



# Making sustainable smallholder tea farming a viable business

Baseline study of the Mufindi Outgrowers Project, Tanzania



LEI

WAGENINGEN UR

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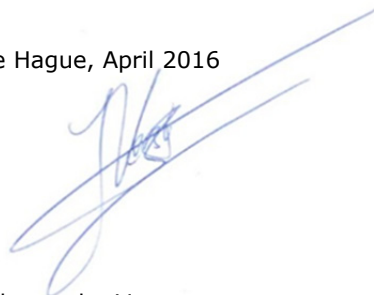
# Preface

The tea sector is facing a great number of challenges related to smallholder production, such as productivity, low income for farmers and workers, issues regarding labour conditions as well as environmental impact. Unilever Tea Tanzania (UTT) and IDH The Sustainable Trade Initiative (IDH) have initiated a project in Mufindi district in Tanzania that aims to improve the livelihoods of smallholder producers.

This Mufindi Outgrowers Project supports tea farmers to implement better farming and management practices expecting that, by increasing the sustainability of tea cultivation and trade, tea production will become a more economically viable option for current and future tea farmers, thus enhancing their standard of living. Furthermore, they will assist smallholder crop producers to convert to tea, through which they are expected to increase their income compared to maintaining crop producers. This study presents the baseline situation of the Mufindi Outgrowers Project implemented in Mufindi, Tanzania, for the year 2014. The research was commissioned by IDH and UTT.

We hope that the findings of this study will help to strengthen the projects and other programmes currently being implemented and inform current and future debates on sustainable tea production. We are greatly indebted to the farmers for their assistance and the information they have provided us with, 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 IDH and UTT teams, who assisted us in finding the farmers to be interviewed, provided us with information on their project approach in Tanzania, connected us to the Uyole Agricultural Research Institute in the Mbeya region for additional information for our analyses and for their feedback to the questionnaire and report. We also wish to thank Catherine Kabungo from Uyole Agricultural Research Institute for the valuable information she provided us with on beans, potato and maize profitability in the Mbeya region. Finally, we would like to thank Mrs. Martina Lusková, who as a trainee at LEI contributed to the research.

The Hague, April 2016



Jack van der Vorst  
General Director Social Sciences Group – Wageningen UR

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# Executive summary

## Supporting tea farmers through the Mufindi Outgrowers Project

Unilever Tea Tanzania (UTT) implements the Mufindi Outgrowers project in Tanzania in partnership with IDH The Sustainable Trade Initiative. In this project, UTT supports already existing smallholder tea farmers (*Brownfield farmers*) with farmer field school trainings and service delivery. They also support smallholder crop producers to convert to green leaf production. These farmers are called *Greenfield farmers*. IDH and UTT want to measure the progress and impact of the MOG project. In order to do so, a baseline study was conducted early 2015 to enable a later evaluation of the project impact. This baseline study report provides insights into the status of affairs, activities and perceptions of the Brownfield and Greenfield farmers targeted by the MOG project as well as of two comparison groups of farmers; tea farmers and crop producers not participating in the project.

## Farmer and household characteristics

The majority of respondents (65%) are male, which is representative for the sector. Farmers are generally old, on average 46 years, and 90% of the farmers have primary education as their highest education level. Almost all family members depend on incomes from tea or other farm activities, but half of them contribute to tea/crop production. Almost all children aged 6-14 go to school. Children in both comparison groups of 15 years and older appear to go to school more often than children in the same age groups from the Brownfield and Greenfield groups. We do not know why this is the case. Farmers farm on average 2.5 hectares of land. Land on which green leaf is produced averages 0.7 hectare. Few farmers are certified.

## Access to services and inputs

Farmers are neutral or unsatisfied with agronomic services, and few farmers participated in agronomy trainings. When they did participate, farmers gained useful knowledge from trainings most of the time.

## Trading relationships

Farmers are dissatisfied with prices and profits. We see differences between Greenfield and Brownfield farmers with regard to their future relationships with their buyers. Most tea farmers do not know whether they will continue their relationship with their buyer and most of them also do not know whether they would like to strengthen their relationship with their buyer. The Greenfield farmers, including the comparison group, are more clear about their outlook in this respect; between 40 and 54% indicate to like to strengthen their relationship with their buyer but about 30% do not want to continue their relationship with their buyer.

## Professionalisation

Farmers show difficulties in recalling production and cost information; hardly any farmer keeps records. This poses a challenge for productivity and profitability analyses because we need enough farmers with good information on production and costs to conduct such analyses. There are differences in pruning practices between the Brownfield and Brownfield comparison group farmers which could be an early effect of the project. More Brownfield farmers prune every four years than Brownfield comparison group farmers. We encountered difficulties in assessing plucking frequency because farmers misunderstood the question. Brownfield farmers planted more seedlings than comparison group farmers; this is probably an early effect of the project. Some farmers use machinery for harvesting and pruning. Even though limited, this may increase in the next years.

Analysing Personal Protective Equipment and use, 30% of the farmers have a mask/respirator, 17% have boots and 4% have a hat. The Brownfield farmers more often own PPE than comparison group farmers, which could be an early effect of the project. Ownership does not mean that farmers actually use the PPE: on average, 70% of the farmers did not use any PPE in 2014.

Farmers usually make decisions based on the state of their bushes/fields and advice by family members or friends. Advice from family and friends is an important basis for decision-making for comparison groups while the project groups more often base decisions on the state of their bushes/field.

### Green leaf productivity

Relatively few farmers know the number of bushes they manage, and kilograms of green leaf produced. The farmers who have provided us with information produce on average 5,125 kg per hectare, and 4,084 in total. Higher fertiliser application is associated with higher green leaf productivity for these farmers based on the household survey data. The productivity of all UTT outgrowers is on average 5,934 kg. This, and the fact that UTT on average produces 13,200 kg of green leaf and 3,000 kg of made tea per hectare indicates a large yield gap, even though this is partly explained by UTT irrigating their plantations several months per year.

### Profitability and income

Brownfield farmers have much higher costs for hired labour than the Brownfield comparison group. They also apply more fertilisers per hectare and have higher planting costs than Brownfield comparison group farmers. Brownfield farmers also receive a higher price for their green leaf than Brownfield comparison group farmers. The profit (net income) of green leaf production per hectare is TZS 786,374 or USD 396 on average. Total net income per farmer from green leaf is TZS 673,042 or 1.09/day, as farmers have on average less than 1 hectare with tea bushes. Based on this average productivity, farmers would have earned USD 1.27/day with on average 1 hectare with tea bushes, and USD 2.54/day when they would have had 2 hectares with tea bushes on average.

Profit per hectare of green leaf is much higher than that of other crops, though farmers could potentially earn more with Irish potatoes or tree production. Net income from crop production is TZS 677,000 or USD 1.09/day per respondent for Greenfield farmers, but about USD 5.45/day for Greenfield comparison group farmers. This difference is because some of the Greenfield comparison group farmers earn a very high income thereby positively influencing the average income earned for the whole group. Income from trees is mainly responsible for these high average incomes. Other studies also find that Irish potato production can be competitive compared to green leaf production in

profits per hectare. The net incomes earned from green leaf or crops appear the same, amounting to USD 1.09 per day. In reality, income from crop production is lower, as we assumed all crops to be sold to the market in our income calculations. As not all crops are sold to the market, but all green leaf is, Brownfield farmers earn a higher cash income than greenfield farmers.

Total household income was about USD 528 or USD 1.45 per day in 2014 on average.

### Livelihood and food and nutrition security

Farmers are relatively poor: their poverty likelihood is 29.0% with regard to national poverty line, 77.7% with regard to the USD 1.25 a day poverty line and 98.9% with regard to the USD 2.50 a day poverty line. Brownfield farmers more often took a loan in 2014 than the other farmer groups (42% compared to an average of 19%). The majority took a loan to cover school fees, to be able to purchase inputs and equipment for crop production (including tea). Sixty-two percent of the farmers save money, mostly for emergencies and school fees. Farmers usually spend their income on general household items including food, school fees, inputs and equipment. Diet is the main issue in food security: On average, farmers had half a month in 2014 in which they did not have enough food to meet their family's needs. About 5% of the farmers did not have enough food in at least one month in 2014. Farmers, however, do not have a diverse diet and mainly consume staples, beans & peas and vegetables.

### Challenges and future perspectives

Inputs (availability, affordability, timely supply) and price levels are main challenges for farmers generally. Greenfield farmers convert to tea to improve their livelihood. They choose to plant one hectare with tea, on land previously used for maize, beans or on land that was idle. The majority of farmers (84%) have a positive outlook with regard to tea farming. Interestingly, Greenfield farmers are more positive towards the future of tea farming for their children than Brownfield farmers.

### Gender

More respondents are male, but this is representative of the sector. We find some differences in gender aspects, but also many similarities. Male farmers own more land in general and land with tea than females, but they do not

differ from each other in tea production aspects. The respondents usually participate in the UTT trainings, whether the respondent is male or female, but relatively more females than males participate in trainings by others than UTT. Males and females are similarly satisfied with services, prices received and profits from tea or other crops. Men have the strongest role in tea farm activities, apart from plucking and pruning, where females and hired labourers are more active respectively. We do not see gender imbalances with regard to receiving earnings from the crop produced and decision making: the respondent's gender is usually the same as the gender of the person receiving the money, and decisions to invest in tea or crop production are usually made by men and women together.

### Conclusions and recommendations

We did not find many differences between the groups and between males and females which would affect the future impact evaluation. However, too few Brownfield and Brownfield comparison group farmers recall green leaf production figures to evaluate the impact of the project on productivity and profitability in the future. Therefore, additional green leaf productivity data analyses were conducted on information of UTT on all Brownfield farmers supplying UTT. These analyses increase the robustness in evaluating the project's impact on productivity. It would be helpful if UTT would gather information from new green leaf suppliers on their production and farm size of the year before they supply UTT to add robustness on the productivity calculations for the Brownfield comparison group.

Even though the majority of the farmers has a positive outlook on tea farming, Greenfield farmers are more positive than Brownfield farmers. This positive outlook is confirmed as profit per hectare of green leaf is much higher than profit for most other crops.

We recommend UTT to continue building relationships with green leaf suppliers, as 65% of them do not expect that their relationship with their primary tea buyer will continue in the future. And 81% of them do not know whether they would like to strengthen their relationship with their main buyer. The reason for this outlook is that farmers can decide every year which factory to supply.

It would be useful if the following characteristics and indicators would be collected for monitoring and evaluation purposes. This information could be recorded by farmers themselves and then entered in a dataset, or it could be directly collected by UTT:

- Farmer characteristics: ID, name, address, phone number, gender, age, education level
- Farm: farm size, green leaf production, price, days spent on the tea farm, costs: hired labour, fertilizer, herbicides.

### Methodology

This study presents the information of 469 farmers in four groups, two project groups and two comparison groups: 94 Brownfield farmers, 124 Brownfield comparison group farmers, 132 Greenfield farmers and 119 Greenfield comparison group farmers. These farmers are situated in 18 villages in Mufindi district in Tanzania and were randomly selected. The study was designed to be able to conduct 'difference-in-difference' analyses in a future evaluation. The baseline survey took place in March and April 2015. The questionnaire was designed building on Unilever's Smallholder Performance Measurement Survey (the Simplified Livelihoods Assessment tool). The research team consisted of 50% males and 50% females.



# Evaluating the project

1





# Evaluating the impact of the Mufindi Outgrowers Project

## Supporting smallholder tea farmers through the Mufindi Outgrowers project

The Mufindi Outgrowers (MOG) project started its activities at the end of 2014. The project was initiated by Unilever Tea Tanzania (UTT) and IDH The Sustainable Trade Initiative. Both organisations aim to further the development of sustainable tea production in Tanzania through the project, creating benefits to smallholder tea farmers.

The MOG project targets two different types of farmers:

- existing tea farmers, called *Brownfield farmers*
- farmers converting their land from other uses to tea production, called *Greenfield farmers*.

The project supports the farmers through: organising farmer field schools; establishing tea nurseries, rehabilitating abandoned tea farms; introducing Rainforest Alliance certification and setting up a service delivery scheme through which farmers can access inputs and services. Please find on the next page the theory of change of the MOG project with regard to the Brownfield and Greenfield farmer interventions.

## Measuring progress and impact of the MOG project

IDH and UTT want to measure the progress and impact of the MOG project. In order to do so, a baseline study was conducted early 2015 to enable a later evaluation of the project impact. The baseline study provides insights in status of affairs, activities and perceptions of the brownfield and greenfield farmers targeted by the MOG project.

