ZARI
Zambia Agriculture Research Institute
Researching Soils, Crops and Water in Zambia

AID BY TRADE FOUNDATION

COTTON MADE IN AFRICA

DOCUMENTATION OF FOCUS GROUP DISCUSSIONS:

BIODIVERSITY IN CmiA FARMING COMMUNITIES

ZAMBIA, EASTERN AND LUSAKA PROVINCES

FROM 8TH JULY – 12TH JULY, 2024

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SUBMITTED TO:
Aid by Trade Foundation (AbTF)

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SHORT SUMMARY OF MAJOR FINDINGS

Zambia Agriculture Research Institute in partnership with Aid by Trade Foundation was contracted to conduct six focus group discussions (FGD) on the topic of biodiversity with CmiA farmers in Eastern and Lusaka provinces from 8th to 12th July, 2024.

Total attendance by gender

The overall number of CmiA farmers that attended the FGD were 136 persons (Table 1), representing percentage attendance by gender of 46% males and 54% females. Out of this total number, 66% were born in these areas while 34% represents farmers who have lived in these areas for more than 10–20 years.

Table 1: Total number of participants and gender

Area	District	Participants	Gender	
			Male	Female
Kalichelo 1	Chipata	24	8	16
Kalichelo 2	Chipata	41	21	20
Nsefu	Mfuwe	14	3	11
Chikowa	Mfuwe	20	10	10
Mwachilele 1	Rufunsa	18	11	7
Mwachilele 2	Chongwe	19	9	10
Total		**136**	**62**	**74**

Community committees and activities

In Nsefu area, the Community Resource Board (CRB) is responsible for nature conservation, while the wildlife Authority makes decisions and the community executes activities like forest regeneration, unlike other areas lacking such committees.

NGOs and other organisations or projects

International Organisations and projects supporting communities in the target areas on environmental management includes the following: Community Markets for Conversation (COMACO), departments of Agriculture and Forestry, Total LandCare, Biocarbon, Plan International, Strengthening Climate Resilience of Agricultural Livelihoods in Agro-Ecological Regions (SCRALA), World Vision, Conservation Farming Unit, World Food Programme (WFP), Zambia Integrated Landscape, LIMA, Japan Tobacco International (JTI), and CmiA partners (Alliance Ginneries Ltd, Highlands Cotton Trading and Louis Dreyfus Company).

Status quo and changes in the biodiversity

Landscape

Major landscapes surrounding these communities include: wetlands, forests, wildlife park, mountains, streams, grazing lands, man-made dams, water wells and ant-hills.

Changes in environment and diversity

Among the notable changes in the environment include the conversion of grazing fields to human settlement, water shortages as a result of insufficient rainfall, which affects gardening in wetlands, and a reduction in the number of tree species owing to charcoal production. Farming lands have degraded soil, resulting in lower yields. The uncontrolled cutting down of trees has resulted in the extinction of some fauna, as well as water scarcity in rivers caused by insufficient rainfall, which has been compounded by climate change.

Indigenous plants/tree species and common types of wildlife

The types of plants/ tree species prevalent and common types of wildlife documented during FGDs with Cotton made in Africa (CmiA) farmers, are listed in appendix 1 and appendix 2.

Changes in wildlife population

In comparison to prior years, several wildlife populations have decreased or disappeared. For example, burning fields has reduced the populations of bush mice and guinea fowl. Human settlement has also contributed to the movement of wildlife away from farms, resulting in human-wildlife conflict. Deforestation, water scarcity, and poaching have all had an impact on many species of wildlife.

Changes in soil fertility/soil microorganism

Farmers have seen changes in the quality of soil on their farms. Soil fertility has declined, resulting in reduced yields. Farmers noted that in the past, they would plant without using fertilizers and still obtain good results. Unfortunately, today's farmers cannot do without fertilizers. Bushfires and the indiscriminate use of herbicides have harmed beneficial soil organisms like earthworms, which aid in the breakdown of organic matter. Bad agricultural practices, such as mono-cropping, have also had a severe impact on soil fertility.

Consequences of changes in soil fertility

Soil degradation on farmer's fields has resulted in reduced crop yields which in turn has threatened food security in the community.

