CURRICULUM

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Community Agriculture Assistant

Short term Curriculum

(Competency Based)

Council for Technical Education and Vocational Training

Karnali Technical School

Chandannath, Jumla

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Introduction

This curriculum for SEECS short term training is designed to produce lower level technical workforce equipped with knowledge and skills related to agriculture production and management occupation. It makes the trainees able to get opportunities for wage and self-employment in the related occupational field.

Aim

To produce lower level agriculture workers (community agriculture assistants) able to provide agriculture services in the community being an entrepreneur/employee/self employed.

Objectives

After the completion of the training program, the trainees will be able:

- To be familiar with agriculture production/management
- To be familiar with cultivation practices of apple and walnut
- To manage nursery, fertilizer, and pesticides
- To produce offseason vegetables
- To carry out beekeeping
- To market agricultural products
- To communicate with others and
- To be familiar with entrepreneur development
- To know the process of making jam, jelly, marmalade, pickle etc.

Course description

This curriculum provides skills & knowledge necessary for SEECS short term training. There will be both demonstration by instructors/trainers and opportunity by trainees to perform skills/tasks specified in this curriculum. Trainees will practice & learn skills using typical tools, materials, equipment & machines necessary for the program. After successful completion of this program the trainees will be equipped with the knowledge and skills related to social mobilization; nursery, fertilizer, and pesticide management; vegetable, fruits, beekeeping, agriculture product marketing; communication; and entrepreneur development.

Duration

The total duration of the course will be of 390 hours (three months).

Target group

All interested individuals in the field of agriculture with educational prerequisite of class eight pass.

Group size

Maximum of thirty

Medium of instruction

Nepali or English or both

Pattern of attendance

- 80% attendance in theory

- 90% in practical/ performance

Focus of curriculum

This curriculum emphasizes on competency /performance. 80% time is allocated for performance and only 20% for related technical knowledge. So the focus will be on performance of the specified competencies in the curriculum

Entry criteria

- Minimum of eight class pass or equivalent
- Minimum of 16 years of age
- Should pass entrance examination

Follow up suggestions

In order to assess the success of this program and collect feedbacks/ inputs for the revision of the curriculum a schedule of follow up is suggested as follows:

- First follow up: - Six months after the completion of the program
- Second follow up: - Six months after the completion of the first follow up
- Follow up cycle: - In a cycle of one year after the completion of the second follow up for five years

Certificate Awarded

The related training institute will provide the certificate of "SEECS short term training". Again, individuals who complete module (s) of the curriculum will receive a certificate of completion of the particular module(s).

Grading System

- Distinction: passed with 80% or above
- First division: passed with 75% or above
- Second division: passed with 65% or above
- Third division: passed with 60% or above

Students' evaluation

- Continuous evaluation of the trainees' performance is to be done by the related instructor/ trainer to ensure the proficiency over each competency under each of the sub-module.
- Related technical knowledge learnt by trainees will be evaluated through written or oral tests.
- Trainees must secure minimum marks of 60% in an average of both theory and practical evaluations.
- There will be three internal evaluations and one final evaluation in each module.
- The entrance test will be conducted by the concerned training institute

Trainers' qualification

- Sc. Ag or equivalent in related field
- Good communicative and instructional skills
- Experience in related field

Trainer-trainees ratio:

- 1:10 for practical classes
- For theory, as per the class room situation

Suggestions for instructor:

Suggestions for instruction:

