Documenting
The sucess Stories

Farmers Organizations for Africa, Carabean And Pacific(FO4ACP)

Farmer Led Research and Innovation (FORI)

Website
www.pafo-africa.org

Email Address
admin@pafo-africa.org

PAFO Panafrican farmers' organization Organisation panafricaine des agriculteurs المنظمة الإفريقية للفلاحين
IFAD INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT
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1. INTRODUCTION AND BACKGROUND

1.1 Introduction

Agroecology has been recognized as a potential solution to the current challenges of agricultural production by offering multiple economic, social, and environmental benefits (Wezel et al. 2009). Agroecological initiatives aim at proposing alternative paradigms to industrial agriculture based on the encouragement of local use of innovations and resources by smallholders (Altieri and Toledo 2011). Many agro-ecological techniques exist worldwide and are applied in varying degrees according to regions and climatic conditions (Wezel 2017; Iyabano 2023). Agro ecology promotes farming practices that mitigate climate change, reduce emissions, recycle resources, and prioritize local supply chains. PAFO will identify and collect the best practices on agro ecology in different regions of Africa by collaborating with its regional farmers' organizations.

Even though much effort is being into the adoption of agro ecology practices, the African continent still faces the challenge of ensuring food security in the face of climate change and other problems such as soil degradation, population growth, conflict, political instability, and the high prevalence of poverty. Decision-making is insufficient to support the agro ecological transition, with farmers excluded from the process of developing policies and strategies for agricultural transformation. Moreover, farmers have limited skills to influence these decision-makers. Policies in place are not adapted to farmers' realities and needs. African farmers are largely smallholders operating in the context of family farming. There has been little or no attempt to gather the views of women and small-scale family farmers affected by these policies and to understand the impact of agro ecology practice on African smallholder farmers.

To address this problem, PAFO implemented this project through the support of European Union, dubbed Capacity Strengthening, Lobbying, and Advocacy to Support Agroecology Practices for Sustainable Food Systems in Africa. The project was implemented through the regional farmers organizations, who are PAFO members. This project was implemented through from IFAD, EU and AGRICORD

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1.2 Objectives Of the project

The objectives of the project were,

- **Objective 1:** Strengthen lobbying and advocacy on the African continent on agroecological practices.
- **Objective 2:** Strengthening knowledge management and capitalization in Africa.

1.3 Documentation methodology

RFO, the implementing agencies for this project, were required to document and share success cases within their area of jurisdiction, which PAFO would consolidate and disseminate to all regions so that each region will be aware of what practices are in place in another region. The identification of success stories started at national level through national farmer's organization under RFOs.
This document contains the success stories that are categorized in three broad thematic areas namely;

1. Agroecology and agriculture productivity
2. Leveraging indigenous knowledge
3. Resilience – climate adaptation and mitigation

The success stories are summarized and presented in the following format

- Partner Organization / RFO responsible
- Title – A concise, engaging title summarizing the focus or outcome of the case.
- Location & Organization – Country, region, and name of the implementing group or farmers' organization.
- Background/Context – A brief Socio-economic and environmental context; why agroecological intervention was needed.
- Problem Statement – Key challenges faced before the intervention.
- Agroecological Intervention – Detailed description of the agroecology practices used, technologies applied, and stakeholder engagement.
- Outcomes & Impact – Measurable results achieved (e.g., yield increase, soil health improvement, community resilience, biodiversity gains, etc.).
- Lessons Learned – Practical insights, innovations, and transferable approaches.
- Challenges Encountered – Any limitations, barriers, or risks.
- Recommendations & Scaling Potential – Suggestions for policymakers, other farmer organizations, or development partners.
- Testimonials (where applicable) – Direct testimonies from beneficiaries or implementers to add a human voice.

2.SUCCESS STORIES

2.1 THEMATIC AREA: AGROECOLOGY PRODUCTIVE

PARTNERS INSTITUTION: SACAU

Location & Organization

Country: Madagascar
Region: Multiple (notably Ampahitrosy, Imeritsiatosika, Itasy)
Organizations: Fifata Group and CEFFEL (Fruit and Vegetable Training and Experimentation Council), with technical support from Fert

Background/ Context

The Fifata Group is a national farmers' organization in Madagascar with a mission to serve farmers across 23 regions through a network of local producer organizations (POs), agricultural colleges, and specialized service arms. In response to increasing agricultural challenges such as soil degradation, climate variability, and rising input costs, the organization launched agroecological initiatives through CEFFEL—its technical and training entity focused on sustainable horticulture. Established in 2006, CEFFEL operates in partnership with Fert and supports farmers with long-term, locally embedded training and experimentation programs.