## Scope of the baseline study

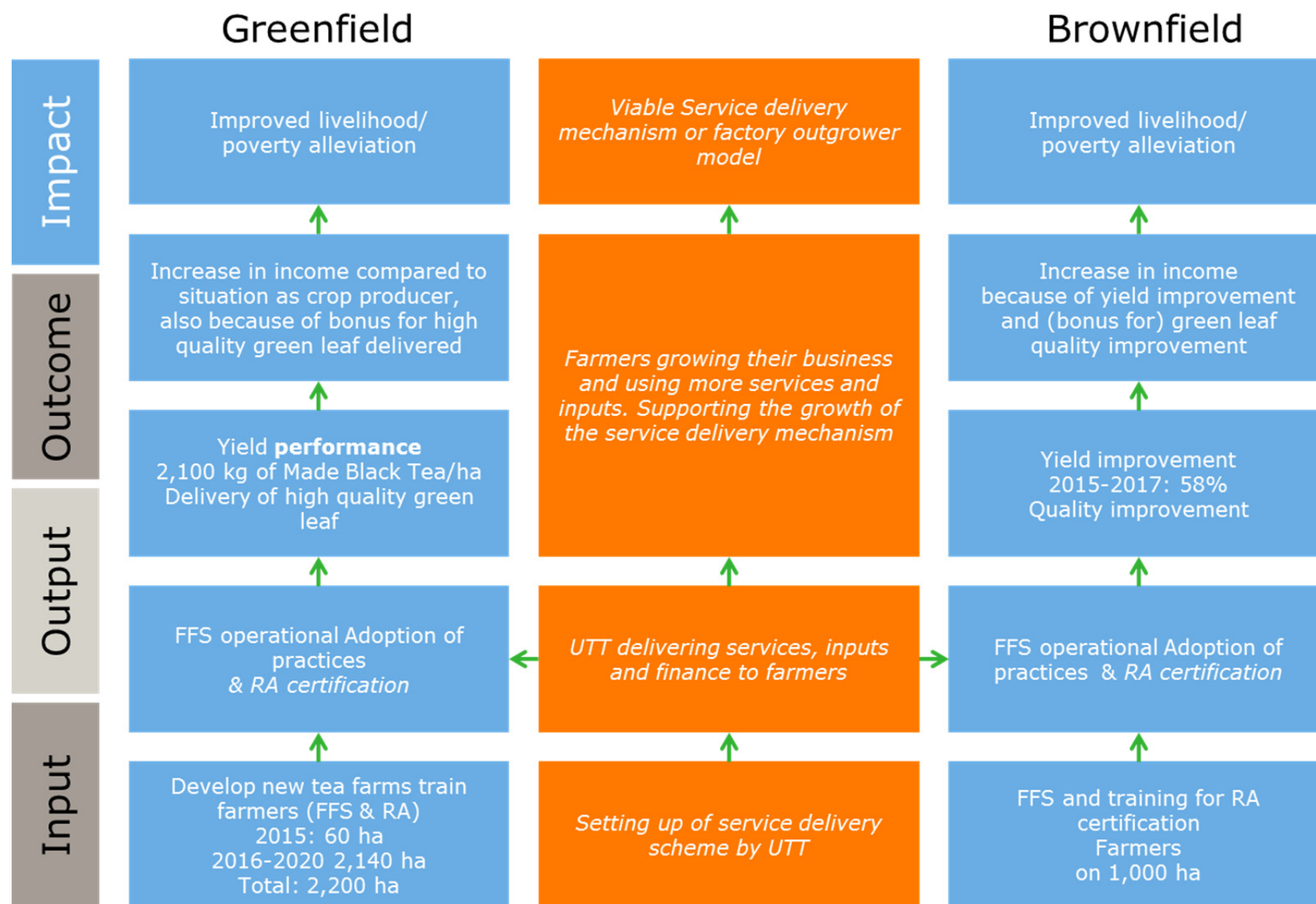
This baseline report provides insights into vital statistics with regard to the household and farm, as well as the livelihoods status of the targeted households. We focus on those outcomes and impacts where meaningful attributable change at field level is anticipated to happen because of the MOG project.

Household and farm characteristics	Expected outcomes and impacts
1. Age	1. Access to services and inputs
2. Gender	2. Trading relationships
3. Education level	3. Professionalisation
4. Family size	4. Tea productivity
5. Farm size	5. Green leaf quality
6. Crop area	6. Profitability of tea and other crops
	7. Income from green leaf
	8. Diversification of income
	9. Total household income
	10. Employment
	11. Labour division
	12. Food security
	13. School enrolment
	14. Livelihood/poverty/resilience
	15. Future outlook regarding tea production

## 469 farmers from four farmer groups interviewed

This study presents the information of 469 farmers in four groups: 94 Brownfield farmers, 124 Brownfield comparison group farmers, 132 Greenfield farmers and 119 Greenfield comparison group farmers. These farmers are situated in 18 villages in Mufindi district in Tanzania and were randomly selected. The baseline survey took place in March and April 2015. More information on the study design can be found in Chapter 2, Methodology.

**Figure 1.1** Theory of change for the Brownfield and Greenfield interventions







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Baseline study  
design to evaluate  
future impact

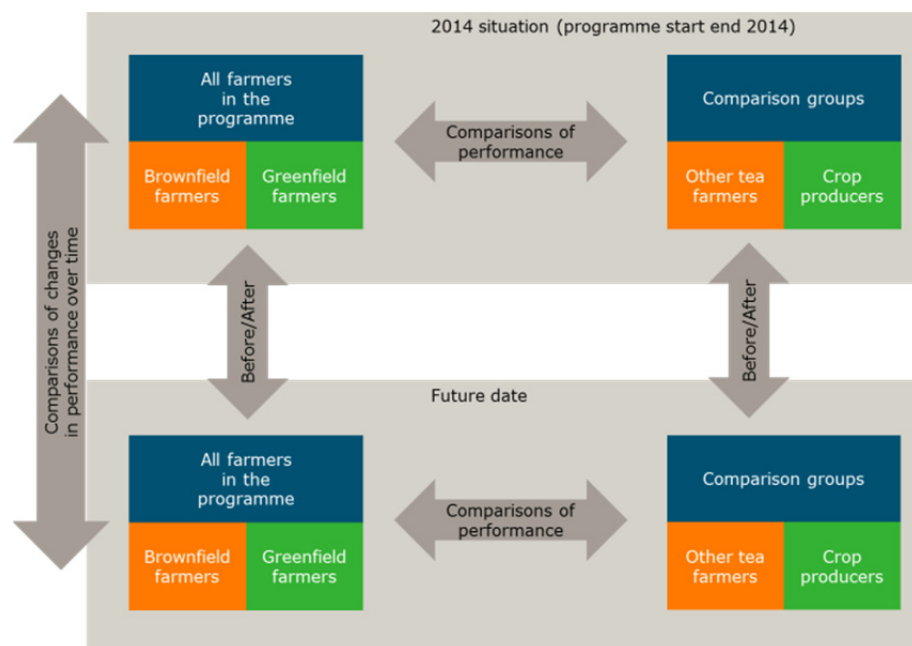


# Baseline study design to evaluate future impact

## Baseline study designed to evaluate the MOG project in the future

The baseline study is conducted to evaluate the MOG project impact at a future date. The evaluation is designed to compare changes in performance over time of farmers who participate in the project and similar farmers who do not. Such analyses are called 'difference-in-difference' analyses. The MOG project targets two types of farmers: already existing tea farmers (*Brownfield farmers*) and farmers who will convert from other crops to green leaf production (*Greenfield farmers*).

**Figure 2.1** Difference-in-difference design of the evaluation



## Farmers from two project and two comparison groups interviewed

To properly evaluate the project impact in the future, we have interviewed a sufficient number of Brownfield and Greenfield farmers, as well as two types of farmers in comparison groups. The first comparison group consists of farmers who already produce green leaf but who do not participate in the project. Their performance change over time will be compared with the performance change of the Brownfield farmers. The second comparison group consists of crop producers who are not expected to convert to green leaf production. Through comparing the change in performance of these crop producers over time with the change in performance of the farmers converting to green leaf, we will be able to assess whether converting to green leaf production creates an impact on farmers' incomes and livelihoods. Please find an overview of the number of farmers interviewed per group on the next page. The number of farmers to be interviewed was based on statistical power calculations.<sup>1</sup>

## Random sampling of farmers to be interviewed

Per project, a list with all villages and the total number of project farmers in each village was obtained. Then, per project group (Brownfield and Greenfield) participants were randomly selected from the total list using the random number generator of Microsoft Excel 2010. The villages from which the comparison group farmers would be interviewed were identified together with the UTT team. These villages are outside the area in which the project is implemented. Other criteria for the selection of these villages were that farmers would have similar characteristics as the project participants, and that they would farm under similar agro-ecological conditions. After the villages were selected, the comparison group farmers were found through snowball sampling.

<sup>1</sup> STATA command: power twomeans 1 1.50, power(0.8) sd(1) for the Brownfield group and STATA command: power twomeans 1 3, power(0.8) sd(5) for the Greenfield group.



## Questionnaire designed building on Unilever's Smallholder Performance Measurement Survey

The questionnaire for this baseline study was created to be able to measure the expected outcomes and impacts of the MOG project (see page 9). In developing the questionnaire, we built on Unilever's Smallholder Performance Measurement Survey (the Simplified Livelihoods Assessment tool or SLA) as well as on advice by UTT and IDH. The questionnaire can be found in Annex 1 of this report.

## Interviews done by ENVICON, an NGO experienced in household surveys, after enumerator training

Enumerators were recruited based on the following criteria: a university degree, fluent in English and Tanzanian Swahili, computer literacy, preferably experience with censuses/surveys, flexible and with sufficient time for being in the field. The enumerators were trained from 7-9 May 2015 in Mufindi area, Tanzania, by Yuca Waarts from LEI and Professor Njau from ENVICON. The training consisted of the following elements: information on tea production by UTT, discussing the questionnaire including translations of English into local terms and role plays to test conducting and interview. The questionnaire was translated into Tanzanian Swahili, and tested in the field before it was finalised.

## Additional data on green leaf production obtained from UTT

Because it was difficult for farmers to recall how many kilograms of green leaf they had produced in 2014, we received the total list of 50 farmers who supplied UTT with green leaf in 2014, to increase the robustness of the green leaf productivity analyses.

## Baseline analyses performed

For this baseline study, we analysed the information from the questionnaire and UTT dataset on green leaf production for the four study groups using STATA13. The following analyses were performed for the various questions and indicators: frequencies (e.g. percentage of farmers giving a certain answer), calculating the mean, median, minimum and maximum values of certain indicators (for instance productivity), including the standard deviation. We performed t-tests to analyse whether there are significant differences between the project groups and their comparison group or between males and females for various indicators. Also we have conducted several correlation tests to see how different indicator values are connected, specifically for the agronomic indicators (productivity, fertiliser use, use of personal protective equipment and herbicides). Finally, we conducted Propensity Score Matching (PSM) to analyse whether the project groups were similar to the comparison groups.

**Table 2.1** Number of farmers interviewed per group

Farmer group	Number of farmers interviewed
<b>Brownfield farmers</b>	94
<b>Greenfield farmers</b>	132
<b>Subtotal MOG project farmers</b>	226
<b>Brownfield comparison group</b>	98
<b>Brownfield comparison group extra*</b>	26
<b>Greenfield comparison group</b>	119
<b>Subtotal comparison farmers</b>	243
<b>Total number of farmers</b>	<b>469</b>
<b>Total number of farmers analysed**</b>	<b>440</b>

\* We came across 26 Brownfield comparison farmers who abandoned their tea farm. We included them in the database as a separate category so we can see whether they will produce green leaf again in the future, and if so, why. We do not know why these farmers abandoned their tea farm.

\*\*\* Three farmers were not included in the analysis due to extreme land sizes (>50 acres). The 26 extra Brownfield comparison farmers were also not included in analyses.

## Results discussed with UTT and IDH staff

The preliminary results of the analyses were discussed in a virtual validation workshop in August 2015. We adapted the analyses and calculations accordingly and obtained additional information on maize, beans and potato production from the Uyoile Agricultural Research Institute in the Mbeya region to better compare profitability per hectare between green leaf and those crops. UTT and IDH also gave feedback to the draft report.

## Gender balance in research team

The research team consisted of 50% males and 50% females. The ENVICON research team consisted of 12 males and 8 females. We especially focused on having a sufficient number of females in the Tanzanian research team so they could interview female respondents when appropriate. The LEI research team consisted of 4 females. In total 12 males and 12 females contributed to the work. While the local data collection efforts were coordinated by a male, the LEI project manager was a female.

# Farmer and household characteristics

# 3



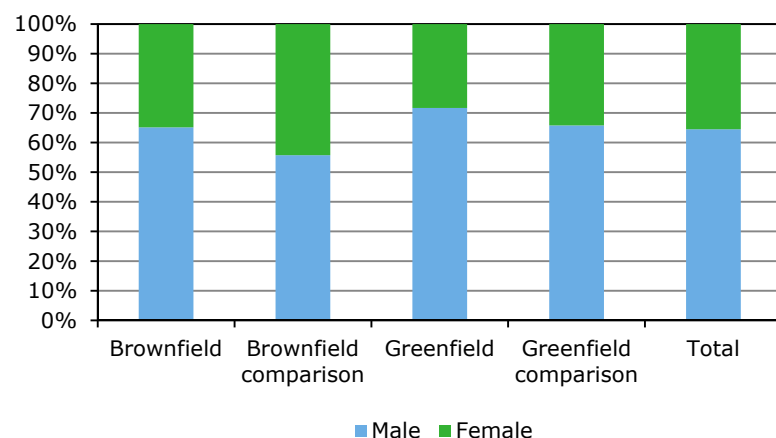


# Farmer and household characteristics

## The majority of respondents are male

Sixty-five percent of the farmers interviewed are male and 35% are female. This is representative for the tea sector in Tanzania.

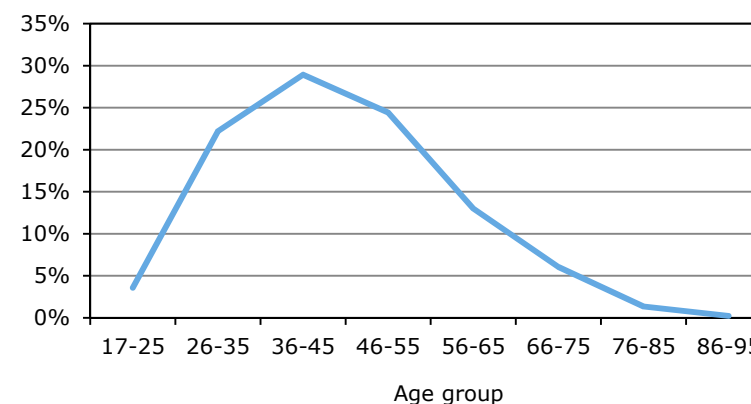
**Figure 3.1** Gender of the respondents



## Farmers are generally old

The average age of the respondents is 45.6 years. The youngest is 17 and the oldest is 95. Seventeen percent of the respondents are active while they are older than the average life expectancy at birth (60 years).<sup>2</sup> At an average age of 51, farmers from the Brownfield comparison group are older than the farmers in the other three groups. Brownfield farmers are older than Greenfield farmers (46 compared to 42).

**Figure 3.2** Age of the respondents

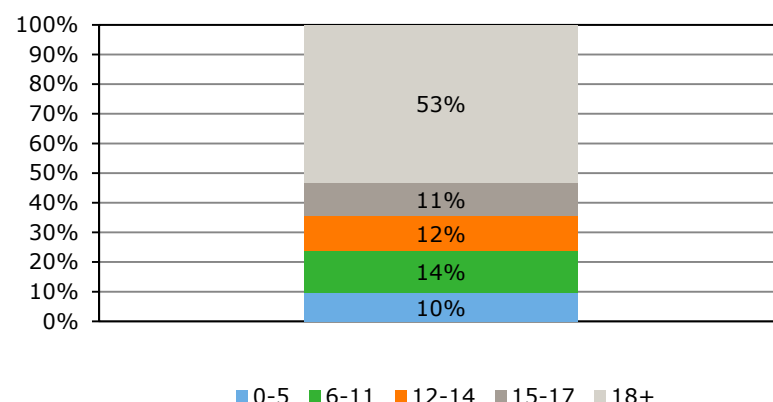


<sup>2</sup> [http://www.indexmundi.com/tanzania/life\\_expectancy\\_at\\_birth.html](http://www.indexmundi.com/tanzania/life_expectancy_at_birth.html)

## Almost half of the household members is between 0 and 17 years

Only a few farmers have few household members. Fifty-three percent of the household members is aged 18 and over and 47% is aged 18 or less. Therefore, there is a low risk of farms not being continued on the basis of family size and family member age levels.

