



# NATURAL FARMING PROJECT

Empowering Sustainable Natural Farming Practices in  
Rural Community

**Good Neighbors Tanzania**

## Abstract

The worldwide shift towards sustainability and environmental consciousness has prompted a renewed interest in natural farming practices as an alternative to conventional agricultural methods. After getting a ToT training on the Eco-friendly farming (Natural farming) for Climate Smart Agriculture from GNGIF in December 2022, GNTZ highlights a comprehensive approach to empowering rural communities to adopt and practice sustainable natural farming methods.

Drawing upon interdisciplinary research, this study emphasizes the significance of enhancing local agricultural systems that prioritize ecological balance, reduce chemical inputs, and increase reliance on natural processes. By promoting agroecological principles and engaging with traditional knowledge, rural communities can regain control over their food systems while fostering biodiversity and soil health.

The abstract also discusses the role of education and knowledge dissemination in this empowerment process. Establishing community-led workshops, training programs, and knowledge-sharing platforms can enable farmers to embrace innovative yet contextually appropriate techniques. This approach strengthens local economies and encourages a sense of ownership and pride in preserving cultural agricultural heritage.

Furthermore, it addresses the potential challenges and barriers faced by rural communities during the transition to sustainable natural farming. Access to resources and market integration are crucial considerations requiring stakeholders' collaboration, including governments, non-governmental organizations, and private enterprises.

### ***Climate Smart Agriculture Resilient Practices through Natural Farming Methods***

Natural farming is an innovative method of farming that utilizes nature's power for maximum performance rather than human interventions.

The materials are locally available in the community and the inputs are made by farmers themselves instead of being purchased in the market, thus lowering the cost for the farmers and converting waste into a productive resource.

Natural farming is a holistic approach that aims at improving and restoring the biodiversity and environment in general. Natural farming is an approach which is focusing on 4 principles namely No tillage; Land mulching, composting and the promotion of Indigenous Micro-Organisms.

### ***The advantages associated with natural farming are, but are not limited to, the following:***

- Natural farming is environmentally friendly
- Natural farming gives a high yield after a certain period.
- The cost of running Natural farming is low as it does not use inorganic fertilizers as well as other chemicals
- Natural farming is a farmer-friendly
- The production resulting from Natural farming is safe for both human and animal life

## Introduction

Good Neighbors works in Tanzania with a vision to support the community retrieves from poverty in the area of Income Generation. The organization works with the direct community's beneficiaries in support of the GNTZ offices and collaborates with the local government and community representatives from all parts of the working villages, wards, and districts.

The project "Empowering Sustainable Natural Farming Practices at Nambinzo ward in Mbozi District, Songwe Region" aims to foster a paradigm shift in agricultural practices towards more sustainable and environmentally friendly methods in rural areas. Situated in the Songwe region of Tanzania, Mbozi District, Nambinzo ward is characterized by its rich agricultural potential, yet it faces challenges related to soil degradation, water scarcity, cost farming, and unsustainable farming techniques. This project seeks to empower local farmers with knowledge and tools to transition to natural and regenerative farming practices, ensuring increased agricultural productivity, income, and the preservation of the region's natural resources.

Ninety percent (90%) of the community members in Nambinzo ward are small farmers/ who cultivate food crops for self-sufficiency only and the main economic activity of the local people is subsistence farming. GNTZ started its operation in Nambinzo CDP in 2015, with the aim of contributing to and improving the well-being, and access to social services, to improve the livelihood of the communities by building their capacities on proper financial management, agriculture, and alternative activities with a sustainable income. GNTZ is determined to establish strategic programs and projects to ensure rural development is achieved with the aim of supporting agriculture, economic development, and the environment.

During the GNTZ implementation of the project in Nambinzo, the significant challenges identified that require interventions through smallholder farmer development projects include low productivity and production of quality crops, inadequate extension services, high prices of agriculture inputs and insufficient access to reliable agro-inputs. Other factors include poor agronomic practices, deforestation and the instability of market crop prices.

GNTZ wants to increase resilience and build adaptive capacity through a natural farming approach. The organization's commitment to making Nambinzo CDP a role model in embracing sustainable farming practices to improve livelihoods and alleviate poverty motivates participatory approaches in promoting sustainable development initiatives among the resource-poor rural community members.

In December 2022, GNTZ prepared Natural Farming Master Training (ToT) with the technical support from GNGIF, participants being farmers, GNTZ staff, extension and government officers from the Mbozi district council, with the objective of promoting sustainable agriculture by minimizing the use of synthetic inputs, such as chemical fertilizers, pesticides, genetically modified organisms (GMOs) and Indigenous Micro Organism (IMO), and instead relying on natural processes to maintain soil fertility and plant health. Due to the training, some farmers have already applied the Natural Farming approach they got from the training facilitated by GNTZ.

