9-2021

Participatory Community Wealth Ranking in Banana-Producing Regions of Uganda and Tanzania

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September 2021

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Photo: CGIAR Research Program on Roots, Tubers and Bananas (RTB)

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Acronyms

CWR   Community Wealth Ranking
IITA   International Institute of Tropical Agriculture
PRA   Participatory Rural Appraisal
SACCOs   Savings and Credit Cooperative Societies
UBOS   Uganda Bureau of Statistics

Executive summary

The report describes the approach and results of community wealth ranking (CWR) exercises conducted in 2015-2016 to ascertain the wealth groups and their characteristics of selected banana-producing communities in two regions of Uganda and four of Tanzania. This research was conducted as part of a Bill and Melinda Gates Foundation-funded project titled 'Improvement of banana for smallholder farmers in the Great Lakes region of Africa' ('Breeding Better Bananas' for short: http://breedingbetterbananas.org), led by the International Institute of Tropical Agriculture (IITA). The CWR information gathered was aimed at informing current and future banana breeding initiatives in and beyond the study areas.

Participatory community wealth ranking exercises were conducted through focus group discussions (FGDs) within six selected districts. Based on their perception of others in their community, the farmers were asked to characterize their community's wealth groups by assets, household and socio-economic characteristics, demographic characteristics, agricultural production practices, access to markets and access to agricultural extension services. They described each group according to similarities in characteristics and their proximity to the community's perceived poverty line.

Qualitative data was collected during 28 sex-disaggregated FGDs conducted with a total of 248 participants. Thirteen FGDs consisted of men only, 13 women only and 2 groups contained both men and women. The research was conducted in two districts in Uganda (Luweero in Central Region and Mbarara in Western Region) and four districts in Tanzania - Meru in the Arusha Region, Moshi in Kilimanjaro (North eastern zone), Rungwe in Mbeya region (Southern Highlands zone) and Bukoba in Kagera region (North western zone).

Participants in the CWR exercises identified between two and five different categories of households, ranked/grouped into what they termed as either the 'Best-off' (including the 'Very rich' and 'Rich' categories), 'Middle' or 'Worst-off' (including the 'Poor' and 'Very poor'), placed either above or below an agreed community poverty line. Overall, most households were perceived as being in the 'Middle' (48%) or 'Worst-off' (35%) groups. Results indicate some differences in reported proportions of the wealth groups by district, country and sex of participants. The 'Worst-off' group was reported to be the largest in both Ugandan districts Luweero (39%) and Mbarara (43%), as well as the Tanzanian site of Bukoba (Kagera region) (53%). In the other Tanzania districts, farmers perceived that most households were in the 'Middle' group—Meru (85%), Moshi (66%) and Rungwe (61%).

The 'Best-off' group was reported to have the highest number of assets such as vehicles, higher-quality housing, diverse sources of income and a diverse diet. This group has access to private healthcare and education, good access to markets, including distant ones and better social connections. Households in the 'Best-off' group have better access to agricultural extension services and knowledge and the opportunity to try new products.

The 'Middle' group was reported to have varying amounts of assets, schooling and healthcare opportunities, including ownership of motorcycles or bicycles, although they mainly use bicycles as their means of transportation; sufficient food, but not consistently and never a surplus; access to both private and government healthcare, primarily relying on government health centres; they send their children to government schools. 'Middle' group access to markets was reported as being more limited geographically and often traders come to their homes instead of them going to the market. This group is reported to engage with agricultural extension services and has the highest motivation amongst all groups to implement new ideas and agricultural practices as they cultivate their own farms and therefore have the time and motivation to experiment.

The 'Worst-off' group was reported as having the least amount of assets, lower-quality housing, limited access to vehicles (primarily travelling on foot) and limited access to adequate food and nutrition. Their children attend government schools, but frequently drop out to work, in order to supplement household income. Healthcare for this group is either through government health centres or traditional medicine. Members of this group rarely have a production surplus to sell. Those few who sell their produce were reported to sell to nearby local markets exclusively to generate an immediate source of cash. This group had the least access to agricultural extension services.

These CWR exercises provide community-/village-specific information that can be used for the dissemination of new banana cultivars and other research or development initiatives that target the poorest, marginalized and vulnerable members of banana-growing communities in sub-Saharan Africa. Importantly, our findings highlight the persistent intergenerational cycle of poverty, indicating the need to re-evaluate social protection schemes, poverty reduction initiatives and community development programmes that have been and continue to be implemented in these communities for decades.

Photo: Bioversity International/A. Vezina

Introduction

Bananas (*Musa* spp.) are an essential source of food, nutrition and income to many smallholder farmers and the general population in the Great Lakes region of East Africa (Nyombi, 2013). They are a source of essential nutrients such as carbohydrates, phosphorus, potassium, calcium and vitamins. Cultivated in a wide range of ecological zones in the region, bananas are mostly grown for household consumption and contribute the largest percentage of the food consumed at the subsistence level. Surplus is usually sold in the local (village) markets (Akankwasa et al., 2013). The most widely grown banana types in the region are the East African Highland cooking bananas. Other banana types include plantain (roasting type), dessert types (e.g. Sukali Ndizi) and beer/brewing types (e.g. Kisubi) (Bagamba et al., 2010; Akankwasa et al., 2013). Farmers grow different banana cultivars for their various consumption and production characteristics and uses (Edmeades et al., 2008). Banana plant parts are also used in medicinal preparations, cultural practices, as animal feed, organic manure, food preparation and for creating shelter (Marimo et al., 2019).

In Uganda, bananas are the most common food crop, grown by more than 70% of the farming population (Nasirumbi et al., 2017). In 2018, Uganda ranked 10th worldwide in banana production with 4.3m tonnes harvested over an area of 130,224 ha (FAOSTAT, 2021). The Uganda Bureau of Statistics (UBOS) reported a 28% increase in banana production from 6.5m tonnes in 2018 to 8.3m tonnes in 2019 (UBOS, 2020). In 2003, Uganda ranked highest worldwide in banana consumption with annual per capita consumption of approximately 1.5 kg per day (Kalyebara et al., 2003). In banana-growing regions of Tanzania, such as the Kagera region, banana is a staple food crop grown by more than 70% of farmers (Kalyebara et al., 2003).

In 2018, Tanzania ranked 13th for banana growing worldwide with a production of 4.0m tonnes harvested over 302,758 ha (FAOSTAT, 2021). Produced mainly by smallholder farmers, banana sales contribute approximately 70% to the household income while the rest is consumed as food (Meya et al., 2020; Mgonja et al., 2020).

This report presents the results of community wealth ranking (CWR) exercises conducted in 2015-2016 through 28 sex-disaggregated focus group discussions (FGDs) in Tanzania and Uganda, as part of the 'Breeding Better Bananas'[1] project led by the International Institute of Tropical Agriculture (IITA) funded by the Bill and Melinda Gates Foundation. The CWR information gathered was aimed at informing current and future banana breeding initiatives in and beyond the study areas. We used a CWR tool[2] to investigate perceptions of wealth differences in the target communities and to identify and understand the indicators of wealth, thus providing community-/village-specific information that can be used to target households and communities for the dissemination of new banana cultivars and other initiatives such as those targeting the poor, marginalized and vulnerable who are in greatest need of support. The findings presented in this report also complement other quantitative and qualitative methods used in the baseline research for the 'Breeding Better Bananas' project, which include a household-level questionnaire conducted with 1319 participants and other participatory rural appraisal tools that focused on seasonal, weekly and daily calendar exercises (Crichton et al., 2017, 2018a, 2018b, Marimo et al., 2021) and FGDs on banana trait preferences (Marimo et al., 2019). The overall aim of the baseline study was to provide an understanding of the agricultural production systems and the socioeconomic context of these systems in the target sites.

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1   http://breedingbetterbananas.org/

2   See protocol used in this study at: https://hdl.handle.net/10568/91043

Community wealth ranking approach

Participatory community wealth ranking (CWR) is a participatory rural appraisal method often used to complement quantitative surveys; it helps researchers to "understand a given issue in its broader local context" (Souares et al., 2010:364) as it relies on statements made by participants that shed light on their 'outsider' perspectives on other community members' wealth (Souares et al., 2010). Unlike large N-surveys, CWR can be a cheaper and quicker method for collecting income and wealth data, and may provide analogous, if not better, results (Reddy 1999; Souares et al., 2010). In a healthcare insurance study conducted in Burkina Faso, Souares et al. (2010) found that wealth ranking reduced village-level data collection to a day and was rapid, as the data checking and quality-control measures needed for a survey were removed (2010: 366). However, they also found that wealth ranking did not save time in urban areas and larger villages, as participants did not know each other "well enough to perform the task" and took up to ten hours (2010: 367).

To assess the reliability of the CWR method, Bergeron et al. (1998) conducted a series of ranking exercises in Honduras that asked participants to rank families with respect to 'food security' as a construct rather than an indicator of wealth. They conducted 55 correlation analyses from their sessions and found that 71% of the groups could not agree upon the classification of 'food-security' and that women were 49% more likely to classify a family as 'food insecure' and 24% less likely to classify a family as 'food secure' (2010: 1896-1897). The authors challenge the reliability of the procedure, given the discrepancy in the correlation between men's and women's perceptions.[3]

Nevertheless, the CWR approach continues to be used and refined by scholars and development practitioners. Practitioners argue that CWR information across contexts and regions is subjective and difficult to generalise (Adams et al., 1997; Hargreaves et al., 2007). They used CWR in their analysis and found statistically significant correlations between the ranking of wealth and survey data gathered in the same study (Hargreaves et al. 2007: 226-227). In the same study, similarities between participatory and survey data produce internal consistency led the authors to state that it is "unlikely that participants in general either did not know the wealth of households in their own

village or that small groups of participants were able to bias the exercise of wealth ranking" (2007: 227). For their research in Bangladesh, which used both wealth ranking and a household-level questionnaire, Adams et al. (1997) found that participants were able to "accurately differentiate households according to a set of culturally relevant wealth criteria" (1997: 1170). They argue that wealth ranking, as opposed to a survey, is a quick and valid way to stratify a village by socio-economic status.

The CWR method is not comparable with the sampling techniques used in large randomized surveys. In larger villages, where more than one wealth ranking exercise might be conducted, a researcher will generally pool the results of all village-level discussions to create a single village ranking profile that might create problems with weighting (Adams et al., 1997). Due to the way in which CWR ranking elicits information through dialogue—in the form of general statements such as 'very rich' or 'poor' and statements used for sorting characteristics such as 'eat at least three meals a day' or 'rarely eat meat'—it provides an alternative set of knowledge about wealth and socio-economic differences in local communities that complements the statistical analyses derived from questionnaire data, and might broaden knowledge about income and assets that a questionnaire participant might be reluctant to disclose in a one-on-one exchange with an enumerator. However, the fact that the definition of 'poor' differs across context is one example of the weakness of the method (the generalizability across context).

