

CHITUNGULU CONSERVATION TRAINING



Program Outline
Chitungulu Conservation Training
Chitungulu, Luangwa Valley, Zambia

19 September 2021

Stichting Chitungulu • Chitungulu Foundation
www.chitungulu.nl

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Foreword

The Chitungulu Foundation has been engaged in community work in Chitungulu since 2012. From the outset, our motto has been: *community outreach – nature conservation*.

We strongly believe that human development, so necessary in this extremely poor and forgotten part of the Luangwa Valley, can only be genuinely sustainable when natural resources are carefully managed and protected by the local communities involved. This is why we have always included nature conservation in our community-oriented projects, ranging from tree planting, the introduction of new, more environmentally-friendly building and farming techniques, to birding lessons at primary schools and conservation training for adolescents. Our work can be divided into two phases - divided, rather strikingly, by a pandemic that has been reminding us of our dealings with nature. Phase 1, covering the period 2012-2020, focused on 1) assisting the community with uplifting the educational standards of their primary schools (through the building of school infrastructure as well as the provision of modern teaching aids), 2) the introduction of the concept of organic vegetable gardening and 3) sustainable poultry and beekeeping practices. In Phase 2 (2021-2027), we are focusing on three core projects: 1) conservation training for adolescents (linked to sponsorship opportunities for vocational training), 2) scaling up of climate-smart/organic vegetable gardening and farming, and 3) beekeeping. Whilst in the second phase climate adaptation will be taking centre stage, the aim of the second phase programs remains the same: community-oriented development in sync with nature conservation.

Over the years, we have been privileged to work with many dedicated and enthusiastic people, both from within the community and outside through individuals and organizations that have been helpful in achieving our goals. We greatly value establishing positive synergies with other organizations such as Luambe Conservation Project, Makolekole, and, recently, Nsanga Conservation, which has bold and audacious, and therefore exciting, plans to reintroduce the black rhino into this part of the Luangwa Valley, as part of their conservation strategies. We are convinced that, by joining forces together, we will be able to preserve both a community's cultural heritage and their extraordinary rich and beautiful natural environment for future generations.

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CONSERVATION TRAINING PROGRAM

CHITUNGULU, ZAMBIA

1. Introduction

Since 2019, the Chitungulu Foundation has been running an annual, six-weeks' Conservation Training program for graduated grade 12 adolescents in partnership with the Chikowa Youth Development Centre (CYDC) and Luambe Conservation Project (LCP) in Luambe National Park, located in Zambia's Luangwa Valley. The program serves the following goals:

1. To win a solid local support base for nature conservation in and around Chitungulu, a remote village in the Luangwa Valley adjacent to Luambe National Park;
2. Raising awareness of climate change and its effects on people and ecosystems worldwide, and raising awareness of the two other planetary crises: biodiversity loss and chemical (notably: plastic) pollution;
3. Raising awareness of the need for climate adaptation in Chitungulu and surrounding villages through climate smart agriculture and sustainable land usage practices;
4. Gaining in-depth knowledge on flora and fauna in and around Chitungulu;
5. Sourcing suitable candidates for a professional nature guide training program in Zambia in order to establish a pool of dedicated nature guides from this part of the Luangwa Valley;
6. Offering other well-performing candidates in this program an opportunity to enroll in a vocational training course of their choice at one of Zambia's learning institutions partnering in our Conservation Training program.

2. Program description

Since the program kicked off in 2019, ten grade-12 graduates have been participating in this training program annually. Depending on available funds, the aim is to increase the annual number of participants to thirty, and to enable 10-15 of them to pursue a vocational training upon completion of the Conservation Training. Female candidates are particularly encouraged to participate (two females who participated in the 2019 program successfully completed their automotive mechanics course and are working as mechanics). Selection takes place on the basis of secondary school exam results, and candidates must have good marks for English, science/biology and maths. The Conservation Training is offered free of charge.

The Conservation Training program is a three-tiered program in which students can progress from the first level (conservation training) to the next (vocational training) and the last level (safari guide training). Only students who excel will be able to enter the last level.

The training is given by the project coordinator of the Chitungulu Foundation, who has practical nature guiding experience in South Africa and is currently taking Wageningen

University courses in nature-based solutions for disaster and climate resilience, including sustainable food crops production. The program's curriculum is based on various southern African training manuals for professional field guides. The training program also links up to two other core projects of the foundation: organic vegetable gardening and beekeeping¹.



