# Training Course on Nutrient Cycling and Efficient Fertilizer Use in Organic Systems

Professional Development Training Course Outline

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| **Category** | Agriculture | **Duration** | 10 Days |
| **Base Fee** | $3,000 USD | **Delivery Mode** | Online / On-site Hybrid |

## Course Introduction

Organic farming systems thrive on the efficient use of natural resources and biological processes. One of the most critical elements in organic agriculture is nutrient cycling, which involves the transformation and movement of nutrients through the soil, plants, water, and atmosphere. Understanding this cycle enables farmers to reduce dependence on synthetic inputs, maintain long-term soil fertility, and achieve sustainable productivity. Training Course on Nutrient Cycling and Efficient Fertilizer Use in Organic Systems aims to empower agricultural professionals, farmers, and policymakers with in-depth knowledge and hands-on skills to enhance soil health, reduce nutrient losses, and improve yields in alignment with climate-smart agricultural practices.

As the demand for organic produce grows globally, so does the need for sustainable soil fertility management. This course is designed to provide advanced techniques and practical approaches to maximize nutrient availability through composting, crop rotation, biofertilizers, and other ecological methods. By integrating traditional knowledge with modern innovations, participants will gain holistic insights into closed-loop nutrient management, organic matter optimization, and site-specific fertilizer applications that minimize environmental impact while maximizing productivity. The course combines theoretical knowledge with real-world case studies and experiential learning.

## Programme Curriculum

**Training Course on Nutrient Cycling and Efficient Fertilizer Use in Organic Systems**

**Introduction**

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Fertilizer Use in Organic Systems aims to empower agricultural professionals, farmers, and policymakers with in-depth knowledge and hands-on skills to enhance soil health, reduce nutrient losses, and improve yields in alignment with climate-smart agricultural practices.

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**Course Objectives**

1. Understand the concept and importance of nutrient cycling in organic farming systems.
2. Evaluate the nutrient sources available in organic systems and their ecological impacts.
3. Design integrated nutrient management plans tailored for organic farms.
4. Optimize soil fertility through composting, green manures, and cover cropping.
5. Assess the role of biofertilizers and microbial activity in nutrient availability.
6. Monitor nutrient flows and losses using organic soil testing techniques.
7. Apply precision nutrient management for various organic crop systems.
8. Identify sustainable fertilizer alternatives aligned with organic standards.
9. Enhance carbon sequestration and reduce nitrogen leaching through smart practices.
10. Promote the use of crop rotations and intercropping to improve nutrient balance.
11. Analyze case studies demonstrating successful nutrient cycling strategies.
12. Incorporate agroecological principles in nutrient and fertilizer planning.
13. Strengthen climate resilience and reduce input costs using efficient nutrient cycling.

**Target Audiences**

1. Organic farmers and producers
2. Soil scientists and agronomists
3. Agricultural extension officers
4. NGO professionals in sustainable agriculture
5. Government and policy makers in agriculture
6. Environmental conservation organizations
7. Agricultural input suppliers and advisors
8. Students and researchers in agriculture and ecology

**Course Duration:** 10 days

**Course Modules**

**Module 1: Introduction to Nutrient Cycling in Organic Agriculture**

- Definition and processes of nutrient cycling
- Differences between organic and conventional systems
- Role of biogeochemical cycles
- Benefits of nutrient cycling for sustainability
- Key nutrients in organic systems (N, P, K, Ca, Mg, etc.)
- **Case Study: Nutrient Flow Mapping on a Kenyan Organic Farm**

**Module 2: Soil Organic Matter and Fertility Management**

- Importance of organic matter
- Building soil organic carbon

- Techniques to maintain soil fertility
- Impact of tillage and residue management
- Organic certification requirements
- **Case Study: Soil Fertility Restoration in Depleted Soils in India**

**Module 3: Composting Techniques and Use**

- Principles of aerobic and anaerobic composting
- Raw materials for high-quality compost
- Nutrient content and application timing
- Compost tea and extract usage
- Quality control and maturity testing
- **Case Study: Large-scale Composting System in Uganda**

**Module 4: Green Manures and Cover Cropping**

- Definition and types of cover crops
- Benefits for nitrogen fixation and erosion control
- Incorporation methods
- Seasonal timing and rotation planning
- Selecting species for local conditions
- **Case Study: Using Sunn Hemp and Clover in Brazilian Organic Farms**