During CWR, individuals living in the same community engage in group-level dialogue to rank households in their community based on their perceptions of its income, assets and other indicators of wealth, and place them into groups. Specific individuals or families are not named; rather the discussion leads to consensus-based responses that are categorised at the group- (village) level. Given the participatory and subjective nature of the approach, Hargreaves et al. (2007) noted that experienced practitioners should run the exercise. For example, not everyone in the same group will have the same definition of 'very rich' or agree upon what constitutes group characteristics to apply the 'poverty line' to place groups over and under. Experienced facilitators must lead the group to a consensus. If participants do not know the community well (for example, if it covers a large area or the sense of community is weak), then participants might categorize too many or too few households into the wrong groups (e.g. 'very rich' or 'very poor').

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3   The participants' sex was one of the correlation variables used by Bergeron et al. (1998). Other variables include the number of days between the training of participants (when they learned the definitions of the constructs) and the running of the exercise and the categories / constructs being assessed. In our study, we disaggregate group participants by sex and interpret perceptions from a gender perspective.

Methodology

Study area and sampling participants

The study was conducted in Luweero and Mbarara districts in the Central Region and Western Region of Uganda, respectively, and four districts in Tanzania (Meru in the Arusha Region, Moshi in Kilimanjaro, Bukoba in Kagera Region, and Rungwe in Mbeya Region) as part of the Breeding Better Bananas project led by the International Institute of Tropical Agriculture (IITA). The baseline research was conducted between 2015-2016. The project partners purposely selected these banana producing districts for sampling as intended target areas for the introduction of new banana cultivars, given the importance of banana production for food and income[4] in these six areas. In Tanzania, Meru and Moshi districts were sampled as one 'district' as they are related to one on-station trial, but the analysis was carried out separately.

Within each district, a four-stage sampling scheme was used to select the CWR participants:

a. In a first step, for each district, a list of all sub-counties (for Uganda) or divisions (for Tanzania) was compiled; all non-banana-producing sub-counties/divisions were removed from the list; the remaining sub-counties/divisions were numbered, and 1-3 banana-growing sub-counties/divisions were selected using a random number generator;

b. In a second step, for each selected sub-county/division, a list of all parishes (for Uganda) or wards (for Tanzania) was compiled; all non-banana-producing parishes/wards were removed from the list; the remaining parishes/wards were numbered, and 2-5 parishes/wards were selected using a random number generator;

c. In a third step, for each selected parish/ward, a list of all villages was compiled; the villages were numbered, and 1-2 villages were selected within the largest parish/ward and 1-2 villages in the smallest parish/ward using a random number generator.

d. To select participants for the FGDs, for each selected village, a list of banana farmers was compiled by a village chairman, and a random number generator was used to select participating farmers.

Before conducting any research activities, informed consent was sought from all participants in the local language. The local languages of respective localities were used as the medium of communication during the discussions to increase participation and capture detailed information. Notes were handwritten on flip charts and in notebooks. In each community, FGD participants were asked to describe different groups in their village based on wealth. An illustration depicting the community as a ladder with the 'Best-off' households at the top and the 'Worst-off' at the bottom was introduced at the beginning of the FGDs (see Figure 1). Participants were then asked to describe the characteristics of households at the top and then households at the bottom of the community ladder. Participants then identified one or more intermediate rungs on the ladder until all the wealth groups in the community were identified. After describing these groups, FGD participants identified the point between groups in which people were no longer considered poor (the poverty line). Some FGDs only identified the 'Best-off' and 'Worst-off' groups, while others identified up to five wealth groups. FGDs identified up to two groups above the poverty line and one to three groups below it. Participants determined the poverty line[5] based on the relative wealth for each group in their community and determined by household assets and other characteristics. Participants discussed and defined wealth categories either in terms of the 'Best-off' and 'Worst-off' or the 'Very Rich', 'Rich', 'Poor' and 'Very Poor'. Some groups created a 'Middle' wealth group either just above or below the poverty line. Enumerators were trained beforehand on how to conduct the FGDs, including helping participants to build consensus on aspects such as number and proportion of wealth groups, group characteristics and how the poverty line was defined.

Data processing and analysis

After data collection, all the data were translated into English. The translators were native speakers of the local languages of FGD participants, who were familiar with the target areas and ensured that as much detail and nuances were captured. Handwritten notes were transcribed into an electronic format using Microsoft

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4 Kilimo Trust 2012: Banana Value Chain(s) in the EAC: consumption, productivity and challenges. https://docplayer.net/61355939-Banana-value-chain-s-in-east-africa.html

5 It is important to note that the poverty line is subjective and only applies to a particular village, thus there is no consistency between the poverty lines in the study groups. The poverty line was chosen by participants and was specific to each FGD.

(MS) Word. Data cleaning, coding and analysis followed a series of steps. The transcribed data were systematically and thematically coded in NVivo and sorted based on the main topics of the FGD script/guideline, while quantitative data (e.g. FGDs reported proportions of wealth groups) was entered and organised in MS Excel. This was an iterative process that involved coding, recoding and sorting. Once all the data were organized, textual data analyses were conducted in NVivo using content analysis while Excel was used for means, frequencies, percentages and graphs.

Key steps in building ladder of life visual

Share of households on each step

STEP **3**

A Define **top step -best off-** traits

STEP **2**

D Indicate **Community Poverty Line** (non-poor above this step)

C Define **other steps** as needed - and traits for each step

STEP **1**

B Define **bottom steps - worst off Step 1 -** traits

Columns totals
100 households
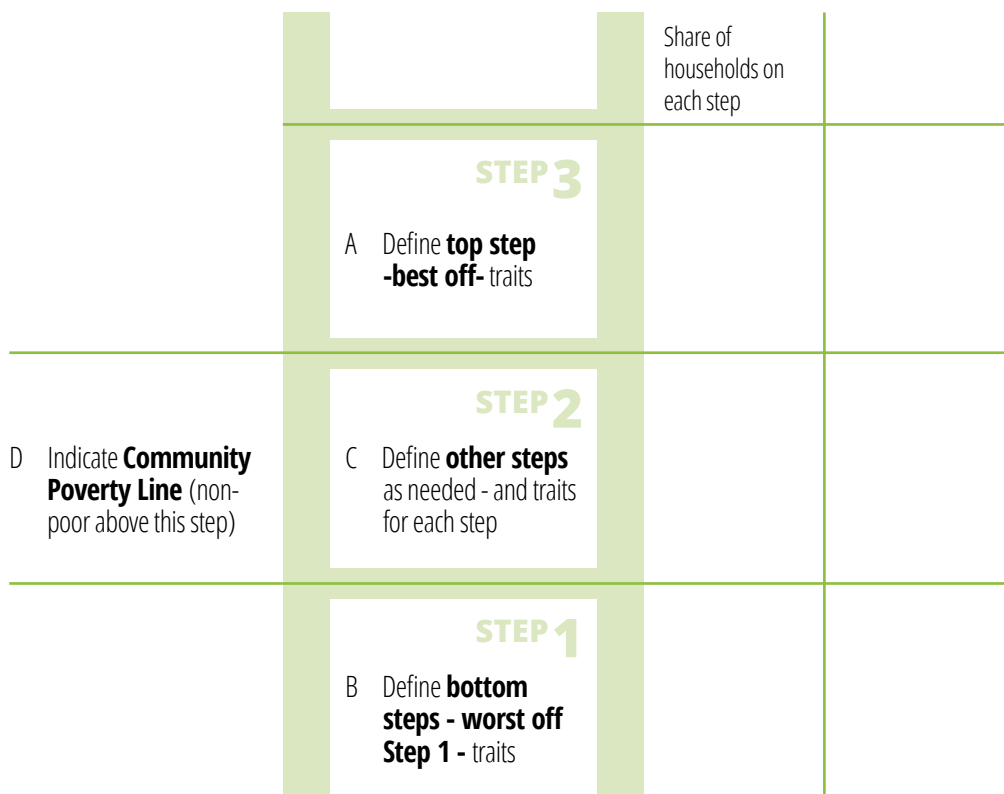
Please remember:
- Step 1 is the bottom step;
- that the FGD decides on number of steps and,
- to indicate the Community Poverty Line

Figure 1.   Illustration depicting the 'Ladder of Life', used as a key element in the CWR focus group discussion exercises to help participants identify and rank the wealth groups and their characteristics on the community 'ladder'.

Photo: CGIAR Research Program on Roots, Tubers and Bananas (RTB)

Results and discussion

This section of the report presents the results of CWR exercises from 28 sex-disaggregated focus group discussions (FGDs)—13 men-only, 13 women-only and 2 mixed-sex[6]; 18 in Tanzania and 10 in Uganda—conducted with farmers in the six study sites. Each participant took part in only one FGD. The average number of participants per FGD was nine. The main discussion topics included the perception of wealth, indicators and criteria for stratifying wealth groups in each village including the cultivation of banana cultivars, production practices and access to agricultural extension services.

In the following four sections we provide a breakdown of the FGD characteristics and the discussion topics. Section 1 describes the FGD participants' characteristics. Section 2 provides an overview of the reported wealth groups and their characteristics. Section 3 covers differences in agricultural production

focused on bananas for each of the wealth groups. Section 4 is a summary of the findings and their implications for banana production.

Study participants' characteristics

Table 1 summarizes the socio-demographic features of 248 CWR participants. The majority of the participants were over 30 years old (86.3%), and more than half were between 31 and 50 years old (56.0%). Men were slightly older than women in both countries. Most participants were married/cohabiting (84%) and a higher percentage of women were widowed (13% vs 2% of men). Most participants had been educated to primary level (78%), although a slightly higher proportion of participants in Tanzania had received secondary or post-secondary education. Uganda also had a higher proportion of participants with no formal education (21% women and 10% men) compared to Tanzania (3% women and 0% men). Agriculture was the most common occupation for participants in both countries (92%).

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6 In each target village, a men-only and women-only FGD were conducted except the two in Luweero district where the women and men FGDs took place in different villages. The two mixed-sex FGDs in Luweero district took place in the same village.