Conservation Training group 3, 2021 – field trip to the Luangwa river in July 2021

Teaching aids and methods include:

- ➔ a collection of nature books/field guides
- ➔ course materials based on southern African training manuals for professional field guides ('safari guides')
- ➔ fact sheets on climate adaptation, courtesy Wageningen University
- ➔ nature documentaries like the Planet Earth series, shown on laptops
- ➔ YouTube movies on climate adaptation and practical mitigation examples worldwide
- ➔ a substantial collection of National Geographic magazines
- ➔ binoculars for birding
- ➔ bird calls app for bird identification training
- ➔ citizen-science apps like iNaturalist and eBird to encourage students to become actively involved in citizen-science conservation projects
- ➔ field trips and game drives in Luambe NP (the latter conducted by LCP)

Students are assessed through weekly exams, one practical community activity (such as plastic clean-ups or tree planting), and a final exam to round off the program.

[See Annex I for an example of a final exam]

¹ See pp. 8-10 for explanation on the program's links with the foundation's other two core projects
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The six best-performing students who have shown motivation and dedication during the training, are rewarded with a sponsorship to enable them to take up a two years' vocational training at the Chikowa Youth Development Centre (CYDC) in vehicle mechanics, general agriculture or catering/food production. All of these courses include the subjects: practical computer training, communication skills and leadership and entrepreneurial training.



Game drive for the second (2020) group of conservation students in Luambe National Park, picture August 2021

Those students who demonstrate potential for a professional nature guiding career are, firstly, trained in a two years' automotive mechanics training at CYDC before embarking on the guide training trajectory, which includes a driving license course, first aid course and a fully accredited Zambian guide training course offered by Bedrock Safari Training. Trainee-guides will be assisted in securing traineeships at various lodges in the Luangwa Valley in order to obtain practical guiding experience whilst completing their guide course.

Since the kick-off of the program in 2019, a total number of ten students who participated in the Conservation Training program have finalized (4) or are in the process of finalizing (6) their studies in mechanics, agriculture, catering, or welding.

3. Preliminary results 2019-2021

Since the Conservation Training started in 2019, the following preliminary results have been observed:

1. The program is popular with the target group as it offers a chance to pursue vocational training which, in the poverty-stricken area of Chitungulu, is out of reach for the majority of secondary-school graduates.

2. Besides the pragmatic reason for the program's popularity, the program does raise conservation awareness and also contributes to the community's climate change resilience, as knowledge on climate smart agriculture is being shared with fellow-community members who are actively engaged in subsistence farming².

3. The program offers young women a way to delay prevailing conservative village customs applying to girls/women in this part of Zambia, encouraging them to become knowledgeable community leaders before settling for married lives.



Two ladies in the 2019 Conservation Training completed their vehicle mechanics training in 2021

4. Program prospects

1. If this program continues for another 5-10 years with a good annual number of participants, it can significantly contribute to youth empowerment as it improves the job prospects of secondary school leavers.

2. Sharing the common traits of the pragmatic 'Generation Z', the students of Chitungulu have shown genuine curiosity and determination to change the world they live in and make things better. The program enables the students to become Chitungulu's first globally informed generation, fostering locally rooted, globally informed development. Thus, in the long run the program can contribute to a generation of local community leaders who have been trained in promoting and practicing ecologically sustainable livelihoods.

3. The program can help building an ecologically literate society by involving the rest of the community more actively in nature conservation, especially as it is linked to climate resilience which is of relevance to every subsistence farmer in Chitungulu.

² During the six weeks' Conservation Training, students stay with various host families within the vicinity of the Conservation Centre, which will encourage the spreading of knowledge. See also p. 12



Students of the Conservation Training group I – 2019



Conservation Classroom 2019



Game drive with students of the 2020 class

5. Interconnection with other core programs

The Conservation Training goes beyond providing in-depth understanding of the local ecosystem in order to promote nature conservation. Through its focus on climate adaptation and climate resilience, the program interconnects with two other core projects undertaken by the Chitungulu Foundation: organic vegetable gardening and beekeeping.

Organic vegetable gardening

The village of Chitungulu has great potential to become a regional provider of organically grown vegetables and fruit. On the one hand, considerable knowledge of organic farming methods has been gained by the vegetable growers over the past years while, on the other hand, market opportunities abound. The nearby located tourist lodge in Luambe NP needs top-of-range, organically grown vegetables and fruits during their six months' operational season. Ever since vegetable farming became popular in Chitungulu, vegetables are being sold to neighbouring villages which have less experience in vegetable farming, or are bartered for other crops which those villages tend to specialize in, such as rice, sorghum or fish. In this way, a more diversified diet is being promoted between villages. Finally, the ever-expanding district capitals of Lundazi and Lumezi are potential markets for niche products from the valley. This market potential is expected to take flight when infrastructure rehabilitation works by the Zambian government are completed.