Problem Statement

Farmers under the Fifata network were increasingly burdened by:

- Poor soil health due to overuse of synthetic inputs (notably NPK and urea),
- High dependency on pesticides causing health issues,
- Rising costs of agrochemical inputs with diminishing returns,
- Post-harvest losses and poor resilience of crops,
- Lack of localized, adaptive knowledge on sustainable alternatives.

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Agroecology Interview

CEFFEL, in collaboration with Fifata and Fert, implemented a range of agroecological solutions focused on:

- **Soil Fertility**: Vermicomposting, liquid compost, and organic mulch;
- **Water Management**: Mulching, water-efficient irrigation, and landscape contouring;
- **Pest & Disease Control**: Integrated pest management using biopesticides, crop rotation, and intercropping with repellent species;
- **Access to Quality Seed**: Farmer-led seed potato and rain fed rice seed production, supported by partnerships with CIRAD and FOFIFA;
- **Knowledge Dissemination:** Farmer-to-farmer exchanges, demonstration plots, specialized training, and educational tools;
- **Youth & Local Involvement:** Engagement of young graduates, local advisors, and relay farmers in training and advisory roles.

Outcomes And Impact

- 61% of seed potato growers eliminated use of mineral fertilizers.
- Storage losses reduced to 5% (compared to 15% in conventional systems).
- Pesticide and fungicide use reduced via substitution with biopesticides and compost.
- Input costs dropped to 29% of total production costs (down from 48%).
- Profit margins improved by approximately 25% compared to conventional methods.
- Improved soil fertility and produce quality, with greater resilience during transport and storage.

Lessons Learned

- Demonstration plots and trial-based learning build trust in agroecological alternatives.
- Local adaptation of solutions is key—especially when tailored to specific soil, climate, and pest pressures.
- Economic incentives (input savings, increased margins) drive faster adoption.
- Long-term advisory support is critical for behavioral change and capacity retention.

Challenges Encountered

- Initial skepticism from farmers accustomed to synthetic inputs.
- Limited access to starter materials for composting and biopesticides production.
- Need for consistent market linkages for organically grown produce.

Recommendations & Scaling Potential

- Scale demonstration plots across more communes to broaden visibility.
- Establish decentralized compost and bio-input hubs for accessibility.
- Support policies that incentivize organic input use and discourage chemical dependency.
- Expand farmer-led seed systems with public-private research partnerships.
- Promote agroecology curricula in agricultural colleges and vocational schools.

Testimonies

- **Testimony 1:**

"we used a lot of synthetic products in the past, particularly NPK and urea mineral fertilizers, to obtain products that could be harvested quickly (6 to 10 kg/are NPK). However, we have noticed that the price of npk is rising all the time, and our soil is becoming increasingly compact and red. If we want to maintain our yields, we are forced to increase the dose of NPK we use.

We decided to reduce and even stop using NPK, urea and pesticides on our crops. We started with trial plots and demonstrations. We substituted chemical fertilizers and pesticides with organic fertilizers such as vermicompost, traditional and liquid compost, mulch and bio-pesticide. Now, as before, our soil is increasingly fertile and the produce from our NPK - and pesticide-free crops has good visual qualities, the harvesting period is spread out, the produce holds up better during transport and keeps better in the event of a shortage than produce grown with NPK and pesticides, which rots quickly. We are currently planning to set up a compost sales point (of all types) to encourage other growers to reduce their use of synthetic growers and to help other growers..."

- **Testimony 2: farmer, imeritsiatosika, itasy**

"i can say that of all the growers in the area, i was the pesticide champion, because i grow kale, tomato, pestai cabbage and other products that insects like. Every time we ate our produce, we contracted stomach and gastric illnesses. We concluded that one of our neighbors was poisoning us via our products. So we decided to stop eating our products. They were all for sale, and we bought what we ate at the market. Since 2016, we have adopted the new integrated pest management technique: association with repellent plants, use of biopesticides, etc. And we have tasted our products and found that the next-door neighbor had nothing to do with our former poisoning, because by using so many pesticides, it was ourselves who put poisons in our own products."