Table 1. Socio-demographic characteristics of participants (%)

		Tanzania			Uganda			All		Overall
		Women	Men	All	Women	Men	All	Women	Men	
		n=80	n=78	158	n=39[x]	n=51	n=90[x]	n=119[x]	n=129	n = 248[x]
Marital status[x] (%)	Single, never married	7.5	5.1	6.3	3.6	5.9	5.1	6.5	5.4	5.9
	Married/cohabiting	76.3	94.9	85.4	71.4	88.2	82.3	75.0	92.2	84.4
	Divorced, separated	5.0	0.0	2.5	7.1	0.0	2.5	5.6	0.0	2.5
	Widowed	11.3	0.0	5.7	17.9	5.9	10.1	13.0	2.3	7.2
Education (%)	No formal education	2.5	0.0	1.3	20.5	9.8	14.4	8.4	3.9	6.0
	Primary	90.0	74.4	82.3	79.5	66.7	72.2	86.6	71.3	78.2
	Secondary	7.5	19.2	13.3	0.0	17.6	10.0	5.0	18.6	12.1
	Post-secondary	0.0	6.4	3.2	0.0	5.9	3.3	0.0	6.2	3.2
Primary occupation (%)	Agriculture	92.5	85.9	89.2	97.4	98.0	97.8	94.0	90.7	92.3
	Salaried job	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Casual labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other activities	7.5	14.1	10.8	2.6	2.0	2.2	6	9.3	7.7
Age (%)	Youth (<30 yrs.)	11.3	14.1	12.7	15.4	19.6	17.8	12.6	16.3	11.3
	Middle age (31-50 yrs.)	66.3	46.2	56.3	51.3	33.3	41.1	61.3	41.1	66.3
	Older adults (51+ yrs.)	22.5	39.7	31.0	30.8	47.1	40.0	25.2	42.6	22.5
	Average age (yrs.)*	42.31 (11.1)	46.54 (14.6)	44.40 (16.0)	46.05 (15.6)	42.31 (16.4)	47.90 (13.1)	43.52 (12.7)	47.62 (15.3)	43.9 (12.1)

* *Presented as mean, standard deviation in parentheses*

x *Some participants did not report their marital status, these were not included in the analysis for that variable hence there were reduced numbers (UG women = 28; UG all =79; ALL women = 108 and OVERALL =237).*

Wealth group typology

The FGDs identified local characteristics that distinguished the wealth status of households in their communities. All 28 FGDs identified 'Best-off' and 'Worst-off' groups, while 22 of the FGDs also identified a 'Middle' group. Similarities in characteristics and proximity to the poverty line in these groups were used to synthesize the three wealth groups during analyses. Table 2 outlines the main characteristics of the different wealth groups identified in the FGDs in terms of material assets, income, household characteristics, demographic characteristics, social status and those related to agricultural production. The following subsections describe these characteristics in more detail.

Table 2. Wealth group characteristics. *Based on descriptions from 28 FGDs (13 women only, 13 men only and 2 mixed sex; 18 in Tanzania, 10 in Uganda).*

		Best-off	Middle	Worst-off
Assets	Housing	Housing made of bricks/cement with indoor toilets, iron sheeting for roofing and cement floor. Often painted, use solar energy for electricity. Some have properties abroad.	Houses may be made of bricks or wood, but generally have iron sheeting for roofing. Toilets are typically outside (pit latrines) and floors of houses may be mud or cement.	Houses made of mud with thatched roofs, some may have concrete houses with iron sheeting for roofing. Outside toilets, not covered, constructed with bamboo, grasses, banana fronds or banana fibres.
	Transportation	Own at least one car and/or motorcycle, may own multiple motorised vehicles (though rare) that may also include lorries.	May own bicycle and/or motorcycle. Sometimes walk, use of bicycle and motorcycle reported most frequently.	Occasionally has a bicycle, most often walk. Use public transport
	Access to necessities and luxuries	Access to items such as sugar, meat, solar electricity, mobile phones, televisions, furniture (e.g. beds and mattresses with mosquito nets, sofas), cooking gas, bank accounts and (for the very affluent/ wealthy), hired help such as housemaids.	Some access to items like furniture, medium quality clothing, light provided by kerosene lamps and sugar for their tea. Some households have a radio and/or mobile phone, but no television; a few have access to solar electricity.	Limited access to items such as furniture (e.g. beds but no mattresses, maybe some chairs), low-quality furniture, no bedsheets, poor quality or cheap clothing; if available, light provided by kerosene lamps and no bank accounts.
Sources of finance and income	Income	Access financial services e.g. loans, have multiple income sources. Some have formal employment e.g. government. Have a lot of money. Some own a school or a hospital in the community.	Carry out brewing activities (waragi), own petty businesses e.g. shops. Can access microfinance services and/or are members of Savings and Credit Cooperative Societies (SACCOS). Most are/have been employed by the government.	No access to financial services (cannot borrow money). Do not save money, use up all they earn. Keep their money in SACCOS/ self-help groups. Most of their children are employed young (housekeeping jobs or are boda-boda riders) and have teenage pregnancies.
Access to water	Water	Have access to tapped water, have tanks and harvest rainwater.	Fetch water from the river.	Fetch water from the river.
Access to food	Food	Able to eat at least three meals per day and always have enough food. Consume meat more frequently and eat a balanced, varied diet.	At least two meals a day, rarely eat meat and often not enough food. Some FGDs reported that they may or may not have malnutrition problems.	At least one meal a day, but generally not enough food. Rarely eat meat and sometimes rely on wealthier groups in the village to assist with providing food. May eat better on special occasions (e.g. holidays/festivities).
Access to health	Healthcare	Use private medical facilities and hospitals and can afford treatments and/or health insurance.	Often go to government healthcare facilities, although some may be able to go to private facilities. Some may have health insurance.	Use a mix of traditional medicine and government health centres. Poor health linked to the limited availability of food, inability to go to health facilities or not being able to afford treatment.
Health status	Health and diet status	Have good/normal health.	Have good/normal health.	Have bad health and their children may have kwashiorkor (severe malnutrition). Have been affected psychologically. Often depressed, sad or unhappy.
Household demographic characteristics	Family size	2-6 children. In some areas, this group may have multiple wives/ concubines.	1-10 children. In polygamous areas, this group can often only have one wife	7-10 children.
	Education	Children attend private and boarding schools, although some may go to government schools. They may also go to university. Individual members may be better educated.	Children attend government schools.	Children attend government schools; however, attendance may be inconsistent, and they may drop out due to the inability to pay fees, or materials/uniforms. Children mostly attend until primary level, rarely secondary. Sometimes assisted by other community members to educate their children.

(Table 2 continued)

		Best-off	Middle	Worst-off
Agriculture production related	Land[7]	Own land between 2.5 and 50 acres. Land may not always be contiguous, can own different parcels of land in different locations. Have land with title deeds; can rent out their land.	Own plots of land ranging from 0.5 to 10 acres, however, most common farm sizes are 1–2 acres. Do not rent out their farms.	Some have no land. May own between 0.25–2 acres of land, but less than 1 acre most common.
	Livestock	Practice zero grazing. Raise a mix of livestock, including cattle, goats and sheep and were reported as having multiples of each animal depending on the district. • Luweero: improved breeds of cattle, goats and chickens • Mbarara: 1–20 cattle, 3 goats • Moshi: 3–10 cattle, 1–10 goats, 10–50 chickens, 1–10 pigs, 4 rabbits • Meru: >10 cattle, 6–200 chickens, 5–50 pigs • Bukoba: 10–20 cattle, 4–15 goats, 5–30 chickens • Rungwe: 3–20 cattle, 3–6 goats, 10–50 chickens, 2–6 pigs.	Raise a mix of livestock, including cattle, goats, pigs, chickens, and sheep and were reported as having multiples of each animal but fewer than the wealthier groups depending on the district. • Mbarara: 1–3 cattle, 1–2 goats, 3 chickens • Moshi: 1–4 cattle, 1–5 goats, 1–10 chickens, 2–4 pigs, 3 rabbits • Meru: 1–4 cattle, 1–4 goats, 1–50 chickens • Bukoba: 1–3 cattle, 3 goats, 5 chickens • Rungwe: 1–6 cattle, 1–3 goats, 1–20 chickens, 1–5 pigs.	Raises no livestock or livestock limited to one cow or pig, several goats, chickens, or rabbits depending on the district* • Mbarara: 2 chickens, 1 goat, 1 pig • Moshi: 0–5 chickens • Rungwe: 1–4 chickens *Specific numbers were not reported for livestock in some of the districts*
	Agricultural labour & market access	Able to employ casual labourers. Access to local markets and some further afield.	Unable to hire outside help; primarily work on own farm. Access to local (village) markets.	Employed by the 'Best-off' as casual labourers; limited time to work on own farms. Access only to local (village) markets.
	Area under banana cultivation (by group and district)	Anywhere from 0.5 to 25 acres for bananas (depending on the district). • Bukoba: >2–7 acres • Meru: 0.5–4 acres • Moshi: 0.5–3 acres • Rungwe: 1–4 acres • Luweero: 4–15 acres • Mbarara: 1–25 acres	Anywhere from 0.25–10 acres for bananas (depending on the district)*. • Bukoba: 0.5–3 acres • Meru: 0.25–1 acres • Moshi: 0.5–1 acre • Rungwe: 0.5–2 acres • Mbarara: 0.5–10 acres *Luweero district FGDs did not report specific numbers*	Anywhere from 0–5 acres for bananas (depending on the district). • Bukoba: 0–0.5 acres • Meru: very small with 2–3 banana mats • Moshi: 0.25–1 acre • Rungwe: 0.5–1.5 with few mats • Luweero: 0–2 acres • Mbarara: 0–5 acres
	Cropping practices	Use a tractor for farming. Use fertilizer, mulch, contouring for erosion, irrigation (if available), pesticides and tractors (if available). Depending on the district, may intercrop. Have many coffee plants. Plantations were described as 'clean'. Hire laborers to work on the plantation. Have good access to extension services.	Use manure, fertilizer, mulch and irrigation (where available, some differences between districts; see Tables 4 and 5). More frequent intercropping reported. Have coffee plants (>50 plants). Conflicting reports of being 'not clean' and well managed and 'clean'. Access to extension services varied from limited to good depending on the district.	Often work as labourers on plantations belonging to the 'Best-off'. No fertilizer; may use manure or mulch with dried leaves or kitchen refuse. Practice intercropping. Have <10 coffee plants. Farms described as 'not clean' (e.g. many weeds present). Do not have the ability to hire labour. No or limited access to extension services or do not implement things learned.
	Social status	Have many friends, sometimes contend for political positions, assist other community members, contribute to social and community activities e.g. road repairs; highly regarded within society.	Have many friends; mobilize for the well-off during political campaigns; partially or fully contribute to village development projects, highly accepted in the community and can hold political positions.	Their friends are also poor, considered of low importance in the society/ families. Have generational poverty. Some FGDs reported they have good relationships with other community members, whilst others described them using terms such as 'beggars', 'thieves' and 'drunkards'.
Social status				

7 With respect to land, the discussion focuses on the perceived amount of land that a household in each group has access to. The security of that access and any tenure arrangement (such as long- or short-term lease or if the land has been inherited) was documented in only a few instances.

Participants categorised households or persons to each wealth group respective to their village (25 FGDs reported this information). In all FGDs, a higher proportion of households were assigned to the 'Middle' (48%) and 'Worst-off' groups (35%). Women in the Uganda FGDs identified a middle group, while men in the corresponding Ugandan FGDs did not identify a middle group in their village[8] (Figure 2 and Table 3). Generally, women identified a higher proportion of households in the 'Very Poor' category than men, while men identified a higher proportion of households in the 'Poor' category in both Uganda and Tanzania. In Tanzania, Meru district FGDs reported the 'Middle' group as making up 85% of villages, while in Bukoba district the 'Worst-off' was reported as the largest group in the villages (53%). In Uganda, the 'Worst-off' group was reported as the largest in both districts (39% in Luweero and 43% in Mbarara). In Luweero, the 'Middle' group was larger than the 'Best-off', while it was the opposite in Mbarara.

