Annual Report

EthioTrees – Tembien Project

February 2019 – February 2020

Annual Report

EthioTrees – Tembien Project

Annual report February 2019 – February 2020

Submitted by: EthioTrees vzw

Date of submission: 15 – 02 – 2020

Summary

Project overview	
Reporting period	February 2019 – February 2020
Geographical areas	Dogua Tembien (Tembien Highlands), Tigray Region, Ethiopia
Technical specifications in use	See approved PDD EthioTrees

Note: Exceptionally, EthioTrees submitted a biannual report in July 2019, in order to request issuance for 9 new sites that were added in July 2018. As of 2020, these sites are incorporated in the standard annual report, running from February till February.

Table 1: Summary table

Project indicators	Historical	Added/ Issued this period (Feb. 2019-Feb. 2020)	Total
No. smallholder households with PES agreements	0	0	0
No. community groups with PES agreements (where applicable) by Feb 2020	18	0	18
Approximate number of households (or individuals) in these community groups	3443	*0*	*3443*
Area under management (ha) where PES agreements are in place	1892	0	1892
Total PES payments made to participants (USD)	70,066*	16,053** (= from issuance of July 2019)	86,119
Total sum held in trust for future PES payments (USD)	2,947	0	0
Allocation to Plan Vivo buffer (tCO_2)	2,897	1,393	4,290
Saleable emissions reductions achieved (tCO_2)	26,070	12,530	38,600

Unsold Stock at time of Submission (PVC)	
Vintage July 2019 - July 2019	458

Plan Vivo Certificates (PVCs) issued to date	**26,070**
Plan Vivo Certificates requested for issuance (Feb. 2019 – Feb. 2020 Vintage)	**12,530**
Plan Vivo Certificates available for future issuance	**0**
Total PVCs issued (including this report)	**38,600**

* see this annual report.
** USD values based on EUR to USD conversion rates on 13/02/2019 (source: www.xe.com); the amount of 14,789 EUR or 16,053 USD is mainly derived from the issuance of July 2019, and to date most investment decisions are still under discussion by the communities to be implemented with the new funding.

Part A: Project updates

A1: Key events

- In one site, Seret, EthioTrees is working together with the NGO WeForest. The site Seret is to be added in the PES project later (probably in 2021), as the project development in this location is fully in line with the approved PDD of EthioTrees. While EthioTrees is the main developer of the PES project, serving as the Coordinator, the project at Seret is managed in the field by WeForest. A memorandum of understanding was concluded between the two parties. EthioTrees Ethiopia will audit the Seret project once per year, in order to ensure that the project complies with the EthioTrees PDD and PES agreement. However, as several practical issues still need to be clarified further, especially within the PDD, the site of Seret is not included in this issuance request.
- Several trainings have been organised over the reporting period: 1 training per exclosure (n = 18) was organized, also covering the newly added exclosures. Training focussed either on environmental management of the exclosure, or on the valorization of the non-timber forest products derived from these exclosures. Special attention was given to marketing training, in order to strengthen the negotiation position of the participating communities when selling the non-timber forest products such as incense and honey. Environmental investments (percolation ponds, planting) were made.
- Further developments of the scientific VLIR-South Initiative (SI) between Ghent University (Belgium) and Mekelle University (Ethiopia) happened over the course of 2018 and 2019. The aim of this 2-year SI project was to estimate the valorization potential of ecosystem services from exclosures in the Tembien Highlands. The project analysed different ecosystem services and estimated their potential for involvement in the Plan Vivo scheme. The project was also investigating whether sustainable essential oil production can increase the cash income of landless farmers. In so doing, the project (i) gave scope for future valorization of ecosystem services in larger parts of north Ethiopia (thus outreaching to include other potential exclosures), and (ii) enhanced the capacity of the Departments at Mekelle University (Business, Environmental Management and Chemistry), including their capacity to conduct participatory action research. Over the course of 2018-2019, five Ethiopian MSc. students and four Belgian BSc. & MSc. students enrolled in the South Initiative programme, supported by EthioTrees. The research programme also included a water quality study that will allow future investments in improved drinking water quality in the area.

- At the beginning and end of 2019, the EthioTrees project was showcased on Tigray Television – the regional television station – thus presenting the project mission to a broad audience across Tigray. BBC World interviewed Seifu Gebreselassie, project coordinator of EthioTrees Ethiopia, in their broadcast of December 2019. See: bbc.com/news/av/science-environment-50693249/making-ethiopia-green-again
- In its long-term strategy, EthioTrees aims to regenerate forest patches in two altitudinal belts of Dogua Tembien Highland - an upper belt in the May Zegzeg catchment (draining towards Geba, where roughly 15 smaller exclosures are located) and a lower belt (steep slopes towards Geba, where roughly 4 larger exclosures are located) - following best practices in forest landscape restoration, with the aim to support naturally-assisted regeneration, improve ecosystem services and community resilience.
- Together with the Tigray Regional Bureau of Environment, EthioTrees holds two-monthly meetings with the Regional Bureau, Sustainable Land Management, BOS+, Trees For Farmers, WeForest and Caritas, to discuss reforestation activities and strengthen synergies in the broader region of Tigray.
- EthioTrees cooperated with the Springer (publishing house) initiative to finalize a "tourist" GeoGuide for the Tembien Highlands. The GeoGuide series publishes travel guide type short monographs focused on areas and regions of geo-morphological and geological importance including Geoparks, National Parks, World Heritage areas and Geosites. The GeoGuide of Dogua Tembien was published in July 2019. In 2021, we aim to get Dogua Tembien listed as a UNESCO Global Geopark and EthioTrees is now fully supporting the necessary structure to set up the park.
  For the guide, please see: https://www.springer.com/gp/book/9783030049546

A2: Successes and challenges

- The main success this year included the consolidation of the 18 existing exclosures. A (possibly temporary) expansion freeze allowed us to focus on the 18 exclosures, improving our operational processes and hiring new personnel in Ethiopia to include a team of 6 team members in Tigray.
- The main challenge still included the creation of awareness of environmental degradation and management by the local population (still in terms of cattle grazing).
- Trainings and group discussions have taken place. The main focus of these discussions was the protection of the exclosures (keeping out the grazing) and on management of the exclosures (seedling planting and seedling irrigation, and soil and water

conservation (percolation ponds, soil bunds and trenches)). Site-specific trainings were also organized, concerning improved market access for incense at incense-producing exclosures and management of bee hives at honey-producing exclosures or at homestead level.