One of the organic vegetable gardens which has been supported by the Chitungulu Foundation since 2012 – picture August 2021

Right from the start in 2012, the Chitungulu Foundation supported vegetable growers in Chitungulu to practice sustainable, environmentally-friendly horticulture. In Phase 1 (2012-2019) of the organic vegetable gardening project, the following goals were set and achieved:

- transfer of knowledge about organic gardening techniques, such as intercropping, companion planting, organic pest control and soil fertility by organic methods;
- introduction of hitherto unknown vegetables and fruits (see Annex III);
- promoting vegetable farming by means of subsidized sale of vegetable seeds, and providing inputs to successful organic gardeners such as treadle pumps, garden hoses and boreholes.

In 2022 the project will enter its second phase, which revolves around the major challenge of adapting food crops production to climate change. Over the years, the effects of climate change, especially erratic rainfall patterns and intense floods or spells of drought, have hit farmers hard. Specific goals in this phase are: 1) scaling up of vegetable production, 2) scaling up of gardens run by women, 3) setting up of local seed banks with open-pollinated and pure-line varieties. Due to their genetic diversity, these seeds can adapt to local conditions and changes in climate, and growers can collect their own seed, which minimizes their dependence on commercial seed markets.

Beekeeping

Beekeeping constitutes an essential part of the organic gardening project. Since 2019, beehive fences were successfully introduced to keep raiding elephants out of the gardens. Obviously, bees also help pollinating the crops, and will be highly beneficial when orchards will be introduced in 2022. In 2018-2019, 70 beehives have been provided to 23 families in Chitungulu. For the years ahead, the aim is to scale up the project and to assist the bee-keepers with the marketing of honey and beeswax in the local Crafts Shop.

Thanks to improved internet access, a WhatsApp group with local vegetable growers has been set up in 2021 to facilitate the sharing of experiences and advice. The aim is to build a database of local experiences which can be shared on platforms such as IUCN's PANORAMA: <https://panorama.solutions/en/about-panorama-solutions-healthy-planet>



Beehive fences proved successful in protecting vegetable gardens against raiding elephants

6. Risk inventory

Following table presents an overview of possible risks that may jeopardize the success of the Conservation Training program, and actions to counteract the risk.

RISK INVENTORY CHITUNGULU CONSERVATION TRAINING PROGRAM	
Risk	Counteract risk
1. Absence of trainer due to unforeseen circumstances (e.g. pandemic, illness)	1. Due to the Covid-19 pandemic our project coordinator responsible for teaching the program was unable to travel to Chitungulu in 2020 and 2021. Nonetheless, the training was continued in 2020 and 2021 with the assistance of two local trainers, who participated in the Conservation Training themselves in 2019. Thanks to improved internet access, tests and study materials could be provided to the local assistants on a weekly basis. Enthusiastic feedback received from the Chikowa Youth Development Centre confirms that the selection of candidates for their vocational training has been successful. For the years ahead, one or two local assistant-trainers will be further trained to ensure the continuation of the training.
2. What happens with the Conservation Centre after ten years? (see also page 11)	2. The long term goal is to hand the Conservation Centre over to Luambe Conservation Project to continue the program. Thanks to a well-stocked library and locally trained trainers, the Conservation Centre will continue to play its role in promoting nature conservation.
3. Lack of funds for vocational training	3. When vocational training opportunities cannot be offered to students, the program's popularity is bound to wane. To ensure that participants in the program will not get disappointed, the Chitungulu Foundation is constantly raising funds and making efforts to bind sponsors to this program for a longer period of time. It is expected that fundraising will become easier over time when the program's track record becomes more evident.
4. Relatively high costs of safari guide training	4. The costs of the renowned safari guide training offered by Bedrock Safari Training are relatively high: € 2800 per person all-in (see pp. 12-13). However, these costs can be spread out over two-three years, depending on how long it takes for the trainee guide to complete his/her required number of practical logged on game drives. A strict selection procedure ensures only the most eligible candidates are selected. Moreover, the tiered training program enables constant monitoring of the candidate's motivation and dedication. Especially, the assessments by CYDC are important selection criteria. Fundraising for the safari guide training will start in the second half of 2022.