Practices to enhance biodiversity

Practices that negatively impact biodiversity

The FGD revealed that practices that have a negative impact on biodiversity include deforestation owing to charcoal production, mono-cropping, indiscriminate herbicide use, and crop residue burning.

Specific measures implemented by farmers to promote or restore biodiversity

Crop rotation, the use of compost and organic manure (cow dung, goat and chicken droppings), afforestation with legume trees (*Gliricidia sepium* and *Faidherbia Albida*), conservation agriculture using minimum tillage (ripping and potholing), and reduced indiscriminate use of chemicals (e.g. herbicides).

How biodiversity changes are monitored on farms

Farmers in the target areas use various methods to monitor biodiversity changes on their farms. According to some farmers, the absence of mushrooms in the woodlands indicates that something has changed in biodiversity. Furthermore, changes in soil structure/color (soil quality) and low yields indicate biodiversity change, according to farmers. In some cases, the appearance of specific weeds, such as witch weed and black jack, was noticed. Climatic variations in weather conditions, such as unusually high and low temperatures and irregular rainfall patterns, are often utilized to monitor biodiversity changes.

1. INTRODUCTION

Cotton made in Africa (CmiA) is an Aid by Trade Foundation (AbTF) initiative and an internationally recognized standard for sustainable cotton from Africa. The core principle of CmiA is that the knowledge imparted to farmers not only helps them achieve higher yields and incomes but also enables them to protect both people and the environment. Biodiversity is crucial for human health and livelihoods. Living organisms including plants, animals, and microorganisms interact to create complex, interconnected webs of habitats and ecosystems, which, in turn, support people and all life on Earth in numerous ways. Consequently, CmiA advocates for practices that conserve or enhance natural habitats on farms and in surrounding areas. Recognizing that local communities have the best understanding of their environment, CmiA adopts an inclusive, participatory approach to identify the most pressing biodiversity issues. As such, Zambia Agriculture Research Institute in partnership with Aid by Trade Foundation was contracted to conduct six focus group discussions with CmiA farmers in Eastern and Lusaka provinces from 8th to 12th July, 2024.

Team Organisation

The team comprised of Agricultural Research Officers Owen Machuku and Jackson Mwenya from Zambia Agriculture Research Institute (ZARI), Nina Schöttle, Project Manager Monitoring, Evaluation and Learning and Dr. Ben Sekamatte, Independent Consultant for East and Southern Africa, both from Aid by Trade Foundation (AbTF).

Objective of the mission

The objective of the mission was to conduct six focus group discussions with CmiA farming communities in Eastern and Lusaka provinces on the topic of biodiversity.

Areas visited

This report serves to provide valuable information on biodiversity that was documented during the focus group discussions (appendix 3) in the specific areas visited. The first FGDs were conducted in Eastern Province in Kalichelo 1 and Kalichelo 2 in Kefa village (Chipata district) while, the second FGDs were done in Nsefu and Chikowa camps (Mfuwe district) and the last FGDs were conducted in Mwachilele in Rufunsa and Chongwe districts of Lusaka province respectively.

2. OUTCOMES OF THE FOCUS GROUP DISCUSSIONS

2.1. KALICHELO 1 AREA (CHIPATA DISTRICT)

The total number of farmers attending this FGD was 24 (33% males and 67% females). The outcome of this discussion was that the community has no committee that deals with nature conservation as well as there are no community activities carried out to restore or protect their environment. However, the presence of non-governmental organizations such as Community Markets for Conversation (COMACO), Department of Agriculture, and Total LandCare support the community on environmental management through the planting of trees (afforestation).
The landscape in this community is surrounded by rivers and wetlands but has no grasslands or mountains. Some changes noticed by the farmers in the environment on community land include: the opening up of places due to indiscriminate cutting down of trees, inadequate rainfall, soil degradation and land use change of grazing lands to human settlement. Tree species prevalent on farmer's farms and those that have disappeared over the past years as well as wildlife commonly seen and/or have disappeared, are listed in appendix 1 and 2.
In this area, the soil fertility has degraded due to poor agricultural practices such as mono-cropping. Subsequently, this has reduced crop yields. Farmers also cited the use of herbicides, charcoal production, and the burning of crop residues to have negatively impacted biodiversity on their farms. To avert this negative impact and enhance biodiversity, farmers are taking actions such as practicing crop rotation, minimum tillage (ripping), planting of legume trees (*Gliricidia sepium* and *Faidherbia Albida*), reduced usage of herbicides, and application of organic manure (cow dung and goat manure). Farmers in this area monitor changes in biodiversity by observing changes in climate patterns comparing the present and the past such as reduced rainfall.

