Biodiversity Challenge Funds: Case Studies Webinar

Africa





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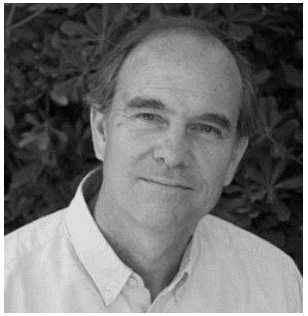

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Agenda

- Welcome and Introductions
- **IWT101: Disrupting international wildlife trafficking networks in West and Central Africa**
- Questions
- **26-015: Traditional African vegetables strengthen food and nutrition security in Madagascar**
- Questions
- **27-001:Conserving High Atlas agrobiodiversity to improve Amazigh livelihoods in Morocco**
- Final Questions

Case Study 1

Project Reference:	IWT101
Project Title:	Disrupting international wildlife trafficking networks in West and Central Africa
Lead Partner:	Environmental Investigation Agency (EIA)
Project Duration:	September 2021 – March 2024
Country(ies):	Cameroon, Gabon, Nigeria

IWT101: Disrupting international wildlife trafficking networks in West and Central Africa

Justin Gosling (Senior Project Coordinator West and Central Africa)

Martina Aerne (Senior Intelligence Analyst)

Environmental Investigation Agency

- Founded in 1984
- Pioneered use of covert investigations to investigate environmental crime
- Programmes on: Climate, Forests, Oceans and Wildlife
- Focus on long-term strategic change

Project Overview

Disrupting international wildlife trafficking networks in West and Central Africa
September 2021 – March 2024

Project Goals
- Reduce international trafficking of elephant ivory and pangolins in West & Central Africa
- Build more effective criminal justice responses to organised wildlife trafficking in Nigeria by working with government and civil-society organisations.
- Generate information to inform intelligence-led law enforcement investigations into trafficking and corruption
- Build capacity for wildlife crime financial investigations, and
- Enhance regional cooperation, including with Gabon and Cameroon.

Outcome
Intelligence-led law enforcement, including use of financial investigations and regional cooperation, disrupts ivory and pangolin trafficking networks and associated corruption West/Central Africa through increased risks for wildlife criminals.

Rationale

West & Central Africa region is a major hub for trafficking of high-value illicit wildlife between Africa and South East and East Asia, sourced from Cameroon, Gabon, Central African Republic, Republic of Congo, Democratic Republic of Congo and Liberia.

Wildlife trafficking undermines the livelihoods and health of rural communities located in and around the areas where poaching takes place by fuelling overexploitation and depletion of wildlife resources that communities rely on for their livelihoods.

Wildlife trafficking networks operating in Nigeria are involved in serious crimes such as money laundering, corruption and fraud diverting resources from activities critical for poverty eradication, undermining ability to meet development objectives and human rights obligations.

Corruption associated with wildlife trafficking undermines rule of law and human security, and the credibility of governments across the region.

Criminal Justice response is weak and fails both victims, perpetrators and the wider community.

Partnerships

Africa Nature Investors Foundation (ANI).

Goal: to demonstrate that conservation can be a catalyst for investment and development, benefitting local communities and other stakeholders.

- Established network of high-level contacts in the Nigerian government, private sector and NGO community
- ANI and EIA collaborate on strategic planning, implementation of activities on law enforcement capacity building; involvement of civil-society and the media; information dissemination; and engagement with the banking sector in Nigeria.
- Key to securing institutional support and the development of relationships with government officials and private sector leaders

Activities

Activity 1
Nigerian and international law enforcement agencies have the information required to conduct operations targeting criminal networks and the corrupt actors facilitating transnational wildlife trafficking, and civil society hold key stakeholders accountable

Activity 2
Enhanced government capacity and public-private sector collaboration in Nigeria to conduct financial investigations for serious and organised wildlife trafficking

Activity 3
Enhanced West/Central Africa regional law enforcement cooperation and sharing of intelligence on wildlife trafficking and associated financial crime

Activity 1: Achievements to date

environmental investigation agency

INTELLIGENCE REPORT

This dissemination is for information purposes only and is being provided in the public interest for independent verification and investigations to address wildlife trafficking and environmental crime globally. The Environmental Investigation Agency (EIA-UK) has no obligation to undertake any further action in relation to this dissemination. Any action or decision taken by the recipient(s) based on information made available in this document is entirely at the recipient's discretion, risk and responsibility. The recipient(s) and any or all its subsidiaries and affiliates shall not hold EIA-UK liable for any and all direct and/or indirect costs, damages and consequences arising from their reliance on, and / or use of this information.