7. What is needed to continue the program

To continue the program, there is need of four types of funding:

1. Funding for the construction of a Conservation Centre (one-off funding);
2. Funding for annual costs of Conservation Training (annually recurring costs);
3. Funding for sponsoring the students at Chikowa Youth Development Centre (annually recurring costs);
4. Funding for sponsoring the students at Bedrock Safari Training (annually recurring costs starting 2023).

1. CONSERVATION CENTRE

Explanation:

In the years 2019-2021 the Conservation Training took place at the premises of primary school Chilubezi, which was built by the Chitungulu Foundation. As this school is on the verge of becoming a government school, involving the handing over of all the classrooms including the current Conservation Classroom, it has become necessary to find a new location to offer training and facilitate an environment conducive to studies. The new Conservation Centre will be located closer to the entrance gate of Luambe National Park, so that field trips into the park will become easier to organize. The centre will consist of one large classroom and two smaller adjacent rooms, the latter enabling the project coordinator to take up residence in a safer place (from 2012-2019 our project coordinator has been camping in the village which poses a safety hazard given the omnipresence of venomous snakes in this area).

1. Construction of a Conservation Centre	Estimated
Spacious classroom and two smaller rooms	€ 6.000,00
Additional requirements: tables, chairs, book shelves (made by local carpenters) and trunks to store binoculars and other study items	€ 1.000,00
Toilet and shower block	€ 2.000,00
Unforeseen expenses (due to currency fluctuations of the Zambian Kwacha)	€ 1.000,00
Costs are inclusive labour and transport of building materials	
Total estimated costs (one-off)	€ 10.000,00

2. ANNUALLY RECURRING COSTS CONSERVATION TRAINING

Explanation:

1. Costs for teaching materials and stationery (notebooks for each student and costs for copying teaching materials);
2. Costs for paying host families nearby the Conservation Centre to accommodate the students for six weeks. Chitungulu being a large and extended village, students spend long hours commuting between their homes (often located far from the road) and the Conservation Centre. This new setup will not only save precious travelling time for the students, but also draws more families into the program to interact with the students who can share what they have learnt.

3. Costs for one (locally purchased) smartphone per group per year. By providing one smartphone to one group of students per year, it is aimed to enable to students to familiarize themselves with the usage of smartphones and, more specifically, to get experience with the usage of citizen-science apps such as eBirds en iNaturalist. The student eventually finishing his/her vocational training at CYDC with the best results, will 'win' the smartphone.

2. Annual costs Conservation Training program	Estimated
Learning materials: notebooks, stationery	€ 30,00
Teaching materials: one smartphone for citizen science apps, internet costs	€ 200,00
Teaching materials: costs for copying	€ 30,00
Boarding costs for host families: food contribution € 40 x 10 families	€ 400,00
Total estimated costs per year	€ 660,00

3. ANNUAL COSTS TRAINING CHIKOWA YOUTH DEVELOPMENT CENTRE

Explanation:

Sponsorship of students at Chikowa Youth Development Centre constitute the largest annual cost item of the program. Successful fundraising for these costs is critical to the success of the program. Depending on the currency rate, the costs for one student at CYDC amount to approx. € 600 per year (most courses at CYDC have a two years' course duration). Costs are inclusive tuition and exam fees, boarding/accommodation and transport (students return to their homes in Chitungulu during the three breaks per year).

3. Annual costs vocational training courses CYDC	Costs
Tuition, registration, exam, accommodation, meals, extra-curricular activities	€ 450,00
Transport costs Chitungulu-Chikowa Youth Development Centre	€ 150,00
Total costs per student per year	€ 600,00
TOTAL COSTS TEN STUDENTS PER YEAR	€ 6.000,00

[A more detailed breakdown of all costs involved is available on request].

For further information on the Chikowa Youth Development Centre, see:

<https://www.facebook.com/chikowaydc>

4. COSTS OF ZAMBIAN SAFARI GUIDE TRAINING

Explanation:

The Zambian Bedrock Africa Wildlife Safari Guide Training offers a fully accredited, high standards training to trainee safari guides. Their training module Wildlife Driving Guide has a minimum course duration of 15 months. Candidates need to secure a place at one of the tourist lodges in Zambia to meet the exam requirements. As traineeships at lodges can be difficult to secure, students from Chitungulu will stand a better chance if they first complete the two years' automotive mechanics course at CYDC.

Fundraising will start in the second half of 2022 as the first eligible candidate will finish his automotive mechanics course in December 2022.