2.2. KALICHELO 2 AREA (KEFA VILLAGE)

The focus group discussion in this area had a total of 41 cotton farmers (48% female and 52% male) in attendance. The community landscape is surrounded by wetlands, rivers, mountains, anthills in some areas and man-made dams. The notable changes in the environment on the community land include heavy deforestation due to cutting down trees, soil degradation and dry grazing land due to overgrazing. The notable changes in the diversity of tree species over the years include native trees have disappeared on the farms and are found far away from the human settlement and only small trees are available as compared to the previous years. Musolo tree in this community is less common on the farms and is only found in the graveyard due to its sacred function (used for appeasing the ancestral spirit). Commonly seen, appeared or disappeared types of wildlife are listed in appendix 2. Most types of wildlife and/or their populations have decreased due to factors such as deforestation and bush fires. Over the past few years, changes in the soil fertility levels on the farms have reduced and these changes are notable in reduced yields and heavy application of fertilizers on farming lands. The changes in the soil fertility were influenced by burning of crop remains hence reducing biodiversity, mono-cropping and over application of chemical fertilizer over the years hence reducing yields on their farms.

2.3. NSEFU AREA (MFUWE DISTRICT)

The village is located next to Mfuwe National Park, with a landscape that comprises forests and vegetation, no mountains, and a few dried-up marshes. The FGD was attended by 14 persons (21% male, 79% female), including two men and four women who were born in the same location. The community has a nature protection group called the Community Resource Board (CRB), and the wildlife Authority leads the majority of activities. Other stakeholders/organizations, such as Bicarbon, COMACO, and LDC, also contribute to environmental management by offering free trees for planting and environmental management training to the community.

Some notable changes on community land throughout the years include deforestation, low water levels, reduced yields due to poor soil fertility, and changes in rainfall patterns. Changes and agricultural techniques have also had a negative impact on the presence and diversity of several indigenous trees on their farmlands, such as *Faidherbia Albida* and *Accacia poliacantha*, and Leadwood/ *Combretum imberbe* as a result of human activities such as cutting them for charcoal or using them to cook with. *Accacia poliacantha*, *Combretum zeyheri*, and *Colophospermum mopane* are three tree species that have become less frequent on their farms, prompting the community to begin cutting down mango trees as an alternative source of fuel. Wildlife has not been spared from the effects of these environmental changes (see appendix 2). The soil fertility and living organisms have also been influenced by changes over time, resulting in soil degradation and nutrient depletion, causing the numbers of soil living organisms such as worms, termites, and antlions to reduce. Certain farming techniques have contributed to these changes, impacting yields, rainfall patterns, and soil deterioration (nutrient runoff).

Farmers have ceased burning crop residue in the fields, practice crop rotation, and afforestation to ameliorate these changes and increase biodiversity on their farms. In addition, some of the specific strategies taken to restore biodiversity include appropriate agricultural practices (crop rotation, manure application, and farm-made composts). Farmers employ traditional knowledge to monitor changes in biodiversity on their farms, such as soil structure, soil colour changes, low yields, and the appearance of certain types of grass (witch weed) in their fields, which represents the changes. What was interesting about this group is that they have cultural ways of preserving biodiversity that they teach their children through traditional songs about appreciating and protecting nature, and they also discourage their children from burning vegetation while mining for bush mice.

2.4. CHIKOWA AREA (MFUWE DISTRICT)

The total number of farmers attending this FGD was 20 (70% males and 30% females). All the farmers have lived here for more than 10-20 years. The community has no committee that deals with nature conservation. However, farmers are taught some activities on how to protect or restore the environment through the support from the non-governmental organizations such as Community Markets for Conservation, Plan International, Louis Dreyfus Company, and projects for instance, Strengthening Climate Resilience of Agricultural Livelihoods in Agro-Ecological Regions (SCRALA). This community is surrounded by landscapes such as forests, mountains, rivers and wetlands. Some noticeable changes in this community have been the drying up of some rivers and changes in weather patterns. For example, historically, rains would start around October 24th, but now rains start late November or even December.