AUTHOR	EIA	**DATE OF REPORT**	12/06/2022
SOURCE REF. NUMBER (ISR)	ISR_225611_55387	**REPORT URN**	IR_225611_55387
SOURCE EVALUATION	1. Reliable		
INFORMATION EVALUATION	A. Known directly to the source		
CAMPAIGN	Elephants		
EVENT DATE	11/06/2022		
REPORT TITLE	Joe SMITH		
REPORT CLASSIFICATION	**CONFIDENTIAL**		
REPORT SUMMARY	Current access to 500 kg of ivory		

INFORMATION CONTENT

1. Intelligence dated 11th of June 2022 indicates that Joe SMITH has direct access to 500 kg of unprocessed elephant tusks.

Intelligence sharing

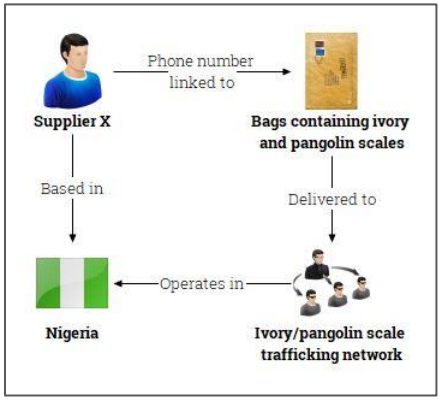
environmental investigation agency

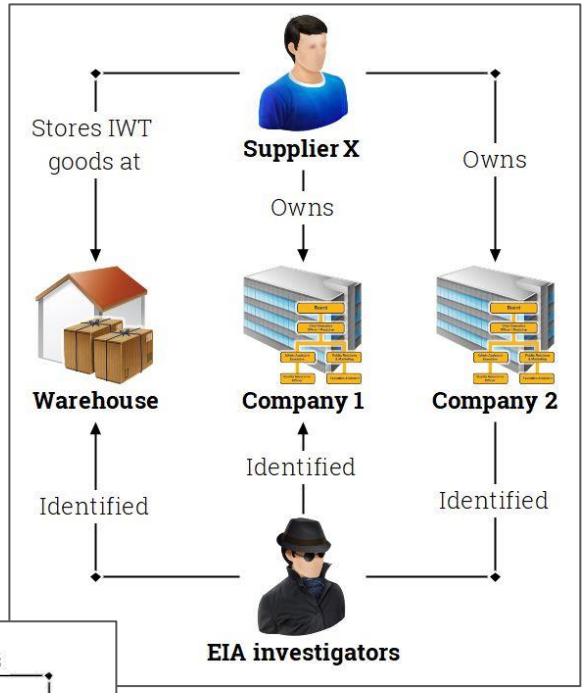
Red Flags in the Transport Sector for the Nigerian Illegal Wildlife Trade

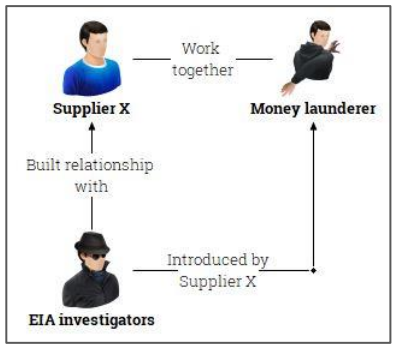
Red Flags in the Financial Sector for the Nigerian Illegal Wildlife Trade

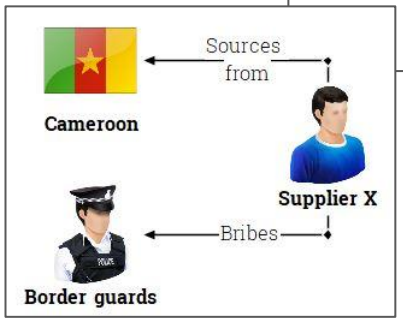
Case study: IWT supplier X

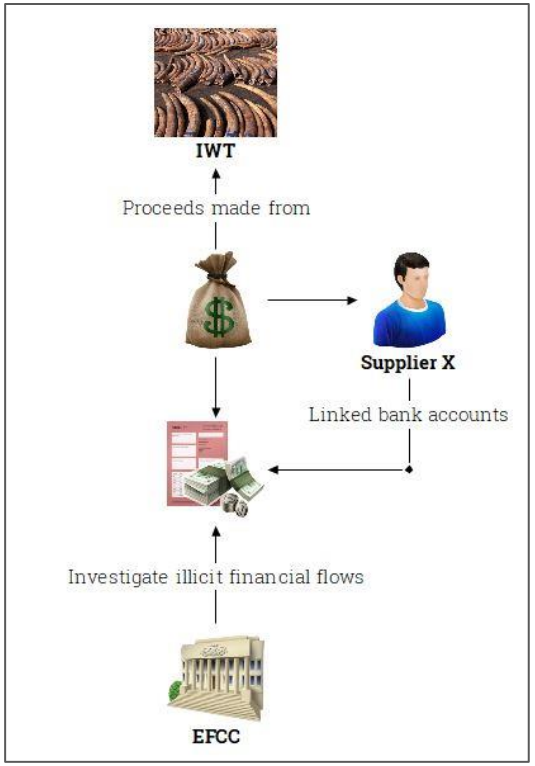
environmental investigation agency











Activity 2

Enhanced government capacity and public-private sector collaboration in Nigeria to conduct financial investigations for serious and organised wildlife trafficking

