Syllabus for Short Term Course for Tea Plantation Assistant

Course Name	TeaPlantation Assistant
Sector	AGRICULTURE
CourseCode	STC-AGR/2025/0283
Level	2.5
Occupation	Tea Plantation Assistant
Job Description	Tea Plantation Assistantinvolvesassistinginthebasicoperations of tea
	cultivation, including planting, plucking and maintaining tea
	bushesundersupervision
Course Duration	270Hrs. (Theory 60 hrs., Practical 120 hrs., ES 30 hrs., OJT 60 hrs.)
Trainees' Entry Qualification	9th Grade pass OR 8th Grade pass and pursuing continuous Schooling OR 5th grade pass with 4 years relevant experience OR Ability to read and write with 5 years relevant experience OR Previous relevant Qualification of NSQF Level 2 with 6 months relevant experience.
TrainersQualification	12 th class passed with elective Agriculture with 5 years' experience in the relevant field. OR Diploma in Agriculture/Horticulture with 3 years' experience in relevant field OR Graduate with Agriculture/Horticulture/B.Sc.inTeaScience with 1 year experience in the relevant field

Structure of Course:

Module No.	Modulename	Outcome	Compulsory/ Elective	Theory (Hrs)	Practical (Hrs)	OJT (Hrs.)	Total (Hrs) [Multiple of 30]
1	BotanyofTea and Nursery Management	Identify tea plant parts, harvesting methods, propagation and nursery management techniques.	Compulsory	20	40	-	60
2	Agronomyof Tea	Prepare land, plant tea and manage young plants	Compulsory	20	40	-	60
3	SoilandWate r Management in Tea	Explain soil fertility, nutrient deficiency, manures, fertilizer,sprinkler,irrigation system,drainage	Compulsory	10	20	-	30
4	Pestand its Management	Identify tea pests and diseases and control them	Compulsory	10	20	-	30
5	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	Compulsory	-	-	60	60
6	Employability Skill	As per guided curriculum	Compulsory	30	-	-	30
		TOTAL		90	120	60	270

DetailedSyllabus:

MODULE1-BOTANY OFTEAANDNURSERYMANAGEMENT

Outcome: Identify tea plant parts, harvesting methods, propagation and nursery management techniques.

Theory Content:

1. Introduction to Tea Botany (4 Hours)

- 1.1 Origin, species (Camellia sinensis)
- 1.2 Plant morphology (roots, stem, leaves, buds, flowers)

2. Physiological Functions (4 Hours)

- 2.1 Photosynthesis
- 2.2 Transpiration
- 2.3 Nutrient transport
- 2.4 Growth stages.

3. Propagation Methods (2 Hours)

- 3.1 Seed germination (sexual)
- 3.2 Vegetative methods (cuttings, layering, grafting)

4. Site Selection & Soil Factors (4 Hours)

- 4.1 Soil types
- 4.2 pH
- 4.3 Drainage
- 4.4 Micro-climate, altitudes, land preparation

5. Nursery Construction & Layout (2 Hours)

- 5.1 Beds vs polybags
- 5.2 Shading
- 5.3 Irrigation scheduling

6. Plant Nutrition & Media Preparation (2 Hours)

- 6.1 Composition of potting media
- 6.2 Fertilizers& manures

7. Pest & Disease Management in Nurseries (2 Hours)

- 7.1 Common pests
- 7.2 Bio and chemical controls, sanitation.

Practical Content:

1. Nursery bed layout & soil prep (10 hrs.)

- 1.1 Site Clearing & Plot Marking, Clear debris and level the site, mark beds (e.g., $1.2 \text{ m} \times 3.6 \text{ m}$) using ropes, pegs. (2 hrs.)
- 1.2 Soil Loosening & Clod Breaking. Dig to -38 cm depth; break clods with hoes, Remove stones and roots. (3 hrs.)
- 1.3 Mixing Organic Amendments, Incorporate FYM/compost (3–10 kg/m²) into soil uniformly, Adjust to desired texture. (3 hrs.)
- 1.4 Bed Final Smoothing & Shaping, Level and firm beds; form raised beds with ridging or sunken beds per season. (2 hrs.)

2. Seed sowing, cuttings, budding/grafting (10 hrs.)

2.1 Seedbed Sowing: Sow seeds 2–4 cm deep; maintain 8–10 cm spacing; cover with FYM-sand mix, Water gently post-sowing. (3 hrs.)