The area has different types of indigenous plants/ tree species prevalent on farmer's farms (see appendix 1), although some of them have been cut down like the mukula (*Pterocarpus tinctorius*) tree used for timber. Farmers in this area have observed some changes in wildlife population over the years. This is attributed to deforestation, water scarcity and poaching. For commonly seen types of wildlife in this area, please see appendix 2. Farmers have also noticed changes in soil quality over the past few years. Initially, in the old days, they would plant crops without adding fertilizers and the yield would still be fine. Even the soil organisms (earthworms) which

help in the decomposition of organic matter have disappeared. Reduced soil fertility has resulted in having poor yields, hence posing a threat on food security. In order to enhance biodiversity, farmers employ the following practices which they are implementing; crop rotation, afforestation, ripping, potholing, use of compost manure and making of fire guards around the farms to avoid bushfires from sweeping through the crop residues. Furthermore, some farmers monitor changes in biodiversity when they observe the appearance of grasses like witch grass and black jack especially when soils are depleted of nutrients.

2.5. MWACHILELE 1 (RUFUNSA DISTRICT)

A total of 18 farmers (61% males and 39% females) attended the FGD. The community has a committee that looks at forest regeneration while NGOs such as World Vision and other organizations like Alliance Ginneries Ltd and the Department of Forestry support the community on environmental management. Mwachilele landscape is surrounded by mountains, forests and rivers i.e Chongwe River. However, noticeable changes have occurred including drying of some rivers thus causing water scarcity for irrigation in vegetable gardens. There is also a reduction in tree species as a result of charcoal production. For plant/ tree species prevalent on farms and commonly seen wildlife, please see appendix 1 and 2. Over the past few years, some farmers have noticed the formation of soil pans on their farms. The occurrence of soil erosion has also contributed to soil degradation whereas the indiscriminate use of herbicides and bushfires have reduced beneficial organism populations such as earthworms and termites. Farmers in this area are practicing afforestation, crop rotation, and application of cow dung as organic manure to enhance biodiversity.

2.6. MWACHILELE 2 (CHONGWE DISTRICT)

The focus group in this area was attended by 19 farmers (53% females and 47% males) from various villages. Five males and three females were born in the same location, and 11 people had lived in the same neighbourhood for ten to twenty years. The village headman leads the community's nature conservation initiatives, which are supported by NGOs such as World Vision, Natural Regeneration, and by the cotton company Alliance Ginneries, who provide training in water management, organic farming, and the prevention of child labour. The landscape is bordered by forests, mountains, rivers, and marshes. The community saw environmental changes on communal land, such as the drying of the major Chongwe River and surrounding wetlands. Appendix 1 lists the most prominent species in the area. Deforestation has contributed to the disappearance of trees species. However, some have regenerated over time. Musekese (*Piliostigma thonningii*), Masuku (*Uapaca Kirkiana*), Katenge (*Dichrostachys cinerea*), and Musolo (*Pseudolachnostylis maprouneifolia*) are among the most prominent trees in the community. In terms of wildlife diversity, the most common animals seen in the area are rabbits, impala and monkeys. However, some changes in the wildlife's population have occurred over time as a result of human meddling in the animal ecosystem, resulting in the extinction of species such as the baboon. However, monkeys have reappeared over the years. These changes have not spared the soils, and diminished fertility has resulted in lower yields; extensive pesticide application has also had an impact on the ecosystem (soil microorganisms).

Farmers have stopped burning crop leftovers in the fields and instead undertake crop rotation and afforestation to mitigate these effects and boost biodiversity on their farms. In addition, some of the specific measures used to restore biodiversity include proper agricultural practices (crop rotation, manure application, and farm-made composts). Farmers use traditional knowledge to monitor changes in biodiversity on their farms, such as soil structure, soil colour changes, low yields, and mushroom disappearance in both farmed fields and the wild.