- Specialist financial investigations support
- Capacity assessment to review the current capacity for financial investigations and identify gaps and opportunities for providing support.
- Financial investigation training courses

Lessons learned

- Build projects into a wider strategy for sustained impact
- Don’t underestimate corruption and bureaucracy
- Safety and security are paramount… and expensive
- Build in broad safeguards
- Anticipate rising costs
- Plan for plans not going to plan

Questions?

Case Study 2

Project Reference:	26-015
Project Title:	Traditional African vegetables strengthen food and nutrition security in Madagascar
Lead Partner:	World Vegetable Centre
Project Duration:	May 2019 – May 2022
Country(ies):	Madagascar

DAR26015 -- Traditional African vegetables strengthen food and nutrition security in Madagascar

S. N'Danikou, B. Rabary, T. Rakotoson, J. Razanameharizaka, T. Radanielina, R. Wanyama, R. Luoga, H. Andriamazaoro, L. Ranaivoson, M. van Zonneveld, Dinssa, P. Schreinemachers,

Biodiversity Challenge Funds Case Study Webinars

Case Studies – Africa, July 15th 2022

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World Vegetable Center

FOFIFA

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SEMANA

What is a traditional vegetable?

- **Traditional** … exotic or indigenous species, varieties or taxa that have been in use for a sufficient length of time to be part of the local food habits, knowledge systems and customs of communities.


AMARANTH


JUTE MALLOW


SPIDER PLANT


AFRICAN NIGHTSHADE


COWPEA LEAVES


AFRICAN EGGPLANT


ETHIOPIAN MUSTARD


OKRA

Traditional African Vegetables for nutrition-sensitive agriculture

More diversity = better nutrition, more resilient food systems and human welfare.

Presentation outline

1. Context, project objectives and activities
2. Progress against project outcome indicators
3. Challenges, lessons, way forward

Presentation outline

1. Context, project objectives and activities
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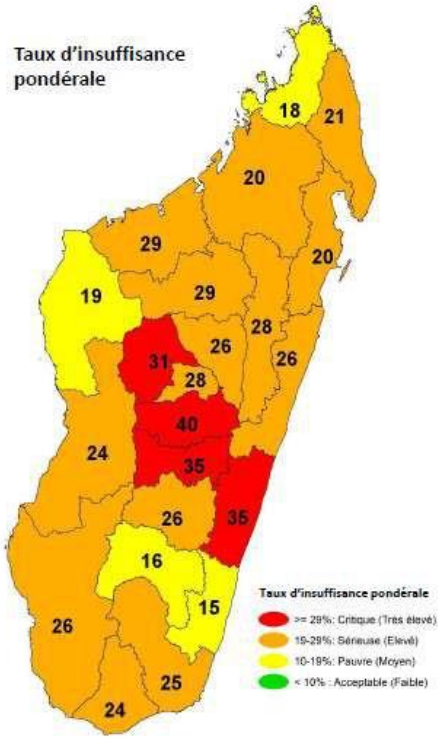
Context

- Madagascar is one of the countries fighting undernourishment and malnutrition, with 38% of women at reproductive age affected by anemia and about 42% of the children under 5 are malnourished. The children in the highlands are the most affected (>60% stunting).



Global hunger index (2018, 2021)

Project objectives

- Overall : To secure benefits of agro-biodiversity for farmer households in two vegetable production regions in Madagascar: Itasy and Antsirabe




Project objectives

Specifically:

1. To protect genetic resources of traditional vegetables through ex-situ and on-farm conservation.
2. To support Malagasy women farmers with practice-oriented research and quality-seed production to grow promising varieties of traditional vegetables.

This will make farming systems more climate-resilient, secure increased income for women farmers, and improve food and nutrition security of Malagasy households.