**Module 5: Biofertilizers and Microbial Inoculants**

- Role of beneficial microbes in nutrient cycling
- Types: Rhizobium, Azospirillum, Mycorrhizae
- Application methods
- Storage and shelf life
- Monitoring effectiveness in the field
- **Case Study: Mycorrhizal Integration in Ethiopian Highlands**

**Module 6: Crop Rotation and Nutrient Balance**

- Designing effective rotations
- Impact on nutrient availability
- Synergies among crops
- Disease and pest suppression
- Monitoring and recording systems
- **Case Study: 5-Year Rotation Plan in the Netherlands**

**Module 7: Nutrient Deficiency Diagnosis and Correction**

- Visual symptoms of nutrient stress
- Soil and tissue testing in organic systems
- Foliar feeding practices
- Natural remedies and amendments
- Preventive vs. reactive approaches
- **Case Study: Addressing Zinc Deficiency in Organic Citrus Farms (Florida)**

**Module 8: Integrated Nutrient Management Plans**

- Developing site-specific nutrient strategies
- Data collection and analysis tools
- Combining multiple nutrient sources
- Compliance with organic standards

- Planning for long-term soil fertility
- **Case Study: IMN Approach in East African Smallholder Systems**

**Module 9: Water-Nutrient Interaction in Organic Systems**

- Role of irrigation in nutrient movement
- Avoiding nutrient leaching
- Water harvesting techniques
- Organic mulching methods
- Drought adaptation strategies
- **Case Study: Water-Nutrient Optimization in Moroccan Olive Orchards**

**Module 10: Climate Change and Nutrient Dynamics**

- Impacts of climate change on nutrient cycling
- Carbon-nitrogen interactions
- Adaptive nutrient strategies
- Low-emission fertilizer practices
- Resilience-building for smallholders
- **Case Study: Climate-Smart Soil Practices in South Asia**

**Module 11: Nutrient Cycling in Livestock-Integrated Systems**

- Manure management techniques
- Co-composting livestock waste
- Grazing systems for nutrient balance
- Integrated crop-livestock planning
- Nutrient budgeting tools
- **Case Study: Zero-Waste Goat Farm in Kenya**

**Module 12: Reducing Nutrient Losses and Pollution**

- Erosion control measures
- Runoff and leaching prevention
- Buffer zones and agroforestry
- Organic pest and disease controls
- Avoiding over-application of inputs
- **Case Study: Nutrient Buffering Practices in Ecuadorian Highlands**

**Module 13: Monitoring, Record-Keeping, and Evaluation**

- Importance of documentation
- Tools for tracking nutrient inputs and outputs
- Organic audit requirements
- Indicators of nutrient cycling efficiency
- Evaluating long-term sustainability
- **Case Study: Digital Record-Keeping in Urban Organic Gardens**

**Module 14: Policy, Standards, and Certification for Nutrient Inputs**

- Organic certification bodies
- Input compliance and documentation
- Local and international standards
- Supporting policies for nutrient management
- Accessing subsidies and programs
- **Case Study: Organic Transition Program in the EU**

**Module 15: Future Trends and Innovations**

- Use of AI and remote sensing in nutrient tracking
- Nano-biofertilizers
- Farmer-led innovation
- Community knowledge sharing
- Circular economy practices
- **Case Study: Blockchain for Organic Input Traceability in Southeast Asia**

**Training Methodology**

- Interactive lectures and presentations with multimedia tools
- Hands-on field demonstrations of composting, cover cropping, and microbial use
- Group work and peer-to-peer learning sessions
- Analysis of real-life case studies and farmer success stories
- Use of farm simulation software and nutrient management planning tools
- Final group project: Designing a nutrient management plan for a sample farm

**Register as a group from 3 participants for a Discount**

**Send us an email: info@fineskilltrainingcenter.org or call** *+254769199797*

***Certification***

*Upon successful completion of this training, participants will be issued with a globally- recognized certificate.*

***Tailor-Made Course***

*We also offer tailor-made courses based on your needs.*

**Key Notes**

**a.** The participant must be conversant with English.

**b.** Upon completion of training the participant will be issued with an Authorized Training Certificate

**c.** Course duration is flexible and the contents can be modified to fit any number of days.

**d.** The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

**e.** One-year post-training support Consultation and Coaching provided after the course.

**f.** Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

## Upcoming Scheduled Sessions

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **23 Nov 2026** | 04 Dec 2026 | Online | $2,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $3,000 |

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **23 Nov 2026** | 04 Dec 2026 | Physical | $6,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $6,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $12,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $9,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $12,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $12,000 |

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