4. Costs Safari Guide training	Estimated
Driving licence training	€ 500,00
First Aid training	€ 150,00
Entry level: Wildlife Transfer Guide (3 months plus practical guide experience)	€ 500,00
Accommodation, transport Lusaka-Chirundu-Bedrock Safari Camp	€ 450,00
Exam fees Wildlife Transfer Guide	€ 100,00
Wildlife Driving Guide (14 days plus practical guide experience)	€ 550,00
Accommodation, transport Lusaka-Chirundu-Bedrock Safari Camp	€ 450,00
Exam fees Wildlife Driving Guide	€ 100,00
TOTAL COSTS SAFARI GUIDE TRAINING per student (estimation based on 2021 fees)	€ 2.800,00

[Brochure and fees Bedrock Safari Training available on request].

8. Program evaluation

Annual monitoring and evaluation of the program is done by the project coordinator/trainer of the Chitungulu Foundation, together with the local assistant-trainers and the Chikowa Youth Development Centre. The annual evaluation report will comprise following aspects:

- Selection process of participants in the Conservation Training
- Annual teaching report including students' community activity
- Feedback of students on the Conservation Training program
- Results of weekly assessments and final exam of the Conservation Training
- Selection process of students for CYDC vocational training courses
- Prognosis of suitable candidates for the safari guide training
- Impact of Conservation Training on the wider community, especially in terms of climate adaptation awareness and support for nature conservation
- Impact of Conservation Training on the emancipation of young women
- Job acquisition/employment rates of students on completion of vocational training
- Annual feedback received from the Chikowa Youth Development Centre
- Cooperation with CYDC in general
- Cooperation with Luambe Conservation Project
- To what extent is the Conservation Training contributing to achieving the United Nations Millennium Development Goals to end poverty worldwide.

The evaluation report will be presented to the sponsors of the Conservation Training program each year in October, and includes a detailed financial report and pictures. Each five years, sponsors will be presented with an integrated evaluation of the past five years.

ANNEX I EXAMPLE OF FINAL EXAM CONSERVATION TRAINING

FINAL AUGUST EXAM CONSERVATION TRAINING CHITUNGULU 2021

Preliminary Exam because of Covid-19 pandemic –

To select Safari Guide candidates, an additional assessment will take place in 2022

Part I - Bird species identification

[In 2019, students managed to identify, in English, approx. 100 birds by their calls at the end of their six weeks' training. Note that, in Chitungulu, bird names are only known in the local vernacular; hence students need to make an effort to familiarize themselves with the English bird names. Due to the Covid-19 pandemic, the students in the 2020 and 2021 courses were asked to provide the common English names of ten bird families only, shown to them in the birds field guide. Those students wishing to pursue the Safari Guide Training need to take an extra course on Bird Identification by bird calls in 2022. As this training module requires the students to put in a fair bit of effort, it is a good way of assessing a student's motivation and dedication to nature conservation].

Part II - Twenty-two questions

1. What are the **full scientific** names of the following five animals:
 - 1.1 African elephant
 - 1.2 Lion
 - 1.3 Leopard
 - 1.4 Buffalo
 - 1.5 Spotted hyena
2. What is Commensalism **and** give an example.
3. Name one **mammal** that is arboreal.
4. Does Hippo (*Hippopotamus amphibius*) belong to the vertebrate class Amphibia or Mammalia? **Explain** your answer, naming at least **three characteristics** of the vertebrate class Hippo belongs to.
5. Give **6 examples of Ungulates** common in the Luangwa Valley.
6. Name **one Mongoose species** that is **truly gregarious**.
7. Name **two** mammal species that are **endemic** to the Luangwa Valley.
8. Name two animals in the family **Viverridae**.

9. What is the one unique characteristic of members of the class Aves compared to members of the vertebrate classes Mammalia and Reptilia?
10. Give two examples of a **Nocturnal animal**.
11. Name **six** families in the **Order Carnivora**.
12. Why is the African elephant a Key Species /explain its role in the environment.
13. Name **two Bird Families** in which all species are cooperative breeders.
14. Give **four** examples in English of a **Raptor**.
15. Give one example of a **Polyandrous bird**.
16. What is the correct name for Chulu ('Ant-Hill') ?
17. Name three types of snake venom **and** give an example of one snake for each type of venom.
18. Nile crocodiles are ecologically important in three ways. Name/explain **three roles** of Nile crocodiles in their ecosystems.
19. Give the English **and** scientific names of **four trees** of your choice which can be found in the Luangwa Valley.
20. What are the problems associated with chemical fertilizers bought from the shops, and how can these problems be addressed/solved by the farmers in Chitungulu?
21. What can farmers in Chitungulu do to adapt to the effects of climate change in the Luangwa Valley (such as heavy storms and floods on the one hand and drought on the other)
22. Name at least three types of ecosystem services which the mopane and miombo woodlands around Chitungulu are providing to the people.