### Project Summary

Natural farming is an agricultural method that emphasizes working with nature rather than against it. It is also known as *"do-nothing farming"* or *"zero-budget farming"* because it involves minimal human intervention and uses locally available resources.

In natural farming, the focus is on creating and maintaining healthy soil, rather than relying on synthetic fertilizers and pesticides. Farmers use a variety of techniques, such as composting, mulching, and cover cropping, to improve soil fertility and structure. They also encourage the growth of beneficial microorganisms and insects to help control pests and diseases.

Natural farmers typically grow a diverse range of crops, including perennial plants, to promote biodiversity and enhance soil health. They may also use traditional methods of seed saving and crop rotation to maintain a healthy and sustainable farming system

Currently, GNTZ managing an ongoing natural farming project, by looking at several important things to consider to ensure its success:

By the end of July, the bean was 10 weeks old, and the stage of growth was pod formation and maturation. We had the challenge of water for irrigation so the crops started to wilt and were forced to dry even when the time for maturation was yet.

#### ***Key Accomplishments (achievements and milestones reached)***

Increased adoption and awareness: One of the significant accomplishments of natural farming is the growing adoption and increased awareness among farmers. Some farmers have transitioned from conventional farming methods to natural farming practices, recognizing the importance of sustainable and environmentally friendly approaches.

Water conservation: Practices such as mulching, drip irrigation, and efficient water management strategies help minimize water usage and reduce the environmental impact associated with conventional irrigation methods.

Develop three bean plots for demonstration (Natural Farming, Local Farming and Conventional Farming): Developing three plots for natural farming, local farming, and conventional farming provides a visual and statistical means to compare, analyze, and communicate the differences between these approaches. It aids in decision-making, trains farmers, and supports research in the field of agriculture and farming practices.

In May 2023 GNTZ established 3 demo plots at its Nambinzo field office (NFO) to practice Natural, Conventional, and Local farming respectively. The plots were sowed with beans (Uyole njano variety) where Natural farming inputs were IMO & other natural solutions; in conventional farming inputs were chemical fertilizers; in local farming, no inputs were used. The plots were used by TOT for the practical study of differences in farming practices.

The planting was done on 18/05/2023, all the ToT participated in the planting activities

## Objective

To promote sustainable and environmentally friendly agricultural practices that lead to improved production, quality, and overall farm health. (To minimize external inputs like synthetic fertilizers and pesticides while maximizing the use of local resources and beneficial ecological interactions)

## Specific Objective

1. Knowledge Dissemination: The project provided comprehensive training to farmers in the Nambinzo ward, introducing them to innovative and sustainable natural farming techniques. Workshops, seminars, and practical demonstrations farms were conducted to educate farmers about organic fertilization (composting manure), agroforestry, crop rotation, companion planting, and integrated pest management.
2. Resource Management: Recognizing the importance of natural resources, the project focuses on soil and water conservation. Farmers trained in soil erosion prevention, composting, and water-efficient irrigation methods, reducing the negative impacts of conventional practices and enhancing the soil's fertility and structure.

3. Biodiversity Enhancement: By promoting diverse cropping systems and incorporating native plant species, the project aims to improve biodiversity on farmlands. Not only supports ecological balance but also creates resilient ecosystems capable of withstanding climate change impacts.
4. Economic Empowerment: The adoption of sustainable farming practices has the potential to increase crop yields, reduce production costs, and open up new market opportunities. Through capacity-building activities, farmers learn on how to create value-added products and access local and regional markets.
5. Natural pest and disease management: Train farmers in using natural methods to control pests and diseases, such as the use of biopesticides, beneficial insects, and companion planting. This reduces reliance on chemical pesticides, which can be harmful to the environment and human health.