A3: Project developments

Below, we give an overview of the project developments that have affected the governance, operations, contractual relationships or legal basis of the project:

- Expansion of the closely connected scientific VLIR-South Initiative between Ghent University (Belgium) and Mekelle University (Ethiopia) over the course of 2018 and 2019. Seven MSc. students were involved, as well as two BSc. students and four University departments. One chemistry thesis focuses on the optimization of the extraction of aromatic oil from *Boswellia papyrifera* (the dominant frankincense tree of Tigray) resins. Other theses focussed on the explaining factors of carbon sequestration, the socioeconomic impact of NTFP's and the potential for drinking water from reservoirs in the area.
- There are no relevant updates to the project documentation.
- Improved exposure led to the project being showcased on Tigray TV twice in 2019, and on BBC World in December 2019 (see above for the link).
- Additionally, our client Davines produced the following project movie: Youtube.com/watch?v=-FK0OGJ23Uc

A4 Future Developments

- Further activities next year will include trainings, seedling planting and seedling irrigation, and the installation of soil and water conservation structures such as percolation ponds, trenches and soil bunds.
- After an earlier expansion phase, the project aims to stop expanding over the next year, in order to consolidate the current areas and improve our operational processes.
- In 2021, we aim to get Dogua Tembien listed as a UNESCO Global Geopark and EthioTrees is now fully supporting the necessary structure to set up the park.

Part B: Project activities

B1: Project activities generating Plan Vivo Certificates

- We list the technical specifications being used in the project, the area covered and participants using these specifications in table 2 below. We only include those areas where PES agreements have been signed.

Table 2: Project activity summary

Name of technical specification	Area (Ha)	No smallholder households	No Community Groups
Ecosystem Restoration in the Tembien Highlands	1892 ha	3443 in total	18

- EthioTrees had expanded the number of exclosures with nine new sites by July 2018. These included May Baeti, Lafa, Daero Hidag, Togul, Sesemat, Adi Meles, Chele Quot, Katna Ruba, and Gojam Sefra.

B2: Project activities in addition to those generating Plan Vivo Certificates

- Trainings were organized to support non-timber forest production, including incense production in Adi Lihtsi (Amanit), Zban Dake (Walta) and Gojam Sefra (Enda Selassie). Around the Seret site (issuance request not included in this report), community members are engaged in a variety of project activities for income generation purposes. They are trained to nurture the seedlings at community-nurseries and then plant and protect the saplings. Alongside this, the project targets women and young adults for training in additional livelihood initiatives to satisfy their nutritional, financial and energy needs in ways that ease pressure on the forest. These initiatives include apiculture, agroforestry and fodder production. Locals are trained to harvest grasses sustainably through a cut and carry system, which is then divided amongst community members to feed livestock in place of open grazing. Honey is a very attractive livelihood option for the community. There are two bee-hive cooperatives set up in the Seret area. In Seret, two nurseries were started that are now in operation: Mygoa and May'sehe.

Part C: Plan Vivo Certificate issuance submission

C1: Contractual statement

- This issuance is based on Plan Vivo maps and signed PES agreements with participants complying with all the minimum requirements stated in these agreements.

C2: Issuance request for projects where issuance is made on the basis of ongoing activities on land already managed by the project (calculated *ex-post*).

Table 3: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period February 2019 – February 2020 for the 9 sites that were added in July 2018, and thus achieved ER's over a half year since the last biannual report of 2019.

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO_2) available from previous periods	Total ER's (tCO_2) achieved this period	ER's minus leakage of 2%	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO_2) from this period	Issuance request (PVCs)	ER's (tCO_2) available for future issuances
May Baeti	*45.96*	*Ecosystem restoration*	0	145.82	142.90	10	14.29	128.61	128.61	-
Lafa	*44.97*	*Ecosystem restoration*	*0*	114.38	112.09	10	11.21	100.88	100.88	-
Daero Hidag	*112.05*	*Ecosystem restoration*	*0*	468.39	459.02	10	45.90	413.12	413.12	-
Togul	*36.00*	*Ecosystem restoration*	0	95.06	93.16	10	9.32	83.84	83.84	-
Sesemat	*46.00*	*Ecosystem restoration*	0	255.09	249.98	10	25.00	224.99	224.99	-
Adi Meles	*64.79*	*Ecosystem restoration*	0	199.86	195.86	10	19.59	176.27	176.27	-
Chele Quot	*50.00*	*Ecosystem restoration*	0	138.91	136.13	10	13.61	122.52	122.52	-
Katna Ruba	*44.00*	*Ecosystem restoration*	0	240.20	235.40	10	23.54	211.86	211.86	-
Gojam Sefra	*275.00*	*Ecosystem restoration*	0	1501.26	1471.24	10	147.12	1324.11	1324.11	-
TOTAL	718.77		**0**	3158.95	3095.77	10	309.58	2786.19	2786.19	**-**

Table 4: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period February 2019 – February 2020 for the 9 sites that were included before July 2018, and thus achieved ER's over a full year since the last annual report of 2019.

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO_2) available from previous periods	Total ER's (tCO_2) achieved this period	ER's minus leakage of 2%	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO_2) from this period	Issuance request (PVCs)	ER's (tCO_2) available for future issuances
Adi Lehtsi	*412.00*	*Ecosystem restoration*	0	4536.00	4445.00	10	445.00	4001.00	4001.00	-
Gidme Gestet	*46.00*	*Ecosystem restoration*	*0*	270.00	265.00	10	26.00	238.00	238.00	-
Meam Atali	*83.00*	*Ecosystem restoration*	*0*	731.00	716.00	10	72.00	645.00	645.00	-
May Getnet	*51.00*	*Ecosystem restoration*	0	281.00	275.00	10	28.00	248.00	248.00	-
May Hibo	*53.00*	*Ecosystem restoration*	0	272.00	267.00	10	27.00	240.00	240.00	-
Afedena	*81.00*	*Ecosystem restoration*	0	565.00	554.00	10	55.00	498.00	498.00	-
Adilal	*83.00*	*Ecosystem restoration*	0	671.00	658.00	10	66.00	592.00	592.00	-
Gemgema	*65.00*	*Ecosystem restoration*	0	309.00	303.00	10	30.00	273.00	273.00	-
Zban Dake	*300.00*	*Ecosystem restoration*	0	3413.00	3345.00	10	334.00	3010.00	3010.00	-
TOTAL	1174.00		**0**	11048.00	10827.00	10	1083.00	9744.00	9744.00	**-**

Table 5: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period February 2019 – February 2020 for all sites (summation).

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO_2) available from previous periods	Total ER's (tCO_2) achieved this period	ER's minus leakage of 2%	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO_2) from this period	Issuance request (PVCs)	ER's (tCO_2) available for future issuances
Total Table 3	718.77	*Ecosystem restoration*	0	3158.95	3095.77	10	309.58	2786.19	2786.19	-
Total Table 4	1174.00	*Ecosystem restoration*	0	11048.00	10827.00	10	1083.00	9744.00	9744.00	-
TOTAL	1892.77	*Ecosystem restoration*	0	14206.95	13922. 77	10	1392.58	12530.19	12530.19	**-**

C3: Allocation of issuance request

- The table below details the allocation of issuances from this project.