1. Select objectives
    - Write objectives of cognitive domain
    - Write objectives of psychomotor domain
    - Write objectives of affective domain
2. Select subject matter
    - Study subject matter in detail
    - Select content related to cognitive domain
    - Select content related to psychomotor domain
    - Select content related to affective domain
3. Select instructional methods
    - Teacher centered methods: like lecture, demonstration, questions answer inquiry, induction and deduction methods.
    - Student initiated methods like experimental, field trip/excursion, discovery, exploration, problem solving, and survey methods.
    - Interaction methods like discussion, group/team teaching, microteaching and exhibition.
    - Dramatic methods like role play and dramatization
4. Select Instructional method (s) on the basis of objectives of lesson plans and KAS domains
5. Select appropriate educational materials and apply at right Time and place.
6. Evaluate the trainees applying various tools to correspond the KAS domains
7. Make plans for classroom / field work / workshop organization and management.
8. Coordinate among objectives, subject matter and instructional methods.
9. Prepare lesson plan for Theory and Practical classes.
10. Deliver /conduct instruction / program
11. Evaluate instruction/ program

Suggestion for the performance evaluation of the trainees:

1. Perform task analysis
2. Develop a detail task performance checklist
3. Perform continuous evaluation of the trainees by applying the performance checklist.

Suggestion for skill training:

4. Demonstrate performance
5. Demonstrate task performance in normal speed

6. Demonstrate slowly with verbal description of each and every step in the sequence of activity of the task performance using question and answer techniques.
7. Repeat 2 for the clarification on trainees demand if necessary
8. Perform fast demonstration of the task.

Provide trainees the opportunities to practice the task performance demonstration:

9. Provide trainees to have guided practice
10. Create environment for practicing the demonstrated task performance
11. Guide the trainees in each and every step of task performance
12. Provide trainees to repeat and repeat as per the need to be proficient on the given task performance
13. Switch to another task demonstration if and only trainees developed proficiency in the task performance.

Other suggestions:

1. Apply principles of skill training.
2. Allocate 20% Time for Theory classes and 80% Time for task performance while delivering instructions.
3. Apply principles of adult learning.
4. Apply principles of intrinsic motivation.
5. Facilitate maximum trainees involvement in learning and task performance activities.
6. Instruct the trainees on the basis of their existing level of knowledge, skills and attitude.

Course Structure

Community agriculture assistant (CAA)

S.N.	Modules and Sub-modules	Nature	Total hours		
			Th	P	Tot
1. Introductory agriculture & social mobilization		**T/P**	**12**	**11**	**23**
	1. Introduction to agriculture		4	4	8
	2. Social mobilization		8	7	15
2. Nursery Establishment and Management		**T/P**	**37**	**79**	**116**
	1. Nursery management		9	25	34
	2. Soil/Fertilizer management		26	46	72
	3. Pesticide management		2	8	10
3. Horticulture, agronomical crops, post harvest and seed production		**T/P**	**53**	**100**	**153**
	1. Vegetable production		8	17	25
	2. Fruits production		9	18	27
	3. Ornamental plants production		4	9	13
	4. Cereal, pulses, and cash crop Production		5	10	15
	5. Post harvest in Agriculture		17	31	48
	6. Seed production		10	15	25
4. Mushroom, sericulture, bee keeping, fish and duck farming		**T/P**	**28**	**26**	**54**
	1. Mushroom		5	6	11
	2.Beekeeping**(Apiculture)**		6	7	13
	3. Fish farming**(Pisciculture)**		7	6	13
	4. Sericulture		4	5	9
	5. Duck farming		6	2	8
5. Marketing, communication and entrepreneur development		**T/P**	**22**	**22**	**44**
	1. Agricultural product marketing		6	6	12
	2. Communication		9	9	18
	3. Entrepreneur development		7	7	14
	Total		**152**	**238**	**390**

Modules and Sub- modules

Module:1: Introductory agriculture & social mobilization

Description: It deals with the knowledge and skills related to introductory agriculture & social mobilization.