Appendix 1: Trees/ plant species

Area	Native Name	Common / Scientific Name	Importance	Remarks
Kalichelo 1 (Chipata)	Ngowe	*Accacia poliacantha*	Soil fertility	Less common
	Mubanga	*Pericopsis angolensis*	For timber	Less common
	Kalama	*Combretum zeyheri*	Herb	Less common
	Mkute	Velvet bushwillow/ *Combretum molle*	Herb	Common
	Musolo	*Pseudolachnostylis maprouneifolia*	Medicinal tree	Less common
Kalichelo 2 (Kefa Village - Chipata)	Nkulo	*Diospyros kirkii*	Edible berry	Common
	Mpakasa	Rain tree/ *Philenoptera violacea*	Herb/ building	Common
	Musekese	Monkeybread/ *Piliostigma thonningii*	Herb	Common
	Balanani	*Cordia myxa*	Herb/ edible fruit	Common
	Mukuyu	Zambezi fig/ *Ficus zambesiaca* Hutch.	Herb/ timber	Common
	Nchenja	*Mimusops zeyheri*	Herb/ edible fruit	Common
	Kaputi	Large red heart/ *Hymenocardia acida*	Herb, wood	Common
	Ngowe	*Accacia poliacantha*	Soil fertility	Common
	Mulele	*Sterculia quinqueloba*	Herb, wood	Common
	Kankande	*Ziziphus abyssinica*	Herb	Less common
	Kafifi	*Acacia gerrardii* Benth	Herb/ forage	Common
	Kabuula	*Viridivia suberosa*	Ornamental/ fruit	Common
	Vuluvela	*Vetiveria-ziza nioides*	Herb	Common
	Misiniga	*Syzygium cumini*	Edible fruit	Common
	Musolo	*Pseudolachnostylis maprouneifolia*	Herb	Less common
Chikowa (Mfuwe)	Musangu	*Faidherbia Albida*	Soil fertility	Common
	Musolo	*Pseudolachnostylis maprouneifolia*	Medicinal tree	Less common
	Gilicidia	*Gilicidia Sepium*	Soil fertility	Common
	Mbangozi	*Senna petersiana*	Herb	Common
	Mupapa	Pod mahogany/ *Afzelia quanzensis*	Ornamental/ herb	Less common
	Mulombe	*Pterocarpus angolensis*	Timber/ herb	Common
	Mukula	*Pterocarpus tinctorius*	Herb/ firewood	Less common

Nsefu Area (Mfuwe)	Mopani	*Colophospermum mopane*	Herb/ fodder	Common
	Musangu	*Faidherbia Albida*	Soil fertility	Common
	Ngowe	*Accacia poliacantha*	Soil fertility/ herb	Less common
	Msimbiti	Leadwood/ *Combretum imberbe*	Charcoal making	Common
Mwachilele 1 (Chongwe)	Mpundu	*Parinri curatailifolia*	Herb/ firewood	Common
	Mubanga	*Faidherbia Albida*	Herb, shade, fertility	Common
	Musekese	Monkeybread/ *Piliostigma thonningii*	Herb	Less common
	Katenge	Sicklebush/ *Dichrostachys cinerea*	Medicinal plant	Common
	Musolo	*Pseudolachnostylis maprouneifolia*	Herb	Less common
	Mutuba	*Brachystegia manga*	Fodder, firewood	Common
	Musangu	*Faidherbia Albida*	Soil fertility	Common
	Chombwe	*Acacia polyacantha*	Herb, firewood	Common
	Mululwe	Long-pod Cassia/ *Cassia abbreviata*	Herb, timber	Common
	Masuku	*Uapaca Kirkiana*	For fruits	Less common
Mwachilele 2 (Rufunsa)	Chombwe	*Acacia polyacantha*	Herb, firewood	Common
	Musekese	Monkeybread/ *Piliostigma thonningii*	Herb	Common
	Blue gums	*Eucalyptus globulus*	Medicinal	Common
	Chibombo	*Acacia hockii*	Herb, firewood	Common
	Chombwe	*Acacia polyacantha*	Herb, firewood	Common
	Musangu	*Faidherbia Albida*	Soil fertility	Less common
	Mubanga	*Pericopsis angolensis*	Timber	Less common
	Musolo	*Pseudolachnostylis maprouneifolia*	Herb	Less common

