Training Course on Agricultural Water Quality Management and Treatment

Professional Development Training Course Outline

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

Course Introduction

Effective agricultural water quality management is vital for sustainable farming and environmental preservation. Training Course on Agricultural Water Quality Management and Treatment is designed to equip agricultural professionals, water engineers, and environmental planners with cutting-edge skills in water treatment technologies, pollution prevention, and climate-smart water management practices. With rising concerns over agrochemical contamination, salinity, and waterborne diseases, managing water quality has become a cornerstone of agricultural resilience and food security.

The course integrates science-based approaches with real-world case studies to provide a holistic understanding of irrigation water quality, runoff control, and wastewater reuse. Participants will gain hands-on knowledge in monitoring water parameters, implementing biological and chemical treatment systems, and ensuring compliance with national and global water quality standards. This training is essential for improving crop yield, protecting human health, and meeting the demands of climate-resilient agriculture.

Programme Curriculum

Training Course on Agricultural Water Quality Management and Treatment

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Course Objectives

1. Understand key parameters for agricultural water quality assessment.
2. Identify sources of water contamination in farming systems.
3. Evaluate the impacts of poor water quality on crop productivity and soil health.
4. Learn best practices for irrigation water treatment.
5. Design and implement low-cost water filtration systems.
6. Analyze government regulations and international guidelines for water use in agriculture.
7. Apply bioremediation and phytoremediation techniques.
8. Implement climate-smart water conservation methods.
9. Monitor and interpret water testing reports effectively.
10. Promote safe reuse of treated wastewater in agriculture.
11. Integrate digital water monitoring tools for smart farming.
12. Develop community-based water safety plans.
13. Create a risk mitigation plan for water contamination incidents.

Target Audience

1. Agricultural extension officers
2. Environmental scientists
3. Irrigation engineers
4. Farm managers
5. Water quality technicians
6. Policy makers in agriculture
7. NGO staff working in agri-environment projects
8. Graduate students in agriculture and water science

Course Duration: 10 days

Course Modules

Module 1: Introduction to Agricultural Water Quality

- Importance of water quality in farming
- Water cycle and contamination risks
- Common pollutants in irrigation water
- Key quality indicators (pH, EC, TDS)
- Water testing tools and procedures
- **Case Study:** Monitoring water quality in Kenyan highlands

Module 2: Water Contaminants and Their Impact

- Agrochemical residues in water
- Heavy metals and salinity effects
- Pathogens and waterborne diseases
- Livestock-related water pollution
- Human and crop health implications
- **Case Study:** Pesticide runoff in Southeast Asia

Module 3: Water Sampling and Testing Techniques

- Sampling protocols for surface and groundwater
- Testing frequency and standards
- Use of mobile test kits
- Interpreting lab results
- Quality assurance in testing
- **Case Study:** Testing irrigation canals in Egypt

Module 4: Water Treatment Technologies

- Filtration (sand, charcoal, ceramic)
- Sedimentation and aeration
- Disinfection (UV, chlorine, ozone)
- Constructed wetlands
- Choosing appropriate tech based on context
- **Case Study:** Low-cost filters for small farms in India

Module 5: Bioremediation and Natural Treatment Systems

- Principles of bioremediation
- Phytoremediation using aquatic plants
- Bacterial cultures for pollutant breakdown
- Role of wetlands in treatment
- Design considerations for bio-systems
- **Case Study:** Wetland restoration for cleaner water in Uganda

Module 6: Managing Salinity and Alkalinity

- Sources of salinity in water
- Soil-water-salt relationship
- EC and SAR measurement
- Leaching techniques
- Use of gypsum and other soil amendments
- **Case Study:** Reclaiming saline lands in Pakistan

Module 7: Safe Use of Wastewater in Agriculture

- Benefits and risks of wastewater reuse
- WHO and FAO guidelines
- Pre-treatment options
- Drip vs. flood irrigation
- Training farmers on safety protocols
- **Case Study:** Treated greywater farming in Jordan

Module 8: Water Harvesting and Storage Solutions

- Rainwater harvesting systems
- Storage tank design and maintenance
- Pond liners and reservoirs
- Reducing evaporation and contamination
- Integration with irrigation systems
- **Case Study:** Rainwater harvesting in Ethiopia’s arid zones

Module 9: Policy and Regulatory Frameworks

- National water laws

- International water quality standards
- Permits and monitoring requirements
- Water user associations
- Advocacy and compliance strategies
- **Case Study:** Enforcing water policies in South Africa

Module 10: Community-Based Water Management

- Participatory planning
- Building local capacity
- Community monitoring tools
- Cost-sharing for water infrastructure
- Gender and youth inclusion
- **Case Study:** Farmer-led water stewardship in Tanzania

Module 11: Digital Tools for Water Quality Monitoring

- Remote sensing for water bodies
- IoT sensors and apps
- GIS mapping of water sources
- Dashboard development for alerts
- Data interpretation and visualization
- **Case Study:** IoT deployment for farms in Israel

Module 12: Water Quality and Climate Resilience

- Climate impacts on water resources
- Drought and flood management
- Adaptation strategies
- Ecosystem-based water solutions
- Resilient farming practices
- **Case Study:** Building resilience in Sahel region

Module 13: Economic Aspects of Water Quality Management

- Cost-benefit of treatment options
- Water pricing models
- Funding and subsidies
- Economic losses from poor water
- ROI on improved water systems
- **Case Study:** Farmer savings from water reuse in Peru

Module 14: Gender and Social Equity in Water Access

- Women’s role in water collection and usage
- Inequity in access to clean water
- Inclusive project design
- Empowering local water champions
- Addressing cultural barriers
- **Case Study:** Women-led irrigation cooperatives in Nepal

Module 15: Final Assessment and Practical Action Plan

- Recap of all modules
- Group presentations on treatment plans
- Problem-solving sessions

- Action plan templates
- Participant feedback and evaluations
- **Case Study:** Pilot project implementation in Zambia

Training Methodology

- Interactive lectures with multimedia presentations
- Field demonstrations and guided lab tests
- Group assignments and peer learning
- Simulation exercises and practical problem-solving
- Expert guest lectures and Q&A sessions
- Hands-on case study analysis and project planning

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
09 Nov 2026	20 Nov 2026	Online	$2,000
09 Nov 2026	20 Nov 2026	Physical	$3,000
09 Nov 2026	20 Nov 2026	Physical	$6,000

Start Date	End Date	Location	Price
09 Nov 2026	20 Nov 2026	Physical	$6,000
09 Nov 2026	20 Nov 2026	Physical	$12,000
09 Nov 2026	20 Nov 2026	Physical	$9,000
09 Nov 2026	20 Nov 2026	Physical	$12,000
09 Nov 2026	20 Nov 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

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