### Progress of Activities, Achievements, Challenges, Lessons Learned, Recommendations & Future Plan

<b>Progress of Activity</b>	<ul style="list-style-type: none"> <li>• Harvesting stage (Beans Crop)-Completed</li> </ul>
<b>Key Achievements:</b> (Highlighted the main achievements)	<ul style="list-style-type: none"> <li>• Project Sustainability</li> <li>• Community Involvement and Participation</li> <li>• Enhancing Skills and Practices through demo plots</li> </ul>
<b>Constraints &amp; Issues:</b> (List the constraints/problems & issues faced)	<ul style="list-style-type: none"> <li>• Lack of Knowledge and Awareness Rural farmers are not aware of natural farming practices</li> <li>• Traditional Mindsets and Practices for traditional farming methods and cultural practices are deeply ingrained in rural communities</li> <li>• Extension services and support from agricultural experts may not be readily available in remote rural areas, making it challenging to provide guidance and assistance to farmers interested in adopting natural farming practices.</li> </ul>
<b>Lessons Learned</b>	<ul style="list-style-type: none"> <li>• Composting kitchen scraps, crop residues, and other organic materials produces nutrient-rich compost that improves soil fertility and structure.</li> <li>• Mulching with organic materials like straw or leaves helps retain soil moisture, suppress weeds, and regulate soil temperature.</li> <li>• Most of the materials used in natural farming are available in the relevant environment</li> </ul>

	<ul style="list-style-type: none"> <li>• Community and Knowledge Sharing in natural farming often encourages collaboration and knowledge sharing among farmers.</li> </ul>
<b>Recommendations:</b> (Suggested recommendations/remedial actions to improve implementation.)	<ul style="list-style-type: none"> <li>• Budget to implement the Natural Farming project</li> <li>• Crop Selection: Choose crop varieties that are well-suited to the local climate and soil conditions based on the season</li> <li>• Mulching: Apply organic mulch (such as maize straw, leaves, or crop residues) around bean/crop plants to conserve moisture, suppress weed growth, and improve soil structure.</li> <li>• Water Management: Optimize water usage through techniques like drip irrigation or rainwater harvesting to ensure efficient water distribution and minimize wastage</li> </ul>
<b>Future Plan</b>	<ul style="list-style-type: none"> <li>• Installation of rainwater gutters for harvesting water during the rain</li> <li>• Install water pump for irrigation</li> <li>• Construction of dam for irrigation</li> <li>• Drip irrigation installation</li> <li>• Strawberry demo farm</li> <li>• Training Natural Farming in the Nambinzo community</li> </ul>
<b>Additional comments</b>	<ul style="list-style-type: none"> <li>• Study/field tours for the farmers to visit the project have been successful in Natural Farming implementation</li> <li>• Finding markets for products produced through natural farming</li> <li>• Link GNTZ staff with experts in exchanging experiences, ideas and training in Natural Farming</li> </ul>

## Conclusion

In conclusion, the empowerment of rural communities in adopting sustainable natural farming practices is a multi-faceted endeavor that encompasses ecological, social, and economic dimensions. By harnessing the inherent wisdom of traditional agricultural practices and combining them with modern insights, rural communities can pave the way toward a resilient and ecologically harmonious future.

The "Empowering Sustainable Natural Farming Practices in Nambinzo Ward, Mbozi District, Songwe Region" project embodies a holistic approach to agricultural transformation. By combining knowledge dissemination, resource management, biodiversity enhancement, economic empowerment, community participation, and rigorous monitoring, the project aims to catalyze a shift towards sustainable farming practices that benefit both the local environment and the livelihoods of the farmers. Through this initiative, Nambinzo can become a model for sustainable

agriculture, inspiring other offices to adopt similar practices and contribute to a more resilient and prosperous future.

### Annex

The assessment and Summarized Statistics

## AGRO- ECOSYSTEM ANALYSIS (AESA) No. 1

### SUMMARY FROM THE TOT ASSESSMENT

**Date:** 25<sup>th</sup> May 2023

**Group Made:** 3 Groups

#### General Information.

**Crop Name:** Common Beans

**Variety:** Njano Uyole

**Date Sown:** 18<sup>th</sup> May 2023

#### Agronomic Data

**Age of the Plant:** One Week

**Stage:** Crop Emergence

Practices: Natural farming plot 1, conventional farming plot 2 and local Farming (no inputs used) plot 3.

Parameter	Natural Farming Plot	Conventional Farming Plot	Local Farming Plot
Germination %	98	58.3	82
No. of leaves	2 primary leaves	2 primary leaves	2 primary leaves
No. of cotyledon	2 cotyledons	2 cotyledons	2 cotyledons
<b>Insect Pests</b>			
	1. No insect pests were observed	1. Black bean Aphids and grasshopper/ white fly	1. Whiteflies
<b>Natural nemies</b>			
	1. There was a spider	1. -----	1-----
<b>General Observations</b>		<b>Recommendations</b>	
1. Natural farming germination was very good compared and conventional was moderate		1. To spray insecticide in conventional and OHN In natural farming plots	

2. In conventional the germination was going on	2.
3. Insect pest was observed in local and conventional farming	3

## AGRO- ECOSYSTEM ANALYSIS (AESA) No. 2

### Summary of AESA TWO Five Groups Involved

**Date:** 08<sup>th</sup> June 2023

**Group:**

**General Information.**

**Crop Name:** Common beans

**Variety:** Njano Uyole

**Date Sown:** 18<sup>th</sup> May 2023

**Agronomic Data**

**Age of the plant:** 3 Weeks

**Stage:** Early Vegetative Growth

Practices: Natural farming plot 1, conventional forming plot 2 and local Farming (no inputs used) plot 3.

