Training Course on Biochar Production and Application in Sustainable Farming

Professional Development Training Course Outline

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

Course Introduction

The growing urgency to mitigate climate change and restore soil health has fueled interest in sustainable farming solutions. Among these, biochar has emerged as a groundbreaking innovation. Training Course on Biochar Production and Application in Sustainable Farming equips participants with the scientific understanding, technical skills, and practical knowledge needed to utilize biochar as a powerful tool for improving soil fertility, increasing crop yields, and sequestering carbon. Through this course, participants will explore the entire biochar value chain, from biomass selection and pyrolysis techniques to field application and policy frameworks.

As global agriculture faces escalating challenges—land degradation, rising input costs, and climate instability—biochar offers an effective, eco-friendly solution that is scalable across smallholder and commercial farms. This course emphasizes hands-on learning, data-driven insights, and field-tested best practices, empowering agricultural professionals, researchers, and stakeholders to implement biochar-based strategies for regenerative farming and climate-smart agriculture.

Programme Curriculum

Training Course on Biochar Production and Application in Sustainable Farming

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Course Objectives

1. Understand the science and chemistry of biochar and its effects on soil systems.
2. Identify the best feedstocks for biochar production based on regional availability.
3. Demonstrate the pyrolysis process and technologies for efficient biochar creation.
4. Explore the carbon sequestration potential of biochar in climate change mitigation.
5. Assess biochar's role in improving soil fertility and water retention.
6. Compare biochar vs. conventional fertilizers for long-term sustainability.
7. Evaluate economic viability and return on investment in biochar adoption.
8. Review international biochar policy frameworks and carbon credit opportunities.
9. Analyze biochar's impact on microbial soil activity and plant health.
10. Promote circular economy principles through waste-to-resource strategies.
11. Conduct field trials and soil tests to measure biochar effectiveness.
12. Develop scalable business models for biochar enterprises and cooperatives.
13. Facilitate community adoption of biochar through outreach and training.

Target Audience

1. Smallholder and commercial farmers
2. Agronomists and soil scientists
3. Agricultural extension officers
4. Environmental consultants
5. Climate change professionals
6. Policy makers in agriculture and environment
7. Green business entrepreneurs
8. NGOs and community development workers

Course Duration: 10 days

Course Modules

Module 1: Introduction to Biochar and Its Importance

- Definition, history, and traditional uses
- Key scientific principles behind biochar
- Comparison with other soil amendments
- Benefits for soil and climate
- Common misconceptions about biochar
- **Case Study:** Biochar adoption in Kenya's maize belt

Module 2: Feedstock Selection and Availability

- Types of biomass (agricultural waste, forest residue)
- Properties of ideal feedstocks
- Regional feedstock mapping
- Feedstock pre-processing needs
- Feedstock sustainability assessments
- **Case Study:** Cocoa husk utilization in Ghana

Module 3: Pyrolysis Technology and Equipment

- Low-tech vs. high-tech pyrolysis methods
- Temperature and process control
- Safety and emissions management
- Mobile vs. fixed biochar units
- Maintenance and troubleshooting
- **Case Study:** Community pyrolysis in India

Module 4: Chemical and Physical Properties of Biochar

- Surface area and porosity
- Cation exchange capacity (CEC)
- pH and nutrient profile
- Biochar activation and inoculation
- Analytical techniques and lab testing
- **Case Study:** Biochar lab analysis in the Philippines

Module 5: Application Techniques in Farming

- Incorporation methods (broadcasting, trenching)
- Recommended application rates
- Timing and frequency of application
- Blending with compost or manure
- Crops best suited for biochar use
- **Case Study:** Coffee plantations in Ethiopia

Module 6: Biochar and Soil Microbiology

- Microbial colonization of biochar
- Influence on soil biodiversity
- Disease suppression potential
- Rhizosphere dynamics
- Biochar as microbial habitat
- **Case Study:** Biochar in organic vegetable farms

Module 7: Water Retention and Drought Resistance

- Water-holding capacity improvements
- Biochar in sandy vs. clay soils
- Irrigation efficiency enhancements
- Long-term moisture retention effects
- Integration into dryland farming systems
- **Case Study:** Biochar in arid Australian landscapes

Module 8: Biochar for Nutrient Retention

- Reducing leaching and nutrient loss
- Nutrient adsorption mechanisms
- Synergies with organic/inorganic fertilizers
- Phosphorus and nitrogen dynamics
- Customizing blends for crop needs
- **Case Study:** Rice paddies in Southeast Asia

Module 9: Carbon Sequestration and Climate Impact

- Biochar’s carbon permanence
- Life cycle analysis

- Measuring CO? offsets
- Carbon credit eligibility
- Integrating with NDC targets
- **Case Study:** Biochar carbon trading in Brazil

Module 10: Economic Viability and ROI

- Cost-benefit analysis
- Labor and capital requirements
- Government and donor incentives
- Market demand and pricing
- Profit models for small-scale units
- **Case Study:** Cooperative biochar model in Malawi

Module 11: Policy and Regulatory Frameworks

- International biochar standards
- National policy integration
- Licensing and certification
- Subsidies and carbon financing
- Legal implications of biochar trade
- **Case Study:** EU Biochar Certification process

Module 12: Biochar and Crop Yield Improvement

- Yield data from multiple crops
- Long-term vs. short-term benefits
- Crop-specific best practices
- Reducing input dependency
- Field measurement techniques
- **Case Study:** Tomatoes and pepper yield in Nigeria

Module 13: Biochar Blends and Commercial Products

- Pellets, powders, and compost blends
- Packaging and branding strategies
- Value-added applications
- Quality control protocols
- Product shelf life and stability
- **Case Study:** Retail biochar in the U.S. market

Module 14: Gender, Inclusion, and Community Engagement

- Women’s role in biochar systems
- Youth employment opportunities
- Inclusive training practices
- Participatory extension methods
- Cultural perceptions of biochar
- **Case Study:** Women-led biochar groups in Uganda

Module 15: Field Demonstrations and Scaling Up

- Organizing farmer field schools
- Monitoring and evaluation strategies
- Scaling tools and approaches
- Tech adoption and barriers

- Pilot project design
- **Case Study:** Scaling biochar in Nepal's hill regions

Training Methodology

- Interactive expert-led lectures with multimedia support
- Hands-on pyrolysis unit demonstrations
- Field visits to operational biochar farms
- Group discussions and peer learning sessions
- Pre- and post-course evaluation
- Real-life case studies and project design

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
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000

Start Date	End Date	Location	Price
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

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

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