Table 6: Allocation of issuance request

Buyer name/ Unsold Stock	No. PVCs transacted	Registry ID (if available) or Project ID if destined for Unsold Stock	Tech spec(s) associated with issuance
Ethiotrees (first issuance)	*4,873*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (second issuance)	*5,856*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (third issuance)	*9,769*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (fourth issuance)	*5,572*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (this issuance)	*12,530*	*104000000014099*	*Ecosystem Restoration*
TOTAL	**38,600**	*104000000014099*	*Ecosystem Restoration*

C4: Data to support issuance request

- We provide the monitoring data for areas of land and participants which support our issuance request in Annex 1.

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

- To date, 25,612 Plan Vivo Certificates have been sold.

Table 7: Sales of Plan Vivo Certificates

Buyer	Year of transaction	Credits bought (tCO2-e)	Value per tonne (USD)
Carbon Sink (IT)	2018	5000	Internal reporting only
Zero Mission (SE)	2018	5000	Internal reporting only
Carbon Sink (IT)	2019a**	5000	Internal reporting only
Zero Mission (SE)	2019a**	5450	Internal reporting only
Carbon Sink (IT)	2019b**	5000	Internal reporting only
Victor Buyck (BE)	2019	162	Internal reporting only

*USD values based on EUR to USD conversion rates on 05/09/2019 (source: www.xe.com)
** 2019a and 2019b refer to the sales of credits in spring and in autumn respectively

Part E: Monitoring results

E1: Ecosystem services monitoring

- We provide annual monitoring results that support the request for new issuances in Annex 1.
- All monitoring targets were achieved.
- No corrective actions needed to be agreed with participants during this reporting period.

E2: Maintaining commitments

- As no participants have resigned or been removed from the project, or had Plan Vivo Certificates allocated against their activities, we do not provide a table with their details in an Annex.

E3: Socioeconomic monitoring

- We provide the results of monitoring of socioeconomic impacts (survey) every 5 years after baselining (impact indicators). Nevertheless, on a yearly basis, the project monitors its activities (yearly activity-based indicators).

These activities include in this reporting period the organization of 18 training sessions at the different sites.

The restoration project has also clear benefits for the wider communities living around the project exclosures. The most important factors include reduction of erosion and gullying, conservation of soil nutrients and groundwater. For instance, forest restoration will locally benefit water availability for the upslope communities. Overall, we expect a net gain in (ground)water availability, also for the upslope communities. This is clearly visible at the site of May Genet. More socioenvironmental investments will be made in 2020, through the sales of the Plan Vivo credits.

E4: Environmental and biodiversity monitoring

- The South Initiative of Mekelle and Ghent University was expanding the existing monitoring program that was successfully applied to the previous 9 exclosures towards 1892 hectares (18 exclosures), in order to achieve (statistically) meaningful monitoring data distributed across the Tembien Highlands.

- Besides biomass and soil carbon estimations, the South Initiative also included monitoring of hydrology. Samples for hydraulic conductivity were taken from different exclosed and adjacent non-exclosed area.

- Based on correlations between soil carbon, above-ground biomass and explaining factors (topography, geomorphology, human activity), the Initiative created a scientific paper on carbon storage potential in the Tembien Highlands.

- The Initiative was further examining hydrodistillation activities. The Initiative experimented with different distillation set-ups at the Chemistry Department of Mekelle University to enhance the quantity (yield) and quality (chromatography) of the incense oil. Chromatography was performed on the samples to identify the abundances of the different (organic-)chemical components of the oil. Results of the analysis will be used to expand the distillation innovation center and organise different trainings on aromatic oil distillation. A training manual in Tigrinya was compiled (see Annex 3).

- The research results were finalized by 5 MSc candidates from Mekelle University, two BSc students and two MSc candidates from HoGent and Ghent University (separate funding). A research assistant was permanently assisting with monitoring activities in the field, and joined the EthioTrees project in 2020. The Initiative provided nine training sessions on environmental economics and statistics at Mekelle University.

- No other changes to the monitoring plans or protocols of the project need to be reported in the updates section of this report.

Part F: Impacts

F1: Evidence of outcomes

- We report research outcomes, patterns or trends from ongoing monitoring or other information which supports the impacts – socio-economic, environmental or cultural – which the project has had every 5 years after baselining. In Annex 2, we provide a short description of activities with photographs. To date, no scientific publications resulting from the project are available yet.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

- By July 2019, 31,795 USD* in PES payments were made, in accordance with the PES agreements. The budget was allocated in line with the PES allocation key:
  - Adi Lehtsi: 8,321 USD = 236 776 ETB (budget of VP Feb 2016 – Feb 2017)
  - Gidmi Gestet: 2,759 USD = 78 513 ETB (budget of VP Feb 2016 – Feb 2017)
  - Meam Atali: 3,360 USD = 95 587 ETB (budget of VP Feb 2016 – Feb 2017)
  - Adi Lehtsi: 7,361 USD = 209 444 ETB (budget of VP Feb 2017 – Feb 2018)
  - Gidmi Gestet: 1,798 USD = 51 180 ETB (budget of VP Feb 2017 – Feb 2018)
  - Meam Atali: 2,399 USD = 68 255 ETB (budget of VP Feb 2017 – Feb 2018)
  - May Genet: 1,812 USD = 51,557 ETB (budget of VP Feb 2017 – Feb 2018)
  - May Hibo: 1,801 USD = 51,233 ETB (budget of VP Feb 2017 – Feb 2018)
  - Afedena: 2,183 USD = 62,115 ETB (budget of VP Feb 2017 – Feb 2018)
- On 12 June 2019, another 33,841 euro or 38,271 USD** were allocated from the issuance of February 2019 as follows:
  - Adi Lehtsi: 7,819 euro = 8843 USD (budget of VP Feb 2018 – Feb 2019)
  - Gidmi Gestet: 2,543 euro = 2876 USD (budget of VP Feb 2018 – Feb 2019)
  - Meam Atali: 3,077 euro = 3480 USD (budget of VP Feb 2018 – Feb 2019)
  - May Getnet: 2615 euro = 2957 USD (budget of VP Feb 2018 – Feb 2019)
  - May Hibo: 2,644 euro = 2990 USD (budget of VP Feb 2018 – Feb 2019)
  - Afedena: 3,048 euro = 3447 USD (budget of VP Feb 2018 – Feb 2019)
  - Adilal: 3,077 euro = 3480 USD (budget of VP Feb 2018 – Feb 2019)
  - Gemgema: 2,813 euro = 3181 USD (budget of VP Feb 2018 – Feb 2019)
  - Zban Dake: 6,205 euro = 7017 USD (budget of VP Feb 2018 – Feb 2019)
- The different investments as result of another 5162 ton from the issuance of July 2019 is still being discussed by the communities.
- There are no funds being held by the project coordinator at reporting period end and there are no withheld payments at reporting period end.
- All payments are made in line with the terms of PES agreements signed.

*USD values were based on EUR to USD conversion rates on 28/02/2019 (source: www.xe.com)

** USD values were based on EUR to USD conversion rates on 12/06/2019 (source:

www.xe.com); please note that this value is a bit higher as compared to the required amount during this vintage period.

