Training Course on Bio-stimulants, Bio-fertilizers, and Biopesticides in Crop Production

Professional Development Training Course Outline

Category	Agriculture	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In response to increasing environmental concerns and the global demand for sustainable agriculture, bio-stimulants, bio-fertilizers, and biopesticides have emerged as revolutionary tools in crop production. These biologically derived inputs enhance soil fertility, boost plant growth, reduce chemical dependency, and mitigate pest attacks—making them indispensable for eco-friendly farming. Training Course on Bio-stimulants, Bio-fertilizers, and Biopesticides in Crop Production is designed to equip agronomists, researchers, farmers, and agribusiness professionals with in-depth knowledge and practical skills in the application, benefits, and integration of biological inputs for improved productivity and environmental sustainability.

The course will explore the science behind microbial formulations, plant-microbe interactions, organic certification requirements, and field application techniques. It will also focus on innovation trends in biological agriculture, regulatory frameworks, and commercial strategies for promoting green inputs. Through interactive modules and case studies, participants will gain practical insights and adopt global best practices for implementing climate-smart agricultural technologies.

Programme Curriculum

Training Course on Bio-stimulants, Bio-fertilizers, and Biopesticides in Crop Production

Introduction

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Course Objectives

This course aims to:

1. Introduce bio-stimulants, bio-fertilizers, and biopesticides in sustainable crop production.
2. Understand microbial and plant-based formulations and their mechanisms of action.
3. Explore the role of biologicals in enhancing nutrient uptake and plant resilience.
4. Demonstrate best practices in the field application of biological inputs.
5. Analyze environmental and economic benefits of using bio-products.
6. Study the regulatory and certification standards for organic and sustainable inputs.
7. Assess the impact of biopesticides on integrated pest management (IPM).
8. Examine quality control, shelf life, and packaging of bio-inputs.
9. Explore recent innovations and biotechnology advancements in biological agriculture.
10. Highlight successful case studies of global and local applications.
11. Equip participants with marketing and commercialization strategies.
12. Foster climate-resilient and low-carbon agriculture through bio-inputs.
13. Enhance farmers' decision-making through participatory and inclusive approaches.

Target Audiences

This course is ideal for:

1. Agronomists and soil scientists
2. Agricultural extension officers
3. Organic and regenerative farmers
4. Agri-entrepreneurs and input suppliers
5. Researchers and academic professionals
6. Environmental and sustainability consultants
7. Policy makers in agriculture and food systems
8. Students in agricultural and biological sciences

Course Duration: 5 days

Course Modules

Module 1: Fundamentals of Bio-inputs in Agriculture

- Definitions and classifications
- Role in sustainable and organic farming
- Distinctions between bio-stimulants, bio-fertilizers, and biopesticides
- Key challenges and opportunities in adoption
- Government and international policy perspectives
- **Case Study: Kenya’s organic transition using bio-inputs**

Module 2: Microbial and Plant-Based Bio-Stimulants

- Categories and sources (seaweed extracts, humic acids, etc.)
- Mechanisms of action and physiological effects
- Application techniques and timing

- Compatibility with fertilizers and pesticides
- Performance under abiotic stress conditions
- **Case Study: Improved tomato yield using seaweed-based stimulants in India**

Module 3: Bio-fertilizers and Soil Health Improvement

- Types: nitrogen-fixing, phosphate solubilizing, mycorrhizal fungi
- Mode of action and interactions with soil microbiota
- Role in enhancing nutrient cycling
- Application in different soil types
- Benefits for long-term soil fertility
- **Case Study: Phosphate solubilizers in maize production in Nigeria**

Module 4: Biopesticides and Pest Control Management

- Classification: microbial, botanical, biochemical
- Target pest spectrum and selectivity
- Safe handling and application guidelines
- Integration into IPM strategies
- Resistance management and sustainability
- **Case Study: Bacillus thuringiensis use in cabbage farms in Tanzania**

Module 5: Innovations and Biotechnology in Bio-Agriculture

- CRISPR and microbial engineering
- Formulation technology and nanobiotechnology
- Precision application with AI and IoT
- Mobile apps for product traceability
- Advances in field diagnostics and delivery
- **Case Study: AI-assisted biostimulant scheduling in Europe**

Module 6: Commercialization and Market Development

- Branding and product differentiation
- Farmer education and capacity building
- Public-private partnerships in biological markets
- Supply chain management
- Regulatory barriers and market access
- **Case Study: Startup success story in South Africa’s biopesticide industry**

Module 7: Policy, Certification, and Standards

- Organic certification procedures
- Regional and international policies (FAO, USDA, EU)
- Product registration and labeling
- Compliance with environmental regulations
- Inspection and auditing frameworks
- **Case Study: Uganda's national biopesticide registration framework**

Module 8: Monitoring, Evaluation, and Scaling Up

- Indicators of effectiveness and sustainability
- Feedback and adaptive learning systems
- Scaling innovations in smallholder contexts
- Participatory monitoring and digital tools
- Gender-sensitive and inclusive adoption strategies

- **Case Study: Scaling biofertilizers in East Africa through cooperatives**

Training Methodology

- Interactive presentations and expert lectures
- Hands-on demonstrations and practical labs
- Group discussions and field experience sharing
- Case-based learning and real-world scenarios
- Online simulation tools and mobile apps
- Post-training support and e-learning resources

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	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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

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