- 2.2 Cutting Preparation & Planting: Select healthy shoots; trim to 1 leaf with 3–4 cm stem. Soak in fungicide for 30 min; plant stems at angle, leaf above soil. (3 hrs.)
- 2.3 Budding Technique: Demonstrate patch or cleft budding on rootstock; bind with tape/rubber. (2 hrs)
- 2.4 Grafting Technique (2 hrs.): Practice cleft grafting; ensure cambial alignment; tape and seal graft unions, Hardening off seedlings, Nursery setup visit. (2 hrs.)

3. Media Mixing, Transplanting & Repotting (10 hrs.)

- 3.1 Potting Media Composition: Blend topsoil, compost, perlite/vermiculite in 2:1:1 ratio; sterilize if needed. (3 hrs.)
- 3.2 Filling & Labelling Containers: Fill polybags/pots; label variety, date, and trainee name. (2 hrs.)
- 3.3 Transplanting Seedlings: Lift seedlings gently; transplant to pots ensuring proper root placement. (3 hrs.)
- 3.4 Repotting Old Seedlings: Transfer 3–4-month-old seedlings to larger containers to prevent root binding. (2 hrs.)

4. Hardening Off Seedlings & Nursery Visit (10 hrs)

- 4.1 Hardening Process:
- Week 1: Loosen polysheet to allow limited airflow,
- Week 2: Roll sides up to 30cm,
- Week 3 Onward: gradually increase exposure until fully uncovered.
 Maintain soil moisture and apply light nutrient spray during hardening. (6 hrs.)
- 4.2 Field Visit to Established Nursery:

Observe bed layout, shade structures (3 m height), irrigation, and cultural practices. Note plant staging, monitoring, pest management, and record maintenance. (4 hrs.)

MODULE 2: AGRONOMY OF TEA

Outcome: Prepare land, plant tea and manage young plants.

Theory Content:

1. Introduction to Tea Agronomy (2 hrs.)

- 1.1 Agro-ecological requirements for growing Tea (Climatic requirement, Soil & Topography)
- 1.2 Overview of agronomic practices in tea cultivation.

2. Land Preparation and Planting (3 hrs.)

- 2.1 Site selection and soil requirements
- 2.2 Steps in Land clearing, contour marking and layout
- 2.3 Choices of Planting Materials (Seed vs Clonal)
- 2.4 Planting methods and spacing

3. Young Tea Management (3 hrs.)

- 3.1 Proper Nursery management strategies
- 3.2 Formation of bush frame (Decentering, Thumb pruning, Debudding, FFP techniques)
- 3.3 Post-Planting care of tea plants (Shade, Water, Nutrition, Mulching)
- 3.4 Plant Protection measures (Weed, Pest, Diseases management)

4. Management of infills (2 hrs.)

- 4.1 Criteria for Selection of Sections for infilling
- 4.2 Timing and methods of infilling

5. Tipping and Plucking of Tea (3 hrs.)

- 5.1 Concept and Objectives of Tipping
- 5.2 Role of Maintenance Foliage
- 5.3 Plucking standards: plucking table, plucking rounds, and frequency
- 5.4 Hand Plucking vs Mechanical Plucking

6. Pruning and Skiffing of Tea (3 hrs.)

- 6.1 Importance and Objectives of Pruning
- 6.2 Types of Pruning i.e rejuvenation, light, and medium pruning
- 6.3 Skiffing: Deep skiff, Medium skiff, Light skiff, Level off skiffing
- 6.4 Post-pruning Operations

7. Shade Trees and their Management (2 hrs.)

- 7.1 Characteristics of Ideal Shade Tree and their role in Tea plantations
- 7.2 Common shade tree species: Permanent Shade trees and Temporary Shade trees

8. Weed Management in Tea plantations (2 hrs.)

- 8.1 Types of weeds in Tea fields
- 8.2 Practices of Manual, mechanical, and chemical weed control in Tea
- 8.3 Weed control schedule and safety measures

Practical Content:

1. LandPreparationandPlanting(6hrs.)

- 1.1 Fieldmarking, pit digging demonstration.
- 1.2 Preparationandplantingofteabushes.
- 1.3 Plantspacingandalignmentpractice.

2. Nurseryand YoungTeaCare(6hrs.)

- 2.1 Nurserybedpreparation.
- 2.2 Transplantingandinitial care.
- 2.3 Mulchingand shadingsetups.

3. TippingandPlucking(8hrs.)

- 3.1 Demonstration of correct tipping technique.
- 3.2 Identificationofidealpluckingpoints.\
- 3.3 Pluckingskill developmentandgreenleaf handling.

4. PruningandSkiffingOperations(6hrs.)

- 4.1 Tool handlingand safetydemonstration.
- 4.2 Executionoflightskiffing, medium prune, and rejuvenation prune.
- 4.3 Post-pruningcare.