**Figure 3.3** Age of household members



## Almost all family members depend on incomes from tea or other farm activities, but half of them contribute to tea/crop production

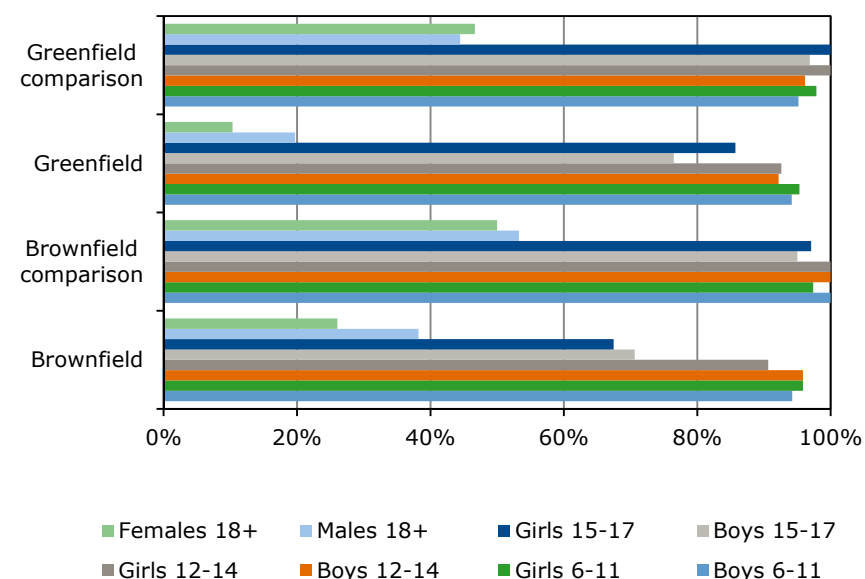
Households<sup>3</sup> consist of 5.4 persons on average, with a range from 1 to 20 persons per household. Brownfield farmers have with on average 5.6 household members larger households compared to the 4.8 members of Greenfield farmer household. An average of 5.3 persons per household are supported by income from tea or other farm activities while on average 2.5 persons contribute to farm or tea farm activities. The Brownfield comparison group has on average 1.8 persons working on the tea farm while they farm more land on average then the Brownfield group.

<sup>3</sup> Households include people living together the majority of the time under the same roof/in the same compound

## School enrolment of children

Almost all children aged 6-14 go to school. Differences are especially noted between the project and their comparison groups for the age groups 12-14, 15-17 and 18 and older. Girls and women aged 12 and over from the Brownfield group go to school less often than girls and women in the same age group from the Brownfield comparison group. Boys and men aged 15 and over from the Greenfield group are less often going to school than those from the Greenfield comparison group. And women over 18 years old from the Greenfield comparison group are less often going to school than those of the comparison group. We do not know why these differences occur.

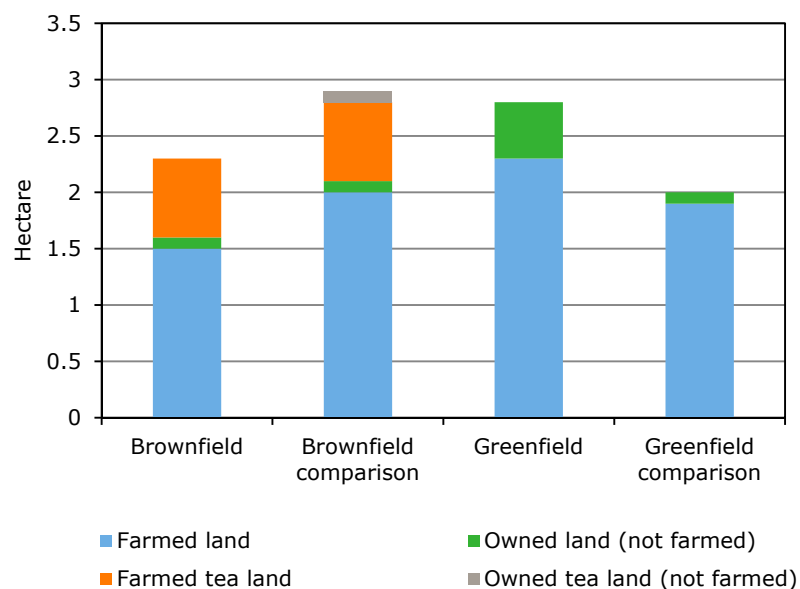
**Figure 3.4** School enrolment per age and gender group



## Farmers farm on average 2.5 hectares of which 0.7 hectare with tea

Generally, farmers own less land than they farm; lease happens in the area, albeit limitedly Greenfield farmers own significantly more land than the Greenfield comparison group. Farmers have on average 0.7 hectare with tea. Sometimes they own more land with tea than they actually farm.

**Figure 3.5** Land size farmed and owned, including for tea



## Few farmers are certified

Fifteen farmers (7.5%) indicated that their farm was certified. Most of them (67%) indicated their farm had been certified organic. Interestingly, no farmers are certified organic in the Mufindi area. Most probably they meant 'certified sustainable', which refers to Rainforest Alliance certification.



4

Access to services  
and inputs



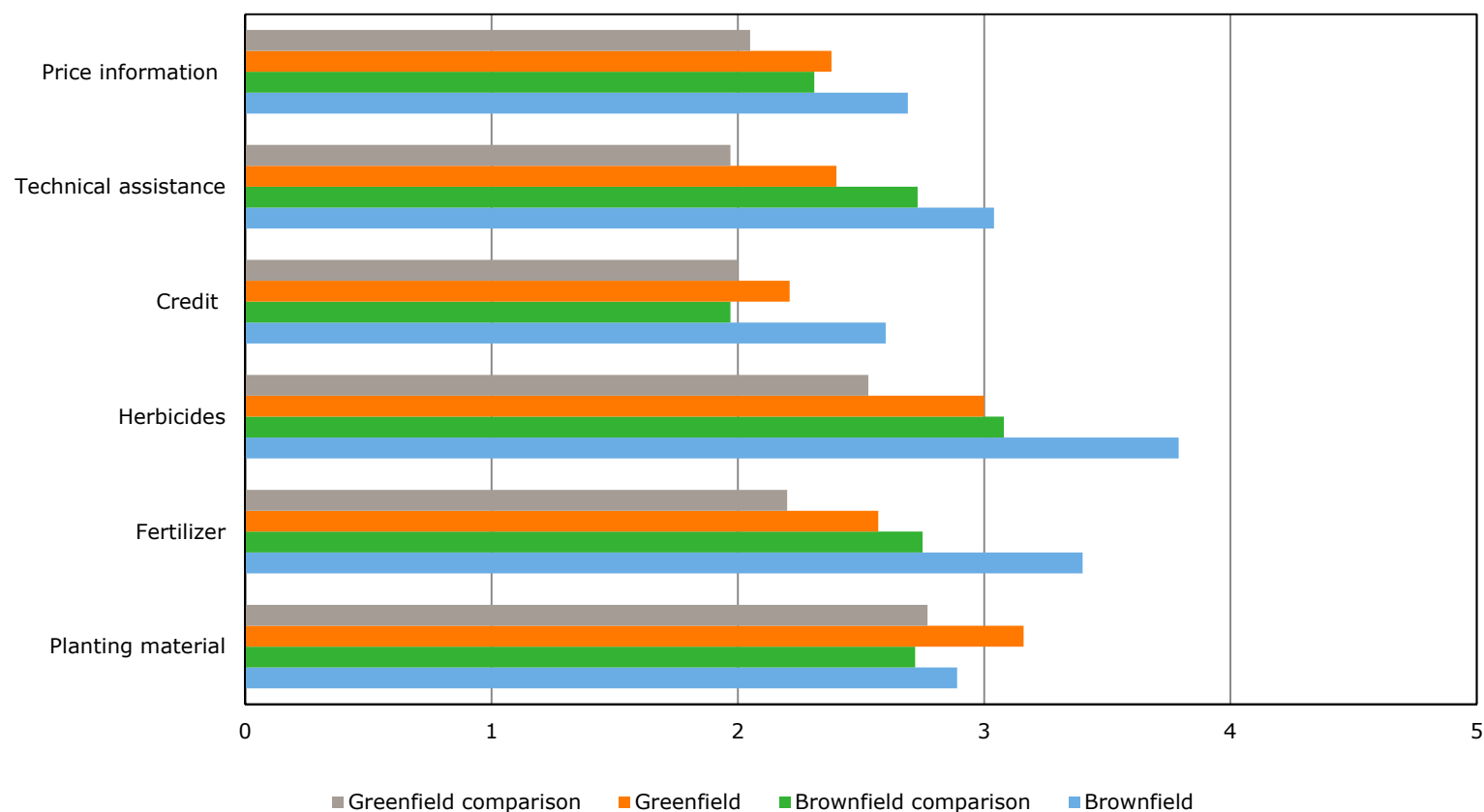
# Access to services and inputs

## Farmers are neutral or unsatisfied with services

Brownfield farmers are generally the most satisfied with services delivered to them compared to farmers from the other groups. But the average satisfaction score indicates that farmers are either neutral or dissatisfied with all types of services under investigation.

Farmers are most satisfied with the access to herbicides and fertiliser, although still the average satisfaction level is relatively low, and farmers are least satisfied with access to credit.

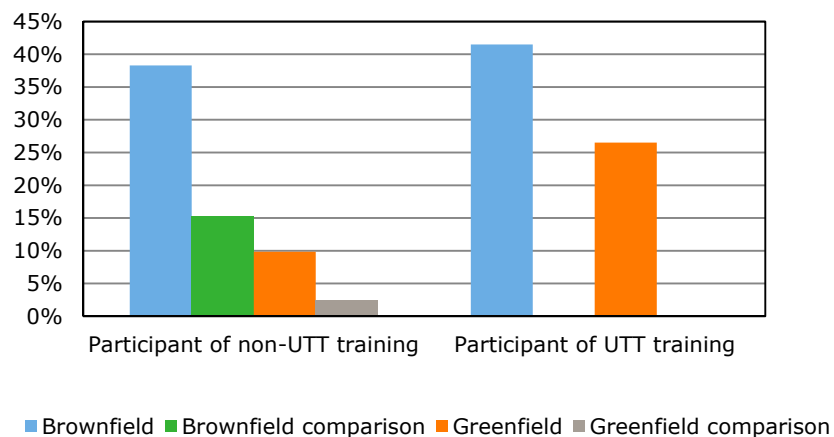
**Figure 4.1** Satisfaction with services: the higher the score, the more satisfied (scale 1 = very dissatisfied, 5 = very satisfied)



### Few agronomy trainings or occasional advice

Less than half of the farmers participated in agronomic trainings or received agronomic advice in 2014. We see an early impact of the MOG project because people already participated in trainings given by UTT. Such trainings include FFS trainings, which started in December 2014. Interestingly, many Brownfield farmers participated in non-UTT trainings, while the other groups generally did not participate in trainings. We do not know who provided such non-UTT trainings.

**Figure 4.2** Respondents' participation in 1 or more trainings in 2014

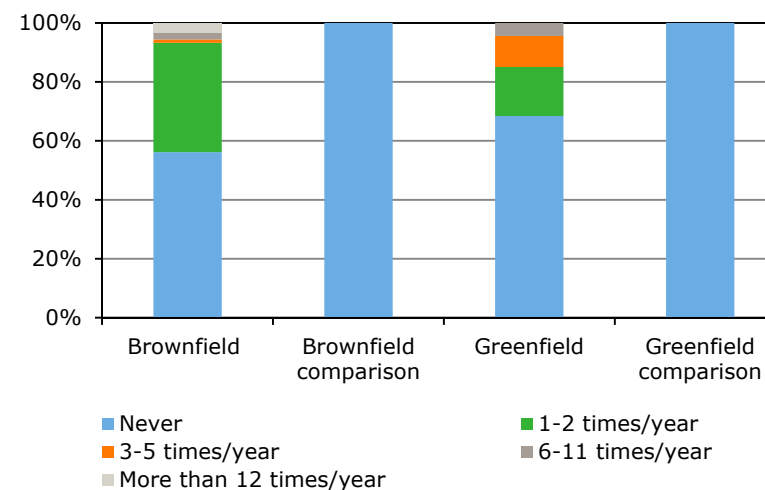


Farmers usually did not participate in trainings, or only in 1 or 2 trainings in 2014.

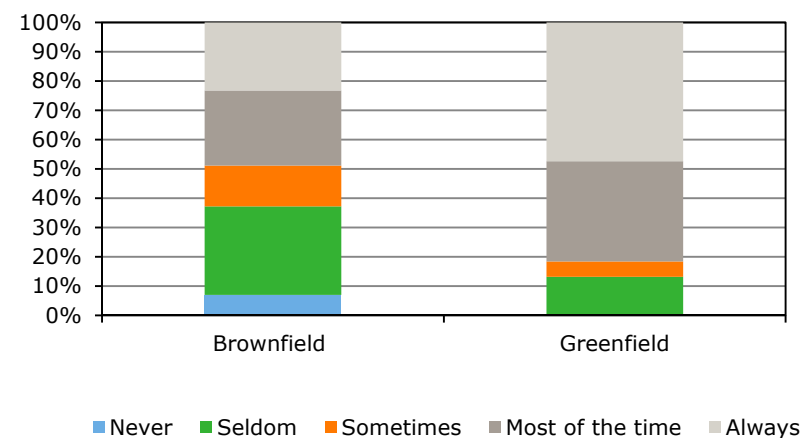
### Farmers gain useful knowledge from trainings most of the time

Farmers value the trainings received and on average gained useful knowledge from the trainings most of the time. Greenfield farmers indicated more often that they gained useful knowledge from the UTT trainings than the Brownfield farmers.

**Figure 4.3** Number of times farmers participated in UTT trainings in 2014



**Figure 4.4** Whether respondents found the UTT trainings useful with regard to knowledge gained





A photograph of a rural landscape. A dirt road stretches from the foreground into the distance. A person wearing a hat and carrying a bag stands on the left side of the road. The landscape is filled with green vegetation, including tall grasses and crops. In the background, there are small houses and more trees. The sky is filled with large, white and grey clouds. A large white circle is superimposed on the right side of the image, containing the number 5.