Part H: Ongoing participation

H1: Recruitment

- Recruitment of the associations / focus groups of all exclosures was completed before. All sites comply with the eligibility criteria set out in the PDD.

H2: Project Potential

- No participant or area under management is on the project's 'waiting list' i.e. where a PES agreement is not yet signed but a *plan vivo* is in use.

H3: Community participation

- We briefly report on the community meetings held throughout the reporting period and attach the pictures of these to Annex 2.

Part I: Project operating costs

I1: Allocation of costs

- We completed the table below summarizing project costs during the reporting period and the sources of income used to meet these costs. The costs (excluding Plan Vivo investments) were fully covered using private donations and limited subsidies.

Table 8: Allocation of costs (for the Feb 2019 – Feb 2020 reporting period).

Expense	Narrative	Amount (USD$)	Contribution from sale of PVCs	Contribution from other sources
Investments	Costs for soil and water investments, planting	8,500	0%	100%
Functioning	Materials, paper, equipment, transport costs	4,200	30%	70%
Personnel	Wages for project coordinator and distillation expert	5,600	30%	70%
Plan Vivo investments	See the socioecological investments described in section A1	38,271	100%	0%

Annexes

Annex 1. Monitoring results that supports the issuance request

Ecosystem Services Monitoring (note: red circle indicates which target value was met)

Activity	Activity Indicator (measure annually)	Annual Targets			Results
		Full Target Achievement	Partial Target Achievement	Missed Target	
Restoration activities	Area of each exclosure undergoing active restoration activities	>10%	=10%	<10%	Adi Lehtsi > 10% Gidme Gestet > 10% Meam Atali > 10% May Getnet > 10% May Hibo > 10% Afedena > 10% Adilal > 10% Gemgema > 10% Zban Dake > 10% May Baeti > 10% Lafa > 10% Daero Hidag > 10% Togul > 10% Sesemat > 10% Adi Meles > 10% Chele Quot > 10% Katna Ruba > 10% Gojam Sefra > 10% → *Guarding and restoration activities were covering all areas*
Tree Planting	Number of seedlings	4000 seedlings	3000-4000	<4000 seedlings	*13510 seedlings planted*
	Survival Rate	>30%	25-30	<30%	*Most recent survival rate estimate: 50.4%*

Socioeconomic Monitoring

Activity	Activity Indicator (measure annually)	Annual Targets			Results
		Full Target Achievement	Partial Target Achievement	Missed Target	
Capacity-Building	Number of organized trainings for	1		0	Adi Lehtsi = 1 Gidme Gestet = 1 Meam Atali = 1

	landless farmers (M/V) per year per exclosure				May Getnet = 1 May Hibo = 1 Afedena = 1 Adilal = 1 Gemgema = 1 Zban Dake = 1 May Baeti = 1 Lafa = 1 Daero Hidag = 1 Togul = 1 Sesemat = 1 Adi Meles = 1 Chele Quot = 1 Katna Ruba = 1 Gojam Sefra = 1
	Participants from more vulnerable groups (women, youth, elderly people)	>25%		<25%	*At all sites > 35%*
Availability of grass fodder	Beneficiaries of grass fodder per exclosure	>3	<3	<1	*In all exclosures: cut-and-carry system implemented*
Countering displaced grazing	Number of observations of displaced grazing mentioned during the yearly meeting of association, other NTFP users and the village council	<2	2	>2	Adi Lehtsi = 0 Gidme Gestet = 0 Meam Atali = 0 May Getnet = 0 May Hibo = 0 Afedena = 1 Adilal = 0 Gemgema = 0 Zban Dake = 0 May Baeti = 0 Lafa = 0 Daero Hidag = 0 Togul = 0 Sesemat = 0 Adi Meles = 1 Chele Quot = 0 Katna Ruba = 0 Gojam Sefra = 0 **Note: as of 2020 we aim to include a quality scoring system to rate every exclosure on the occurrence of displaced grazing, grazing and timber harvesting within the exclosure**
Countering	Number of	<2	2	>2	Adi Lehtsi = 0 Gidme Gestet = 0

timber harvesting on public lands	observations of timber harvesting on public lands mentioned during the yearly meeting of association, other NTFP users and the village council				Meam Atali = 0 May Getnet = 0 May Hibo = 0 Afedena = 0 Adilal = 0 Gemgema = 0 Zban Dake = 0 May Baeti = 0 Lafa = 0 Daero Hidag = 0 Togul = 0 Sesemat = 0 Adi Meles = 0 Chele Quot = 0 Katna Ruba = 0 Gojam Sefra = 0

Environmental Monitoring

Activity	Activity Indicator (measure annually)	Annual Targets			Result and mitigating actions
		Full Target Achievement	Partial Target Achievement	Missed Target	
Water Management	Number of Percolation Ponds per exclosure	2	<2	<1	Adi Lehtsi = 2 Gidme Gestet = 2 Meam Atali = 2 May Getnet = 2 May Hibo = 2 Afedena = 2 Adilal = 2 Gemgema = 4 Zban Dake = 2 May Baeti = 2 Lafa = 2 Daero Hidag = 2 Togul = 2 Sesemat = 2 Adi Meles = 2 Chele Quot = 2 Katna Ruba = 2 Gojam Sefra = 0 **Action: all percolation ponds to be finished in 2020.**

Annex 2. Project activities report

EthioTrees Quarterly Activity Report Q4-2019

December 2019

1) Introduction

In this short quarterly report, EthioTrees presents its most relevant activities in Q4-2019. Working towards an annual report for 2019, we built on the activity report from September (Q3). This approach allows progressive insights on ongoing activities, without losing the overall context of the running project activities. To highlight the new activities, text reporting from the previous report (Q3) is represented on the left.

The aim is non-technical: for the technical summaries, we refer to the annual reports of Plan Vivo.

General and ongoing activities

Activity group and project aim	On track?	Achievement in 2019
Dissemination of project results		
EthioTrees tries to share its project insights both locally and internationally, in order to create a broad support base and awareness beyond the boundaries of the project zone.	OK!	At the beginning of January 2019, the EthioTrees project was showcased on Tigray Television – the regional television station – thus presenting the project mission to a broad audience across Tigray. In December 2019, the "regreening Ethiopia" piece is going out at various times on BBC World News, featuring Seifu Gebresillasie (EthioTrees) – here is a link to the online version: https://www.bbc.co.uk/news/av/science-environment-50693249/making-ethiopia-green-again