5. InfillingTechniques(4 hrs.)

- 5.1 Identificationofgapsandpreparationofinfillpits.
- 5.2 Replantingpractice.
- 5.3 Taggingand monitoring of in fills.

6. ShadeTreeManagement(4hrs.)

- 6.1 Identification of shadetree species.
- 6.2 Pruningand lopping of shadetrees.
- 6.3 Pollardingmethodsandschedules.

7. WeedIdentificationandControl(6hrs.)

- 7.1 Fieldidentification of common weeds.
- 7.2 Demonstrationofmanualandchemicalweedcontrol.
- 7.3 Useofsprayers and safety gear.

MODULE3:SOIL&WATERMANAGEMENTINTEA

Outcome:Explain soil fertility, nutrient deficiency, manures, fertilizer, sprinkler,irrigationsystem,drainage

Theory Content:

1. BasicsofSoil Fertility(2hrs.)

- 1.1. Conceptofsoilfertilityandits roleinhealthy Teabushes.
- 1.2. CharacteristicsofTeagrowingsoil.
- 1.3. Briefdiscussiononsoilphysicalparameters(texture, stricture, BD) and chemical parameters (pH, EC, Nutrients)
- 1.4. Needofregular soiltestingbefore manuringinTea cultivation.

2. FertilizerApplication inTea(2hrs.)

- $2.1. \ Essential Mineral nutrients \ (macroand micro-nutrients) required in Tea.$
- 2.2. NutrientrequirementatdifferentgrowthstagesforyoungTeaandmatureTea.
- 2.3. CommonfertilizersusedinTeacultivation.
- 2.4. Methodsoffertilizerapplication(broadcasting,ringmethod,fertigation,foliarspray)

3. OrganicManuresandAmendments(2hrs.)

- 3.1.TypesoforganicmanuresusedinTeaplantation(FYM,compost,greenma nure, vermicompost).
- 3.2. Purpose of various amendments used in Teaplantation (Dolomite, Pyrites, Biochar, Humic Acid etc.).
- 3.3. Briefideaaboutthein-situpreparationtechniquesoforganicmanuresandamendments.
- 3.4. Benefitsoforganicmatterinsoilhealth, Soilrehabilitation.

4. IrrigationinTea(2hrs.)

- 4.1. ImportanceofwatermanagementinTea.
- 4.2. Methodsofirrigation inTea(drip,sprinkler,manual).
- 4.3. Schedulingirrigationbasedon plantandsoil needs.
- 4.4. NeedofRainwaterharvestinginpresentclimate-changescenario.

5. DrainageSysteminTea(2hrs.)

- 5.1. Importance of proper drainage in Tea.
- 5.2. Typesofdrainagesystems(surface, subsurface).
- 5.3. Symptomsofpoordrainage(waterlogging,rootrot).
- 5.4. Maintenanceofdrainage structures

Practical Content:

1. SoilSamplingandTesting(4hrs.)

- 1.1 Fielddemonstration onsoil samplecollection.
- 1.2 Labinterpretation of soil pH, organic carbon and nutrients.
- 1.3 Useof portablesoil test kits.
- 1.4 Preparationofasoil healthcard.

2. FertilizerApplication(4hrs.)

- 2.1 Demonstration of correct fertilizer application techniques (ring, broadcasting, foliar).
- 2.2 Calculationoffertilizerdosageperplant/acre(orha).
- 2.3 Mixingand applyingfoliarsprays.
- 2.4 Safetyandhygieneduringhandlingchemical fertilizers.

3. PreparationandApplicationofOrganicManuresorAmendments(4hrs.)

- 3.1 Compostingtechniquesusingorganic biomass.
- 3.2 Preparation of compostor vermicompost and its application.
- 3.3 Preparationmethodofbiochar, cowdungs lurry and green manures and application.
- 3.4 ProcedureofApplyingDolomiteorPyritesforpHManagement,Soil rehabilitationprocess in uprooted tea bushes region.

4. FieldIrrigationSchedulingandManagement(4 hrs.)

- 4.1 Determiningirrigationneedbasedonsoil moistureandbusheshealth.
- 4.2 Operatingsprinklersystem underdifferentsoil conditions.
- 4.3 Avoidingover-orunder-irrigation.
- 4.4 Demonstrationonrainwaterharvestingorgroundwaterrechargestructuresin Tea Garden.

5. DrainageStructureMaintenanceandImprovement(4 hrs.)

- 5.1 Inspectionofexistingdrainagechannels.
- 5.2 Clearingblockeddrainsandrestoring slope.
- $5.3\ Construction of simple contour bunds and\ trenches.$
- 5.4 Installingfielddrainsinwaterlogged patches.