5

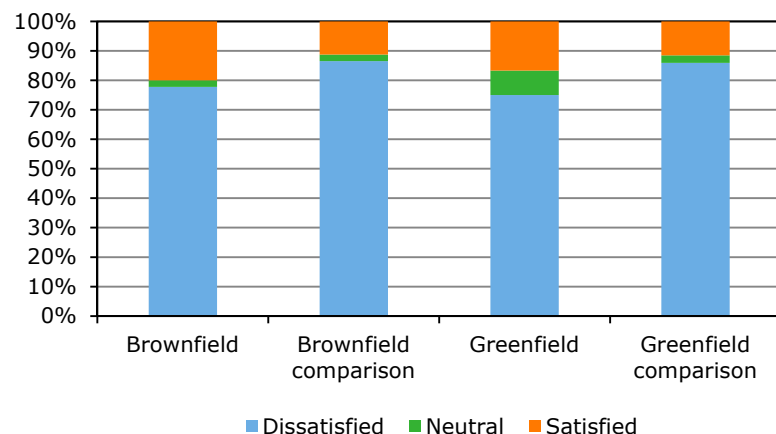
Trading  
relationships

# Trading relationships

## Farmers are dissatisfied with prices and profits

Most (75-87%) farmers are dissatisfied with the price they receive for green leaf (tea farmers) or the most important crop for their family (Greenfield groups). Farmers are similarly dissatisfied with profits (66-87%). Such dissatisfaction is quite typical for green leaf producers, as well as other crop producers, but we do find differences: Greenfield farmers are more satisfied with the price they receive for food crops than Greenfield comparison group farmers. And Brownfield farmers are more satisfied with profits than Brownfield comparison group farmers.

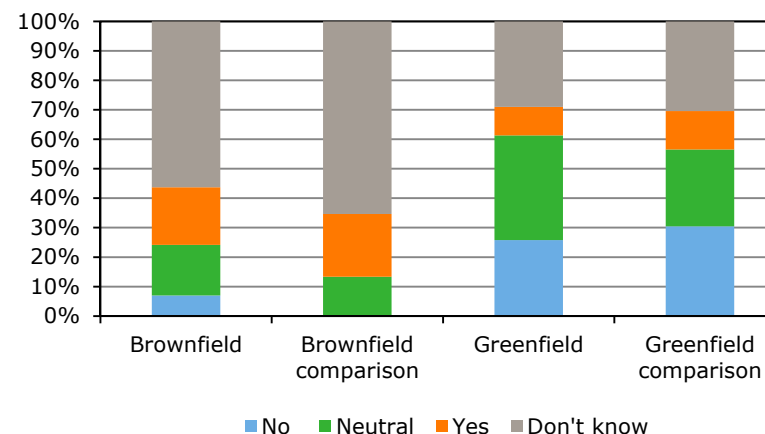
**Figure 5.1** Satisfaction with the price received for their crop (tea/crops) in 2014



## Most tea farmers do not know whether they will continue their relationship with their buyer

Fifty-six percent of the Brownfield farmers do not expect that their relationship with their primary tea buyer will continue in the future and 7% of the Brownfield farmers expects the relationship not to continue. This can be explained by the fact that in Tanzania, contracts between a producer and a tea factory are closed annually. Farmers base their decision which factory to supply based on green leaf prices and services delivered. Greenfield farmers show different expectations regarding their relationship with their buyers; about one third of the farmers is either neutral, does not know, or expects the relationship to end in the future.

**Figure 5.2** Whether farmers will continue their relationship with their buyer in the future

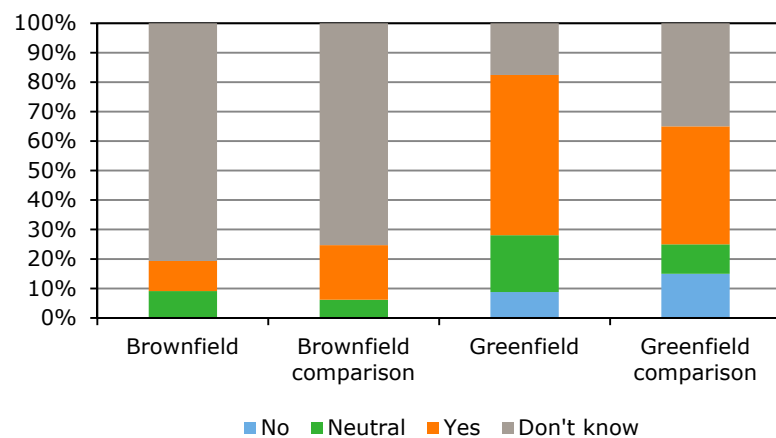




### Most tea farmers also do not know whether they would like to strengthen their relationship with their buyer

Similar trends can be seen when we ask farmers whether they would like to strengthen their relationship with their buyers. Most of the tea farmers do not know whether they would like to strengthen their relationship, probably again because contracts with buyers are closed every year. Many Greenfield farmers are positive towards strengthening their relationship.

**Figure 5.3** Whether respondents would like to strengthen their relationship with their buyer



6

Professionalisation





# Professionalisation

## Hardly any record keeping and recall of production and cost information by farmers

It is important to note that the majority of farmers has difficulties in indicating or estimating the numbers of tea bushes and green leaf production figures. Very few farmers do keep (written) records and probably because of this, we have a very low number of farmers for whom we have green leaf production data for 2014 (72 out of 192, less than 40%). It seems that many farmers are not very aware of their actual production figures and costs.

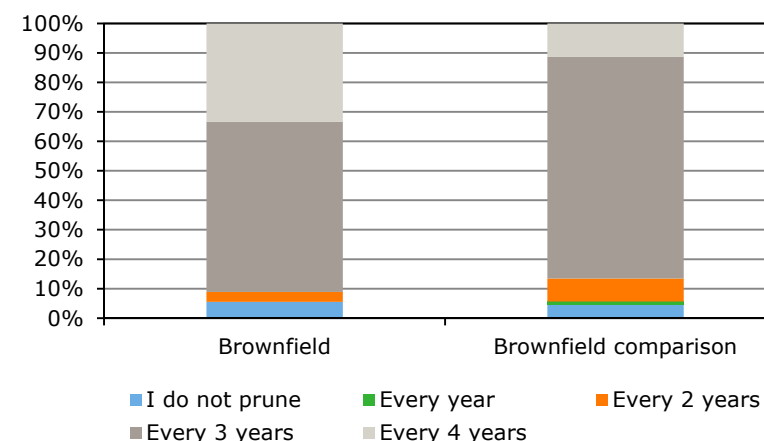
## Challenge for productivity and profitability analyses

Not only is it difficult for farmers themselves to calculate exact costs and revenues, the low number of observations also makes finding significant changes over time and between the groups a challenge. This thus also challenges conducting the impact evaluation at a future date as we need a sufficiently high number of farmers for whom we have good quality data on green leaf production and costs, for both the project and the comparison group, to find significant changes. In the future evaluation we will include information from other sources on profitability of green leaf in Tanzania to analyse whether the farmers in our sample farmers.

## Pruning and plucking practices

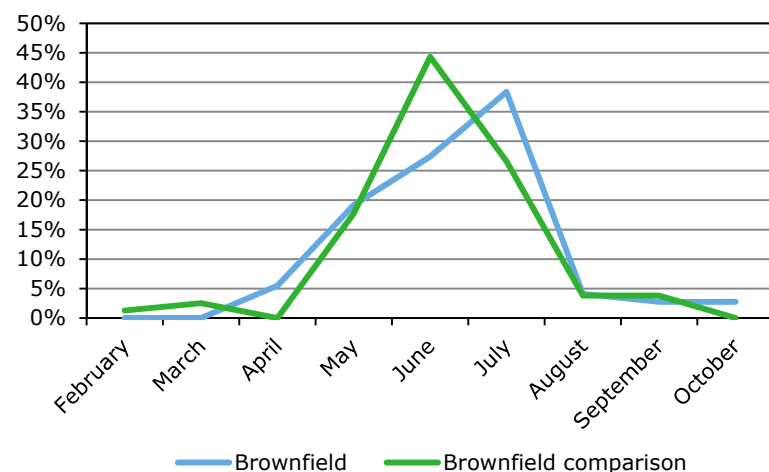
There are differences in pruning practices between the Brownfield and Brownfield comparison group farmers. This could be an early effect of the project. Brownfield farmers prune on average every 3 years and the majority prunes in June and July, the best season for pruning the bushes. More Brownfield farmers prune every four years than Brownfield comparison group farmers.

Figure 6.1 How often farmers prune their bushes



Some farmers do not prune at all, and some pruning also takes place in months less suitable for pruning (February-April, August-October).

**Figure 6.2** Month in which pruning takes place



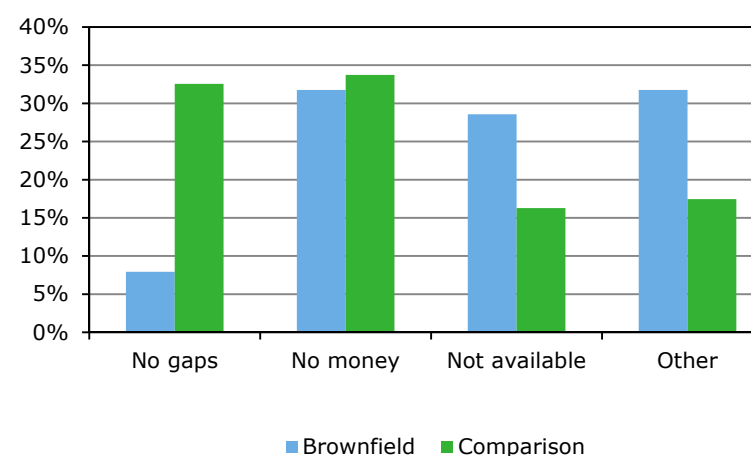
### Plucking frequency – difficulties in establishing the baseline

Farmers have misunderstood the question on plucking frequency; they indicated to pluck more often in the dry season than in the main growing season. While in reality farmers pluck more often in the main growing season. According to UTT, the average plucking frequency is 1-2 times per month. Every 15 days in the main growing season, and every 28 days in the dry season.

### Brownfield farmers planted more seedlings than comparison group farmers, probably an early effect of the project

The Brownfield farmers planted more bushes last year than the Brownfield comparison group (30% against 7%). Reasons for not planting seedlings are: no gaps, no money, no availability, and other reasons (no land, time or priority). Interestingly, Brownfield comparison group farmers more often indicated to have no gaps than Brownfield farmers. But we do not have information on the % of area with gaps for both groups to confirm this.

**Figure 6.3** Reasons for not planting seedlings



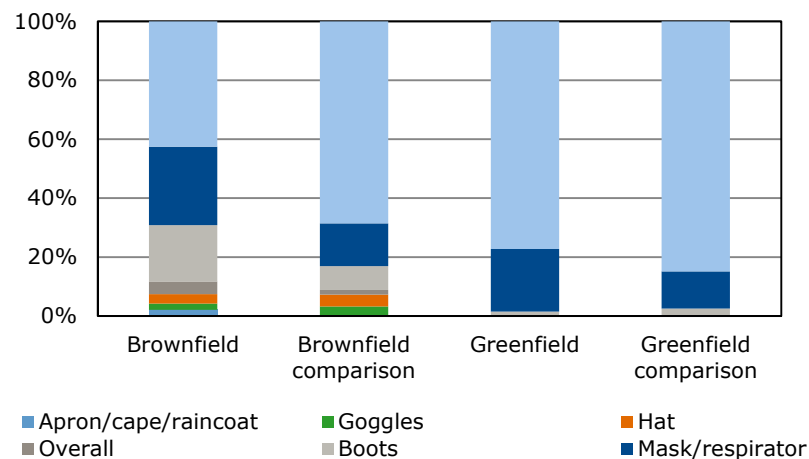
### Some use of machinery for harvesting and pruning

Brownfield farmers do not make use of harvesting or pruning machines while 6% of the Brownfield comparison group uses a harvesting machine and 3% a pruning machine. Even though these differences are not significant, it does show that some smallholder tea farmers started mechanisation of tea production activities.

### Personal protective equipment

Forty-three percent of the farmers do not own PPE. Thirty percent have a mask/respirator, 17% have boots and 4% have a hat. The Brownfield farmers more often own PPE than comparison group farmers. This could indicate an early effect of the project (e.g. because the awareness of the importance of PPE increased already). Ownership does not mean that farmers actually use the PPE. On average, 70% of the farmers did not use any PPE in 2014. Most PPE used are masks/respirators (18%) and boots (7%).

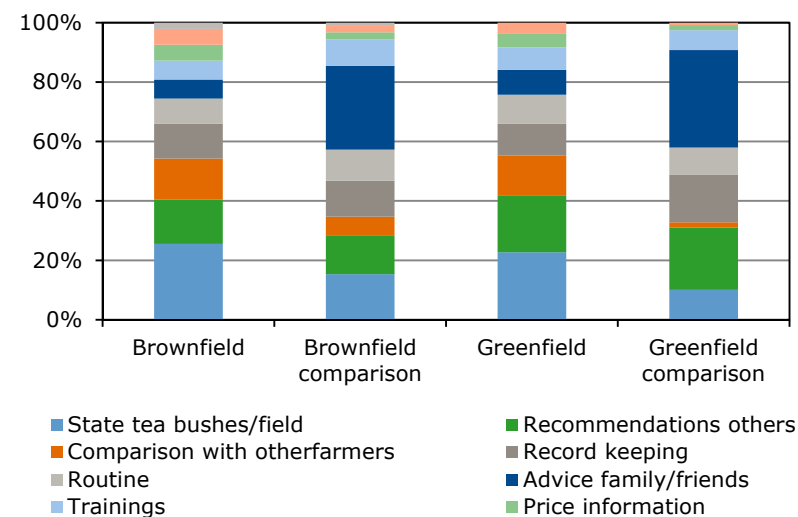
**Figure 6.4** Use of Personal Protective Equipment



### Farmers usually make decisions based on the state of their bushes/fields and advice by family members or friends

We see many similarities in how farmers make decisions, but also differences between the groups. The Brownfield and Greenfield farmers mostly take decisions based on the state of their bushes or field, while both comparison groups mostly base their decisions on advice from parents, friends or neighbours.