8   These three FGDs each identified four wealth groups: 'Very rich', 'Rich', 'Poor' and 'Very poor' in their communities and their characteristics were similar to those in the 'Best-off' and 'Worst-off' groups identified in other FGDs.
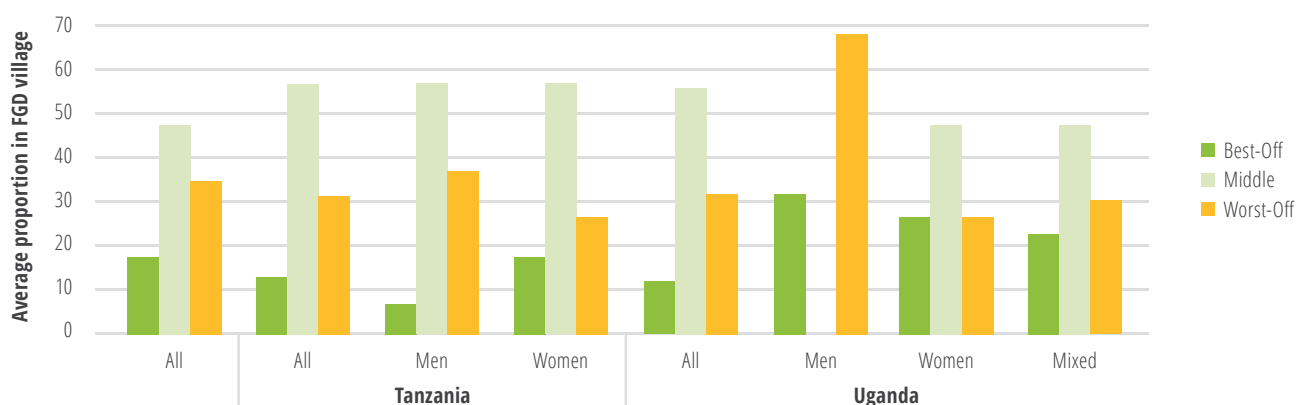
Figure 2.   Reported average proportion of different wealth groups differentiated by sex and country.
FGD n=25 (Tanzania men n=8, Tanzania women n=8, Uganda mixed n=2, Uganda men n=3, Uganda women n=4)

Table 3.   Proportion of wealth groups reported in FGD communities by sex and district.
FGD n=25 (Tanzania FGD=16; men n=8, women n=8, Bukoba=6, Meru=2, Moshi=4, Rungwe=4; Uganda n=9; mixed sex=2, men=3, women n=4, Luweero=4, Mbarara=5)

	FGD	Best-off	Middle	Worst-off
All		17.20	47.60	35.20
Tanzania	All	11.56	56.56	31.88
	Men	6.88	56.25	36.88
	Women	16.25	56.88	26.88
	Bukoba	10.00	37.50	52.50
	Meru	7.50	85.00	7.50
	Moshi	13.75	66.25	20.00
	Rungwe	13.75	61.25	25.00
Uganda	All	27.22	31.67	41.11
	Men	31.67	0.00	68.33
	Women	26.25	47.50	26.25
	Mixed	22.50	47.50	30.00
	Luweero	25.00	36.25	38.75
	Mbarara	29.00	28.00	43.00

Socioeconomic characteristics of the wealth group types

'Best-off'

This group was sometimes sub-divided into two groups, 'Very Rich' and 'Rich', and sometimes described as 'Rich' or 'Best-off'. As there are many overlaps between these categories, reported characteristics of the 'Very Rich' and the 'Rich' are described in this section. Of the 24 FGDs that reported a percentage breakdown of households in each wealth group, 6 FDGs reported the 'Very Rich' group with proportions ranging from 0 to 15 (average 8, mode[9] 10) and 22 FGDs reported the presence of a 'Rich' group with proportions ranging from 5 to 35 (average 16, mode 15).

'Very Rich'

The 'Very Rich' group owned multiple forms of transportation including at least one or more cars, motorcycles and/or other motorised vehicles such as lorries. Members of this group are able to choose what and when to eat and may have surplus crops to sell. Their diet was described as varied and healthy. They are able to access private medical facilities and hospitals and can afford the treatments they need and have health insurance. Their children typically attend private schools and are highly likely to attend university. Individual members of this group are reported to be better educated than those in the 'Middle' and 'Worst-off' groups.

Houses of those categorized as 'Very Rich' are roofed with iron sheets, have brick and/or cement walls, cement floors and indoor toilets. According to Kebede (2009) having a corrugated iron roof increases the probability of being classified into a higher wealth group by 2.5 times compared to being grouped in a lower wealth cluster. This is likely so because an iron roof costs more than other roof types. The houses are often painted and are powered by solar energy. The 'Very Rich' are reported to have access to most necessities and luxury items such as sugar, meat, phones, televisions, furniture (e.g. beds and mattresses, mosquito nets and sofas), cooking gas, bank accounts and hired domestic help such as housemaids.

Participants reported that the 'Very rich' have multiple sources of income and access to loans because they have collateral.

The size of land owned by the 'Very Rich' varied from 1 to over 50 acres. Some of the smaller parcels of land reported for this group are located in villages that on average reported smaller land sizes for all groups, or belong to 'Very Rich' who are more likely to be involved in other off-farm businesses. Overall, land sizes for this group were described as 'big' or 'large' in contrast to the other wealth groups. The 'Very Rich' group also could own different parcels of land in different locations. Land can be partitioned and rented out to the landless or share-cropped—as such, land ownership results in both more food and higher income. They raise a mix of livestock, including cattle, goats and sheep and are reported as having multiple heads of each animal. Ownership of cattle, farm implements and income result in higher farm output, improved availability of and access to food, and improved housing (Groverman, 1990). Livestock is viewed as a store of wealth because the animals can be sold in the event of production, market related and economic shocks. Hence, the greater the household's capacity to insure against consumption and financial shocks, the higher the chance of it being classified as rich.

'Rich'

Those in the 'Rich' group are described as holding similar assets and characteristics to the 'Very Rich' group, especially in terms of transportation, housing, healthcare, schooling and access to necessities and luxury items. Homes are described by participants from several FGDs as 'modern'. Compared to the 'Very rich', this group is reported as not always having surplus crop outputs to sell, as maybe using a bicycle or public transportation in addition to their motorised vehicles and as not hiring domestic help. No information on total family size is reported, however, the number of children per household is provided. FGD participants report 2-6 children in 'Rich' families. Generally, 'Rich' families are reported as being smaller in size than other wealth groups.

Participants reported that the 'Rich' are part of and keep their money in microfinance institutions and SACCOs. They also have bank accounts for themselves and sometimes also for their children.

The 'Rich' are reported as having from 0.5 to 15 acres of land; plot sizes for this group are described as larger compared to other lower-wealth groups. Similar to the 'Very Rich', the FGD participants note that land for the 'Rich' group is not always in contiguous fields and that members of this group could own different parcels of land in different locations. Like the 'Very Rich', land parcels could be distributed in disparate fields. Participants also characterize the 'Rich' group as raising a mix

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9   The mode is the value that appeared most frequently in a set of data values.

of livestock, including cattle goats, pigs, chickens, rabbits, sheep and possessing multiple heads of each animal. They were also reported as having "very good houses" for their animals (Ugandan men FGD[10]).

'Middle'

Twenty-two of the FGDs mention and characterize this group as households or persons 'Just above' or 'Just below' the community poverty line, implying that two clusters constituted the 'Middle' wealth group. Generally, the characteristics of the two groups were similar, with the main distinction being if FGD participants categorised the 'Middle' group either just above or just below their defined poverty line. The distinction of being just above or just below the poverty line is made clear in the sub-sections below. 17 FGDs said this group was just above and five FGDs described it as just below the poverty line. Of the 22 FGDs that reported a percentage breakdown of households in each wealth group, 15 reported a group just above the poverty line with proportions ranging from 10 to 80 (average 48, mode 60) and 11 FGDs reported the presence of a group just below the poverty line (but above the 'Worst-off' group) with proportions ranging from 20 to 75 (average 42, mode 50).

a.   Just above the community poverty line

'Middle' groups ranked as living just above the poverty line were described as using bicycles, motorcycles or walking as a means of transport, although bicycle and motorcycle combined were the most frequently mentioned. This group was reported to eat at least two meals a day, but rarely eats meat. Family sizes are larger than for the 'Best-off' group, with reported family sizes of 2-10 children. Several FGDs reported labour provision as one of the reasons for having more children as they contribute to on-farm labour. This group was reported as using government healthcare facilities, although some may be able to afford private facilities. Some families in this group have public health insurance and generally their health was reported as good. Their children were reported as attending government schools, although some may go to private schools, and they usually attend up to secondary level.

Houses for those living just above the poverty line may be made of bricks or wood, but generally have iron sheeting for roofing and floors may be made of mud or cement. Toilets are typically outside (pit latrines). This group was reported to have some access to basic necessities and luxury items such as furniture, medium-quality clothing, kerosene lamps for lighting and sugar for tea. Some households

were reported as owning a radio, but no television. Some families might have a small home solar system to power a few light bulbs, radio and/or television set.

The group was reported as having anywhere between 0.5 and 6 acres of land (seven of the 15 FGDs reported land size for this group). They were reported to raise livestock, including cattle, goats, pigs, chickens, birds and sheep and a few of each animal but less than the wealthier groups. For example, this group was described as "...*the person who keeps every kind of livestock but in small numbers*..." (Tanzania Men FGD[11]). Two FGDs (one men-only from Tanzania and one women-only from Uganda[12]) indicated that most women-headed households in their communities were in this wealth group.

b.   Just below the community poverty line

Similar to the category above, those living just below the poverty line were described as using bicycles, motorcycles or walking to their destinations, although bicycles were the most frequently mentioned form of transport. They also were reported as having at least two meals a day, but generally insufficient food intake. Family sizes for the category just below the poverty line ranged from 1 to 5 children. Participants in one group in Tanzania reported that households in this group could only afford to support one wife. In contrast to those just above the poverty line, households did not have health insurance and used government medical facilities. Their children attended government schools at least through primary level.

Houses for those living just below the poverty line may be built of bricks or wood, with iron sheet roofs. Toilets were typically outside (pit latrines) and floors made of mud or cement. Households in this group were reported to have limited access to basic necessities and luxury items such as furniture. Members wear medium-quality clothing and use kerosene lamps to light their homes. Some households were reported as having a radio and/or mobile phone.

This group was reported as owning approximately one acre of land. Similar to the group ranked as 'not poor and not rich', living just above the poverty line, those in this group were also reported to raise a diversity of livestock, including cows, goats, pigs, chickens, birds and sheep and were reported as having multiple of each animal but fewer than the wealthier groups. Two FGDs (one women-only and

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10 LUWZIRNAMCWRM001

11 BUKBUGRUBCWRM001

12 BUKRUBKABCWRM003 and LUWZIRNAKCWRF001

one men-only from Tanzania[13]) identified that most woman-headed households in their community were in this wealth group.

'Worst-off'

The 'Worst-off' group is composed of two groups: the 'Poor' and 'Very Poor'. While all 28 FGDs identified a 'Poor' group and/or 'Very Poor' group, 7 FGDs created a 'Very Poor' group, making an extra effort to distinguish between the two least-wealthy groups in their village. Generally, the two groups share similar characteristics, however, the way they are described differs—the distinctions are made clear in the sub-sections below. Of the 25 FGDs that reported a percentage breakdown of households in each of the least wealthy groups, 22 FGDs ranked the 'Poor' between 10 and 85 percent (average 34%, mode 10) and 7 FGDs reported the presence of a 'Very Poor' group with proportions ranging between 5 and 65 percent (average 19%, mode 10).