Eastern Africa Farmers Federation. (EAFF)

Location & Organization

Country: Democratic Republic of Congo (DRC)
Region: Outskirts of Virunga National Park
Organizations Involved:

- Union de Femmes pour le Progrès Social (UFPS)
- Green Livelihoods Alliance
- Education Center for Environmental Protection and Sustainable Development

Background/ Context

Communities around Virunga National Park in DRC face the dual challenge of environmental degradation and socio-economic vulnerability. Encroachment into the park for agriculture and fuel has been rising, largely driven by poverty and food insecurity. In this context, women's associations have taken the lead in promoting sustainable land-use practices to protect biodiversity while improving livelihoods. UFPS—Union de Femmes pour le Progrès Social—is at the forefront of these efforts, targeting women farmers with practical agroecological interventions to increase productivity without encroaching on protected land.

Problem Statement

- Land degradation and declining soil fertility
- Deforestation and encroachment into Virunga National Park
- Limited awareness and access to climate-resilient practices
- Gender disparity in access to training and inputs
- Lack of sustainable livelihood alternatives for rural women

Challenges Encountered

- Continued pressure on land due to population growth
- Need for stronger institutional support and extension services
- Limited baseline data to quantify some ecological outcomes
- Risk of project dependency without sustained market linkages

Agroecology Interview

UFPS and partners have rolled out a series of agroecology-based practices including:

- **Agroforestry systems** integrating fruit and native trees
- **Soil health restoratio**n through mulching, row sowing, and organic fertilizer application
- **Training and awareness-raising** on drought-resilient farming practices
- **Women-centric outreach** to build technical capacity and promote adoption
- **Community sensitization** on reducing forest clearing and embracing sustainable practices

Outcomes And Impact

- Enhanced **climate resilience** through widespread adoption of drought-tolerant methods
- Improved s**oil fertility and moisture retention** on previously depleted land
- Reduction in unsustainable land clearing, helping conserve Virunga's biodiversity
- Strong **community buy-in** with increased participation by women and marginalized groups

Promoted local stewardship of natural resources through **grassroots environmental education**

Lessons Learned

- Women-led organizations can effectively bridge the gap between conservation and livelihood imperatives.
- Locally adapted agroecological practices gain traction when supported by continuous training and peer learning.
- Integration of environmental and gender objectives creates broader community support and ownership.

Recommendations and Scaling Potential

- Expand the model to other buffer zones around national parks in the region
- Formalize partnerships with local authorities to mainstream agroecology in rural policy
- Mobilize investment for agroforestry value chains to support income generation
- Document and disseminate success stories to strengthen advocacy and funding efforts
- Establish peer-to-peer farmer learning exchanges across provinces

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Agroforestry Transformation on the Edge of Virunga, DRC

Restoring Land and Empowering Women

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ROPPA

Location & Organization

Country: Burkina Faso
Regions Covered: Oubritenga (Plateau Central), Sanmatenga (Centre Nord), Yatenga (Northern Region)
Lead Organization: FO-RI Project Consortium
Key Stakeholders: Farmers' Organizations, Research Institutions, Local Networks (e.g., UNAPOB)

Background/ Context

Burkina Faso is the second-largest onion exporter in West Africa, with an annual production of over 362,000 tons, valued at 129 billion FCFA (~196 million Euros). However, the onion value chain faces critical constraints, including:

- Climate change effects on production cycles,
- Overreliance on synthetic pesticides,
- Post-harvest conservation challenges,
- Public health concerns linked to input misuse.

The FO-RI project was initiated as a response, aiming to professionalize onion farming through agroecological practices, enhance income generation, and empower youth and women in the agricultural sector.

Problem Statement

- Inadequate conservation infrastructure leading to post-harvest losses.
- High dependence on costly and harmful chemical inputs.
- Limited market access and commercialization pathways for smallholder farmers.
- Underutilization of local knowledge and agroecological potential.

Challenges Encountered

- Initial skepticism toward replacing synthetic inputs.
- Need for continuous monitoring to validate agroecological trial outcomes.
- Infrastructure and technical limitations in some pilot zones.