Project activities

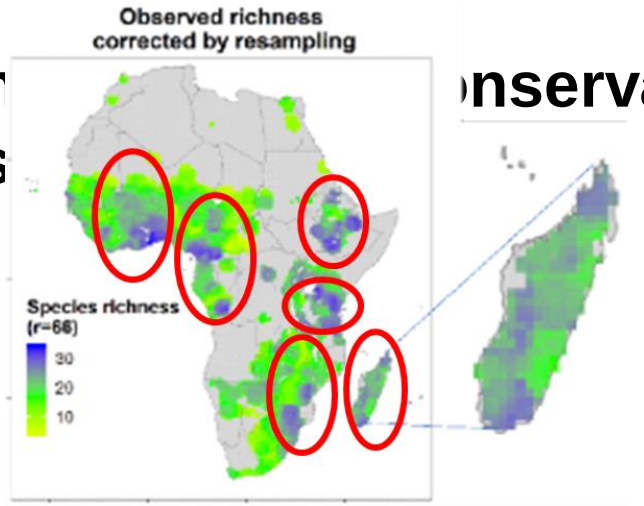
1. Good understanding of the status of agro-biodiversity (ABD) in Malagasy food systems.
2. Protect and characterize genetic resources of vegetable diversity.
3. Train Malagasy extension workers and women farmers on seed saving and production of traditional vegetables.
4. Strengthen regional school garden programs to promote conservation and use of ABD.
5. Train Malagasy women farmers on seed production for commercialization.

1. Good understanding of the status of agro-biodiversity (ABD) in Malagasy food systems.

- Gap analysis identified hotspots of traditional African vegetable biodiversity
- 62% of 126 selected African vegetables is poorly conserved *ex situ*
- **…est in… …nservation in … spots**

Diversity and conservation of traditional African vegetables: Priorities for action

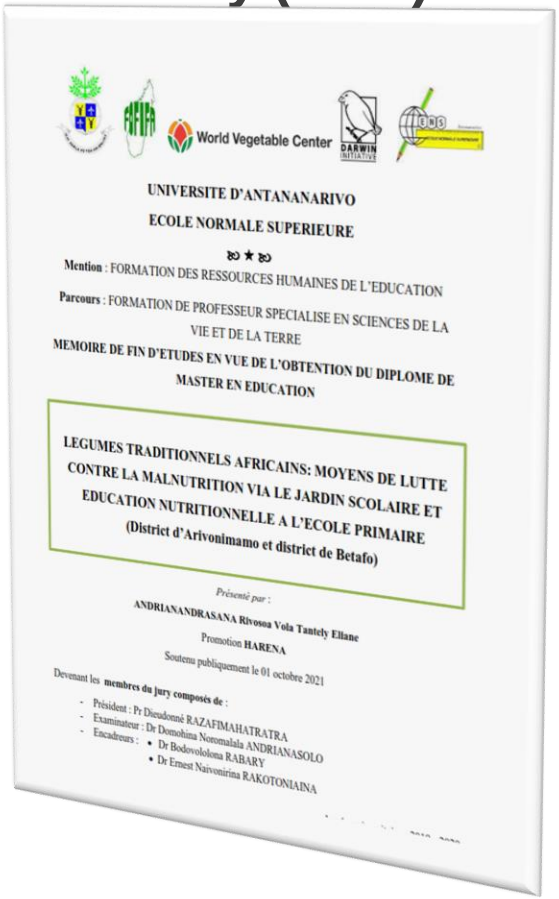
Maarten van Zonneveld[1] | Roeland Kindt[2] | Svein Ø. Solberg[3] | Sognigbé N'Danikou[4] | Ian K. Dawson[5]



van Zonneveld et al. (2021)

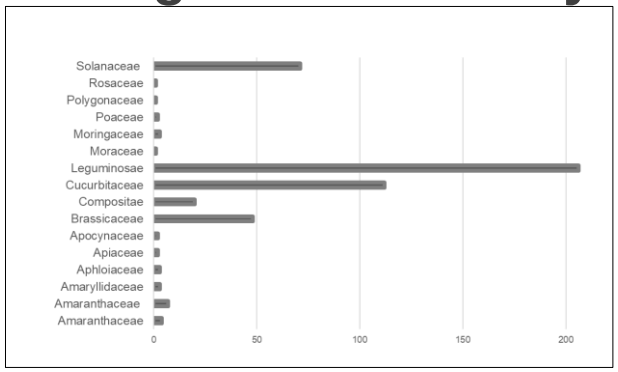
1. Good understanding of the status of agro-biodiversity (ABD) in Malagasy food systems

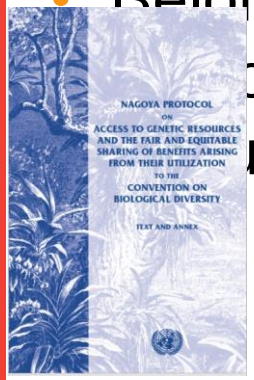
- Agrobiodiversity assessments in **8 communities**/ villages (6 planned)
- Understood the current use and conservation status of traditional vegetables and other Malagasy food plants
- Trained **11 MSc** (8 planned) in agrobiodiversity, socioeconomics, education science to academically strengthen these research disciplines in Madagascar
- Agrobiodiversity catalogue Volume 1 developed