'Poor'

Families in this group were described as sometimes having access to a bicycle (hiring rather than owning the bicycle), but most in this group often walk as a means of transportation. The 'Poor' are able to have at least one meal a day but was generally reported as not having enough food to eat. Households diets rarely contained meat and sometimes relied on wealthier groups in the village to assist with providing food. This group may eat better on special occasions (e.g. holidays/festivities such as Easter). This group's family size was reported as larger than the 'Middle' and 'Best-off' groups on average, with participants reporting families in this category as having between 7 and 10 children. FDG participants stated that larger family size was due to a lack of understanding about or access to information on family planning, as well as a desire for an increased family labour force to increase household income by helping out on farms and assisting them later in life when they are elderly. Some parents in poor households choose to have many children in the hope that some children might become wealthy and assist the rest of the family. The 'Poor' group was described as accessing a mix of traditional medicine and government health care in the event of illness. However, an inability to afford medicine meant that even those going for consultations may not follow through with prescribed treatments. Some groups (seven out of 18) linked this group's poor health to hunger. Their children attend government schools mainly to primary level, rarely secondary; however, this attendance may be inconsistent due to the parents' inability to pay school fees, make contributions for school meals or pay for uniforms,

or because the children may leave to start working for wages or on the farm.

The houses that the 'Poor' reside in were reported as generally being made of mud with thatched roofs (often made from banana fronds, grasses or papyrus reeds), although some may have concrete houses with iron sheeting for roofing. Toilets are outdoors and may not be covered, and are constructed with bamboo, grasses or banana fronds. Households were reported to have limited access to basic necessities and luxury items such as furniture (typically sleeping on beds made from leaves and no mattresses or bed frames, maybe some chairs), no bed sheets, poor quality clothing, light provided by kerosene lamps and no bank accounts. Participants reported that the 'Poor' keep their money in SACCOs.

The 'Poor' were reported as having anywhere from 0.5 to 5 acres of land available, however, most FGDs (16 of the 21 who described land size for this wealth group) said this group own land sizes of less than one acre. There was less agreement on what livestock this group owns. Reports ranged from no livestock, or livestock limited to one cow or pig, several goats, chickens or rabbits. Not owning assets can negatively affect/hamper/remove the capacity to buy or rent farm implements or inputs, procure enough food and affect housing quality, among other things (Groverman, 1990). Five FGDs (one men-only and two women-only FGDs from Tanzania[14] and two men-only from Uganda[15]) identified the 'Poor' group in their community as the most composed of women-headed households. Participants in one of the Uganda FGDs mentioned that widowed women-head households inherited assets from their husbands and hence were not in the poorest category. They were also part of SACCOs, which provided them with a financial cushion and social capital.

'Very Poor'[16]

The 'Very Poor' group was described as walking or sometimes using public transport. They may eat once per day and often did not have enough food. They may rely on getting fed on the farms where they provide casual labour, on food provided/donated by wealthier families in the village or they may be called when a dead animal is found. Some FGDs in Uganda reported this group as stealing food. Family size for

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13   MBARUNNYAKACWRF003 and BUKRUBKABCWRM003

14   BUKBUGRUBCWRF001 and BUKKATKASCWEM002

15   MBARUBNYAKACWRM003 and MBANDEKYECWRM004

16   Nine FGDs described this group as 'drunkards', 'beggars' or 'thieves' that occasionally comprised entire families, but more often were referring to single individuals when using these terms to describe this group.

the 'Very Poor' was either very small (two Luwero FGDs[17]; one men-only, one women-only said this group has no children or wife, such as a single person living alone) or very large. Only three FGDs specifically mentioned family size for the 'Very Poor'. This sub-group were reported as relying on more traditional herbal medicines rather than going to health centres. Other FGDs described this group as unhealthy due to malnutrition. Children in these households attend government schools, however, they are unlikely to attend beyond primary level and often drop out earlier to tend livestock or to earn money.

Houses for this group are generally made of grass with thatched roofs and mud floors. They may not have access to a latrine, so they use latrines on other people's land. One FGD (Ugandan men, Luweero) said this group did not have homes to sleep in, they slept in other people's kitchens. This group was reported to have limited access to basic necessities and luxury items, such as furniture (e.g. no beds, sleeping on only grass), bed linen, poor quality clothing, no soap, lighting or salt for cooking.

This group had no land or had access to very little land, generally limited to what is just around their house to 0.5 acres. They do not cultivate their own banana plantations but may be able to grow a few banana plants and other crops (e.g. coffee) on the edges of their land (as reported by participants in one FGD each in Tanzania and Uganda). The 'Very Poor' were reported as likely to own limited and small livestock due to land restrictions. The 'Very Poor' were reported as working as casual labourers.

Agricultural practices in different wealth groups

Participants in each of the FGDs were also asked to report on agricultural practices for the different wealth groups. The following section describes the cropping practices, access to markets, agricultural extension services and information, and types of bananas grown in the three wealth groups and districts in each country.

'Best-off'
The 'Best-off' were reported as being primarily engaged in farming, however, they typically hired individuals from less wealthy groups to work on their farms. This work included spraying pesticides, cultivation-related activities and tending livestock. Their income was reported as coming from the sale and trade of agricultural products (e.g. coffee, banana and fruits). The distinction made between the 'Rich' and the 'Very Rich' was that occasionally the 'Rich' would also work

on their own farms, while the 'Very Rich' were reported to exclusively employ others.

Both men and women focus groups in Tanzania and Uganda reported the 'Best-off' group as having a high prevalence of pests and disease in their banana fields. The reasons given for this were: applying too much fertiliser (one Ugandan men FGD) or that the casual labourers they hired were less invested in caring for the plants, for example "*Their plantations are more diseased because they use casual labourers who may not care about the plantations like the real owners.*" (Ugandan men FGD[18] from Mbarara). Participants from two FGDs also reported that casual labourers used the same pangas to cut bananas on multiple plantations, which has the potential to spread pests or diseases between plantations (both Ugandan men FGDs from Mbarara). Owners of big plantations often hire large numbers of farm workers who may use numerous farm tools without applying strict plantation management, therefore increasing the chances of disease transmittal.

The only specific mention of a pest/disease was yellowing of the leaves reported for Mshare bananas and a disease that causes banana plants to rot at the core and fall over (one Tanzanian men FGD[19] in Meru). These descriptions are consistent with Panama disease/Fusarium wilt fungal disease. In contrast, seven FGDs said that the 'Best-off' group did not experience pests/diseases on their plantations due to their ability to afford and use pesticides. Limited intercropping was reported for the 'Best-off' group and what was reported was selective (e.g. maize, pineapple or cassava planted on the outer perimeters, bananas mixed only with beans or coffee). Generally, the 'Best-off' group was reported as growing a variety of crops, but in separate fields. Inputs and practices included inorganic fertilizers or manure, pesticides and mulching with coffee husks (where available) or grass that they have employed people to cut for them. General farm conditions were described as 'clean' or 'well managed' due to frequent weeding, mulching, de-suckering, taking care of pests/diseases, digging trenches and terracing.

Participants from one FGD (Tanzanian men FGD) also reported some of the farmers in the 'Best-off' group as having access to machinery such as tractors and milling/grinding machines. This group used irrigation more than the 'Middle' and 'Worst-off' groups.

The 'Best-off' were reported to sell their bananas (and other crops, e.g. coffee) locally or to traders with lorries able to transport them to markets further away (e.g. Kampala in Uganda or Dar es Salaam in

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17 LUWZIRNAK-WRF 001 and LUWZIRNAM-WRM 001

18 MBANDEKYECWRM004

19 MERPOLAMBCWRM001

Tanzania). Participants from some FGDs also reported that those in this group grew bananas for both home consumption and sale. The 'Best-off' group was also reported as producing other products, such as banana beer to be sold. Their market access was often described as 'good' based on personal connections, ability to bargain on price (via selling at market rather than selling on the farm) and the quality (and quantity) of bananas produced.

The 'Best-off' group was also described as being able to adopt new crop varieties banana cultivars as they can afford new planting material. "*The best-off will adopt the new varieties since they can afford transport to the centres or the destined towns where the seedlings are being distributed or given out*" (Ugandan women FGD[20]). In addition, the 'Best-off' were reported to be the ones who hold demonstration plots that others are expected to learn from. This is perhaps because they have the resources required to manage such plots (e.g. enough land). Of the 18 FGDs that reported on

the 'Best-off' and extension services, 13 reported that they access agricultural extension services, either in the village or in areas further away. The 'Best-off' are able to access these other services as they could afford the transportation and use their personal networks to find out about these services. The 'Best-off' can therefore seek out the advice they need compared to the other wealth groups who often have to wait for the extension agents to come to their community or somewhere nearby. Participants from the five FGDs that reported the 'Best-offs' not attending extension services provided reasons that included a lack of time, the ability to hire their own extension workers, and participants from two FGDs reported that no local extension services were available to attend. Most of the discussions did not provide information about the types of extension services received and if these differed by wealth group. This is important information that can help assess what kind of extension services are lacking for the specific wealth groups. For the few that provided this information, the type of training mentioned includes 'better techniques for banana maintenance and coffee growing'.

20 MBARUBNYAKACWRWRF003

Photo: CGIAR Research Program on Roots, Tubers and Bananas (RTB)

The list of banana cultivars reported as being planted by the 'Best-off' group in the two countries are the following*: **Tanzanian** FGDs: EAHB brewing (Embile/Mbiire/Embidde), EAHB cooking (Matooke), Enyoya, FHIA, Gonja, Kabalagala (Kisukari/Kambani), Kimalindi, Kimalindi fupi, Kimalindi ndefu, Mchare, Mkono wa Tembo, Mtwishe, Musakala (Enshakara), Muvubo (Njubo), Mzuzu (Plantain/Matoki), Ndizi Ng'ombe, Uganda, Uganda ndefu, Yangambi Km5. **Ugandan** FGDs: Bogoya, Enyeru, Kibuzi, Mbwazirume, Muvubo (Enjubo), Nakitembe (Entaragaza), Rwamigongo. (*Please note, this is not an exhaustive list of the cultivars grown by the farmers. Although there are many FHIA types, FHIA-17 is the most dominant*).

'Middle'

Those ranked in the 'Middle' group were reported to work occasionally as casual labourers on the farms of the 'Best-off', but primarily on their own farms tending their own livestock, as well as possibly having other forms of employment (often described as selling vegetables or leafy greens from their plantations and selling bananas). Participants from one FGD (Tanzanian, all-women FGD) described the relationship between the three groups as the 'Middle' group being hired by the 'Best-off' farmers to supervise the 'Worst-off' labourers working on the plantations of the 'Best-off'. Those in the 'Middle' group were unable to hire extra help.

