

COURSE OUTLINE

PROGRAMME TITLE	Vermiculture & Vermicomposting: Practical Conversion of Organic Waste into Valuable Soil Inputs
OVERVIEW (Brief introduction Of the topic)	Organic waste from agriculture, plantations, mills, food processing and other operations can create disposal costs, odour, environmental concerns and lost resource value. Vermiculture and vermicomposting provide a practical biological approach for converting suitable organic materials into useful soil inputs such as vermicast. This one-day HRD Corp Focus Area programme under Smart Farming provides practical knowledge of earthworm-based organic-waste conversion. Participants learn to identify suitable and unsuitable feedstocks; apply carbon-to-nitrogen (C:N) ratio principles; prepare bedding and conditioned feedstock; establish and manage a vermiculture system; monitor operating conditions; troubleshoot common problems; and assess vermicast maturity, handling, quality and agricultural use. The programme comprises 420 learning minutes: 150 minutes (2.5 hours / 35.7%) of theory and guided instruction and 270 minutes (4.5 hours / 64.3%) of genuine supervised practical/applied learning. Two 15-minute refreshment breaks and one 60-minute lunch break are excluded from the seven learning hours. Participants map waste streams; inspect, sort and classify feedstocks; calculate and prepare C:N-informed blends; assess pre-composting readiness; prepare bedding; establish and operate a worm unit; measure temperature, moisture and pH; diagnose worm-bed conditions; assess vermicast maturity and handling; and complete an organisational Organic Waste to Vermiculture to Vermicast implementation plan. Competency is assessed through knowledge checks, supervised practical observation, practical assessment and presentation of the implementation plan.
LEARNING OUTCOME	Upon completion of this course, participants will be able to: 1. Explain the principles of vermiculture and vermicomposting and their role in circular organic-waste management. 2. Identify and classify organic feedstocks according to suitability for vermiculture, including carbon-rich and nitrogen-rich materials and materials requiring conditioning or pre-composting. 3. Explain composting-worm requirements and apply practical C:N ratio, bedding, moisture, temperature and aeration principles when preparing a vermiculture system. 4. Prepare suitable bedding and feedstock and participate in establishing or managing a basic vermiculture unit safely and consistently. 5. Conduct basic worm-bed monitoring and interpret temperature, moisture, smell, decomposition, worm activity, drainage and aeration observations. 6. Identify common vermiculture operational problems and recommend appropriate corrective actions. 7. Assess basic vermicast maturity, handling and quality considerations and identify appropriate agricultural uses. 8. Develop a basic Organic Waste to Vermiculture to Vermicast implementation plan for an identified organisational waste stream.
DURATION (days)	1 day (420 learning minutes / 7 learning hours). Breaks excluded: two 15-minute refreshment breaks and one 60-minute lunch break. Theory: 150 minutes (35.7%). Supervised practical/applied learning: 270 minutes (64.3%).
TARGET PARTICIPANTS	• Plantation and Mill Managers / Executives • Sustainability and ESG Personnel