Agroecology Interview

The FO-RI project employed a multi-pronged approach built around co-creation, experimentation, and knowledge sharing:

- **Innovation Co-Development:** Mobilization of indigenous practices and farmer knowledge in onion farming and preservation.
- **Soil & Crop Health: Adoption of composting techniques** (pit and heap), crop rotation (onion-cereal), and crop association (onion with roses).
- **Biopesticides Use**: Local production and deployment of natural pest control solutions.
- **Improved Seed Systems:** Utilization of locally produced improved onion seeds by member organizations like UNAPOB.
- **Post-Harvest Handling**: Promotion of adapted storage infrastructure and traditional conservation techniques accessible to family farms.
- **Market Enablement:** Introduction of warrantage (inventory credit) and group marketing mechanisms to stabilize farmer incomes.

Outcomes And Impact

- Enhanced access to organic inputs and local bio pesticides reduced dependence on synthetic chemicals.
- Significant uptake of agroecological techniques across nine pilot sites.
- Empowerment of women through engagement in seed production, composting, and marketing.
- Identification of practical storage innovations that reduced spoilage and were affordable for smallholders.
- Strengthened partnership between farmers' organizations and research institutions.

Lessons Learned

- Enhanced access to organic inputs and local bio pesticides reduced dependence on synthetic chemicals.
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Recommendations & Scaling Potential

- Institutionalize agroecological onion production through policy support and research integration.
- Replicate field-tested innovations in similar agro-climatic zones across West Africa.
- Scale warrantage systems for broader market access and income security.
- Establish mentorship networks through endogenous facilitators and agronomy graduates.
- Increase investments in women-led processing and conservation initiatives.

Quotes

"The fo-ri approach has given us the tools to improve our yields and sell at better prices, without harming our soils or health. Through composting and biopesticides, I've reduced my input costs and grown healthier onions."

The Fo-RI Approach

Grown-Healthier Oniond

Pesticides and Composting for affordability

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Location & Organization

Country: Tanzania
Regions: Mkindo, Kigugu, Hembeti, Dakawa
Implementing Organization: Agricultural Council of Tanzania (ACT)
Lead Farmers & Community Networks

Background/ Context

For decades, Tanzanian smallholder rice farmers operated under conventional systems plagued by declining soil fertility, high input costs, erratic rainfall, inefficient water use, and low yields. The environmental and financial toll of conventional methods also led to increased greenhouse gas (GHG) emissions and declining farmer morale. While the System of Rice Intensification (SRI) was first introduced in 2006, adoption remained minimal due to limited outreach and poor farmer-to-farmer knowledge transfer.

Problem Statement

- Chronic low yields in rice production (8–12 bags/acre)
- Degradation of soil and increased water stress
- High costs of synthetic fertilizers and inputs
- Limited awareness and uptake of agroecological alternatives
- Weak gender inclusivity in extension programs

Challenges Encountered

- Initial resistance due to unfamiliarity with SRI methodology.
- Maintaining consistency in the application of all nine steps.
- Ensuring equitable access to training across remote communities.

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Agroecology Interview

ACT adopted a participatory, gender-sensitive, and decentralized model to scale SRI adoption:

- **Farmer-to-Farmer Extension (F2F)**: Lead farmers were selected at the village level to train peers on SRI practices.
- **Training:** Both theoretical and hands-on training in nine core SRI steps was provided. Continuous refresher training was conducted.
- **Gender & Youth Inclusion:** Targeted 40% women and 30% youth participation. Final outcomes exceeded these goals.
- **Capacity Building:** ACT trained two field officers per community and conducted gender sensitization programs.
- **Entrepreneurial Support:** Training in business management, market linkages, and value chain integration.

Outcomes And Impact

- **Yield Increase:** Farmers tripled rice yields, with some reaching 45 bags/acre.
- Income Boost: Over 50% increase in income, enabling investments in homes, livestock, and off-farm ventures.
- **Women's Empowerment:** Women accessed financial services, diversified income (e.g., poultry), and strengthened bargaining power.
- **Water Efficiency:** SRI reduced water use by over 50%.
- **GHG Reduction:** Decreased reliance on artificial fertilizers led to lower emissions.

Institutional Recognition: SRI was adopted into Tanzania's 5-year National Agriculture Research Agenda (NARA), and ACT signed a MoU with the government to advice on scaling the method.