The 'Middle' group's banana plants were reported to have a lower prevalence of pests and diseases. The reasons given for this included this group working on their own farms and therefore being able to promptly notice sick or affected plants (Ugandan women FGD[21]). This may be because they strictly follow the recommended practices on banana pest and disease management. However, participants from other FGDs said that this group had a high prevalence of pests/diseases as they were unable to purchase pesticides or fertilizers. The mention of agrochemicals (fertilizers and pesticides) suggests possible problems related to declining soil fertility, nutrient deficiencies/imbalances, and conditions most likely to be associated with pest and disease attacks (in Uganda the general term "*lunyo*" is used to refer to soils with low fertility). Specific pests/diseases reported for Kabalagala (Kisukari/Kambani) banana cultivars include *Bungua* (banana weevils), *Kibuguru* (greyish on banana fingers) and leaf drying[22]. These descriptions can be associated with Black Sigatoka, banana bacterial wilt disease, weevil borer and plant parasitic nematodes.

Some reported intercropping on 'Middle' group

farms, including such crops as cassava, beans, African eggplant (bitter solanum), maize, pumpkins, Irish potatoes, green leafy vegetables, yams, sweet potatoes and coffee. While fewer pests/diseases were reported than for the 'Best-off' and the 'Worst-off', the farms in the 'Middle' group were also described as 'not well managed' (e.g. weeds, limited input application). However, greater access to livestock (and therefore manure) was also noted as this group was able to use manure as fertiliser rather than purchasing industrial fertiliser. This group was reported to carry out de-suckering on a non-regular basis (linked to the 'not well managed farms') and also as using domestic waste for fertiliser in addition to, or instead of, manure (where manure is not available). Participants from some FGDs reported that the group could irrigate (Meru and Moshi district in Tanzania[23]).

The 'Middle' group sold bananas locally—in local or nearby markets or to traders on bicycles—as they were not as able to reach other markets due to lack of transport (unlike the 'Best-off' group). This group may also brew and sell beer from the bananas they produce, in addition to producing beer for home consumption. This group was reported as being the most likely to adopt new agricultural ideas and practices due to their time availability (as they are working on their own farms) and a perception that they "...*have motivation to go further in development.*" (Tanzanian men FGD[24]). Also, "...t*he best-off has already reached their goals, the worst-off are somehow discouraged. The middle group is the only ones that [...] have motivation to go further in development.*" (Tanzanian men FGD[25]). Of the 17 FGDs that reported on attending extension services, 11 indicated that the 'middle' group attended. The reasons for not attending from the other six FGDs ranged from lack of services in the area to lack of ability to pay for available services. Participants from two[26] (in Rungwe and Bukoba districts, Tanzania) of the six FGDs that indicated not attending extension services reported no extension service in their area.

The list of banana cultivars reported for the 'Middle' group in the two countries is the following*: **Tanzanian** FGDs: Bukoba, Cardaba, EAHB brewing (Mbire/Embidde), EAHB cooking, Enyoya, FHIA, Kabalagala (Kisukari/Kambani), Kimalindi, Kimalindi ndefu, Mchare, Mkono wa Tembo, Musakala (Enshakara), Muvubo (Njubo), Mzuzu, Ndizi Ng'ombe, Uganda, Yangambi Km5; **Ugandan** FGDs: Bogoya, Butobe, Enjagata, Enyeru, Kibuzi, Nakabululu (Embururu), Nakitembe (Entaragaza). (*Please note, this is not an exhaustive list

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21   MBANDEKYECWRF004

22   In Moshi and Rungwe districts, MOSKIBOTACWRM002 and RUNUKUNKUCWRM002

23   MERPOLAMBCWRM001, MOSKIBOTACCWRM002

24   MOSVUNLEKCWRM003

25   RUNPAKMPUCWRM001

26   BUKBUGRUBCWRM001 and RUNUKULUPCWRF003

of the cultivars grown by the farmers. Although there are many FHIA types, FHIA-17 is the most dominant).

'Worst-off'

The 'Worst-off' were reported to have limited time to work on their own land, as they were employed as casual labourers on the farms of the 'Best-off' group. As described by a participant from a Tanzanian women FGD, "*They have many weeds [in their own plots] as most of their time is used to work on rich people's plots as labourers.*"[27] This group also has limited access to land (see Table 1 and Section 3.3). Participants from 16 of the 17 FGDs that reported pest and disease infestation on the 'Worst-off' group's crops stated that there was higher pest/disease prevalence in among this group compared to the 'Middle' and 'Best-off' groups. The reasons included poor management practices and growing bananas in the bush (due to limited land availability); however, participants from one Ugandan women FGD reported that this group was able to quickly notice and remove damaged plants. Specific pests and diseases reported in these FGDs include: *Bungua* (banana weevils) – *Rungwe, Kisoli* (Fusarium wilt) – Moshi and *Fuko* (mole rat) – Moshi district.

The 'Worst-off' were reported to use bananas leaves or kitchen peelings for mulching, indicating that no additional inputs (e.g. inorganic fertiliser or pesticides) are used. Some members in this group were reported as being unable to afford basic implements such as hoes. Weeding, mulching and time dedicated to tending to plots were reported as infrequent due to time spent working as labourers. Intercropping was reported by participants from almost all FGDs (19 of the 24 FGDs that reported on the 'Worst-off' group's agricultural practices). The following crops were reported as being grown: African eggplant, avocados, banana, beans, cassava, coffee, Irish potatoes, jackfruit, maize, okra, peppers, pumpkins, sweet potato and yams, and a combination of these were reported to be intercropped with bananas (e.g. bananas, beans and maize). Their farms were occasionally described as 'dirty' or 'disorganized' due to lack of or poor management (15 FGDs), and one Ugandan men FGD stated that these farms were the source of inoculum/hosts for pests and diseases. Lack of livestock was also linked to no or limited fertilizer use, hence the low yields. Some FGD participants also reported that people in this group would grow any banana cultivar, yet they would not yield as much as for the 'Middle' and the 'Best-off'.

The 'Worst-off' were reported to generally not sell their bananas, as they primarily produce for home consumption. Participants from five FGDs reported the 'Worst-off' group as also selling some bananas, but in small quantities and only in local (same village) markets. Participants from two FGDs reported that this group sometimes harvests and sells their bananas before they are ripe to earn money quickly (both Tanzanian women FGDs).

Participants from one FGD reported a willingness to engage in new agricultural practices among the 'Worst-off' group but noted a lack of time, finances and land as barriers to implementing new ideas. This included lack of money for transportation to extension activities, although participants from some FGDs noted that local council centres sometimes provide the extension information. Despite these reported barriers, participants from at least one FGD reported a willingness among the 'Worst-off' group to access extension services, "*It is the Abeineho [the 'Worst-off' group] who will adopt the new innovations because they want to be like the upper categories. Besides, we are the majority in this village*" (Ugandan men FGD[28]). There were mixed reports on access to agricultural extension services, including participants from FGDs who reported no extension services offered in their villages and others who reported equal access for all wealth groups to extension services.

The list of banana cultivars reported for the 'Worst-off' group in the two countries is the following*:
Tanzanian FGDs: FHIA, Kabalagala (Kisukari/Kambani), Kayinja (Kisubi), Kimalindi, Kimalindi ndefu, Kisukari, Kivuvu (Harare), Mamba Kisambo[29], Mchare, Mkono wa Tembo, Musakala, Mwika , Ndizi Ng'ombe, Uganda, Mzuzu, Ndiali). **Ugandan** FGDs: Bogoya, Enyeru, Kibuzi, Nakitembe (Entaragaza). (**Please note, this is not an exhaustive list of the cultivars grown by the farmers. Although there are many FHIA types, FHIA-17 is the most dominant*).

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27 BUKBUGRUBCWRF001

28 BUKBUGRUBCWRF001

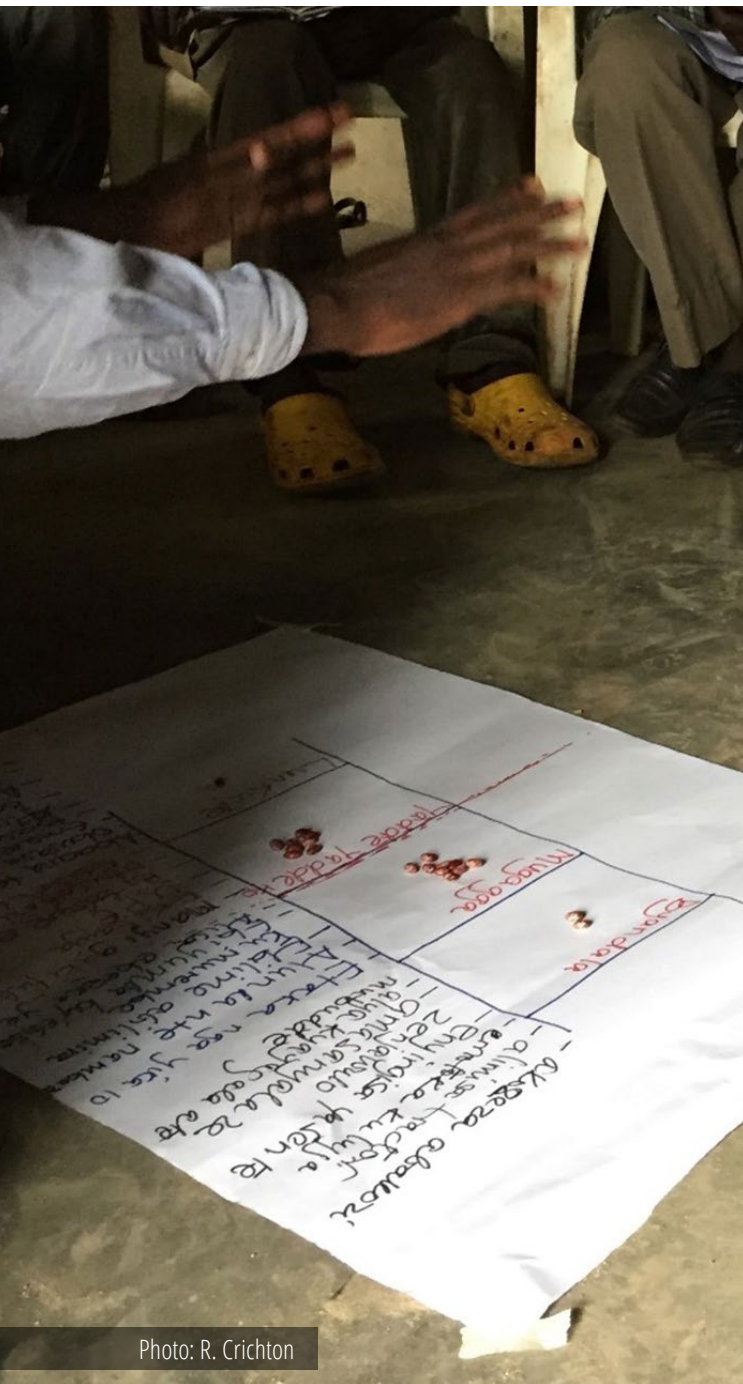29 Mamba Kisambo and Mwika cultivars could not be identified

Photo: R. Crichton

Comparing banana agricultural practices in Tanzania and Uganda

During the CWR exercise, participants discussed the farms and practices within their respective wealth groups, comparing banana agricultural practices, the prevalence of pests and diseases, cultivars and market access (results from Tanzania are shown in Table 4 and from Uganda in Table 5).