		Please spread the news!
EthioTrees cooperates with the Springer (publishing house) initiative to finalize a "tourist" GeoGuide for the Tembien Highlands. We support the creation of a network to win the recognition for Dogua Tembien as an official ***UNESCO Global Geopark****.*	Ongoing	The Geo Guide book was officially launched in Dogua Tembien (Hagereselam) on 28/11/2019 with the help of the Woreda administration. The launch was broadcasted on Tigray Television and Dmtsi Weyane TV – both regional television stations. See the linkages from: https://www.youtube.com/watch?v=S9qbhw_8Xvc starting at 32.17-35.54 minutes; https://www.youtube.com/watch?v=jiQxGg0R4ww by DW; started at 0:37-5:15.
Scientific collaborations		
Further developments of the scientific VLIR-South Initiative occur between Ghent University (Belgium) and Mekelle University (Ethiopia). The aim of this 2-year SI project is to estimate the valorization potential of ecosystem services from exclosures in the Tembien Highlands. The project analyses different ecosystem services and estimates their potential for involvement in the Plan Vivo scheme. The project is also investigating whether sustainable essential oil production can increase the cash income of landless farmers. In so doing, the project (i) gives scope for future valorization of ecosystem services in larger parts of north Ethiopia (thus outreaching to include other potential exclosures), and (ii) enhances the capacity of the Departments at Mekelle University (Business, Environmental Management and Chemistry), including their capacity to conduct participatory action research.	OK	Over the course of 2019, five Ethiopian MSc. students and 2 Belgian MSc. students enrolled in the South Initiative programme, supported by EthioTrees. All 7 students performed field work in the EthioTrees sites. In Q4, two Ethiopian scientists (Dr. Abraha and Dr. Etefa) had a short-term research visit in Ghent, Belgium. In addition, in October and November 2019, two Belgian college students performed a research stay in Dogua Tembien, with a focus on water quality sampling and drinking water purification methods.

EthioTrees holds regular platform meetings with stakeholders such as government and non-government actors, to integrate a shared understanding on project activities and to develop common plans.	OK	In 2019, EthioTrees held platform meetings with stakeholders from the regional bureau of agriculture, regional REDD+, SLM, Caritas and WeForest, Trees For Farmers, as well as the agricultural office of the Woreda (natural resource protection).

Figure 1: Presentation and field visiting at platform meeting (Q4).

2. Community meetings

Activity group and project aim	On track?	Achievement in 2019
Plan Vivo mapping		
The project works closely with rural households near young exclosures in different villages in Dogua Tembien. During the first phases of the project activities, awareness, acceptance and participation of these rural communities in the project are assessed and ensured by the local coordinator. Plan Vivo maps are constructed. At each exclosed area, the project engages a group of 10-40 landless farmers of different gender and age. A landless farmer represents a household without valid land certificate. The project aims to engage farmers under a 50-50% gender balance. *As all participating farmers are 'landless', they are often relatively young (20-40 years old). The landless farmers are often organised in exclosure associations. The associations elect a representative through a democratic election. The members of the association are 'under rotation' responsible to manage a part of the exclosure (including the patrolling process and the daily management) and are able to benefit from ecosystem services from the exclosure.*	OK	By 2019, all EthioTrees exclosures have Plan Vivo maps!

Figure 2 (a & b): Meeting with community in May Genet and Endaslassie society (Gereb gunful, Adiy meles and Chelaqo). A main purpose of the meeting was to have common understanding between EthioTrees and the participants with regards to the exclosure, how Ehiotree could deliver benefits, and how to prepare plan vivo maps.

Gender equality and empowerment

As an experiment, EthioTrees organized an awareness creation session with regards to the plan vivo planning of the project separately for men and women committees in May Genet. Thus, the village existing map and the future map were designed in separate groups, showing the impact of gender on the spatial planning priorities of the village. Results and follow-up will be discussed in February 2020.

Figure 3: Focus groups preparing plan vivo maps for women and men separately.

Trainings		
After 'plan vivo' maps are established, EthioTrees organizes discussions sessions and trainings to optimally manage a part of the	On track	In 2019, we focused on the following training sessions:

exclosure (guarding proccess, enrichment planting of trees, soil and water conservation, honey production, frankincense cultivation, limited timber production, grasses for livestock feeding in stable). We aim for (minimum) one training per exclosure per year.		(i) <u>Exclosure management</u> A main purpose is to learn how to keep the exclosure healthy and how to evaluate the guarding system. (ii) <u>Seedling planting</u> Here we focus on pit excavation for planting seedlings in the exclosure and how we can manage young seedlings to improve the survival rate. (iii) <u>Social trainings</u> In this training, we learn how young landless farmers can gain income from NTFP.
EthioTrees aims for training sessions that have direct economic impact, especially related to NTFP.	Ongoing	To illustrate the impact of training on NTF production, the price evolution of frankincense (before and after project intervention) evolved from 28 ETB /kg to 50-60 ETB/kg. With an average of 4500 kg / association, this delivers an added value of + 144 000 ETB/year (association). The price of honey went from 200 to 400 ETB/kg with the installation of an extractor machine (while 1 beehive delivers app. 50 kg / year).


Figure 4 (a & b): Training session with the community of Afedena

3. Tree planting, soil and water conservation and water harvesting

Activity group and project aim	On track?	Achievement in 2019
Natural regeneration		
The project assists the natural regeneration of the indigenous vegetation, partly through improved management and partly through enrichment planting activities. Enrichment planting to further support the forestation activity and to support biodiversity improvements	Ongoing	The project implements soil and water conservation activities, including stone bunds, soil bunds, percolation ponds and moisture harvesting structures such as 'half moons' to trap runoff water. The project monitors

focusses on indigenous vegetation (Olea, Juniperus, Dodonea, Cordia, Celtis, Acacia); Eucalyptus is not planted in the project areas. *We aim for an implemented high-quality guarding system in every exclosures, and aim to install SWC in every exclosure every year.*		biodiversity, including both plants and trees as well as (qualitatively) animals (mammals and birds). The survival rate of planted seedlings in 2018 is 50.4%.

*Figure 5 (a – b): Moisture harvesting activities at Meam Atali. EthioTrees started to excavate 2 big (6*3*2 m) percolation ponds and 25 moisture harvesting trenches (3*1*1 m) as moisture harvesting structures in the exclosure.*

Figure 6: Seedling planting at May Genet (pictures at 17/06/2019: start of the rainy season) when simultaneously a training of youngsters was organized focusing on small pit excavation for planting seedlings in the exclosure, as well as micro-irrigation.

Figure 7: Irrigation trenches at Sesemat (up), Maibaati (middle) and Gemgema (down). About 20-24 percolation ponds were installed at each site – spatially separated as it provides a good advantage to capture the runoff water for infiltration.

Figure 8: Seedling planting at May Genet site.

4. Socioecological investments

Activity group and project aim	On track?	Achievement in 2019
Reservoir construction		
EthioTrees aims to support at least one socioecological investment per village per year. *Access to safe drinking water is one of the most pressing issues in the villages of the North Ethiopian Highlands. Several communities decided*	Ongoing	Excavation of ponds took place in different villages. In all sites, there was participation of communities (on road maintenance and soil embankments arrangements to access the sites by machinery).

to address this issue by investing the Plan Vivo credits in drinking water reservoirs.		<u>Adi Lithtsi</u> Excavation of two ponds took place in Adilihsti (Hizaety Gidmy and Horeyo Gidmy). EthioTrees started with a labor force that included around 80 people of the community. The plan was for them to directly participate during the excavation and get benefits of the pond. As it turned out, this was quite heavy work. Therefore, a tender document was prepared and was given to a contractor through a least bidding system. Digging was done through machine (excavator and dump track). For illustration purpose, the dimension of one pond in Adi Lehtsi is 3119 m^3 while the other pond is 2390 m^3. <u>Gidmi Gestat</u> Another pond was expanded in Gdmi Gestat with machine. In Gedmi Gestate (Adi keshefo) the dimensions include 26.5 x 15 x 4.4m and 8 x 1.6 x 0.6m. <u>Meam Atali</u> Also at the Mean Atali site, a pond was expanded with machine. The dimensions included 31 x 10.5 x 3.1 m and 9 x 7 x 1.65 m.