**Figure 6.5** On what basis respondents make decisions





Green leaf  
productivity  
and price

7





# Green leaf productivity and price

## Low knowledge on number of bushes and green leaf produced

Twenty-five percent of the farmers could indicate the number of bushes they have and 72 tea farmers (38%) gave us information on their green leaf production in 2014 (40 Brownfield farmers and 32 Brownfield comparison farmers). On average, farmers have 12,000 bushes per hectare.

More farmers (75%) could remember the year of the first establishment of the tea farm. On average, the tea plantations are 14 years old, with no differences between the Brownfield and the Brownfield comparison group.

## Tea farmers produce 5,125 kg per hectare, and 4,084 in total

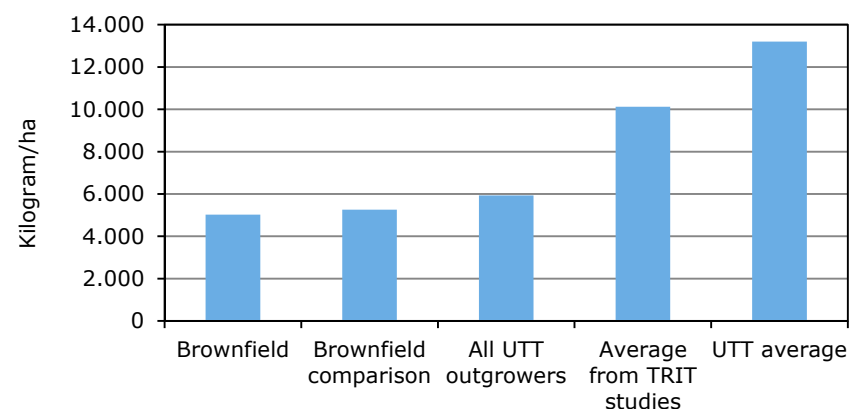
In 2014 tea farmers produced on average 4,084 kg in total. This amounts to 5,125 kg of green leaf and 1,165 kg of made tea per hectare on average, with no significant differences between the Brownfield and Brownfield comparison group. Farmers produce 61% of this total amount in the main growing season; 39% is produced in the dry season. Interestingly, if we look at all UTT outgrowers, productivity per hectare is higher, on average 5,934 kg. This difference occurs because there are some farmers with a very high average productivity on the UTT list. This, and the fact that UTT on average produces 13,200 kg of green leaf and 3,000 kg of made tea per hectare indicates a large yield gap, even though this is partly explained by UTT irrigating their plantations several months per year.

## Brownfield farmers receive a higher price for their green leaf

Brownfield farmers received a price of TZS 246 per kg green leaf in 2014 compared to 230 for Brownfield comparison group farmers. UTT pays more to its farmers than other factories, especially because of bonus

payments. However, in 2014 no bonus was paid and the price paid to farmers was much lower than UTT expected. A regular price without bonus is TZS 250 per kilogram of green leaf.

Figure 7.1 Green leaf productivity



## Higher fertiliser application is linked to higher green leaf productivity

We find a statistically significant and positive correlation between the number of bags of fertiliser applied per hectare and green leaf productivity per hectare. Higher fertiliser application rates are thus positively associated with higher green leaf productivity.





8

Profitability and  
income

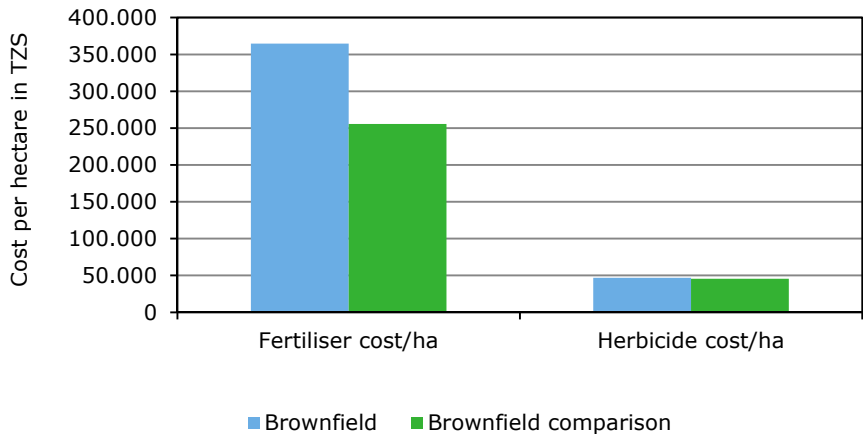


# Profitability and income

## Brownfield farmers apply more fertilisers per hectare

Brownfield farmers apply more fertilisers per hectare than Brownfield comparison group farmers: they apply on average 6.7 bags/336 kg per hectare which equates to around 85 kg of nitrogen per hectare, which is very low. For instance, the KTDA target is to apply minimally 150kg/ha. The comparison group applies 4.7 bags/237 kg per hectare. These amounts are equivalent to fertiliser costs of TZS 364,000 and TZS 256,000 per hectare respectively. This difference is statistically significant, and could probably be a result of already improved access to fertiliser through the MOG project because it started late 2014. We do not find a difference in the application of herbicides per hectare between the groups.

Figure 8.1 Costs for fertiliser and herbicide application (material)

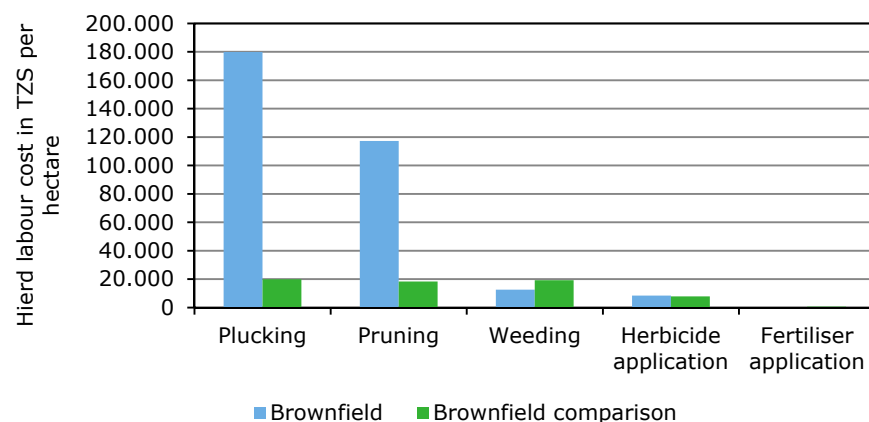


## Brownfield farmers have much higher costs for hired labour than the Brownfield comparison group

Brownfield group farmers in total spent TZS 318,551 on hired labour in 2014, which is significantly higher than the TZS 46,552 spent by the Brownfield comparison group. This large difference is mainly explained by costs for plucking, with 6 Brownfield farmers reporting more than TZS 1,000,000 per hectare for hiring tea pickers. Also, Brownfield farmers have much higher hired labour costs for pruning (TZS 117,251 versus TZS 18,319). Hired labour costs for weeding, fertiliser application and herbicide application does not differ much. Hired labour costs for weeding and herbicide application were calculated based on the number of days spent and a salary of TZS 5,250 per day (USD 3.09 per day). This appears to be quite a high salary, but was confirmed by farmers and ENVICON. Yearly hired labour costs for plucking were estimated by the farmer. Labour cost for pruning are based on the number of bushes pruned times the price paid to hired labourers for pruning one bush. The same counts for fertiliser application, but then regarding the number of bags applied and the price paid to a worker for applying one bag of fertiliser. Please find more information on costs and how they were calculated in Appendix 1.



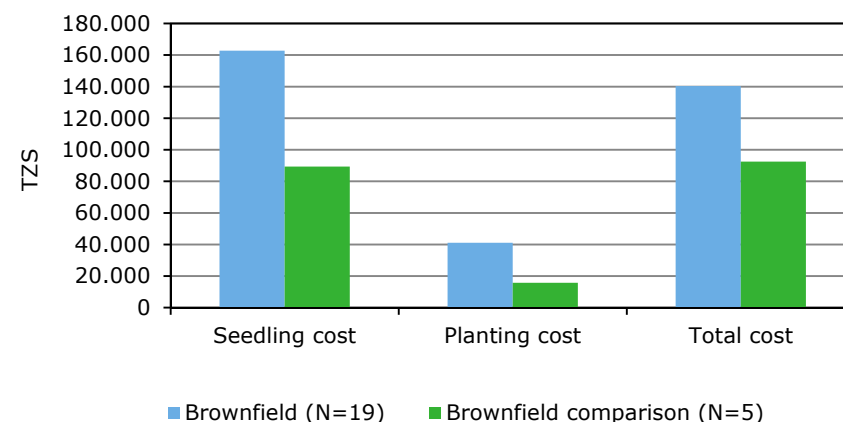
**Figure 8.2** Hired labour costs in green leaf production



### Brownfield tea farmers have higher planting costs than Brownfield comparison group farmers

More Brownfield farmers bought more seedlings in 2014 than Brownfield comparison group farmers: 19 Brownfield farmers bought an average of 1,017 seedlings compared to 5 Brownfield comparison group farmers who bought an average of 128 seedlings. The average price paid per seedling was TZS 103, which was the same for all farmers. The high number of seedlings bought by the Brownfield group is probably an early effect of the MOG project.

**Figure 8.3** Planting costs: seedlings and labour costs (total cost in 2014)



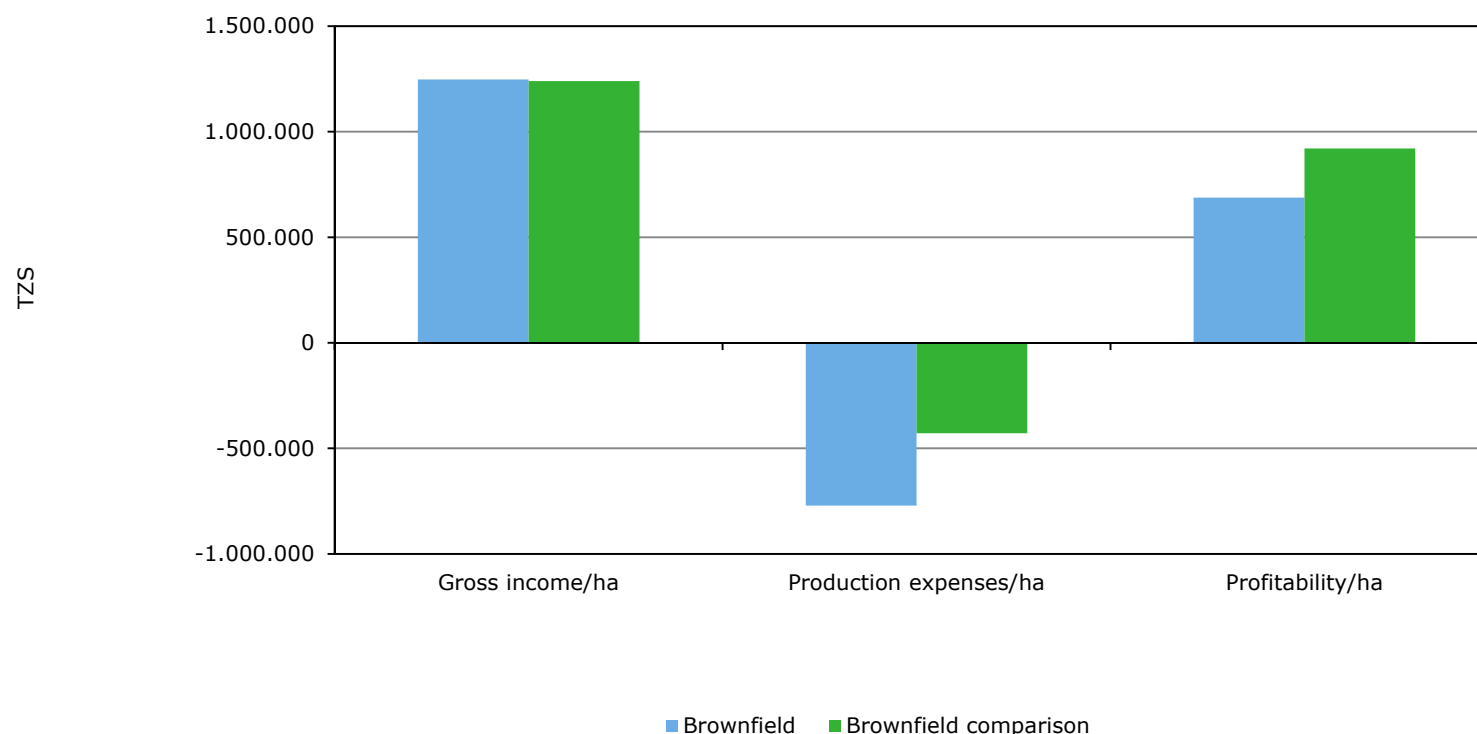
### Profit green leaf production per hectare is TZS 786,374 or USD 396

With an average gross income of TZS 1,244,000 and average expenses of about TZS 613,355 per hectare, profit per hectare amounts to TZS 786,374. This profit is calculated without taking into account days spent by family labour. Brownfield farmers have higher total production costs than Brownfield comparison group farmers, but their profitability per hectare is not significantly different. In our calculations, 20% of the farmers incurs a loss with GL production. This may be because the hired labour wage included in the analyses may be in reality lower. But it remains surprising, as we did not take into account time spent by family labour in the cost calculations.

### Total net income from green leaf is TZS 673,042 or USD 1.09/day per respondent

Because farmers have less than 1 hectare of land with tea bushes, they earned a net income of USD 396 with green leaf production, with no differences between the groups. This results in a net income of USD 1.09 per day *per respondent* from green leaf production, which is well below the USD 1.25 poverty line. It would be much less than 1.25 per day if you calculate the income per day per household member. As green leaf producers also produce other crops, their total income per day is higher than 1.09 USD/day per respondent. Please find information on total household income below.