Lessons Learned

- Farmer-to-farmer extension enhances adoption and social cohesion.
- Continuous training, especially for lead farmers, is essential.
- Integration of public sector extension enhances technical capacity.
- Local adaptation of SRI practices is critical for sustainable outcomes.

Recommendations & Scaling Potential

- Scale the F2F extension model to other regions and value chains.
- Institutionalize agroecological rice practices within government subsidies and programs.
- Strengthen farmer organizations to manage group production, marketing, and regulation.
- Conduct longitudinal research on soil health and emissions reduction.
- Leverage youth and women groups for long-term sustainability of SRI dissemination.

Quotes & Testimanials

"Before sri, farming was for survival. Now, it's a business, and our rice fields feed more than our families. The women in our village now own livestock, run small enterprises, and teach others—farming gave us more than food."

ROPPA

Location & Organization

Country: Mali
Region: Koulikoro
Organization: Simplified Cooperative Society "Agroécologie Paysanne TJIKE YEREMAHORONYA TON"
Partner: Coordination Nationale des Organisations Paysannes (CNOP Mali)
Contact: Abdoulaye Samahatou (touresamahatou@yahoo.fr)

Background/ Context

In Koulikoro, family farms have long relied on synthetic agro-inputs introduced through external extension programs. Over time, this led to deteriorating soil fertility, environmental degradation, and rising health concerns. In the pursuit of food sovereignty and ecosystem restoration, the cooperative Agroécologie Paysanne initiated a revival of indigenous plant-based treatment methods—anchoring ecological restoration within farmer wisdom and autonomy.

Problem Statement

- Escalating losses due to plant pests and diseases
- Overreliance on harmful synthetic pesticides and fertilizers
- Degradation of soil and water quality
- Negative impact on human and animal health
- Declining biodiversity and erosion of traditional knowledge
- Weak local production systems for agroecological alternatives

Challenges Encountered

- Inconsistent access to all plant species year-round
- Need for standardization and dosage control in formulations
- Limited formal recognition in national input certification systems
- Market access and regulatory pathways for natural products are underdeveloped

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Agroecology Interview

The cooperative, with support from CNOP Mali, began producing natural plant-based biopesticides and fertilizers using accessible local materials such as:

- Hibiscus, papaya, neem, eucalyptus, calotropis leaves
- Garlic, ginger, onion, and hot pepper
- Alcohol, molasses or brown sugar, and neem seeds

These were blended into natural treatments that control pests and diseases while supporting soil and crop health. The initiative included:

- **Farmer-led research and trials** on plant mixes and application
- **Community training sessions** on preparation and safe usage
- Knowledge sharing platforms across cooperatives in Koulikoro
- Documentation of traditional plant remedies for broader dissemination

Outcomes And Impact

- Significant reduction in chemical input dependency
- Healthier soils with enhanced biological activity
- Safer working environments for farmers—especially women
- Improved yields and crop resilience
- Preservation and scaling of local botanical knowledge
- Community empowerment through farmer-to-farmer diffusion

Lessons Learned

- Farmer confidence increases when solutions reflect their lived experience
- Decentralized production of biopesticides is feasible and affordable
- Biodiversity is a practical input—not just a conservation target
- Reviving ancestral knowledge fosters intergenerational learning and respect

Outcomes And Impact

- Institutionalize farmer-led biopesticides development within agricultural policy
- Create community-based certification systems for organic inputs
- Develop partnerships with universities to document and validate practices
- Expand outreach and training to other West African countries through CNOP and ROPPA platforms
- Integrate this model into agroecology extension strategies at national level

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Location & Organization

Region: Southern Africa (with pilot experiences in Zimbabwe, Malawi, Zambia, Tanzania, and Eswatini)
Lead Organization: Southern African Confederation of Agricultural Unions (SACAU)
Partners: National Farmers Organizations (NFOs), SACAU Community of Practice (CoP), Short Term Experts, local extension actors

Background/ Context

Farmers across Southern Africa face increasing climate variability, degrading soil quality, and rising input costs. In response, SACAU initiated a series of regional exchanges, study tours, and rapid studies to identify, test, and document realistic and scalable agroecological practices for climate resilience. Key insights were drawn from countries in the region and international visits, including a notable study tour in Germany. These efforts aimed to strengthen farmer capacities and embed sustainable practices into national agriculture systems.