2.Protect and characterize genetic resources of vegetable diversity

- Collected and conserved **501** seed samples of traditional vegetables (400 accessions planned)
- Belonging to 16 botanical families
- [illegible]



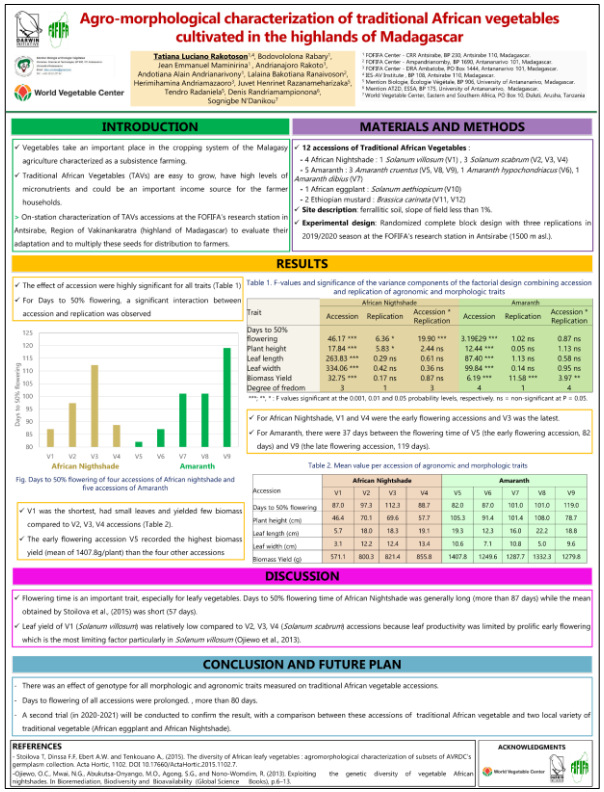


2.Protect and characterize genetic resources of vegetable diversity

- Re-discovery and rescue of the endangered wild cowpea (*Vigna keraudnii*) in Madagascar
- *Vigna keraudrenii* is closely related to cowpea **->** high priority wild relative for *Vigna* breeding
- Red-listed as an endangered species and not conserved in any genebank **->** high priority for rescue

2.Protect and characterize genetic resources of vegetable diversity

- Characterised accessions of selected priority crops (amaranths, African nightshades, African eggplant)



Agro-morphological characterization of traditional African vegetables cultivated in the highlands of Madagascar

Tatiana Luciano Rakotoson[1,4], Bodovololona Rabary[1], Jean Emmanuel Maminirina[1,4], Andrianajoro Rakoto[1], Andoitiana Alain Andrianarivony[1], Lalaina Bakotiana Ranaivoson[2], Herimihamina Andriamazoro[3], Juvet Henrinet Razanamaharizaka[3], Tendro Radaniela[3], Denis Randriamampionona[4], Sognigbe N'Danikou[5]

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[2] FOFIFA Center - Ampandrianomby, BP 1690, Antananarivo 101, Madagascar.
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[5] Mention Biologie, Ecologie Végétale, BP 906, University of Antananarivo, Madagascar.
[6] Mention ATZE: ESSA, BP 175, University of Antananarivo, Madagascar.
[7] World Vegetable Center, Eastern and Southern Africa, PO Box 10, Duluti, Arusha, Tanzania

World Vegetable Center

INTRODUCTION

- Vegetables take an important place in the cropping system of the Malagasy agriculture characterized as a subsistence farming.
- Traditional African Vegetables (TAVs) are easy to grow, have high levels of micronutrients and could be an important income source for the farmer households.
- On-station characterization of TAVs accessions at the FOFIFA's research station in Antsirabe, Region of Vakinankaratra (highland of Madagascar) to evaluate their adaptation and to multiply these seeds for distribution to farmers.

MATERIALS AND METHODS

- **12 accessions of Traditional African Vegetables** :
  - 4 African Nightshade : 1 *Solanum villosum* (V1) , 3 *Solanum scabrum* (V2, V3, V4)
  - 5 Amaranth : 3 *Amaranth cruentus* (V5, V8, V9), 1 *Amaranth hypochondriacus* (V6), 1 *Amaranth dibius* (V7)
  - 1 African eggplant : *Solanum aethiopicum* (V10)
  - 2 Ethiopian mustard : *Brassica carinata* (V11, V12)
- **Site description**: ferrallitic soil, slope of field less than 1%.
- **Experimental design**: Randomized complete block design with three replications in 2019/2020 season at the FOFIFA's research station in Antsirabe (1500 m asl.).