Appendix 2: Wildlife species

Area	Native Name	English name	Remarks
Kalichelo 1 (Chipata)	Nyani	Monkeys	Common
	Kalulu	Rabbits	Less common
	Impala	Impala	Common
	Njovu	Elephant	Common
	Ngulube	Bush pig	Common
	Mbewa	Bush mouse	Less common
Kalichelo 2 (Kefa Village - Chipata)	Ngulube	Bush pig	Common
	Kalulu	Rabbits	Common
	Fisi	Hyena	Common
	Mbalani	Birds	Common
	Mbewa	Bush mouse	Less common
	Nkhanga	Guinea fowls	Less common
	Nyani	Monkeys	Disappeared
	Mkango	Lions	Disappeared
	Mpongwe	Gorilla	Disappeared
	Mbabala	Porcupines	Disappeared
	Njati	Buffalo	Appeared
	Mbila	Guinea pigs	Appeared
Chikowa (Mfuwe)	Cheta	Leopard	Common
	Ngulube	Bush pig	Common
	Mpombwe	Rhino	Common
	Nkhanga	Guinea fowl	Common
Nsefu Area (Mfuwe)	Chitembele	Rhino	Common
	Mimbulu	Green monitor Lizard	Common
	Kalulu	Rabbits	Less common
	Ndungu	Zebra	Common
	Njovu	Elephant	Less common
	Mkango	Lion	Less common
	Chimbwi	Hyena	Less common
Mwachilele 1 (Chongwe)	Mbila	Guinea pigs	Less common
	Kalulu	Rabbits	Common
	Insha	Impala	Common
	Nyani	Monkey	Common/ appeared
	Nyani	Baboons	Disappeared
Mwachilele 2 (Rufunsa)	Nyani	Monkey	Common
	Kalulu	Rabbits	Common
	Mimbulu	Green monitor lizard	Common
	Fulwe	Tortoise	Common
	Njovu	Elephant	Disappeared
	Ngulube	Bush pigs	Disappeared

Appendix 3: Pictorial presentation of the focus group discussions

Figure 1: Nina having a light moment with women farmers after a successful focus group discussion

Figure 2: Owen conducting an interactive focus group discussion in Kalichelo in Kefa village, Chipata

Figure 3: Ashley – Alliance Ginneries Ltd Manager (far left) pose for a photo with Nina and cotton farmers

Figure 4: Dr. Ben and Joesph – LDC Managing Director (far second right) after a FGD in Chikowa, Mfuwe

Figure 5: Jackson documenting the information during FGD

Figure 6: Jackson conducting a FGD in Mwachilele, as farmer (green t-shirt) explains the status quo of the Rufunsa district environment

ABOUT THE AID BY TRADE FOUNDATION

The Aid by Trade Foundation (AbTF) was founded in 2005 and is now an internationally renowned and active nonprofit organization for sustainable raw materials. Through its work, it makes a decisive and measurable contribution to improving the living conditions of people and animals and to protecting the environment. With its certified raw materials Cotton made in Africa (CmiA), Cotton made in Africa Organic (CmiA Organic), Regenerative Cotton Standard (RCS) and The Good Cashmere Standard (GCS), the foundation puts its goals into practice. A globally active alliance of textile companies and brands requests the certified raw materials and pays a license fee to the foundation's marketing company, ATAKORA Fördergesellschaft GmbH. This entitles the partners to market their goods with the labels of the standards. In view of the increasing challenges small-scale farmers and textile companies are facing, the standards are of fundamental importance for their resilience and future viability. The AbTF works in close cooperation with industry experts, animal welfare and nature conservation specialists.

With the Cotton made in Africa (CmiA) initiative,AbTF is putting its principles into practice. The trade partners of the CmiA Demand Alliance source African cotton produced according to the CmiA standard and pay the foundation a volume-based license fee that is reinvested in the cultivation areas. Consumers recognise products by the CmiA label and make a valuable contribution to protecting the environment and supporting smallholder farmers and their families in Africa.

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