Figure 9 (a & b). Excavation with labor force at Hzaety Gidmy (Adilhtsi).

*Figure 10 (a & b). Final excavated pond of Hizaty Gidmy, constructed by stone walls with 1 meter height * 0.6 meter width * 188 meter length.*

Figure 11. Excavation of pond at Adikeshefo.

Figure 12 (a - d). Excavation of pond at Adikeshefo. The upper left side is at the start; the upper right side shows the excavation after the works. After some rain and at end of the rainy season, the pond is happily full of water.

Water quality experiments and investments		
Access to safe drinking water is one of the most pressing issues in the villages of the North Ethiopian Highlands. Several communities decided to address this issue by investing the Plan Vivo credits in better quality drinking water.	Ongoing	Several community meetings took place in Meam Atal with the two Belgium students on how to assess the problem of water quality and how to solve such issues on household and village level. Fencing of ponds is important to keep cattle out, as these are important sources of water contamination. A fence was constructed in Adilihtsi. The circumference of the pond was fenced by stone walls with one meter height * 0.6 meter width *188 meter length. A first sand filter (water purification) is planned in Meam Atali in 2020.

Figure 13: Community meetings took place in Meam Atal to address the issue of water quality.

Homestead feeding		
As indicated in all PES agreements, both the associations, other customary NTFP users and the village councils pledge to monitor and counter potential displaced grazing. Livestock feeding in the stable (i.e. through feed boxes) is thus stimulated through trainings, installation of feeding boxes and drinking boxes. Observations of displaced grazing are reported.	Ongoing	EthioTrees selected 44 people from Adi Lihitsi and Meam Atali and provided them with 1.5 quintal - 2 quintal cement and plaster. The participants collected sand and stone masonry to construct feeding boxes at the side wall of their houses. EthioTrees allowed grass collection from exclosure by cut and carry system.

Figure 14: Making a cattle drinking spot near the reservoir of Meam Ataly with supporting cement – in order to save the animal fodder from wastage; and different feeding boxes near the houses.

Figure 15: All communities are taken grass equally from the exclosure and improve the fodder availability in their house. In Meam Atal 200 HHs and in May Hibo 30 HHs are benefitting.

School construction		
As indicated in all PES agreements, investments can be made to tackle pressing social issues, as long as the environmental regeneration in the exclosures is well addressed by the village.	Ongoing	In several sites there was participation of community members on road maintenance, soil and water conservation and school construction works. In Afedena especifically, the community decided to invest part of the plan vivo credits for the construction of the school. EthioTrees helped to transport 17 trucks with stones from the surroundings and started building.

		EthioTrees also constructed two classes buildings in the Amanit school with the plan vivo credit payments.



Figure 16 (a-d): Collecting stone and excavation of the foundations; and masonry wall of the school under construction.

Under construction
Amanit school

Current school Amanit

Figure 17 (a and b). Constructing masonry wall of the school and the current grade four class on teaching time.

Manuals

Prepared for Local Farmers

on

The extraction of Essential oils from *Eucalyptus globules* and *Bosswelia papyrefera*

Mekelle, Tigray, Eyhiopia

December, 2019

ኣወፃፅእ ዘይቲ ካብ ቆፅሊ ባህርዛፍን ዕጣንን

1. ቆፅሊ ባህርዛፍ

1.1. መእተዊ

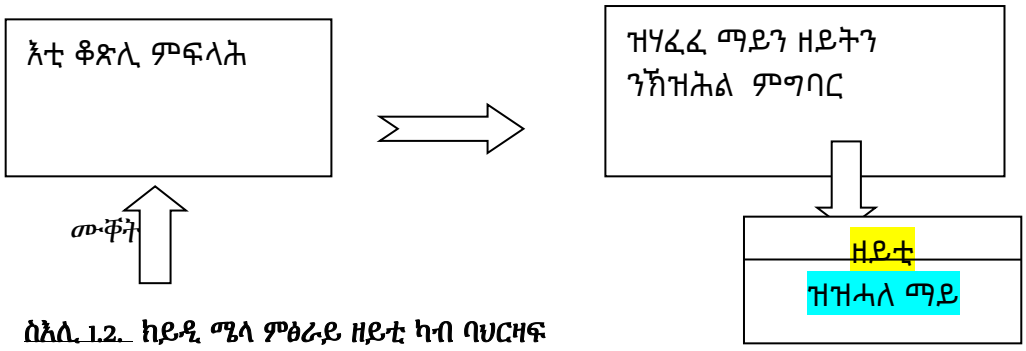
ባህርዛፍ ኣብ ኣሁጉረ ኣውስትራልያ ዝተረኽበ ኮይኑ ካብቶም ልዕሊ 700 ዓሌታት ተኽሊ ኣብቲ ሃገር ዝርከበ ሓደ እዩ። ባህርዛፍ ኣብ ኣሁጉረ ኣወስትራልያ ብዓብላልነት ዝርከብ ተኽሊ ኮይኑ ብዙሓት ረብሓታት አለውዎ። ብፍላይ ካብኡ ዝርከብ ዘይቲ ውፅኢታዊ ዝኮነ መድሓኒትነት ይጠቅም። ኣብ ሃገርና ክንርኢ ከለና ዝተፈላላዩ ተክልታተ መድሓኒትነት ዝጠቅሙ ተክልታት አለው። ካብዚእቶም ባህርዛፍ ብዋንነት ዝጥቀስ እዩ። በዚ መሰረት ዝተፈላላዩ ረብሓታት ንማሕበረሰብ ዝህብ ተክሊ እዩ ። ባህርዛፍ ኣብ ሃገርና ጥራሕ ዘይኮነስ ኣብ ቻይና፣ህንዲ ፣ ግሪክ ንኣውሮፖን ብብዛሓት ንመድሓኒትነት ረብሓ እንደውዓለ ዝርከብ ኮይኑ እዚ ረብሓኡ ንምርካብ ብዝተፈላላዩ መንገድታት ይዳለዉ። ካብዚኣቶም ቀጥታ ብቆፅሉ ፣ ዘይቱ ምስወፅ ፣ ኣብ ፋብሪካ ምስ ካልኦት ባእታታት ብምውሃድ ንመድሓኒትነት የገልግል። ከም ኣገላልፃ ሜዲካል ኒውስ ቱደይ(Medical News Today) ልዕሊ 400 ዓሌታት ባህርዛፍ ይርከቡ። እቲ ቆፅሊ ብስነ እፅዋት ምደባ መሰረት **እዩካልይፕቱስ ግሎብሉስ** ምንጪ ናይቲ ዝፍለጥን ኩሉ ግዜ ዝውስድን ዘይቲ ባህርዛፍ እዩ።