RESULTS

- The effect of accession were highly significant for all traits (Table 1)
- For Days to 50% flowering, a significant interaction between accession and replication was observed

Table 1. F-values and significance of the variance components of the factorial design combining accession and replication of agronomic and morphologic traits

Trait	African Nightshade			Amaranth		
	Accession	Replication	Accession * Replication	Accession	Replication	Accession * Replication
Days to 50% flowering	46.17 ***	6.36 *	19.90 ***	3.19E29 ***	1.02 ns	0.87 ns
Plant height	17.84 ***	5.83 *	2.44 ns	12.44 ***	0.05 ns	1.13 ns
Leaf length	263.83 ***	0.29 ns	0.61 ns	87.40 ***	1.13 ns	0.58 ns
Leaf width	334.06 ***	0.42 ns	0.36 ns	99.84 ***	0.14 ns	0.95 ns
Biomass Yield	32.75 ***	0.17 ns	0.87 ns	6.19 ***	11.58 ***	3.97 **
Degree of freedom	3	1	3	4	1	4

***, **, *, ns F-values significant at the 0.001, 0.01 and 0.05 probability levels, respectively, ns = non-significant at P = 0.05.

Fig. Days to 50% flowering of four accessions of African nightshade and five accessions of Amaranth

- For African Nightshade, V1 and V4 were the early flowering accessions and V3 was the latest.
- For Amaranth, there were 37 days between the flowering time of V5 (the early flowering accession, 82 days) and V9 (the late flowering accession, 119 days).
- V1 was the shortest, had small leaves and yielded few biomass compared to V2, V3, V4 accessions (Table 2).
- The early flowering accession V5 recorded the highest biomass yield (mean of 1407.8g/plant) than the four other accessions

Table 2. Mean value per accession of agronomic and morphologic traits

Accession	African Nightshade				Amaranth				
	V1	V2	V3	V4	V5	V6	V7	V8	V9
Days to 50% flowering	87.0	97.3	112.3	88.7	82.0	87.0	101.0	101.0	119.0
Plant height (cm)	46.4	70.1	69.6	57.7	105.3	91.4	101.4	108.0	78.7
Leaf length (cm)	5.7	18.0	18.3	19.1	19.3	12.3	16.0	22.2	18.8
Leaf width (cm)	3.1	12.2	12.4	13.4	10.6	7.1	10.8	5.0	9.6
Biomass Yield (g)	571.1	800.3	821.4	855.8	1407.8	1249.6	1287.7	1332.3	1279.8

DISCUSSION

- Flowering time is an important trait, especially for leafy vegetables. Days to 50% flowering time of African Nightshade was generally long (more than 87 days) while the mean obtained by Stoilova et al., (2015) was short (57 days).
- Leaf yield of V1 (*Solanum villosum*) was relatively low compared to V2, V3, V4 (*Solanum scabrum*) accessions because leaf productivity was limited by prolific early flowering which is the most limiting factor particularly in *Solanum villosum* (Ojiewo et al., 2013).

CONCLUSION AND FUTURE PLAN

- There was an effect of genotype for all morphologic and agronomic traits measured on traditional African vegetable accessions.
- Days to flowering of all accessions were prolonged. , more than 80 days.
- A second trial (in 2020-2021) will be conducted to confirm the result, with a comparison between these accessions of traditional African vegetable and two local variety of traditional vegetable (African eggplant and African Nightshade).

REFERENCES

- Stoilova T, Dinssa F.F, Ebert A.W, and Tenkouano A., (2015). The diversity of African leafy vegetables : agromorphological characterization of subsets of AVRDC's germplasm collection. Acta Hortic, 1102. DOI: 10.17660/ActaHortic.2015.1102.7.
-Ojiewo, O.C., Mwai, N.G., Abukutsa-Onyango, M.O., Agong, S.G., and Nono-Womdim, R. (2013). Exploiting the genetic diversity of vegetable African nightshades. In Bioremediation, Biodiversity and Bioavailability. (Global Science Books), p.6–13.

ACKNOWLEDGMENTS

World Vegetable Center

3.Train Malagasy extension workers and women farmers on seed saving and production of traditional vegetables

- **25** extension officers (68% female) and **200** women farmers trained.

4.Strengthen regional school garden programs to promote conservation and use of agrobiodiversity

- **8** school gardens established (5 planned)
- **2** Regional and **1** national school gardens program workshops (1 planned)

5.Train Malagasy women farmers on seed production for commercialization.