(position/level)	• Environmental and Waste-Management Personnel • Farm Managers and Supervisors • Composting and Organic-Waste Operators • Food and Agro-Processing Personnel • Agricultural / Field Executives • Technical Officers • Farmers and Smallholders • Cooperative and Community Project Leaders • Entrepreneurs involved in organic fertiliser, vermicast or soil-input production • Personnel responsible for organic-waste recovery or circular-economy initiatives
COURSE CONTENT (with submodules)	ONE-DAY PROGRAMME - VERMICULTURE, VERMICOMPOSTING AND PRACTICAL ORGANIC-WASTE CONVERSION INTRODUCTION - Organic-Waste Context and Safety • Programme orientation, practical expectations, hygiene and safety • Participant organic-waste experience mapping • Allocation: 15 minutes theory + 15 minutes supervised applied practical MODULE 1 - From Organic Waste to Biological Resource • 1.1 Organic waste as a cost, environmental liability and recoverable resource • 1.2 Circular economy and biological resource recovery • 1.3 Vermiculture, vermicomposting and conventional composting • 1.4 Role of earthworms and microorganisms in decomposition and vermicast formation PRACTICAL 1 - Organic-Waste Identification and Resource-Recovery Exercise • Teams handle and identify sample waste materials, separate suitable and unsuitable fractions and assign potential vermiculture uses • Allocation: 65 minutes theory + 10 minutes supervised hands-on practical MODULE 2 - Worms, Feedstock, C:N Ratio and Vermiculture Environment • 2.1 Composting-earthworm biology, bedding functions and feeding behaviour • 2.2 Suitable and unsuitable organic feedstocks • 2.3 Carbon-rich and nitrogen-rich materials and C:N ratio • 2.4 Feedstock blending, pre-composting/conditioning and readiness for worms • 2.5 Moisture, temperature, aeration, pH and environmental requirements PRACTICAL 2 - Feedstock Classification, C:N Balance, Blending and Readiness Assessment • Participants inspect, sort and classify feedstocks; measure and blend carbon-rich and nitrogen-rich materials; determine conditioning needs; and use temperature, moisture and pH tools • Allocation: 40 minutes theory + 65 minutes supervised hands-on practical MODULE 3 - Vermiculture System Establishment and Management - Core Practical • 3.1 Bedding preparation, structure and moisture adjustment • 3.2 Feedstock preparation, blending and readiness check • 3.3 Worm introduction, initial feeding and bed setup • 3.4 Feeding strategy, moisture, drainage, covering and protection controls PRACTICAL 3 - Core Hands-On Vermiculture Unit Establishment and Management • Every participant participates in preparation, setup, moisture adjustment, worm introduction/feeding and recording under trainer supervision • Allocation: 100 minutes supervised core hands-on practical MODULE 4 - Monitoring, Troubleshooting and Vermiculture Health Check • 4.1 Healthy and unhealthy worm-bed indicators • 4.2 Temperature, moisture, aeration and drainage monitoring • 4.3 Heat, odour, anaerobic conditions, excess moisture, pests and corrective actions PRACTICAL 4 - Worm-Bed Monitoring and Troubleshooting

	• Participants measure and record conditions, interpret observations, diagnose physical problem scenarios/samples and determine corrective actions • Allocation: 10 minutes theory + 35 minutes supervised practical/applied learning MODULE 5 - Vermicast Harvesting, Maturity and Value • 5.1 Recognising mature vermicast and separation methods • 5.2 Finished-vermicast C:N ratio, stability and quality indicators • 5.3 Screening, handling, storage and agricultural use PRACTICAL 5 - Vermicast Maturity, Handling and Quality Assessment • Participants compare mature and immature samples; perform a basic maturity/separation assessment; screen and handle samples; and assess texture, moisture, smell, contamination and storage readiness • Allocation: 10 minutes theory + 20 minutes supervised hands-on practical MODULE 6 - Organisational Implementation, Competency Review and Closing • 6.1 Organic Waste to Vermiculture to Vermicast implementation planning • 6.2 Feedstock, pre-treatment, site, workflow, monitoring, output use, risks and controls • 6.3 Practical competency review, knowledge check, evaluation and closing PRACTICAL 6 - Organisational Implementation Plan and Competency Assessment • Teams prepare an implementation plan; the trainer observes performance against the practical checklist, verifies competencies and provides corrective guidance • Allocation: 10 minutes theory/assessment + 25 minutes supervised practical/applied learning TOTAL LEARNING TIME • Theory and guided instruction: 150 minutes (35.7%) • Genuine supervised practical/applied learning: 270 minutes (64.3%) • Total learning time: 420 minutes (7 hours)
LEARNING METHODOLOGIES	Learning Methodologies 1. Interactive instructor-led presentations and guided instruction 2. Participant organic-waste experience mapping 3. Organic-waste and feedstock identification exercise 4. Guided feedstock suitability, C:N ratio, blending and conditioning assessment 5. Hands-on bedding preparation and moisture adjustment 6. Practical feedstock preparation, blending and worm-readiness assessment 7. Supervised vermiculture-unit establishment and management 8. Worm introduction, feeding and operating-control practice 9. Temperature, moisture, pH, aeration, drainage and worm-bed health monitoring 10. Practical troubleshooting and corrective-action exercise 11. Vermicast maturity, separation, handling and quality assessment 12. Group Organic Waste to Vermiculture to Vermicast implementation planning 13. Trainer observation using a practical competency checklist 14. Knowledge checks, presentation, reflection, evaluation and Q&A Delivery balance: 150 minutes theory/guided instruction and 270 minutes supervised practical/applied learning.