ዘርኦ

ሓ

1.2.2. ሜላ ምፅራይ

- ቆፅሊ ባህርዛፍ ምሽምጣጥ
- እቲ ቆፅሊ ናብ መሞቂ ድስቲ ምእታው ናብኡ ማይ ምውሳክ።
- እቲ ድስታ ክዳኑ ምግጣም
- እቲ መዝሓሊ ምስቲ ቆፅሊ ዝሓዘ ድስቲ ምግጣም
- ማይ ንክፈልሕ እቲ ሓዊ ምልክስ
- ማይ ካብቲ ዘይቲ ምፍላይ



ስእሊ 1.2. ክይዲ ሜላ ምፅራይ ዘይቲ ካብ ባህርዛፍ

1.3. ረብሓታት ባህርዛፍ ኣብ ጥዕና

ናይ ባህርዛፍ ቆፅሊን ዘይቱን ንመድሓኒትነት ረብሓ ኣለዎም ። እቲ ተኽሊ ብኣብዛሓ ከም መድሓኒት ፣ መፅረይን ኣየር ብምዕሻግ እኳ ዘይርከብ እንተኾነ ግና ባህርዛፍ ብዙም ዝስዕቡ ፎርምታት (መንገድታት) ይርከብ።

1.3.1. ባህርዛፍ ዝርከበሉ መንገዲታት/ከይዲታት

1. **ብቆፅሊ፡-** ብሓድሽ ይኹን ምስ ደረቐ ንኣየር ንፅሁነይ እና ከም ሻሂ መድሓኒት ይጠቅም ።
2. **ዘይቲ፡-** ኣብዚ ባህርዛፍ ናብ ሳዕድን ቁሪን መድሓኒት ብምውሳክን ናብ ናይ ስኒ ውፅኢትን እና ቀጥታ ንቃንዛ መድሓኒትነት ይጠቅም ብተወሳኪ ኣብ ናይ ኳዕቲ ማዕድን ስራሕቲን ሽታ ጥቅሚ ይህብ ።
3. **ብክሬም (ቅብኢት)፡-** ብቐጥታ ናብ ቆርበት ብምግባር እታ ተኽሊ ንቀለልቲ ቁስሊ ይፈውስ። ንቁሪ መከላለ እውን ይጠቅም።
4. **ብምንፃግ**፡- ሓደ ሓደ ኩባንያታት ብዝንፀግ መልክዕ ብምዝግጃው ይጥቀምሉ።

ቆፅሊ ባህርዛፍ ብኣጠቃላይ ብዙሕ ረብሓ ኣብ ጥዕና ደቂሰባት ዝህብ ኮይኑ ካብኣቶም ከምዝፅቡ ተዘርዚሮም ይርከቡ።

1. **<u>ፅረ ታህዋስያን፡-</u>** እቲ ብቆፅሊ መልክዕ እንከሎ ብሻሂ ኣቢልካ ብምጥቃም ፀረ ታህውስያን ይጠቅም። ኣብዚ ቆፅሊ ዘለው ንጥረ ነገራት ከምኒ ካንሰር፣ ልቢ ሕማምን ካልኦትን ይፈውስ
2. **<u>ሕማም ሰዓል የውግድ፡ ምህንጣስን</u>** ምስዓልን ብምውጋድ ፅቡቅ መድሓኒት ኮይኑ የገልግል

<u>ስእሊ 1.3.</u> ረብሓ ባህርዛፍ ንሕማም ሰዓል

3. **<u>ፅሩይ ኣስናን ንምፍጣር፡-</u>** እቲ ቆፅሊ በዘለዎ ፅረ ባክተርያን ደቂቅቲ ፈጡራተን ኣፍ ብምፅራየን ስኒ ብምከብኽብን ጥቅሚ ይህብ። ብተወሳኪ ናይ ስኒ Decay(ምብልሻው) የወግድ።
4. **<u>ዝደረቐ ቆርበት ይሕክም</u>**፡- ናይ ተፈጥሮ ርጥበት ብምሕላው እቲ ቆርበት ከይደርቅ ይከላከል

<u>ስእሊ 1.4.</u> ረብሓ ባህርዛፍ ንቆርበት

5. **<u>ቃንዛ ምቅናስ፡-</u>** ናይ ጭዋዳን መጋጠጣሚን ቃንዛ ንምቅናስ ይሕግዛ እቲ ዘይቲ ባህርዛፍ።
6. **<u>ናይ ምትንፈስ ሰርዓት ምስትክክል</u>** ፡- ሰዓል ፣ ቀሪ ፣ ኣዝማ ወዘተ ንምክልኻል ይጠቅመ።
7. **<u>መገጣጠሚን ጭዋዳን ሕማም</u>** ፡- ብዘይቲ ባህርዛፍ ምሕሳይ ናይቲ ቀንዛ ምቅናስ የምፅእ ።

1.4. ናይ ገዛ ጥቅሚ

- ንሰሙናን መፅረዪ ገዛን ንምስራሕ ይጠቅም
- ንጥብጣበትን ምልክታትን ንምውጋድ
- ኣብ ክዳውንቲ መሕፀቢ(ላውንደሪ) ይጠቅም
- ኣብ ተኽልታት ብምርጫው ተባያት ምውጋድ ይካአል
- ኣብ ምድርቤት (ገዛና) ብምርጫው ጨ ና እቲ ገዛ ንምስትክከል

1.5. ረብሓታት ባህርዛፍ ንህንፃ ስራሕቲ

- ✓ ንህንፃ ስራሕቲ ዘገልግሉ ጣውላታት ንምስራሕ ይውዕል
- ✓ ቐልጢፉ ስለ ዝጥፅ እፅዋት ናይ ምብራስ ሓደጋ ይቅንስ

2. ዕጣን (Boswellia papyrifera)

2.1. መእተዊ

ዕጣን ብመልክዕ ማስቲክ ኣብቲ ጉንዲ ተክሊ ተጣቢቑ ዝርከብን በዓል ብዙሕ ረብሓ ዝኾነ ቀዋሚ ተክሊ እዩ። ዝተፈላለዩ ዓሌታት ተክሊ ዕጣን ይርከቡ ። ካብ ኣቶም -- ሓደ ኮይኑ ብኣብዝሓ ኣብ ኢ/ያ ሉደንን እንትርከብ ብዝተወሰነ መልክዑ ኣብ ምዕራብ ኣፍሪካ ይርከብ። ካብዚ ተክሊ ዝወፅእ ናይ ማስቲክ ባህራ ዘለዎ ዕጣን ንመድሓኒትነት ዝጠቅም ኮይኑ ካብ ኣቶምን ---ወዘተ ዕጣን ኣብ ውሽጢ ዝተፈላለዩ ዓይነታት ኣሲድ ዝሓዘ ኮይኑ እዚኣም ድማ ንዝተፈላለዩ ሕማማት ናይ ምክልኻል ዓቅሚ ንክህልዎ ይሕግዙ ። እቲ ዕጣን ንመድሓኒትነት ዘገልግል ካብኮነ ነዚ ድማ ፅሬቱ ዝተሓለወ ክኸውን ይግባእ። በዚ መሰረት ፅሬት ዕጣን ዝውስኑ ነገራት ዝበቅለሎም ከባቢታት ፣ ኩነታት አየር ፣ ዝእረየሉ ግዜን ካልኦትን