THANK YOU FOR YOUR DEDICATION TO THE STUDIES OF YOUR NATURAL ENVIRONMENT!

**WE HOPE YOU HAVE ENJOYED THIS COURSE. PLEASE PASS ON YOUR KNOWLEDGE
TO OTHER COMMUNITY MEMBERS SO THAT WE ALL BECOME
PROUD AND INFORMED ZAMBIAN CONSERVATIONISTS. ZIKOMO.**

ANNEX II OVERVIEW STUDY FEES CHIKOWA YOUTH DEVELOPMENT CENTRE 2021 TRIMESTER 2 AND 3 (in Kwacha)

COURSE	SURNAME	NAME *	other names	Gender	term 2 / 2021			Examination Teveta 2021	term 3 / 2021			Expected
					tuition	board	Practical ingredients		tuition	board	Practical ingredients	
Mech 2021	ZULU	S.		Male	1,200	500		1,200	1,200	500		4,600
Mech 2021	MWALE	R.		Male	1,200	500		1,200	1,200	500		4,600
Agri 2021	LUNGU	A.		Female	1200	500		1480	1200	500		4,880
Agri 2021	MSIMUKO	P.		Male	1200	500		1480	1200	500		4,880
Agri 2021	PHIRI	E.		Female	1200	500		1480	1200	500		4,880
Food T1 2021	LUNGU	P.		Male	1200	500	200	400	1200	500	200	4,200

* First names have been abbreviated for privacy reasons

[Available on request: detailed breakdown of total study costs including transport costs]

ANNEX III ORGANIC VEGETABLE GARDENING PROJECT CHITUNGULU

OVERVIEW INTRODUCTION VEGETABLES PHASE 1 2012-2019

Organic vegetable gardening project Chitungulu since 2012			
<i>Vegetable/fruit</i>	<i>Traditionally cultivated</i>	<i>Newly introduced</i>	<i>Popularity</i>
Amaranthus/Bondwe	x	extra promoted	++
Basil		x	+++
Beetroot /- leaves		x	+++
Bush beans		x	+++
Butternut squash		x	+++
Cabbage		x	+++
Carrot		x	+++
Chick pea		x (2017)	+++
Chinese cabbage	x		++
Coriander		x	+++
Cow pea	x		+++
Cucumber		x (2017)	experimental
Eggplant (aubergine)		x	+++
Garlic		x	+++
Impwa (local eggplant)		x	+++
Lemon		x	+++
Lettuce (for tourists)		x	+
Mint		x	++
Moringa oleifera	x	extra promoted	+++
Mung bean		x (2019)	experimental
Mustard leaves	x		++
Okra	x		+++
Onion	x		+++
Passion fruit		x	+++
Physalis (Cape gooseberry)		x	+++
Pigeon pea	x	extra promoted	+++
Rape (<i>Brassica napus</i>)	x		+++
Radish		x	++
Rosemary		x	+++
Rucola		x	++
Sweet pepper		x	+++
Sweet potato	x	x (new varieties)	+++
Swiss chard		x	+++
Tamarind	x		+++
Thyme		x	++
Tomato	x		+++
Turmeric	x		++
In and around the organic vegetable gardens			
	<i>Traditionally cultivated</i>	<i>Newly introduced</i>	<i>Purpose</i>
Acacia ataxacantha		x	elephant deterrent
Azadirachta indica/ (Neem)		x	garden pest repellent, medicinal properties

Beehives	x		elephant deterrent, pollination, honey, wax
Faidherbia albida/ Winterthorn	x		soil improver, compost, shade provider
Gliricidia sepium	x	x	soil improver, compost, shade provider
Lemon grass	x		elephant deterrent, garden pest repellent
Makeche	x		garden pest repellent
Moringa oleifera	x		shade provider, nutrient booster
Sisal agave	x		elephant deterrent, rope
Sunflower	x		shade provider, compost, edible seeds



Students of the 2019 Conservation Training writing their final exam – picture August 2019

In the end, we will conserve only what we love; we will love only what we understand and we will understand only what we are taught.

Baba Dioum

Senegalese environmentalist and forestry engineer