In Tanzania, results were generally similar across the four study districts, although not all FGDs provided detailed information on every aspect, thus the conclusions should be interpreted with caution. Areas of banana cultivation were smallest in Meru, Moshi and Rungwe (ranging from a few mats placed around the house for the 'Worst-off' group, to 4 acres for the 'Best-off' group) and largely similar for wealth groups in the other three districts. Intercropping was reported for all groups in all districts except for the 'Best-off' in Bukoba. There was no reported difference in disease or pest prevalence between any of the wealth groups. In Uganda, agricultural practices across the two districts were generally similar (although the Luweero FGDs did not undertake detailed discussion, making the comparison more difficult). One of the main differences appears to be in the prevalence of pests and diseases for the 'Worst-off' group. In Luweero, FGD participants reported that the plantations of the 'Worst-off' group were a source of pests and disease for the entire community, while in Mbarara pest or disease prevalence among the 'Worst-off' group was reported to be limited. One FGD in Mbarara (Uganda) linked this low prevalence to the limited use of implements like pangas (which are believed to spread diseases between plants), and harvesting done by hand[30]. The limited use of such tools might be due to limited capacity to buy them and that it might not make economic sense to invest in them, given the small size of their plantations.

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30 MBANDEKYECWRM004

Table 4. Comparing banana agricultural practices, pests and diseases, market access and cultivars grown across selected Tanzanian districts. *(FGD n= 18: 6 Bukoba, 2 Meru, 4 Moshi and 6 Rungwe)*

District / Wealth group	Agricultural practices	Pests and diseases	Market access	Cultivars	Farm size (acres for banana cultivation)
Bukoba Best-off	• Use fertiliser and pesticides, mulch, contouring for erosion • No intercropping • Hire labourers	*Information not provided**	• For sale and home consumption • Good transportation increases access to far-away markets • Able to negotiate good prices for the product	FHIA, Mtwishe, Yangambi Km5, Enyoya, Musakala, Muvubo, EAHB brewing (Embile/Mbiire/Embidde), Gonja	>2–7
Bukoba Middle	• No irrigation or mulch, use manure • Farms are not 'clean' (i.e. have weeds) • Limited access to extension services	*Information not provided**	• For sale and home consumption • Obtain lower prices than the 'Best-off' group	FHIA, Yangambi Km5, Enyoya, Musakala, Muvubo, EAHB brewing (Embile/Mbiire/Embidde), Cardaba	0.5–3
Bukoba Worst-off	• Intercropping • No fertiliser or pesticides, mulch with dried banana leaves • Farms are not 'clean' (weed-infested) • Work as labourers on plantations of the 'Best-off', little time to spend on own plantation • No access to extension services	Pests prevalent	Home consumption only	FHIA, Musakala (Enshakara)	0–0.5
Meru Best-off	• Intercropping • Use fertiliser and irrigation • Hire labourers	Some diseases present (especially in Mchare)	For sale and home consumption	Mchare, Uganda ndefu	0.5–4
Meru Middle	• Intercropping • Use fertiliser and irrigation • Access to extension services	Some diseases present (especially in Mchare)	*Information not provided**	Mchare, Kabalagala (Kisukari/ Kambani) Kimalindi, Ndizi Ng'ombe	0.25–1
Meru Worst-off	• Use manure • Access to irrigation canals	Some diseases	Home consumption only	Mchare, Kabalagala (Kisukari/ Kambani), Kimalindi, Ndizi Ng'ombe	Small area around the edge of houses
Moshi Best	• Intercropping • 'Clean' farms • Access to fertiliser, pesticides and water • Do not attend extension services due to time, but access information afterwards by asking others who attended events • Hire labourers	Limited pests and diseases	For sale and home consumption	Mchare, Ndizi Ng'ombe, Kabalagala (Kisukari/Kambani), Kimalindi fupi, Kimalindi ndefu, EAHB cooking (Matooke)	0.5–3
Moshi Middle	• Conflicting reports of being 'not clean' and 'well managed' and 'clean' • Intercropping • No irrigation, some manure use	Not common, but are affected	• For sale and home consumption • Rely on internal (village) market	Mchare, Kimalindi ndefu, Ndizi Ng'ombe, Kabalagala (Kisukari/ Kambani), Kimalindi, EAHB cooking, Bukoba	0.5–1
Moshi Worst-off	• Intercropping • No access to fertiliser, irrigation or pesticides; farms are not 'clean' (weed-infested) • Limited access to extension services, or do not implement practices learned • Work as casual labourers on 'Best-off' plantations	Some diseases and pests (e.g. Kisoli [Fusarium wilt] disease and Fuko [mole rat])[31]	Home consumption only	Ndizi Ng'ombe, Kimalindi ndefu, Kabalagala (Kisukari/Kambani), Mchare, Kimalindi, Mwika*, Mamba Kisambo* *Mwika and Mamba Kisambo are cultivars which could not be identified	0.25–1

(continues...)

31 MOSVUNLEKCWRM003

(Table 4 continued)

District / Wealth group		Agricultural practices	Pests and diseases	Market access	Cultivars	Farm size (acres for banana cultivation)
Rungwe	Best-off	• Use fertiliser, mulch, manure, tractors and pesticides • Some intercropping with coffee, yams • Hire labourers • Have problems with water access	Some diseases and pests	• Access traders with lorries and markets far away • For sale and home consumption	Uganda, Kimalindi, Mzuzu (Matoki), Mchare, Kabalagala (Kisukari/Kambani), Mkono wa Tembo	1–4
	Middle	• Mulch, some fertiliser and manure use, although no irrigation • Poor farm management • No extension services access	Pests and diseases present (linked to lack of pesticides due to cost)	• For sale and home consumption • Rely on middlemen for market access or use local (village) market	Mzuzu, Uganda, Kabalagala (Kisukari/Kambani), Mchare, Mkono wa Tembo, Kimalindi	0.5–2
	Worst-off	• Intercropping • Farms are not 'clean' • No fertiliser or irrigation, occasional manure application • No access to extension services	Diseases prevalent (e.g. Bungua [banana weevils])[32]	• Home consumption • Some may sell unripe prior to harvest for cash advance, only use internal (village) market	Uganda, Kimalindi, Mzuzu, Mchare, Kabalagala (Kisukari/Kambani), Mkono wa Tembo, Ndiali, Kivuvu (Harare), Kayinja (Kisubi)	0.5–1.5

* *Not every FGD reported information for all categories related to agricultural practices, e.g. pests and diseases were not reported for two wealth groups in Bukoba.*

32 Described as rotting the stem, drying and yellowing the leaves in FGD RUNPAKMPUCWRM001.

Photo: CGIAR Research Program on Roots, Tubers and Bananas (RTB)

Table 5. Comparing banana agricultural practices, pests and diseases, market access and cultivars across selected Ugandan districts. *(FGD n= 10: 4 Luweero, 6 Mbarara)*

District / Wealth group		Agricultural practices	Pests and diseases	Market access	Cultivars	Farm size (acres for banana cultivation)
Luweero	Best-off	• Employ labourers • Use manure, mulch, dig trenches, remove male buds	*Information not provided**	*Information not provided**	*Information not provided**	4–15
	Middle	Sometimes mulch	Rarely has pests or diseases	Mostly home consumption, may sell some	*Information not provided**	*Information not provided**
	Worst-off	• Works as labourer on other plantations • Poor practices (no mulch or de-leafing)	Source of banana diseases in the community due to poor practices	Only for own consumption	*Information not provided**	0–2 (not exclusive bananas, other crops as well)
Mbarara	Best-off	• Use manure, mulch, dig trenches, prop plantations • Employ labourers • 'Clean' plantations • Sometimes intercrop • Access extension services locally and far away (have time/ability to travel) • Have land and access to seedling distribution centres to trial new cultivars	• Most affected plantations (as casual labourers they are less invested in caring for their own plantation) • Usually, the first to act to apply preventative measures	• Sell to traders with lorries to take to large towns and cities (e.g. Juba in Sudan) • Good market connections	Nakitembe (Entaragaza), Mbwazirume, Enyeru, Muvubo, Kibuzi, Rwamigongo, Bogoya	1–25[33]
	Middle	• Practice intercropping • Irregular de-suckering • Mulch with domestic rubbish • Go to local council for extension	Fewer pests (as spend most of their time on own plantation so can respond immediately)	Sell to local traders with bicycles	Enjagata, Nakabululu, Butobe, Enyeru, Bogoya, Kibuzi, Nakitembe (Entaragaza)	0.5–10
	Worst-off	• Mulch with dry banana leaves and kitchen refuse • Extensive intercropping • Poor maintenance, (e.g. irregular weeding) • Do not attend extension services (working full-time)	Limited diseases	For home consumption only	Kibuzi, Bogoya, Nakitembe (Entaragaza), Enyeru	0–5

* *Not every FGD reported information for all categories related to agricultural practices (e.g. no FGDs in Luweero reported banana cultivars).*

33 All other FGDs stated sizes between 3 and 10 acres, except MBABUBKANCWRF002, which reported 25 acres.
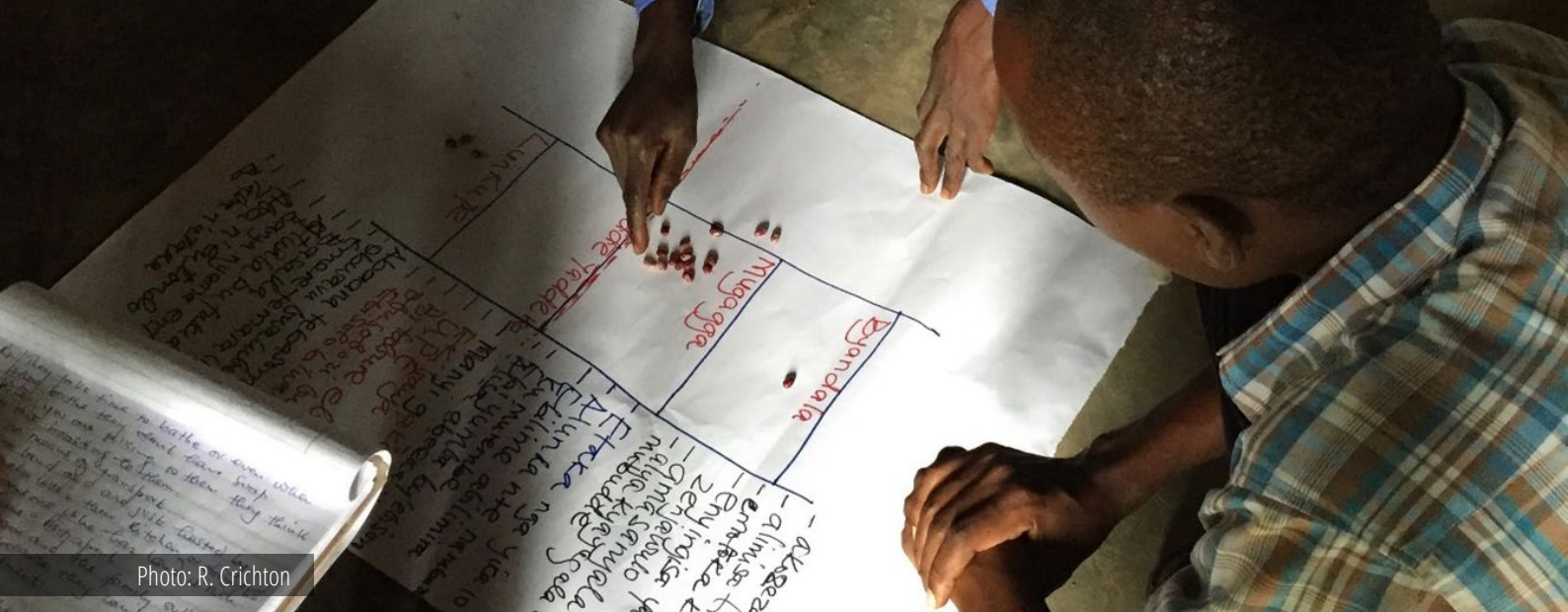
Photo: R. Crichton

Summary and conclusion

This section summarizes the general characteristics of the three wealth groups, including the assets, household characteristics, demographic characteristics and those related to agricultural production, access to markets and agricultural extension, and draws conclusions in order to better inform banana breeding initiatives.