ስእሊ 2.1: ተክሊ ዕጣን

2.2. ኣደማምያ/ምንኩሕኻሕን ደርጃ ምውፃእን ዕጣን

2.2.1 ኣደማሞያ ተክሊ ዕጣን

እዚ ከይዲ ብባህላዊ መንገዲ እዩ ዝካየድ። ነቲ ተኽሊ ብበሊሕ መሰርሒ /ሓፂን ብምውጋእ ንኽደሚ ብምግባር ኣብ ዓመት 8-12 ግዜ ዝናብ ኣብ ዘይዘንበሉ ግዜ ንኽደሚ ይግበር። ኣብቶም ናይ መጀመርታ 3-4 ናይ መድመይቲ ግዜታት ኣብ ክሊ 21-30 መዓልትታት እንትካየድ ኣብቶም ዝተረፉ ናይ መድመይቲ ግዜታት ግና ካብ 10-15 መዓልትታት ይካየዱ። እቲ ተኽሊ ምስ ደመየ ከም ንብዓት ዝተወሰነ ቦታ ውርድ ኢሉ ንኣየር ስለ ዝቃላዕ ይእከብ። ስለዚ እናጠንከረን እናደረቐን ብምኻድ ፃዕዳ ሕብሪ ይህልዎ። ካብ ሓደ ተኽሊ ኣብ ዓመት ከባቢ 3 ኪሎግራም ዕጣን ክእከብ ይኽእል። ብመሰረት ዘለዎ ርጉደቱ ናይቲ ተኽሊ፣ ናይ እቲ ከባቢ መፍረያይነት እና ወãቲ። ሓደ ተኽሊ ዕጣን እንክብካቤ እንዳሃብካ 50-60 ዓመታት ክፀንሕ ይኽእል።

ስእሊ 2.2: ኣደማሞያ ተክሊ ዕጣን

2.3. ምእራይን ደረጃ ምውፋእን ዕጣን

እዚ ዝተኣከበ ዕጣን ይእረን ደረጃ ይወፆን ብመሰረት ሕብሩ፣ ፅርየቱን መጠኑን (Size) ብመሰረት እዚ ኣብ ኢትዮጲያ ሓሙሽተ ደረጃታት ምህርቲ ዕጣን /B.papyriyura/ኣለው።

ንሳቶም እውን፡-

- ✓ 1ይ ደረጃ: ፃዕዳ ሕብሪ ዘለዎ ልዕሊ 6 ሚሊ ሜትር ዙርያ ዘለዎ ዕጣን እዩ
- ✓ 2ይ ደረጃ: ፃዕዳ ሕብሪ እና 4-6 ሚሊ ሜትር ዙርያ ዘለዎ
- ✓ 3ይ ደረጃ: ፃዕዳ ሕብሩ ኮይኑ 2-4 ሚሊ ሜትር ዙርያ ዘለዎ
- ✓ 4ይ ደረጃ: ቡናማ ወይ ፀሊም ሕብሪ ምስ ዝተፈላለዩ መጠን (Size) ዘለዎም
- ✓ 5ይ ደረጃ: ሕሩጭ ምስ ትሕቲ 2 ሚሊ ሜትር ዙርያኡም ዕጣናት የጠቓልል

ስእሊ 2.3: ተክሊ ዕጣን

2.4. ሜ ላ ኣሰራረሓ

- እቲ ዕጣን ይእከብ
- እቲ ዕጣን ዘለዎ ፅርያት ንምሕላው ይእረ
- ናብቲ ድስቲ ብ ምእታው ን ክሓቅቅ ፅሩይ ማ ይ ምውሳክ
- ምስሓቐቐ እቲ ድስቲ ክዳኑ ብምግጣም ዝግጅ ብምግባር
- እቲ ድስቲ ሙቐት ክረክብ ምግባር
- እዚ ዘይቲን ማይን ተሓዋዊሱ ዝነበረ ምፍላይ
- እቲ ዘይቲ ኣብ ፅሩይ መትሓዚ ከዲንካ ምቅማጥ

2.5. ረብሓታት ዕጣን ኣብ ጥዕና

- ኣብቲ ዕጣን ዝርከብ ኣሲድ ኣብ ውሽጢ ሰውነትና ሊኮትሪነስ (leukotrienes) ንኽይፍጠር ይከላኸል። ሊኮትሪነስ (leukotrienes) ማለት ሞለኪዩል ኮይኑ ሕማም ሕኽኽ መንስኤ ዝኾውን እዩ። ስለዚ እቲ ተኽሊ ፀረ-ማሕኽኽቲ ባህሪ ኣለዎ
- ዕጣን ንምሕካም ኦስትኣኣርትራትስ (osteoarthritis) ቃንዛን ማሕኽኽትን ይጠቅም።ዕጣን ምንሽርታትን መጋጥም ንምቅናስ ይሕግዝ
- ዕጣን ፀረ-ማሕኽኽትን ሰውነትና ሕማማት ናይ ምክልኻል ዓቕሚ ንኽዓቢ ይሕግዝ
- ሕማም ኣዝማ ይከላኸል
- ኣብቲ ዕጣን ዝርከብ ኣሲድ ዕብየት ካንሰር ንኽደናን ይገብር። ብዝበለፀ ናይ ጡብ ካንሰር ይከላኸል
- ኣብ ናይ ቤተ ክርስትያን ባዓላት ከም መድመቒ እቲ ባዓልን ሃይማኖታዊ ፀሎት መብፀሒን ይጠቅም። ንሽታ መስርሒ የገልግል ብተወሳኺ ኣብ ስነ-መፀባበቒ ውፅኢታት ንምስራሕ ዓብዩ እጃም ኣለዎ
- ንመመልኸፅን ሽታን ጥቅሚ ይውዕል
- ሓደ ሓደ ግዜ ኣብ ናይ ቆርበት እንክብካቤ ንምግባር ንጥቀመሉ
- እቲ ዘይቱ ፀረ-ባክተርያ ፀባይ ኣለዎ። ብተወሳኺ ኣብ ደም ዝውውር ንክፍጠን ይሕግዝ

- ንሕማም ሸኸርያ መድሓኒትነት ይጠቅም
- ፀረ-ታህዋስያን