Objectives: After its completion the trainees will be able:

1. To introduce agriculture occupation
2. To be familiar with the concept of social mobilization

Time (hrs)	
Th	12
Pr	11
Tot	23

Sub-modules:

1. Introduction to agriculture
2. Social mobilization

Sub-module:1.1: Introduction to agriculture

Description: It deals with the knowledge and skills/tasks related to introductory agriculture. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To introduce agriculture occupation

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th. (4 hrs) + Pr. (4 hrs) = Total (8 hrs)		Time (hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Tot.**
1	Introduce Agriculture with their branches	• Definition, Importance and Scope of Agriculture	1	-	1
2	Define common agriculture terms	• Common agriculture terms: cultivation, tillage, training, pruning, propagation, manuring, irrigation, cropping system, cropping intensity	1	-	1
3	Perform basic agricultural activities	• Basic ag. activities: field preparation (ploughing, digging, levelling), manuring, irrigation, intercultural operation (weeding, hoeing, earthing up), disease/pest management, harvesting, threshing	1	2	3

4	Develop concept on cultivation & management of crops	• Requirements of soil, climate and other factors for cultivation of crops	1	2	3
	Total		**4**	**4**	**8**

Sub-module:1.2: Social mobilization

Description: It deals with the knowledge and skills/tasks related to social mobilization. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To be familiar with the concept of social mobilization

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(8 hrs) + Pr.(7 hrs) = Tot.(15 hrs)		Time (hours)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce Social Mobilization	• Definition, concept, scope and importance	1		1
2	Select community sites	• Background information (Location, • General Socio economic condition) • Number of communities, target objectives • Rapport building	1	1	2
3	Prepare village profile	• Techniques , social environment • Tools for keeping records	1	1	2
4	Collect information from other organizations about their activities	• Targeted details about the organizations, • keeping records • Analysis of current status of target group • Target group identification, tools and • methods, report writing	1	1	2
5	Conduct household survey	• Data collection, checklist/questionnaires • preparation, sampling methods, keeping • records • Historical analysis of household (Tools • and methods, report writing)	1	1	2
6	Conduct individual interview	• Key informants, checklist/questionnaires preparation, sampling methods, keeping records	1	1	2

7	Conduct group interview	• Checklist/questionnaires preparation, time management, keeping records	1	1	2
8	Prepare cropping calendar	• Cropping plan: principle procedure and application	1	1	2
	Total:		**8**	**7**	**15**

Module:2: Soil, nursery, fertilizer and pesticide management

Description: It deals with the knowledge and skills related to nursery, fertilizer and pesticide management.

Objectives: After its completion the trainees will be able:

- To improve soil quality
- To manage nursery
- To manage fertilizer
- To manage pesticide

Time (hrs)	
Th	37
Pr	79
Tot	116

Sub-modules:

1. Nursery management
2. Soil/fertilizer management
3. Pesticide management

Sub-module:2.1: Nursery management

Description: It deals with the knowledge and skills/tasks related to nursery management. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To manage nursery

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(9 hrs) + Pr.(25 hrs) = Tot.(34 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce Nursery	• Definition, Concept, Scope, and Importance	1	-	1
2	Select site for Nursery	• Criteria for site selection	1	1	2
3	Collect seed	• Types, Varieties, Source		2	2
4	Treat soil/ seed	• Method, Chemicals, Duration	1	1	2
5	Prepare Nursery Bed	• Type (Raised, Flat, Sunken beds), Nursery bed layout	-	2	2
6	Make Tunnel	• Size, Materials and their quality (Plastic, Bamboo, Pegs)	1	2	3
7	Sow/ Plant Seed	• Planting distance, Method, Time of Plantation	-	2	2

8	Grow Seedling	• Duration of Growth, Water Requirement, Weed, Disease and Pest Management	-	2	2
9	Carryout Propagation	• Types (Sexual and Asexual)	1	-	1
		• Different types of Cutting	1	3	4
		• Differet types of Grafting	1	4	5
		• Different type of Budding	1	3	4
		• Different type of Layering	1	3	4
	Total:		**9**	**25**	**34**

Sub-module:2.2: Soil/Fertilizer management

Description: It deals with the knowledge and skills/tasks related to fertilizer management. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To improve soil quality
- To manage fertilizer