Parameter	Natural Farming Plot	Conventional Farming Plot	Local farming plot
<b>Height of crops</b>	17.1cm average from five groups	14.42 cm average of five groups	12.5
<b>No. of leaves</b>	2 primary leaves, 2 foliated leaves	2 primary leaves, 2 foliated leaves	2 primary leaves, 2 foliated leaves
<b>Condition of the crops</b>	Very good	Good	Moderate
<b>Insect pests</b>			
	1. Black Aphis and white flies	1. Black aphids white flies	1. Black Aphids and white flies
	2. Grasshopper	2. Wilting was observed	2. Wilting
		3. Grasshopper	3. Grasshopper
<b>Natural enemies</b>			
	2. Spider	1. Nil	1. Nil

General Observations	Recommendations
1. In Natural Farming the situation is good compared to other plots	1 To apply insecticide in the conventional plots and natural solution in the NF plots
2. In the Natural Farming plot, the growth rate is high	2. To irrigate frequently
3. Growth in local farming is moderate	3.
4. In conventional and local plot there is wilting of bean crops	4

The following was the activity that was done in July

1. Irrigation was done daily with the help of the ToT in their groups
2. Agroecological Assessment no. 4.

### AGRO- ECOSYSTEM ANALYSIS (AESA) No. 3

#### Summary of AESA 3, Five Groups Involved

**Date:** 26<sup>th</sup> June 2023

**Group:** All five groups

#### General Information.

**Crop name:** Common Beans

**Variety:** Njano Uyole

**Date sown:** 18<sup>th</sup> May 2023

Practices: Natural farming plot 1, conventional forming plot 2 and local Farming (no inputs used) plot 3.

#### Agronomic data

**Age of the plant:** 6 Weeks

**Stage:** Flowering Stage

Parameter	Natural Farming Plot	Conventional Farming Plot	Local Farming Plot
<b>Height of Crops</b>	41.3 cm average from five groups	29.7 cm average of five groups	22.5 cm average of five groups
<b>No. of Leaves</b>	11 leaves.	10 leaves	7 leaves
<b>No. of Flowers</b>	11 flowers on average	11 flowers per plant	5 flowers per plant
<b>No. of Branches</b>	8 branches	7 branches on average	2 branches on average
<b>Insect Pests</b>	2. Grasshopper	2. Black aphids' white flies	2. Black Aphids and white flies
	3. Black Aphis	3. Wilting was observed	3. Wilting

	4. Beetle	4. Grasshopper	3. Grasshopper
<b>Natural Enemies</b>	3. Spiders	1. Nil	1. Nil
	2. Beetle		
<b>General Observations</b>		<b>Recommendations</b>	
4. In natural farming the situation is very good compared to other plots		1 To apply insecticide in the conventional plots and natural solution in the NF plots	
5. In the NF plot the growth rate is high		2. To irrigate frequently	
6. Growth in local farming is moderate		3. To find the source of water for irrigation	
7. In conventional and local plots there is wilting of bean crops		4. Timely application of IMOs in the plots.	

**AGRO- ECOSYSTEM ANALYSIS (AESA) No. 4**  
**Summary of AESA four, five Groups involved**

**Date:** 13<sup>th</sup> July 2023

**Group:**

**General Information.**

**Crop Name:** Common Beans

**Variety:** Njano Uyole

**Date Sown:** 18<sup>th</sup> May 2023

Practices: Natural farming plot 1, conventional forming plot 2, and local Farming (no inputs used) plot 3.

**Agronomic Data**

**Age of the Plant:** 8 Weeks

**Stage:** Pod formation and maturation stage

Parameter	Natural Farming Plot	Conventional Farming Plot	Local Farming Plot
<b>Height of crops</b>	40.66 cm average from five groups	32.76 cm average of five groups	24.96 cm average height
<b>No. of leaves</b>	17 leaves	17 leaves	11 leaves
<b>No. of flowers per plot</b>	The average number of flowers was 5.	The average flower was 4	The average flower was 3
<b>No. of pods/fruits</b>	The average no. of pods was about 20	The average no. of pods was about 18	The average no. of pods was 6
<b>No. of branches</b>	The average no. of branches was about 4	The average no. of branches was about 4	The average no. of branches was about 4.