**Figure 8.4** Green leaf profitability per hectare

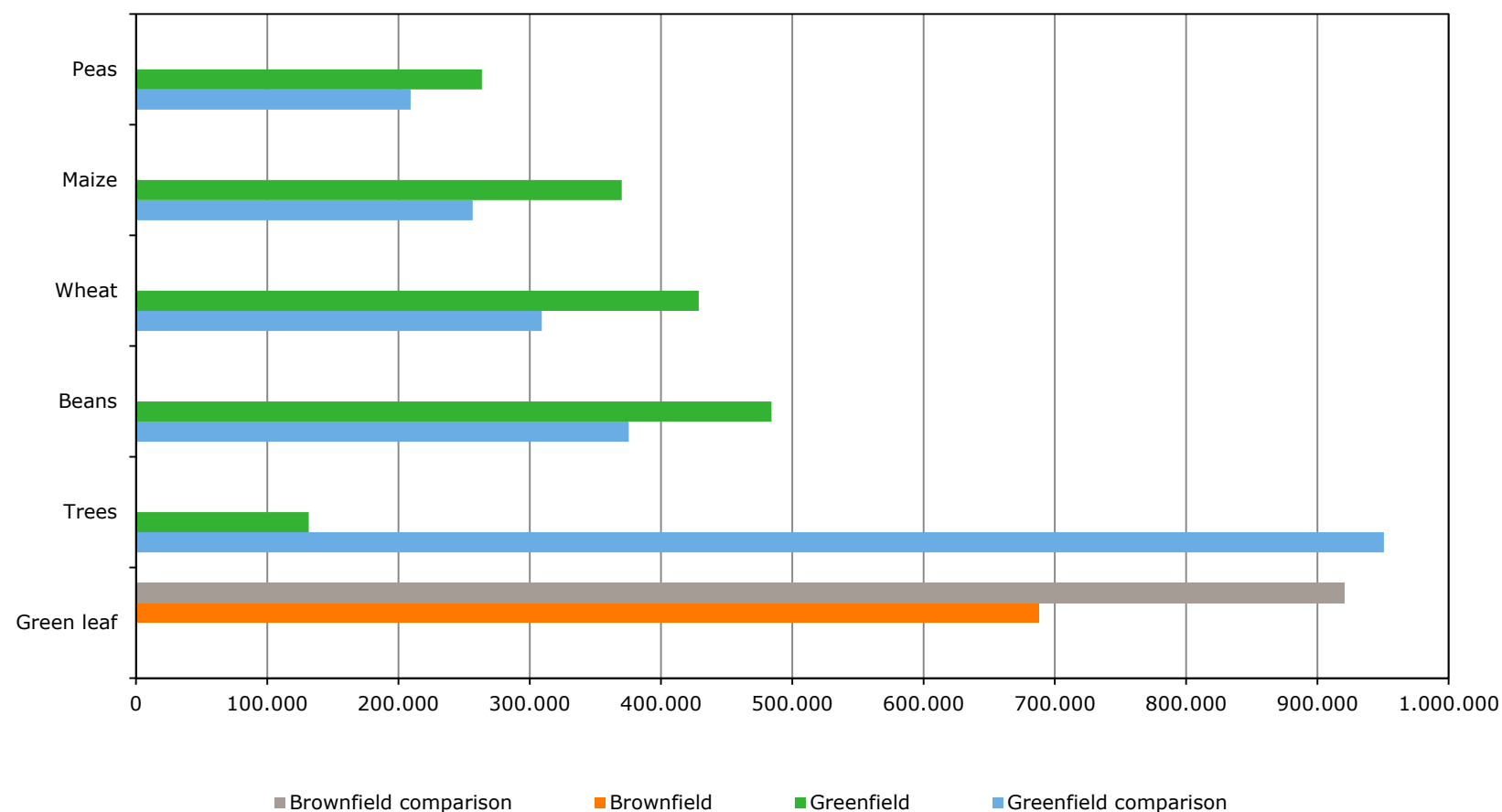


### Profit per hectare of green leaf is on average much higher than that of food crops, apart from possibly Irish potatoes, and trees

The profit per hectare for the main crops produced by the Greenfield and Greenfield comparison group farmers is on average much less than the profit per hectare of green leaf production. Farmers can possibly earn more than with green leaf through producing Irish potatoes or trees. However, for potatoes we have too few observations to draw solid conclusions on, and with regard to profit from trees, some farmers have earned a huge profit in 2014, even

though we have divided their profits by 8, because it takes on average 8 years before trees are harvested. In the profit calculations, we have not taken into account the costs for hired labour. That is why the profit for crops and green leaf can be compared. Importantly, there is a very high variability of profits per hectare for all crops including green leaf. Usually some farmers make a loss, but there are also farmers who have very high profits per hectare. For more information see Appendix 2.

**Figure 8.5** Profitability per hectare for food crops, trees and green leaf



**Net income from crop production is TZS 677,000 or USD 1.09/day for Greenfield farmers, but about TZS 3,380,742 or USD 5.45/day for Greenfield comparison group farmers**

Greenfield farmers earn a net income of TZS 776,000, and Greenfield comparison group farmers earn about TZS3,380,742 in total from all their crop production activities. There is a wide range of income levels; 6% makes a loss

overall, while some farmers earn large amounts; nine farmers earn more than TZS10,000,000, 1 of which is from the Greenfield group and 8 are from the comparison group. These eight comparison group farmers earning very high incomes have influenced the average net incomes positively. Income from trees is mainly responsible for these high average incomes.

The net incomes earned from green leaf or crops appear the same, amounting to USD 1.09 per day. In reality, income from crop production is lower, as we assumed all crops to be sold to the market in our income calculations. As not all crops are sold to the market, but all green leaf is, Brownfield farmers earn a higher cash income than greenfield farmers.

### Other studies also find that Irish potato production can be competitive compared to green leaf production in profits per hectare

Based on our research, but also on information received from the Uyole Agricultural Research Institute in the Mbeya region, it appears that farmers can have a broad range of yields and profits per hectare. It appears that the average yields in this study for Irish potatoes, beans and maize are much lower than the yields they collected or calculated. We do not know why this is the case. But as the variability of the production and profit figures of the farmers in our sample is high it may be that such variability is a usual characteristic of smallholder food production in Tanzania.

These external studies indicate that these three crops can be competitive compared to green leaf production. In our study we find that only possibly Irish potatoes and trees can be competitive crops.

**Table 8.1** Yield and profitability per hectare for Irish potatoes, Beans and Maize

<b>Irish potatoes</b>			
	Yield/ha	Profit/ha	Number of observations
Greenfield (2014)	2,459	2,120,682	10
Greenfield comparison (2014)	2,145	2,131,595	4
Study 1a (improved practices) (2015)	3,035	1,110,000	-
Study 1b ('normal') (2015)	3,035	1,674,000	-
<b>Beans</b>			
	Yield/ha	Profit/ha	Number of observations
Greenfield (2014)	682	484,127	96
Greenfield comparison (2014)	504	375,432	81
Study 2 (2015)	1,500	860,000	-
<b>Maize</b>			
	Yield/ha	Profit/ha	Number of observations
Greenfield (2014)	1,494	370,066	115
Greenfield comparison (2014)	1,292	256,535	110
Study 3a (local practice) (2013)	3,102	-32,032	-
Study 3b (partial adoption) (2013)	4,482	328,786	-
Study 3c (full adoption) (2013)	8,000	1,238,000	-

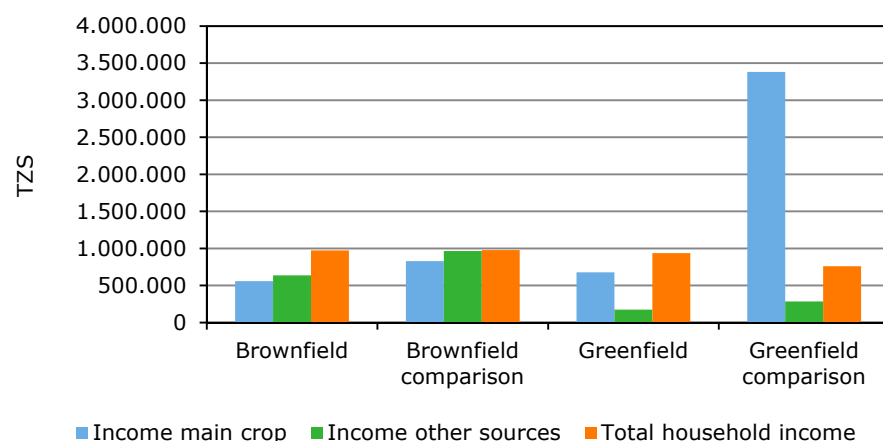
Source: Our research, and research by the Uyole Agricultural Research Institute (Study 1a, 1b, 2, 3a, 3b and 3c).



## Total household income was about USD 528 or USD 1.45 per day in 2014

Farmers earn between USD 102 and USD 484 per year from other sources of income than their main crop. We found one difference in income levels between the groups: Greenfield comparison farmers have a significantly higher total household income in 2014 than Greenfield farmers. The reason for this is because they earned a lot by felling and selling their trees. The total household income consists of income earned with food crops, as well as income earned from other sources than food crops. The net incomes from green leaf production, the main food crop, or from other sources do not differ between the project groups and their comparison group.

**Figure 8.6** Total income from the main crop, other sources of income and total household income



## Share of income from green leaf production in total household income is 52% for Brownfield farmers and 60% for Brownfield comparison group farmers

Farmers themselves perceive the share of income from green leaf production to be lower than the share we calculated; 21% estimate the tea share less than 25% and on average farmers indicate that they depend for 25-50% of their total income from tea. We found that income from green leaf production contributes with 52% to total household income. A reason for this could be that farmers do not keep records and feel that the cost of inputs is high while the price received for green leaf is not high enough.

Greenfield farmers indicate that they depend for 25-50% of their total income on the main crops they produce. Interestingly, we calculated the share to be 89% for the Greenfield farmers and 82% for the Greenfield comparison group farmers. A reason for this difference could be that the Greenfield farmers calculated their share on the basis of money received and thus did not take into account foods eaten instead of sold, while we calculated the net income based on the assumption that farmers actually sold all of their produce.





9

Livelihood and  
food and nutrition  
security



# Livelihood and food and nutrition security

## Farmers are relatively poor

The Progress out of Poverty scorecard is based on assets, literacy and schooling.<sup>4</sup> Scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). The higher the score, the less likely the respondents are poor. The average score among the farmers is 38, meaning that the farmers are relatively poor. Their poverty likelihood is:

- 29.0% with regard to national poverty line
- 77.7% with regard to USD 1.25 a day poverty line
- 98.9% with regard to USD 2.50 a day poverty line

Thus, most of the respondents are likely to fall under the USD 2.50 poverty line, which confirms our findings of net incomes in the previous chapter. We do find differences between the groups: the Brownfield comparison group has a bigger likelihood to fall under the poverty line than Brownfield group, and the Greenfield group has a bigger likelihood to fall under poverty line than the Greenfield comparison group.

## Brownfield farmers more often took a loan in 2014

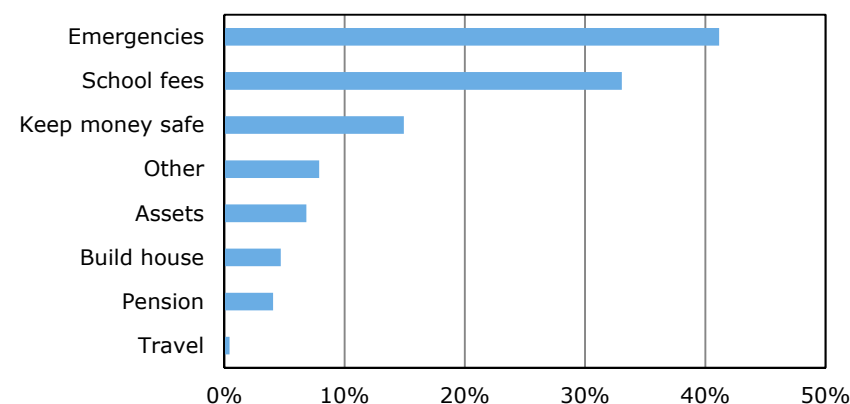
Nineteen percent of all farmers took a loan in 2014. Brownfield farmers more often took a loan than the other groups: 42% of them took a loan. The greenfield comparison group has least often taken a loan (7%). The majority took a loan to cover school fees, to be able to purchase inputs and equipment for crop production (including tea). We do not know where they are taking loans from, and at what interest rate(s).

## Sixty-two percent of the farmers save money, mostly for emergencies and school fees

Sixty-two percent of the farmers saved money in 2014. Seventy-two percent of the Brownfield comparison group farmers save money compared to 41% of the Greenfield comparison farmers. Farmers who do save money, do so through Savings And Credit Co-operatives (SACCOs, 30%), privately at home

(28%), through a village community bank (VIKOBAs, 23%) or a savings account (18%). The majority of the farmers save money saved for school fees, emergencies and to keep money safe.

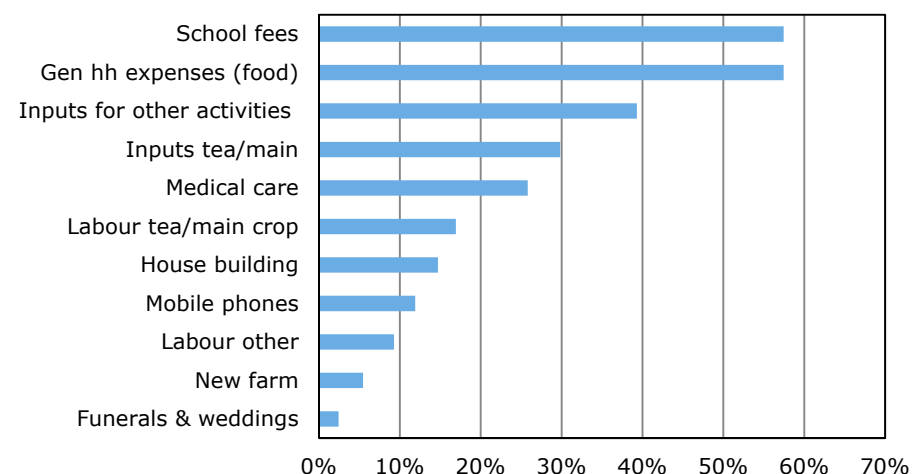
Figure 9.1 For which purpose farmers save money



<sup>4</sup> Please find more information on the PPI, and its application in Tanzania: <http://www.progressoutofpoverty.org/country/tanzania>