Problem Statement

- Decreasing agricultural productivity due to erratic rainfall and rising temperatures
- Overuse of chemical inputs and declining soil fertility
- Water scarcity and lack of efficient irrigation infrastructure
- Weak access to timely climate information
- Poor pest control measures leading to crop and ecosystem degradation

Challenges Encountered

- Limited national-level funding and policy incentives
- Inconsistent farmer access to training and CSA inputs
- Need for coordinated monitoring and evaluation mechanisms across countries

Agroecology Interview

SACAU synthesized and piloted ten practical, farmer-relevant interventions:

1. Conservation Agriculture:
   - Promotion of Pfumvudza technique via demo plots
   - Minimum tillage, crop residue retention
2. Soil Fertility Management:
   - Farmer training in soil sampling, pH balancing, and precision nutrient application
3. Drought-Tolerant Varieties:
   - Dissemination of regionally appropriate, stress-resilient crop varieties
4. Drip Irrigation & Scheduling:
   - Capacity building in efficient water use and irrigation timing
5. Climate Information Services:
   - Equipping farmers with timely weather forecasts for planting and input decisions
6. Animal Feed Production:
   - Local fodder and concentrate production, including hydroponic systems
7. Agroforestry Systems:
   - Integrating nitrogen-fixing trees and shrubs with crops
8. Water Harvesting:
   - Building contours, dams, and water storage for year-round irrigation
9. Integrated Pest Management (IPM):
   - Training in biological and low-cost pest control alternatives
10. Bokashi Composting:
    - Combining organic and inorganic inputs for balanced, low-cost fertilization

Outcomes And Impact

- Improved yields across both crop and livestock sectors
- Reduced dependence on synthetic fertilizers and pesticides
- Improved soil health, moisture retention, and biological diversity
- Strengthened food and income security
- Greater water efficiency and expanded irrigated acreage
- Empowered farmer organizations and extension systems to drive CSA adoption

Lessons Learned

- Demonstration plots and peer learning accelerate uptake
- Local adaptation of interventions is crucial for effectiveness
- Farmer-led innovation, when supported with technical expertise, is scalable
- Climate services are underutilized but critical for proactive farming decisions

Recommendations & Scaling Potential

- Institutionalize these 10 practices within NFO programming and national agriculture policies
- Allocate more resources for on-farm demonstrations and localized CSA training
- Strengthen multi-stakeholder partnerships to scale Agroecological solutions
- Create regional knowledge-sharing platforms and success story documentation
- Mobilize donor and government investment to upscale proven practices across all Southern African countries

Quotes

These practices are not theoretical—they're field-proven and ready for scale." We saw what pfumvudza did for farmers in Zimbabwe. It's time to adopt it across the region."

UMNAGRI

Location & Organization

Country: Tunisia
Region: Nabeul Delegation
Organization: URAP Nabeul (Urban and Rural Agricultural Promotion Unit)
Project Lead: Zouari Slim, International Expert
Initiative: Mini Hydroponic Greenhouse Demonstration Project

Background/ Context

The Nabeul region, characterized by a Mediterranean semi-arid climate, is known for its citrus orchards, olive groves, and vegetable farming. However, it faces worsening water stress, soil salinization, biodiversity decline, and urban encroachment. Recurrent extreme weather events—including floods (2018) and heatwaves (2024)—have exacerbated agricultural vulnerability. With a shrinking freshwater supply and increasingly unpredictable rainfall, URAP Nabeul launched a climate-smart pilot centered on hydroponic greenhouse farming to educate producers and transition to sustainable agriculture.

Problem Statement

- Chronic water scarcity and overexploitation of boreholes leading to seawater intrusion.
- Soil salinization due to inefficient irrigation and evaporation.
- Erosion and topsoil loss from monoculture and over-tillage.
- Decline in biodiversity and soil life, particularly absence of earthworms and humus.
- Heavy reliance on chemical inputs, raising costs and health risks.
- Lack of adaptive farming knowledge in response to climate volatility.

Challenges Encountered

- High setup costs and reliance on stable electricity for hydroponic systems.
- Limited technical know-how and skilled labor in advanced hydroponic management.
- Initial resistance from conventional farmers skeptical of technology-driven methods.