<b>General condition</b>	Very good	Good	Moderate
<b>Insect pests</b>	5. Black aphids.	6. Black aphids	5. Black Aphids and white flies
	7. Grasshopper	8. Wilting was observed	6. Wilting
	9.	10. Grasshopper	7. Grasshopper
<b>Natural enemies</b>	4. Spider	3. Spider	1. Nil.
<b>General Observations</b>		<b>Recommendations</b>	
11. In natural farming the situation is good compared to other plots		1 To repeat the comparison during the rainy season	
12. In NF plot the growth rate is high		2 To find a permanent source of water since the well present is used by the community hence no enough water to do irrigation	
13. Growth in local farming is poorly due to scarcity of water for irrigation		3.	
14. In conventional and local plot there was high degree of wilting of bean crops		4	

### Yield Assessment

Type Of Farming	Plot Area	Yield Per Plot (Kg)	Yield Per Acre (Kg)
Natural Farming	206.4 M <sup>2</sup>	18	348.9
Conventional Farming	209.5 M <sup>2</sup>	9	171
Local Farming	190.5 M <sup>2</sup>	1.5	31.5

### Interpretation

From the above table, natural farming practices have a higher yield, in which one acre can yield 348.9 kg which is equivalent to 17 Tins of 20kg, Conventional farming produces 171 kg. and local farming was the last in yield producing 31.5 kg per acre.

Under the situation, the yield varied significantly due to differences in agro-ecology from the natural farming plot, the yield is twice the yield in the conventional farming practices while with that of local farming less eleven times.

**Photos**



**Farmers continuing with harvest activities at the end of August**



**Beans after harvested**



**Farmers with smiling face during the harvesting**

	
<p><b>ToT prepared beans after harvested</b></p>	<p><b>Agronomist &amp; ToT measuring the harvested common beans</b></p>

## Case story

### 1. **Joel's Story: An Exciting Success Tale of Natural Farming**

One of the success stories of this project is Joel Ngao, a resident of Isenzanya Village in the Nambinzo ward, aged 36 and a father of four. In December 2022, Joel received training in Natural Farming from the GNTZ office in Nambinzo as a lead farmer/Trainer of Trainers to educate his community about natural farming.

Joel decided to start with bean farming using Natural Farming techniques. In June 2023, he harvested 200 kilograms of beans from his small half-acre farm and sold them for TZS 3,000 per kilogram, earning TZS 600,000. (240 USD). This money helped him purchase essential items for his family and farming inputs.

Following this success, Joel transitioned to maize farming using the Natural Farming approach. In November 2023, he prepared a one-hectare farm for maize cultivation using this method. He expects to harvest 20 bags of maize, which could fetch TZS 1,800,000 (710 USD) in the current market. With the total cost of TZS 230,000 for Natural Farming techniques, Joel will make a profit of TZS 1,570,000.(590 USD)

Through this journey, Joel has demonstrated how natural farming can transform the life of a poor farmer and become a source of success and prosperity for his family.



## 2. Ester's Incredible Journey in Natural Vegetable Farming

Ester, a 23-year-old resident of Isenzanya Village in the Nambinzo ward, Mbozi district, had a remarkable journey from hardship to success through natural farming. After graduating from

Hollywood Secondary School, she faced a roadblock in her education due to her parent's inability to afford school fees. Consequently, Ester had to stay at home and assist her parents in various activities, including farming, which did not yield much profit. Her Previous income from GNTZ 30 USD Per Month (Cleaning the Office)

In December 2022, Ester received training in Natural Farming organized by the GNTZ organization, where she was appointed as the lead farmer and Trainer of Trainees (ToT) to help her community in the Nambinzo CDP adopt this environmentally friendly and cost-effective farming method.

A year after receiving the training, Ester decided to fully commit to commercial farming using natural methods, focusing on vegetable farming (Vegetables Natural Farming Agribusiness). With just a 0.5-acre farm, Ester now earns approximately TZS 250,000/=(100 USD) per month from her vegetable crops grown.

Her main market is the weekly auction held in the town of Vwawa, the headquarters of the Mbozi district.

With the income she earns, Ester can cover her living expenses, including the school fees for her younger sibling who is in Grade 4 at Isenzanya Primary School. Additionally, she can afford healthcare costs for her elderly parents, who frequently face health issues.

Moreover, Ester has become a role model for the young girls in her village, inspiring them to venture into natural farming to increase their income and support their families financially. Her success catalyzes others to embrace natural farming as a means of livelihood, ultimately uplifting the community and paving the way for a brighter future.



**//End of document//**