**Figure 9.2** How farmers spend their money



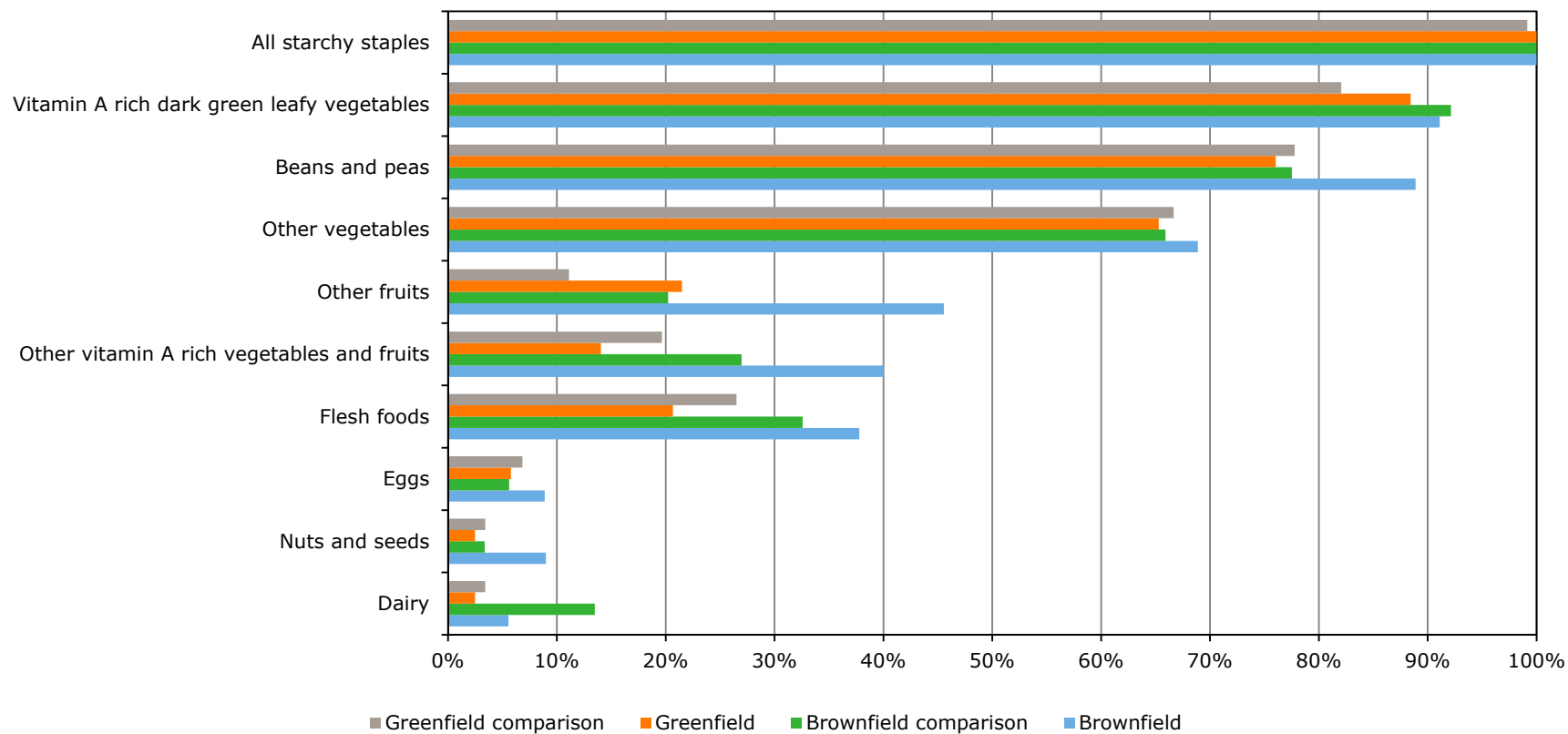
### **Farmers usually spend their income on general household items including food, school fees, inputs and equipment**

We find some differences between the groups: brownfield farmers spend more often money on school fees, hiring labour and medical care than the other groups, and greenfield farmers more often spend money on building/construction than greenfield comparison group farmers.

### **Diet is the main issue in food security**

On average, farmers had half a month in 2014 in which they did not have enough food to meet their family's needs. About 5% of the farmers did not have enough food in at least one month in 2014. Both comparison groups less often have insufficient food than the Greenfield and Brownfield farmers. Looking at nutrition, we find that farmers do not have a diverse diet, they mainly consume staples, beans & peas, vegetables, flesh food and vitamin A rich food. But they hardly eat any nuts & seeds, dairy products or eggs. The dietary diversity score is therefore 3-5 out of 10 (a mean of 3-4, a median of 4-5) meaning that the main issue regarding food security is not the availability or access to food, but nutrition.

**Figure 9.3** What types of food farmers eat in a day.





# Challenges and future perspectives

# 10



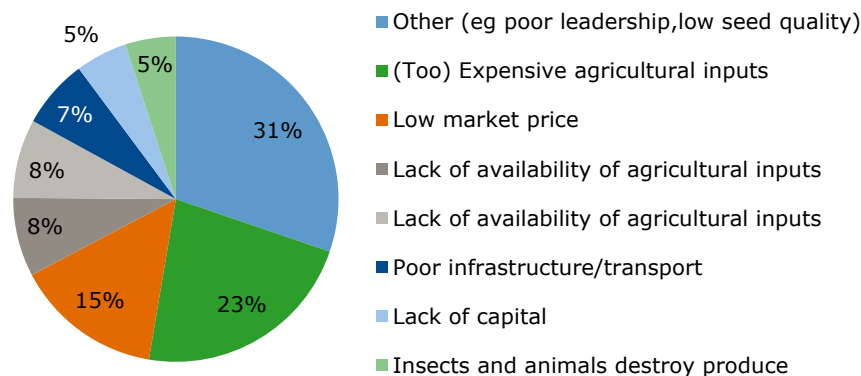


# Challenges and future perspectives

## Inputs and price levels are main challenges for farmers

The main challenges tea farmers face are related to agricultural inputs such as fertiliser and herbicides: they are (too) expensive, not available or not supplied in time. Other challenges are is the low market price for tea and poor infrastructure or high transportation costs. Many farmers mentioned that insects and wild animals destroyed their produce. We assume this challenge relates to other crops than tea produced.

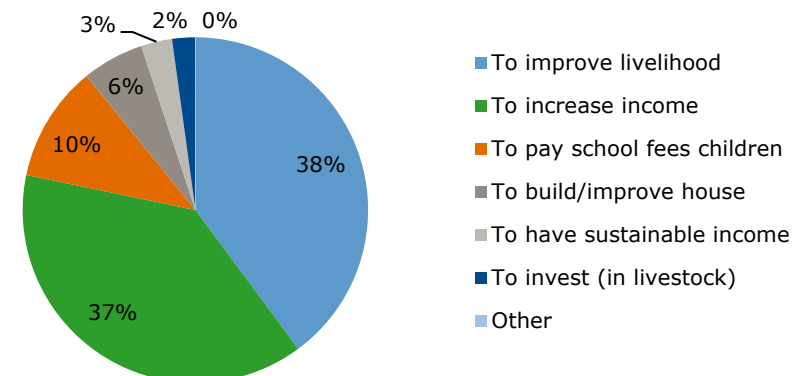
**Figure 10.1** Challenges mentioned by farmers



## Greenfield farmers convert to tea to improve their livelihood

The main reasons for greenfield farmers to convert to tea is the expectation of an increase in income (40%) and because tea is a permanent cash crop (33%). It is therefore no big surprise that farmers expect improved livelihoods (38%) because of conversion, as well as an increase in incomes (37%).

**Figure 10.2** Expected change because of conversion to green leaf production



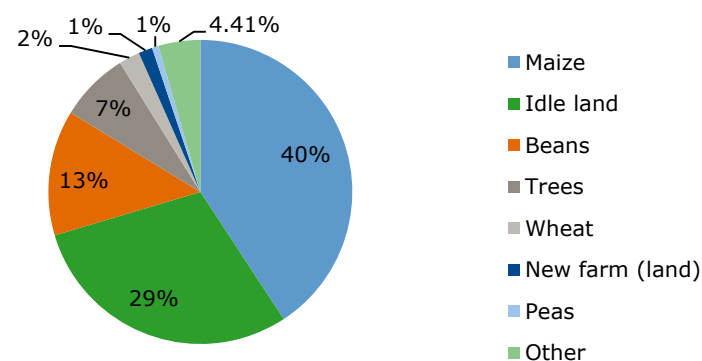
### Farmers choose to plant one hectare with tea, on land previously used for maize, beans or on land that was idle

Greenfield farmers intend to plant approximately 4,000 tea bushes on 1 hectare of land. This is a low number; Unilever would expect between 12,000 and 14,000 bushes to be planted per hectare. Forty percent of the farmers plants tea on land previously used for maize production, 29% on idle land, and 13% on land used for beans. Nineteen percent of the farmers expects to incur losses in the period between planting tea bushes and harvesting green leaf, as it takes some years before they earn an income from green leaf. They intend to make up for such losses via intercropping or through leasing or buying extra plots.

### Positive outlook on tea farming

The majority of brownfield farmers (84%) expects to invest more in tea farming in the next 5 years than they did last year. The groups do not differ in these expectations. Eighty-two percent of farmers who will convert land to tea would like their children to become tea producers. Interestingly, 91% of greenfield producers has expressed this wish, compared to 71% and 81% of brownfield and brownfield comparison farmers. Apparently greenfield farmers are more positive towards the future of tea farming for their children than brownfield farmers.

**Figure 10.3** Use of land before converting to tea





# Gender

# 11





# Gender

## More respondents are male, but this is representative for the sector

Sixty-five percent of the farmers interviewed is male and 35% are female. This is representative for the tea and crop production sector in Tanzania. The project groups do not differ from the comparison groups with regard to the proportion of males and females.

## Male farmers own more land in general and land with tea

Males farm and own significant larger pieces of land, in general, but also land planted with tea bushes.

**Figure 11.1** Farmed and owned land (hectare), males versus females



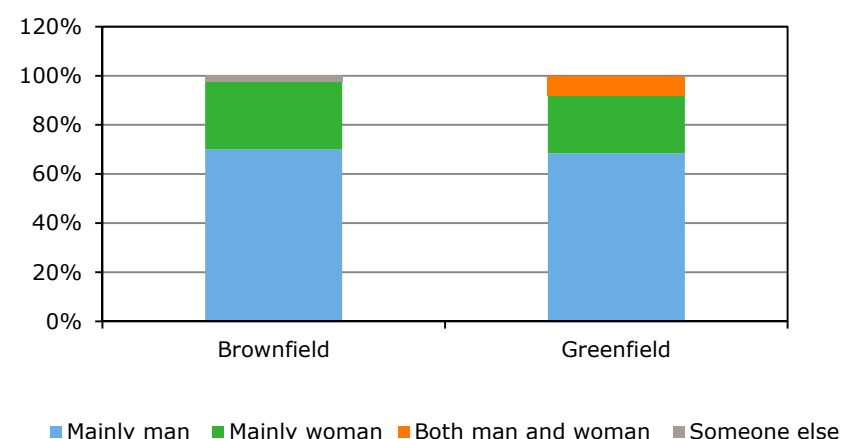
## Males and females do not differ in tea production aspects

Males and female farmers do not differ with regard to the number of bushes per hectare, the age of the bushes and productivity per hectare.

## The respondents usually participate in the UTT trainings, whether the respondent is male or female

Slightly more males participate in trainings than what would be expected based on the respondents sex (70% compared to 65%). Most of the respondents appear to participate in the UTT trainings themselves.

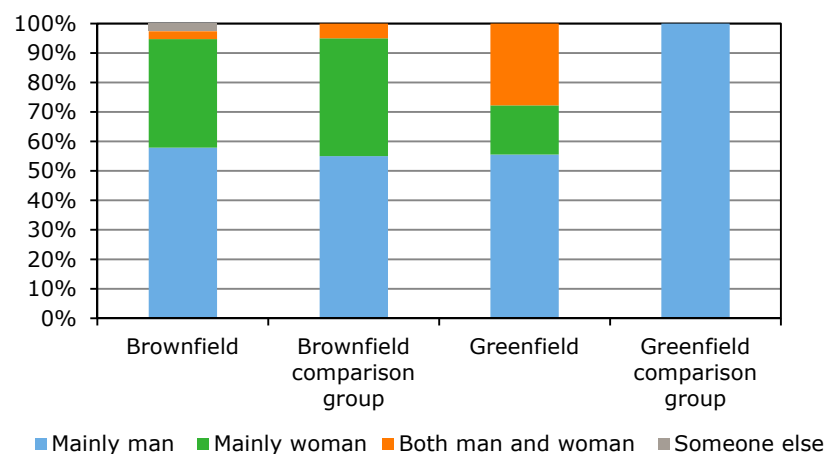
**Figure 11.2** Who participates in UTT trainings



### Relatively more females participate in trainings by others than UTT

Less than 60% of the men participate in agronomy trainings given by others than UTT, apart for the greenfield comparison group in which 100% of the training participants are men. Interestingly, in the greenfield group, in about 30% of the cases both males and females participate in such trainings, while in other groups usually either the males or females participate. Thus, relatively more females participate in agronomy trainings by others than by UTT. A reason for this could be that the focus of such trainings is about crops which are more often managed by women.

**Figure 11.3** Male and female participation of trainings by others than UTT



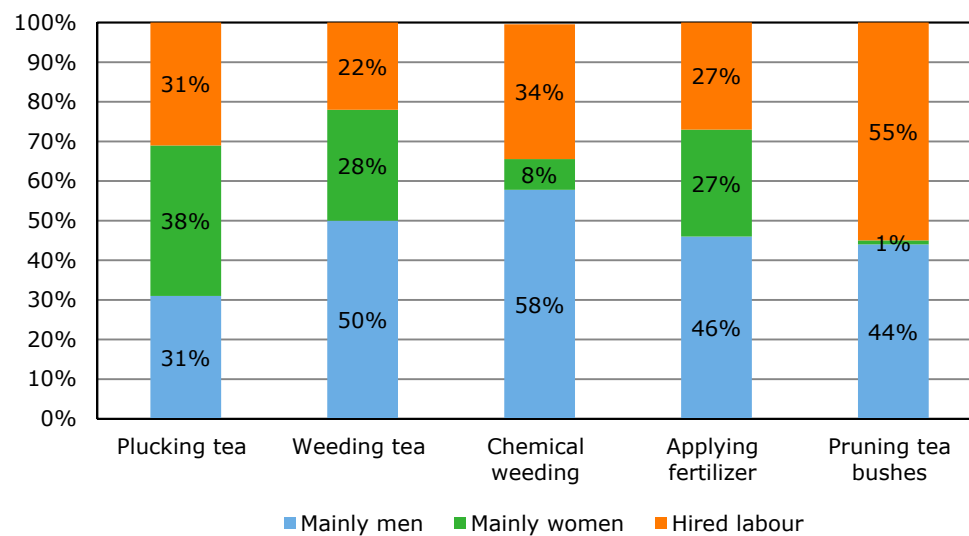
### Males and females are similarly satisfied with services, prices received and profits from tea or other crops

Most farmers are neutral or unsatisfied with services (inputs, information and technical assistance) and they are dissatisfied with prices and profits. Males and females do not differ in this respect.