- **11** progressive women farmers trained on seed production and seed business (10 planned)




Presentation outline

1. Context, project objectives and activities
2. Progress against project outcome indicators
3. Challenges, lessons, way forward

Project outcome

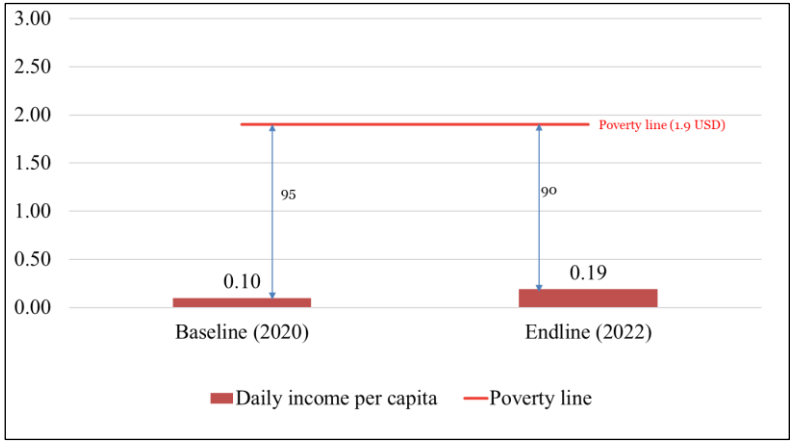
Protection and enhancement of genetic resources of traditional vegetables in Madagascar resulting in increased access to vegetables for 15,000 Malagasy people, climate-resilient farming systems, and improved protection of vegetable biodiversity.

- **21,231** households reached with improved seeds of traditional vegetables

Project outcome indicators

0.1. At least 1,000 farmer households in the Itasy and Antsirabe regions report a 25% increase of their overall income and an 25% more stable income by growing traditional vegetables (survey sample = 200 farmers participating directly in the project and 200 randomly selected farmers not participating directly)

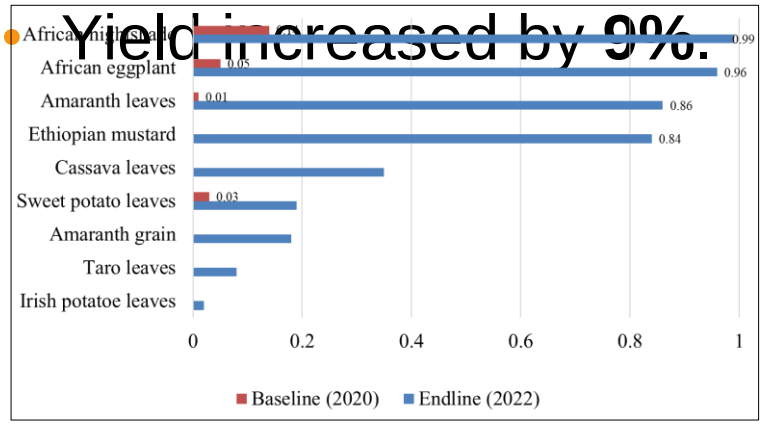
- Daily per capita income of intervention group increased by **47.4%**
- The difference between control and intervention group reduced at endline compared to baseline (data not shown here)

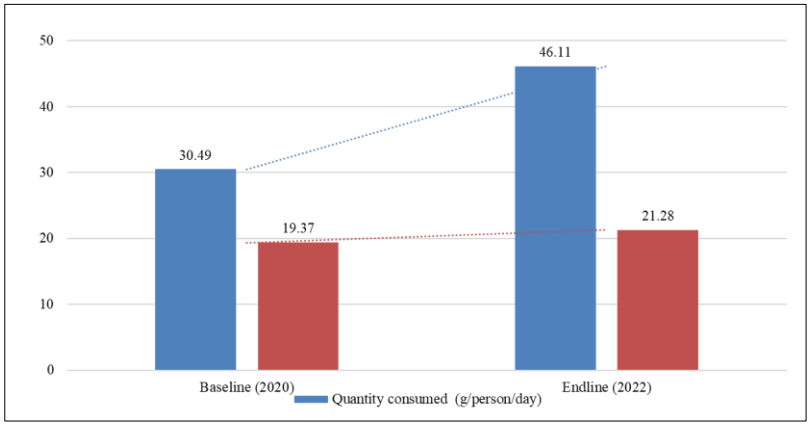


Project outcome indicators

0.2. Farmer families that grow traditional vegetables are food and nutrition secure through the whole year.

- Vegetable consumption increased by **32.6%** from 30.49 g/day, although still far from meeting the daily requirement of 240 g/day/capita.
- Yield increased by **9%**.