The 'Best-off' group across sites was reported to have the highest number of assets such as vehicles, higher quality housing, enough food, access to private healthcare and education. They were also reported as having better access to markets, especially those further away due to their access to motor transport, as well as better social connections. They were also reported to have better access to agricultural extension services and knowledge, and openness to trying new products.

The 'Middle' group had varying amounts of assets, including some households with access to motor vehicles but generally, bicycles are their primary means of transportation. The 'Middle' group are reported as generally have enough food, but not consistently and never a surplus. They are able to access a mix of private and government healthcare, primarily relying on government health centres and also sending their children to government schools. Their access to markets is more limited geographically—instead of transporting their own produce to the market like the 'Best-off' group, traders come to their homes instead. This group was reported as engaging with agricultural extension services and having the highest motivation for engaging in new ideas due to working on their own farms and having the time to test new ideas or techniques.

The 'Worst-off' group had the most limited assets, poorer housing quality than the other two groups,

very limited access to vehicles (primarily walking to reach their destination) and limited access to adequate food and nutrition. Although their children attend government schools, they drop out of school earlier than the other two groups to help supplement their family income. They have access to government health centres or traditional medicines and can rarely afford medical treatments. Members of this group have limited land to cultivate, so they generally grow for home consumption and rarely sell their produce; their market access is therefore limited. The very few who do sell excess produce do so exclusively within very local (same village) markets and as a means to obtain an immediate source of cash. This group had the least access to agricultural extension services.

One of the main and most important differences between the three groups is the amount and type of labour dedicated to tending their farms. The 'Best-off' are able to hire farm labourers (generally sourced from the 'Worst-off' group), while the 'Middle' group tend to work on their own farms, and persons from the 'Worst-off' groups are hired as labourers on the farms of the 'Best-off' (and who may/may not be managed by persons in the 'Middle' group). These labour practices influenced the quality and production of bananas and other crops reported. The poorest crop quality and lowest total production yields were found on the farms of those ranked 'Worst-off', primarily due to their inability to spend time on their own farms, lack of resources to acquire inputs and the smaller sizes of their plots. Almost all the FGD participants reported that this group primarily grew crops for their own subsistence. The poverty cycle for this group frequently starts at a young age, with the children working for wages (often for members of the 'Best-off' group) rather than attending school *"[...] the majority of their children do not go to school, [instead they are]*

grazing the cows of the best-offs" (Tanzanian women FGD[34]). This indicates that the disadvantages for the poorer members of society start early in life. This also highlights intergenerational poverty traps and the urgent need for deliberate and sustainable efforts to reduce the gaps.

Most participants who mentioned how each wealth group was perceived in the community reported that the 'Best-off' and 'Middle' group had good relationships with the community, while the 'Worst-off' group generally did not. There were a few exceptions, for example, one men-only Tanzanian FGD reported tensions between the 'Best-off' and 'Worst-off' group "*The best-off harass the worst-off when it comes to contributions to village development. Because they are authorizing decisions that are hard to be implemented by the worst-off, e.g. amount of village contributions*"[35]. The ability to contribute to village development projects and related differences in power revealed that, generally, the 'Best-off' are perceived as having good relationships with the community, although some of these relationships were referred to as complicated.

While the 'Best-off' group was reported as having the largest access to agricultural inputs, knowledge, and tools and markets, there was a perception by many FGD participants that the 'Middle' group had the better farms due to time spent on their own farms and the implication that the personal investment resulted in more care for their plants and a greater willingness and more time available to try newer ideas or techniques. Many middle-group farmers were perceived as working hard because they had aspirations of upward social mobility and of becoming members of the 'Best-off' group. One of the reasons provided for higher disease or pest prevalence in the 'Best-off' farms was the use of casual labourers whose tools cross-contaminate the farms of the 'Best-off', as well as the size of the 'Best-off' farms mentioned as too large for one person to spot problems early and respond promptly.

Some FGDs mentioned that, in general, banana plantations managed by men were well managed, whilst the women's farms were not, due to their many responsibilities "*For a man, the plantation is de-suckered properly and well managed...women have many responsibilities and do not have enough time to attend to bananas*" (Ugandan men FGD[36]). In another FGD some participants mentioned that some women-headed households were better-off than men-headed households due to the possessions they owned.

There were minimal differences in the types of banana cultivars grown by the different groups. Differences would perhaps occur at the individual plot level regarding the number of mats for a particular cultivar, mainly due to the size of land available. Farmers seem to grow all the banana types (i.e. cooking, dessert, roasting and beverage/brewing) irrespective of the wealth group. The banana types have different uses and varied strengths and weaknesses (see Marimo et al., 2019 for detailed information about cultivar use and preferences in the study areas). Given that the information provided by groups on types of cultivars grown is not exhaustive, it is challenging to reach a conclusion regarding the relationship between banana cultivars grown and wealth groups.

Implications/ recommendations

The community wealth ranking exercises conducted in the different districts and villages of Tanzania and Uganda aimed to rank the wealth groups based on district socio-economic characteristics, in order to gather important data to inform various initiatives in the study areas in and beyond the Breeding Better Bananas project. Specific to the project, results indicate the need to include different wealth groups in the testing of new hybrid banana cultivars. Often, farmers who are selected for on-farm trials are those who tend to have more resources (i.e. land, labour, access to inputs etc.), excluding households that are characterized as 'middle' or 'poor'. This could be because implementers sometimes have to set up trials quickly and obtain results within the short project lifecycles. This form of exclusion of the other wealth groups was indicated by data gathered in some of the FGDs, reporting that the 'Best-off' households are the ones that have access to and plant new/ newly introduced banana cultivars. On the other hand, some groups reported that the 'Middle' and 'Worst-off' wealth groups were willing to try out new innovations and technologies and had aspirations to be like the 'Best-off' or upper-wealth categories, yet they lacked access to the new technologies, knowledge and extension agents that would support this upward mobility. Hence, development planners and project designers and implementers need to focus on inclusion, making deliberate efforts to incorporate lower-wealth groups into extension efforts. Inclusive community-based initiatives such as grouping farmers during on-farm trial implementation and testing can be used. Allowing all community members to have access to and conduct participatory varietal evaluation in a farm that maybe owned by farmers in the upper wealth categories can also be an option. There are differences in the kinds and prevalence of pests and disease, as well as farm management practices

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34 MBABUBKANCWRF002

35 MERPOLAMBCWRM001

36 MBARUBNYAKACWRM003

identified by FGDs for the different wealth groups, indicate knowledge gaps in management practices that extension programmes should selectively prioritize. More efforts are required to ensure that all wealth groups have equal access to extension services. Some groups reported that the 'Worst-off' often have no time to attend extension events because they are always working and/or have no means to transport themselves to places where events are taking place. Extension services should therefore be decentralized to the local/community level and take place during times when everyone can attend. In addition, the focus groups did not go into detail about the types of extension services that the various wealth groups have access to and seek. This is important information that can help planners develop context-specific extension packages that consider the needs of the different wealth groups.

Social protection programmes should be implemented especially for the less-privileged community members that have little or no wealth. Proven initiatives such as cash transfers, subsidies and social safety nets can do much in helping alleviate poverty. Such programs will need to be sustainable and context-specific to ensure equal, equitable outcomes and help households out of poverty and the intergenerational poverty trap. Malnutrition was mentioned as a characteristic of children in the 'Worst-off' category reiterating the need to implement nutrition-specific interventions and that can include biofortified crops. Specific, bundled interventions that incorporate socio-technical innovations can be used to transform agri-food systems in specific communities (Barrett et al., 2020).

Limitations of this study

There was insufficient information collected across all the FGDs to draw conclusions on some aspects, for example the relationship between the banana cultivars grown and the wealth groups.

The subjectiveness of the poverty line, which only applies to the particular village, means there is no consistency between the poverty lines across the study sites/villages. Future studies are needed that combine the qualitative and quantitative definition of poverty to address the limitation of subjectivity. The value attached to different wealth resources also varies by community, therefore results may not be generalized outside the study sites. However, this would also be an important level of detail that could ensure the application and implementation of context-specific ad hoc recommendations within the target communities.

The proportions of participants that were of a particular wealth group were not recorded or known during sampling, hence there might be biases in the reported information depending on the composition of the group. Ideally, proportionate representation of the wealth groups in a group could reduce some of these biases.

There was a lack of detailed intersectional information on some aspects related to wealth or poverty, for example 'type' of households that typically fall in the mentioned wealth categories e.g. whether they are women-headed, men-headed, widowed, divorced; young, middle-aged, older; migration impacts etc. Such qualifiers are important when discussing the poverty-wealth nexus in rural households with likely implications for socioeconomic characteristics, social relations and support networks for families, among other things. Perhaps enumerators and facilitators could have probed more to extract this information. It is, however, possible that these aspects were not mentioned because they are not obvious indicators of poverty for the FGD participants.

There are bound to be group dynamics when eliciting information through FGDs. Although a consensus is reached and used as the 'group opinion', it is possible that in some groups there are members who are more vocal than the others and those who are timid who might not say much. Depending on the group composition, those with more influence (i.e. rich/well off, leaders etc.) might be the ones who provide the inputs that can lead to biased information. The facilitator needs to ensure that everyone in the group is engaged in a non-biased manner.

There may also be gain-bias. When discussing wealth-related aspects, a group may understate the proportions, especially if they anticipate that the community will receive something from the researchers or will be asked to participate in an intervention, from which they all can 'benefit' as a community. Thoroughly explaining the goals of the research before starting and constant reminders throughout participatory research exercises is crucial.

One challenge with discussing characteristics of wealth groups is that economic class and identity can often be intertwined. For example, good/bad characteristics may be assigned to certain groups based on stereotypes. Regardless of assets, participants may characterize a group based on past issues or identify them using derogatory terms (e.g. some FGDs referring to the 'Worst-off' groups as beggars, drunkards) based on their ranking.

The proportions assigned to each group are made on the assumption that participants selected for the CWR exercise were conversant with the majority of households in their community.

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