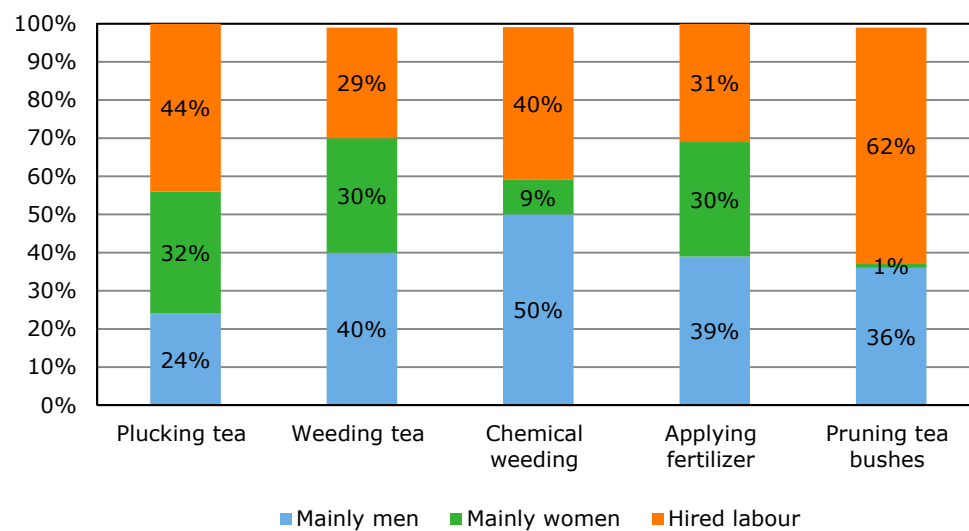
### Men have the strongest role in tea farm activities, apart from plucking and pruning

Males are responsible for 24-58% of tea production activities such as plucking, weeding, spraying chemicals, applying fertiliser and pruning tea bushes. Plucking is mainly done by women or hired labour, and hired labourers usually prune tea bushes. No girls and very few boys under 18 have main roles at tea farms. We see the same labour division trends between brownfield and brownfield comparison group farmers, apart from plucking tea, for which hired labour more often plucks tea at the brownfield comparison group compared to the brownfield group. We did not record whether there were incidences of child labour.

**Figure 11.4** Labour division in tea production activities: Brownfield farmers

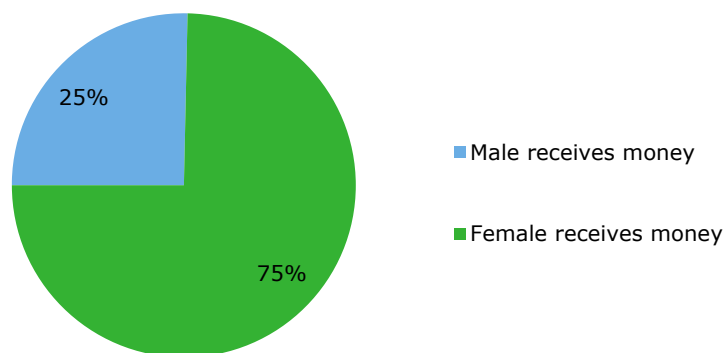


**Figure 11.5** Labour division in tea production activities: Brownfield comparison group farmers





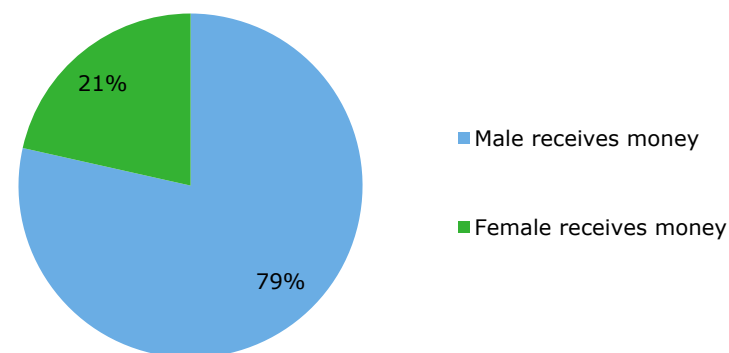
**Figure 11.6** Which gender receives most of the money with female respondents



**The respondent's gender is usually the same as the gender of the person receiving the money**

Males significantly more often (60%) receive the money from green leaf or crop sales, with no differences found between the groups. But this is related to the fact that we have more males than female respondents. In between 75 and 79% of the cases, the respondent's gender is the same as the gender of the person receiving the money, which is probably the respondent, although slightly less females receive the money compared to males (21 versus 25%).

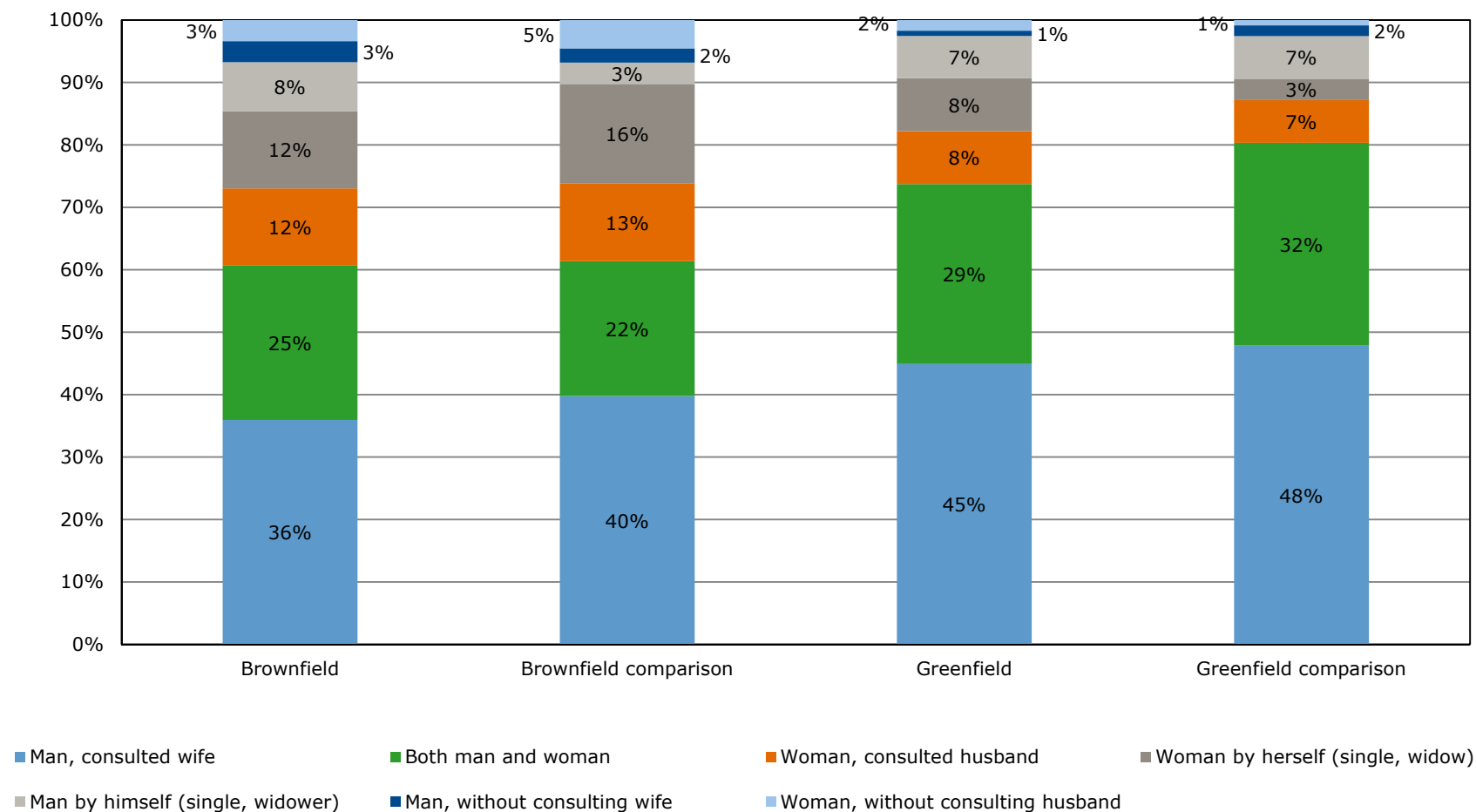
**Figure 11.7** Which gender receives most of the money with male respondents



## Usually decisions to invest in tea or crop production are made by men and women together

More than 60% of the respondents indicates that decisions on green leaf or crop production are made by males and females together. Maximum 6% of the respondents indicate that decisions are made without consulting their partner.

**Figure 11.8** Who makes decisions on green leaf or crop production?







12

Conclusions and  
recommendations



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# Conclusions and recommendations

## **Not much difference between the groups and between males and females which would affect the future impact evaluation**

We did not find many differences in the characteristics or indicators of the farmers in the four groups studied, nor between males and females. This means that the project groups and their comparison groups are quite comparable, and thus that the future evaluation can take place based on the respondents interviewed for the baseline study. We ran various analyses (including Propensity Score Matching) that confirm this. However, the analysis does indicate that about 10% of the Brownfield sample group shows significantly higher production per hectare – a level not matched in the comparison group. This difference did not appear by comparing average productivity between the groups. For future evaluations it should be determined whether the difference is due to the lack of production data which impedes a full comparison, or whether we need to facilitate the inclusion of a more productive group of comparison farmers in our future sample.

## **But too few Brownfield and Brownfield comparison group farmers recall green leaf production figures to evaluate the impact of the project on productivity and profitability**

We found that less than 40% of the brownfield and brownfield comparison group farmers could recall how much green leaf they had produced in 2014. Per group, we have about 35 farmers of whom we have information on productivity and profitability. We foresee that this number of respondents per group is too low; we expected to have at least 70 farmers per group for whom we would have reliable data. This poses a challenge to evaluate the impact of the MOG project on green leaf productivity and profitability. If UTT would use electronic weighing scales which issue receipts after measurement, this would facilitate the farmers to keep records on green leaf production.

## **Additional green leaf productivity analyses based on information of UTT on all farmers supplying UTT increases robustness in evaluating the impact on productivity.**

We have conducted additional analyses of green leaf productivity based on information from UTT on all 50 farmers supplying them in 2014. We propose that such data will maintain to be collected in the upcoming years, and that it will be used for the final impact evaluation study to increase robustness of conclusions on productivity change.

## **It would be helpful if UTT would gather information from new green leaf suppliers on their production and farm size of the year before they supply UTT**

Next to analysing the productivity of UTT suppliers, it would be helpful that, when new farmers start supplying UTT, information on their green leaf production and farm size for the previous year is collected and recorded by UTT. Such data would also best include the gender of the farmer and the village he or she comes from. In such a way, an additional Brownfield comparison group is created, and the robustness of the analyses of the brownfield comparison group is enhanced. Most probably, many of these farmers will also have difficulties to recall information on green leaf produced. But even if we obtain information on minimally 10 farmers, this would already be very helpful.

## **Indicators proposed to be monitored at farm level**

It would be useful if the following characteristics and indicators would be collected for monitoring and evaluation purposes. This information could be recorded by farmers themselves and then entered in a dataset, or it could be directly collected by UTT:

- Farmer characteristics: ID, name, address, phone number, gender, age, education level
- Farm: farm size, green leaf production, price, days spent on the tea farm, costs: hired labour, fertilizer, herbicides.

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### **The majority has a positive outlook on tea farming, but greenfield farmers are more positive than brownfield farmers**

More than 70% of farmers would like their children to become tea producers, and 84% of the brownfield farmers expects to invest more in tea farming in the next years than they did in 2014. Interestingly, 90% of the greenfield farmers would like their children to become tea farmers, which is a higher percentage than brownfield farmers expressing that wish.

### **This positive outlook is confirmed as profit per hectare of green leaf is much higher than the amount for other crops.**

The only crop that could come close in profitability is Irish potatoes and also the production of trees may be highly profitable. All the other crops studied have a much lower profit per hectare. The positive outlook towards tea farming from the greenfield farmer perspective is thus confirmed.

### **But professionalisation matters: there is a huge variability in productivity and profitability of green leaf but also other crops.**

The positive outlook on green leaf production can be fulfilled, but we see a huge variability in green leaf production figures, but especially in profitability. Farmers can make a loss in producing green leaf and other crops, but can also earn much. How farmers manage their land and their crops is thus a key element in the earning potential of various crops.

### **The MOG project takes up the challenge to enhance the professionalisation of the farmers they work with**

Farmer professionalisation is one of the key aspects of the MOG project. One of the activities in the project is to provide farmers with a booklet for record

keeping and to train them on the importance of record keeping. The contents of the farmers recording book include among others: farm information, records of new tea planted and infilling, records of tree planting, production and sale, agrochemical use, other activities conducted on the farm, other crops, animals kept. The data from this baseline study can also be used for the trainings and other services by UTT to their suppliers. For instance, farmers intend to plant much fewer tea seedlings per hectare than UTT has in mind; UTT could work with the farmers to ensure a good planting density in new plantations to optimise productivity. We expect that, when the future impact evaluation study will be performed, more Brownfield farmers will be able to recall production and cost information because of the MOG project, or show such information in their records.

### **UTT to continue building relationships with green leaf suppliers**

Sixty-five percent of the brownfield farmers does not expect that their relationship with their primary tea buyer will continue in the future. And 81% of them do not know whether they would like to strengthen their relationship with their main buyer. This results from the fact that farmers can decide every year which factory to supply. As we assume that the main buyer from the Brownfield farmers is UTT, such doubts about future relationships are important for UTT to take into consideration because if not, farmers could decide to supply another factory. By doing so, they would maintain and improve their relationships with their suppliers and by doing so secure the supply of green leaf.

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# Appendices

The Appendices to this report can be accessed by following this link:

<http://dx.doi.org/10.18174/378707>



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### Authors

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### Layout

MediaCenter Rotterdam

### Photos

Yuca Waarts, LEI Wageningen UR

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LEI Wageningen UR  
P.O. Box 88  
6700 AB Wageningen

T +31 (0)317 481 875

E [yuca.waarts@wur.nl](mailto:yuca.waarts@wur.nl)

[www.wageningenUR.nl/lei](http://www.wageningenUR.nl/lei)

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