean baseline, starting at the same time as the baseline study was conducted (2012). These projects also show very few significant changes compared to the uncertified group.
   b. The same is true for the analyses of the combined group of farmers from Projects 2, 3, 4, and 6, which started in 2010 or 2011. We expect that these projects did not have productivity impacts yet at the time of the baseline study. These projects also show few significant changes compared to the uncertified group.
3. The time between the baseline survey and the endline survey. The endline study was planned taking into account the possibility that long-term programme effects may have manifested themselves, collecting data for the years 2011 and 2014. But as services related to inputs were scaled up some years after the programmes' start, it could be that we have been unable to measure the effects of these programme elements.

Also, as the ToC and UTZ Code of Conduct is based on continuous improvement, this assumption indicates that ongoing improvement should show up as higher levels of impact for UTZ-certified farmers. However, this has generally not been found to be the case when comparing the results with the comparison group.

Recommendations

Take into account other important factors influencing cocoa farmers in the Theory of Change

Sector-wide developments such as the higher cost of hired labour and a higher cocoa price have a major impact on profitability and farm incomes. Training and certification programmes, such as the UTZ-Solidaridad programme do not have a direct effect on such price and cost changes. Furthermore, children still work on cocoa farms because they need to learn about cocoa production, and sometimes conduct hazardous activities. Finally, the adoption of good agricultural practices does not automatically improve productivity. Thus, the attribution of outcomes to programme interventions as hypothesised in its Theory of Change remains elusive to scientific proof.[8] Other factors have a much stronger influence on how these indicators and outcomes develop over time than the programme or UTZ certification. Therefore, we advise the programme and UTZ Certified to take into account such factors in their Theory of Change, and adapt it accordingly based on the findings in this study.

Find out why farmers have not fully adopted the recommended practices

It appears that farmers are not fully adopting the good agricultural practices recommended by the programme. It may be that farmers, even though their training has taught them what to do, ignore the lessons learnt during training for instance if they do not have the means to adopt certain practices. Or it could be that they forget these lessons over time. We thus recommend the programme to first discuss with farmers why certain recommended practices were not adopted, and how this influences their productivity levels. These discussions should ask the question why many farmers have not fully adopted the recommended practices. Improving the quality and effectiveness of trainings should be part of this discussion.

[8] i. Farmers are more resilient, ii. Farmers make a decent income, iii. Farmers, farm workers and their families have a decent standard of living, iv. Farmers, farm workers and their families enjoy better health and v. Children do not do hazardous work and are able to go to school.

Improve farmers' satisfaction with services

One reason for the low changes in productivity found in this study (on average 10%) may be that not all farmers are satisfied with several of the services they received. Farmers are least satisfied with the insurance system and access to credit. Farmers' access to pesticides, seedling/pods and fertiliser has barely improved. Nor has there been improvement in assistance related to commercial activities, COCOBOD or the LBC. As past service delivery is not associated with higher productivity and income, the programme could focus its efforts on other services to achieve the intended impact. We advise to only do so when there is a need for such services and there is persuasive evidence that such services will indeed achieve the intended impact.

Investigate how to offer different types of services to different types of farmers to maximise impact

Farmers in the programme differ in terms of farm characteristics, e.g. with regard to productivity per hectare, production costs and farm size. For instance, farmers with larger farms and farmers who hire labour have increased their productivity over time while other farmers have not. Different types of farmers probably have different needs in their cocoa farming activities and a blanket approach in which most farmers obtain similar training does not create the intended impact. We therefore recommend the programme to explore how different farmer types can be supported with specific services suitable to their needs in order to maximise impact. This may alter the programme's focus, for instance lead to the decision not to target certain types of cocoa farmers because only a minimal impact can be expected for those farmers.

Support farmers to decrease production costs and increase labour efficiency

Farmers mentioned high production costs as a huge challenge. Future interventions could focus on reducing the cost of labour and other inputs to ensure that these production costs do not erode profits. This could include assisting farmers to manage their cocoa farms more efficiently and reduce

their workload, e.g. accessing pruning knives, which save work and reduce accidents, making more use of weeding and spraying gangs, accessing cheaper inputs and mechanising pod breaking. Supporting groups of farmers to own and share PPE is another way of improving access to equipment at a lower cost.

Increase (farm) incomes by increasing farm sizes and diversifying sources of income

Interventions could also focus on increasing farmers' incomes by helping them to increase the size of their farms, for example by setting up land agents to help swap, lease, buy and sell land. We understand that though there is the possibility for farmers to acquire extra land, it hinges on other farmers selling their land. So this is not an approach that is easy to implement. Another possibility is to support farmers to find or create other sources of income to complement the total household income.

Investigate why Project 1 farmers decreased the implementation of GAPs and experienced a decrease in productivity and income

Farmers from Project 1 experienced a significant decrease in the implementation of GAPs, productivity and income over time. This could have been because they had already made progress in these areas prior to the baseline study, but this was not confirmed by the organisation implementing the project. Therefore it would interesting to further investigate why this happened.

Improve data quality and learning

Collect real-time information from farmers on production details

Farmers have difficulty recollecting information about cocoa production, especially when it comes to costs. We recommend collecting real-time farm information from a small sample of farmers to gain an in-depth understanding of productivity and profitability details, as well as challenges in cocoa production. An independent organisation would preferably collect this data, as farmers are more likely to respond truthfully to an independent organisation. They may withhold information from organisations to which they sell their cocoa, especially about productivity and sales, because despite having contracts with buyers, farmers do sell on the side.

Such information should then be used for farmer-to-farmer learning in small groups as well. Farmers are quite diverse in their farm management and outputs. Thus, learning what other farmers do on the farm and what the benefits of such actions are can be very informative and may lead to changes in decision-making and higher impacts. The data collected for this impact evaluation can also be used for farmer learning, but there are practical challenges in doing so as the dataset contains information from farmers dispersed over the project areas.

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Appendices

The Appendices to this report can be accessed by following this link:
http://edepot.wur.nl/366868

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