MODULE 4: PEST AND ITS MANAGEMENT

Outcome: Identify tea pests and diseases and control them

Theory Content:

1. Overview of Major Tea Pests (2 hrs)

- 1.1 Sucking pests (e.g., mosquito bug, thrips, aphids, mites): identification & damage symptoms
- 1.2 Chewing pests (e.g., loopers, caterpillars): identification & damage symptoms

2. Integrated Pest Management (3 hrs)

- 2.1 Principles of IPM: decision-making process, ecological balance, action thresholds
- 2.2 Components of IPM: scouting/monitoring, record-keeping, strategy selection

3. Control Methods (3 hrs):

- 3.1 Cultural & mechanical methods: Pruning, sanitation, mulching.
- 3.2 Biological control agents: use of predators, parasitoids (e.g., Trichogramma)
- 3.3 Chemical control: pesticide selection, safe handling, PPE

4. Monitoring & Record-Keeping (2 hrs):

- 4.1 Monitoring methods: sticky traps, light traps, field scouting
- 4.2 Record keeping & thresholds: maintaining logs, interpreting action thresholds

Practical Content:

- 1. Systematic field walks: Identify pests and capture symptoms.(2 hrs)
- 2. Specimen preparation): Collect and store pests for further study as voucher specimens.(2 hrs
- 3. Trap Installation & Monitoring: Count pest captures and log results.(2 hrs)
- 4. Sprayer Calibration & Application: Calibration exercises: Calibrate knapsack sprayers accurately.(2 hrs)

- 5. Safe application practice: Apply chemicals and bio-controls using PPE.(2 hrs)
- 6. Biological Control Demonstrations (2 hrs).
- 7. Culturing beneficials: Raise predators/parasitoids in small natural setups.(2 hrs)
- 8. Field release: Observe predator-prey interactions in situ.(2 hrs)
- 9. Cultural Practices, Mechanical Practices & Sanitation exercises: Remove diseased leaves, prune understorey.(2hrs)
- 10. Mulching, uproot infected sources, record logging & threshold Decisions & Daily log maintenance: pest counts, damage notes. (2 hrs)

<u>LearningOutcome –AssessmentCriteria</u>

Module No.	Outcome	Assessment Criteria			
1	Identify tea plant parts, harvesting methods, propagation and nursery management techniques.	 1.1 Identifyroots,stems,leaves,buds,and describe their function 1.2 Demonstratebedpreparation,seed sowing,stemcutting,andbudding 1.3 Successfullytransplantseedlingsand demonstrate hardening-off process 1.4 Cleanandstoretoolsproperly,maintain disease-free nursery conditions 			
2	Prepare land, plant tea and manage young plants	 1.5 Lay out planting grid with correct spacing and pit dimensions 1.6 Measure and apply recommended dosages of fertilizers/manure 2.1 Demonstrate weeding, mulching, pruningorshademaintenanceinfield 2.2 Completefieldlogswithdate, activity, and results accurately 			
3	Explain soil fertility, nutrient deficiency, manures, fertilizer, sprinkler,irrigation system,drainage	 3.1 Usesoiltestingkitstorecordbasic soil parameters 3.2 Createcompostpitsandapply material in planting beds 3.3 Setupdripormanualirrigationand show slope-based drainage 3.4 Identify and apply mulching, bunding, orpittechniquestoretain water. 			
4	Identify tea pests and diseases and control them	 4.1 Matchsymptomstopesttypesand explain lifecycle where relevant 4.2 Mixandapplysolutionswith correctPPEandsafedisposal 4.3 Identifynaturalenemies,traps,and use preventive cultural practices 4.4 Fillpestscoutingsheetswithdate, pest level, and actions taken 			
5	OJT	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor).			
6	EmployabilitySkill	Asperguidedcurriculum			

$\underline{List of \ Tools, Equipment and Materials needed for 30 Trainees (Practical)}$