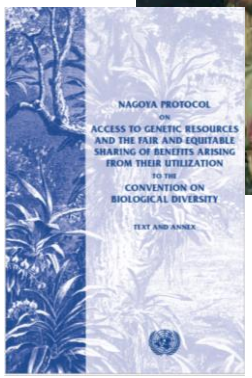




Project outcome indicators

0.3. At least 400 accessions of vegetable landraces from Madagascar are protected *ex-situ.*

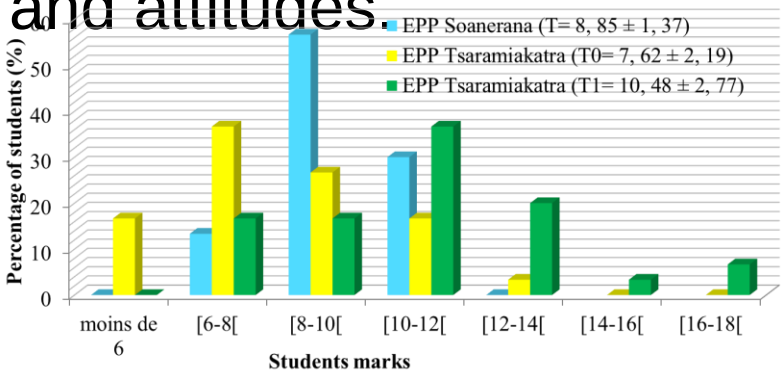
- 501 accessions (400 planned) collected and conserved ex-situ in genebank
- E[illegible]us [illegible] of FAO



Project outcome indicators

0.4. School children in the participating primary schools increased their knowledge and improved their attitude regarding consumption, nutrition, and taste of traditional vegetables

- Involvement of children in biodiversity-rich school garden activities and nutrition education improved their knowledge and attitudes.



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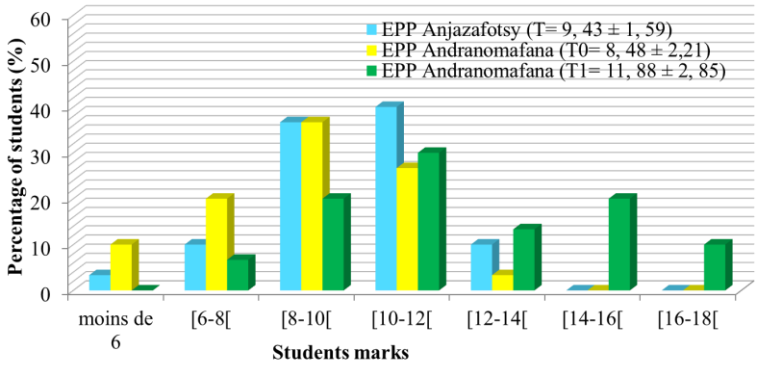

Betafo district

Project outcome indicators

0.4. School children in the participating primary schools increased their knowledge and improved their attitude regarding consumption, nutrition, and taste of traditional vegetables

- The school children involved in the biodiversity-rich school garden program are eating more vegetables because of improved knowledge and awareness.

Project outcome indicators

0.5. 100% increase in sales of traditional vegetable seeds.

- Sales increased by over 100%. M&E data analysis still ongoing.

Presentation outline

1. Context, project objectives and activities
2. Progress against project outcome indicators
3. Challenges, lessons, way forward

Challenges

- Challenge 1: Covid-19 restrictions affected travels and activities to some extent.
- Challenge 2: Withdrawal of the private sector partner SEMANA in the last year.
- Challenge 3: National rules and procedures on

Lessons learned

- Lesson 1: Building a project stemming from local demand is key for success.
- Lesson 2: Strong partnership, commitment, adaptive management are important
- Lesson 3: Stakeholders' engagement & awareness increase

Better to know before start

1. Decision making authority of key project staff : e.g. participation of the private sector
2. Local administrative realities : to assess their possible impacts on project implementation. Find alternatives -- > adaptive management
3. Local capacities: e.g. Infrastructure for vegetable germplasm conservation.

Way forward: What we wish to change from what is known now

1. Scaling monitoring to strengthen rescue and conservation of African vegetables.
2. Scaling participatory evaluation : importance of citizen science approach
3. Scaling school gardens and HGSFP: production, consumption commercialization.

Local governments, NGOs and development programs are showing interest in TAV seeds (eg. Mayors from other regions, Agrisud NGO, etc.)

Acknowledgements

Thank you.
Questions are most welcome.

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Case Study 3

Project Reference:	27-001
Project Title:	Conserving High Atlas agrobiodiversity to improve Amazigh livelihoods in Morocco
Lead Partner:	Global Diversity Foundation
Project Duration:	June 2020 – May 2023
Country(ies):	Morocco

Thanks for listening!

Upcoming Deadlines:

DARWIN INITIATIVE 30 YEARS

Main Stage 1: Monday 25 July
Extra: Monday 3 October

ILLEGAL WILDLIFE TRADE CHALLENGE FUND

Main, Extra & Evidence Stage 1: Monday 22 August

DARWIN PLUS

Fellowships: Monday 17 October