Agroecology Interview

URAP Nabeul's pilot integrates hydroponic agriculture within a structured greenhouse environment to demonstrate sustainability:

- Greenhouse Construction: 12m x 5m tunnel greenhouse covered with UV-resistant tarpaulin and a 50–60% shading net.
- NFT & Aeroponic Systems: Nutrient Film Technique (NFT) and aeroponics to cultivate herbs and vegetables using 90% less water.
- Water Efficiency: Closed-loop irrigation conserves water and prevents runoff or salt accumulation.
- Demonstration & Awareness: Farmers, students, and citizens from rural and urban areas engaged in training, field visits, and technical sessions.
- Climate Education: Trainings include the impacts of conventional farming, adaptation techniques, and resilient agriculture principles.

Outcomes And Impact

- Raised awareness on the urgency of sustainable practices amid climate change.
- Empowered farmers and stakeholders with practical exposure to water-efficient and chemical-free production methods.
- Built local capacity to adopt hydroponics as a viable model for urban and peri-urban food production.
- Set groundwork for replication in other water-stressed regions of Tunisia and North Africa.

Lessons Learned

- Hydroponics complements, rather than replaces, soil-based farming, especially where land and water are constrained.
- Urban and peri-urban settings can be leveraged for sustainable food systems when integrated with training and public infrastructure.

Community learning through demonstration greenhouses enhances understanding of resource limitations and

Recommandations & Scaling Potential

- Institutionalize demonstration greenhouses in agricultural training centers and schools.
- Develop local cooperatives or youth startups to manage hydroponic units with municipal support.
- Combine vertical farming and rooftop hydroponics in urban areas to address food security and heat island effects.
- Promote regional collaboration between North African countries facing similar agro-climatic constraints.
- Integrate hydroponics within national adaptation plans and post-2024 Sustainable Development Goal (SDG) strategies.

Quotes

This is not just a greenhouse—it's a vision of how we must grow in a world with less water and more heat"

"Farmers are realizing that water efficiency and innovation can co-exist with our traditions."

The hydroponic greenhouse in Tunisia

Water effisciency and Innovation

3. Conclusion And recommendation

3.1. Conclusions

The main reason promotion of agroecological techniques is connected to the goal of improving the agricultural production of African farmers, which is fundamental in increasing their market shares, incomes and livelihoods. Additionally, PAFO, as a continental farmers' body continues to work on advocacy, lobbying, and knowledge management on agroecology to gather support for its members to adopt agroecology practices for sustainable food production and food security. This project was therefore successful in achieving the aforementioned; improved production and knowledge gathering and sharing for advocacy and lobbying

Additionally, the project implementation was successful in achieving the intended objectives specifically; Objective 1: Strengthen lobbying and advocacy on the African continent on agroecological practices, and Objective 2: Strengthening knowledge management and capitalization in Africa.

3.2. Recommendations

Based on the documented case studies, PAFO makes the following recommendations

1. Prioritization of participatory agroecology design. For the success of the initiatives, farmers are core in design and implementation. In future initiatives, efforts should be directed at ensuring farmer knowledge is embedded from inception through co-creation frameworks.
2. Expanding Agroecological Training Platforms. There is high demand for agro-ecology knowledge and practices across all regions in the continent. It is recommended that PAFO and RFOs focus on institutionalizing agro-ecology platforms, as well as supporting peer-based farmer schools, and demo plots under NFOs.
3. Scaling community-driven irrigation financing need to be prioritized as a climate adaptation and relisience support to farmers. Successful models eg Rwanda's IWUA model can be replicated and eand linked to national subsidies or credit programmes.
4. Strengthening agroecological enterprise models. Stakeholders including partners, PAFO, RFOs and NFOs should invest in the critical and marginalized actors especially women and youth agripreneurs offering agroecology-based services or inputs.
5. Policy integration need to be prioritized. Support should be directed to climate smart agricultural initiatives and ensuring agroecology is incorporated in climate policies at National level (national agricultural plans and agricultural investment plans).

PAFO
Panafrican farmers' organization
Organisation panafricaine des agriculteurs
المنظمة الإفريقية للفلاحين

Thank you For your attention!

www.pafo-africa.org

admin@pafo-africa.org

Kigali Rwanda. KG 25

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