SI. No.	Nameof the Tool&Equipment	Specification	Quantity
1.	Spades	Heavy-duty, forged iron blade with wooden handle	15 nos. (sharedby two trainees)
2.	HandHoes (Kodali)	Carbonsteelblade,wooden handle	15 nos.
3.	Sickles	Curvedbladewithserrated edge, 6–8" blade length	15 nos.
4.	PruningKnife/Chopper	Hardenedsteelblade,10–12"	10 nos.
5.	PruningShears(Secateurs)	Forfinepruning, Upto 1.5 cmdiameter cutting capacity	10 nos.
6.	LoppingShears	For shade tree lopping; telescopic handles; cutting dia 1.5"	5 nos.
7.	MeasuringTapes (30 m)	Fiber/steeltapewithhook, water-resistant	6 nos.
8.	LineMarkingRope(50m)	Cotton/synthetic rope with markings at60cmintervals	6 nos.
9.	WateringCans(10–15L)	Galvanized/plasticwithfine rose head	10 nos.
10.	Sprayers(Knapsack,16 L)	HDPE tank, lever-operated, adjustable nozzle, shoulder strap	5 nos.
11.	SafetyGloves(PVC/Rubber)	Fullhandcoverage; chemical-resistant	30 pairs
12.	MulchingMaterial (Straw/Polythene)	Driedgrass/strawbundlesor black polythene mulch rolls (1m width)	For1plot
13.	PlantingMaterials(Tea seedlings/clones)	Healthypolybagseedlings	50-60
14.	FertilizerSamples(Urea,SSP, MOP)	For demonstration only, properlylabeledandhandled	2 kgeach
15.	Weedicide (Glyphosate/Paraquat)	Fordemoonly-storedand used under supervision	1Leach
16.	Buckets(Plastic,10–15L)	Forcarryingwater,weeding residues, or mulch	10 nos.
17.	Soil auger	Stainless steel, hand- operated, 30–50 cmdepth	10 nos.
18.	Zip-lockBags	500gcapacity,forsoil sample collection	60 nos.
19.	PermanentMarkers	Waterproof,forlabelling	10 nos.

		bags		
20.	PortableSoilTest Kit	pH,NPK, EC test with reagentsonfield demonstration	5 nos.	
21.	Compostunit/VermicompostUnit	1.5x1x1mbrick-linedpit for demo	2 nos.	
22.	Surface-dwellingEarthworm species	Requiredforvermicompost preparation	As per requirements	
23.	Straw / Dry Leaves	Forcompost preparation	As per requirements	
24.	Sprinklerset	Fordemoofsprinkler irrigation	1 no	
25.	DrainagePipes(PVC)	Fordemopurpose,100mm dia,6 m length	1 no	
26.	Bioformulations	For demonstration	10 nos.	
27.	Storagebottlesforpesticide	Labeled, for demonstration	10 nos.	
28.	Microscopes(simple)	Forpest morphologystudy	5 nos.	
29.	Samplepestcharts/posters	Forteachingaids	5 sets	
30.	PPEkits(gloves,masks,aprons)	Forsafehandlingduring spray	30 nos.	
31.	Sprayers(hand/knapsack)	Forpesticideapplication	10 nos.	
32.	Petridishes /Glass slides	Formicroscopicobservation	100 nos.	
33.	Sweepnets	Forfield collectionof insects	10 nos.	
34.	Insectcollectionjars	Forlivepestcollection	30 nos.	
35.	Handlens/Magnifyingglass	Forpest identification	15 nos.	
36.	Aprons	Forcleanlinessand uniformity	30 nos.	
37.	Hand gloves	Safetyduringhandling	30 pairs	
38.	Shadenets	For nurseryshade structure	50 m	
39.	Potting media	(soil:sand:FYM)	As required	
40.	Vermicompost/Organicmanure	Forpottingmixture	100 kg	
41.	Measuringtape	Fornurserybed layout	10 nos.	
42.	Labelsandmarkers	Forplant tagging	200 nos.	
43.	Wateringcans	For nurserywatering	10 nos.	
44.	Seedtrays/Germinationtrays	Forseed sowingpractice	100 nos.	

45.	Polybags(8"x10")	Forpottingteaseedlings	500 nos.
46.	Buddingknives	Forgrafting/budding demonstration	15 nos.
47.	Pruners/Secateurs	Forcuttingstemsand branches	15 nos.

Marks Distribution

Outcome	Outcome Code	Type	Total Th marks	Total Pr marks	Total OJT marks
Identify tea plant parts, harvesting methods, propagation and nursery management techniques.	AGR/0283/OC1	Compulsory	50	180	0
Prepare land, plant tea and manage young plants	AGR/0283/OC2	Compulsory	50	180	0
Explain soil fertility, nutrient deficiency, manures, fertilizer,sprinkler,irrigationsystem,drainage	AGR/0283/OC3	Compulsory	30	150	0
Identify tea pests and diseases and control them	AGR/0283/OC4	Compulsory	20	140	0
Work in real job situation with emphasis on basic safety and hazards	AGR/0283/OC5	Compulsory	0	0	150
Employability Skill-30 Hrs	DGT/VSQ/N0101	Compulsory	50	0	0

Full Marks: 1000 Theory: 200including ES Practical: 800 including OJT