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(26 hrs) + Pr.(46 hrs) = Tot.(72 hrs)		Time(hrs)		
1	Introduce Soil	• Defination of Soil	1	-	1
		• Physical, Biological and Chemical properties of soil			
		• Soil depth/ profile			
		• Importance of top soil			
2	Determine soil texture by feeling method	• Types of soil texture and their importance	-	1	1
3	Apply integrated soil management practices	• Role of organic and inorganic manure and fertilizer	1	-	1
4	Take soil sample	• Importance and method of sampling	-	1	1
5	Perform Soil Test	• Test primary nutrients	1	2	3
6	Determine soil P^H	• Definition of soil P^H		2	2
		• Methods of P^H determination			
7	Apply soil erosion control	• Definition, concept, types, and control of soil erosion	1	-	1
		• SALT method (Slopping agriculture land technology)			

8	Identify common deficiency symptoms of fertilizer	• Deficiency symptoms of major nutrients (N.P.K)	-	2	2
9	Explain importance of organic manure	• Importance of compost (FYM/Green manure/Vermicompost/Bokasi)	1		1
10	Determine quality of chemical fertilizer by local method	• Local methods of quality determination	-	1	1
11	Introduce manure /fertilizer	• Types, advantages and disadvantages	-	1	1
12	Prepare compost	• Materials, Methods, types	1	1	2
13	Improve FYM	• FYM methods of Improvement	-	2	2
14	Identify common fertilizer	• Name, Nutrient composition	-	1	1
15	Calculate fertilizer requirement	• Mathematical calculation, Dose, Nutrient composition, Area of requirement	1	2	3
16	Apply Micro/ macro nutrients	• Nutrient category • Source of micro nutrients • Required amount	1	1	2
17	Apply chemical Fertilizer	• Type, advantages and disadvantages	1	1	2
18	Store inorganic fertilizer	• Storage condition		1	1
19	Climatic Conditions	• Temperature, Rainfall, RH, Sunlight, Chilling Temperature, Wind, Altitude,	1	2	3
20	IntroduceIntroduce and produce Vermicompost	• Introduction to vermicompost Vermicoposting materials Earthworm species and their cultures Method of vermicomposting phases of vermicomposting and procedure of vermicompost production Harvesting Uses of vermiwash Preparation of vermi tank Advantages of vermicompost	5	10	15
21	Identify Varieties	• Recommended varieties of apple in Nepal	1	-	1

22	Introduce pit preparation, planting and orchard establishment	• Pit digging, planting using planting board, Time of planting, method of planting, depth of planting, spacing,Layout orchard, Method of orchard establishment	2	4	6
23	Introduce orchard Management	• Importance and Constraints	1	-	1
		• Training & Prunning	1	2	3
		• Application of Bordeux Mixture	1	2	3
		• Identification of Flowers of apple	1	1	2
24	Apply Irrigation	• Time of irrigation, role of irrigation, type of irrigation, advantages of modern irrigation techniques	1	1	2
25	Apply Manure and Fertilizer	• Types of manure and fertilizer, Calculation of fertilizer dose, identification and role of different fertilizer, dose of fertilizer, organic manure and their importance	1	2	3
26	Identify Disease and Pest	• Identify major disease and pest of apple and walnut	2	3	5
	Total:		**26**	**46**	**72**

Sub-module:2.3: Pesticide management

Description: It deals with the knowledge and skills/tasks related to pesticide management. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To manage pesticide

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

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	Th.(2 hrs) + Pr.(8 hrs) = Tot.(10 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce Pesticide	• Types, Concept, Advantages and disadvantages	1	-	1
2	Identify Common pesticides	• Name, chemical composition, limit of danger (colour, signs), mode of action (contact or synthetic)	-	1	1
3	Prepare botanical from local materials	• Identification of common plants and materials for botanical preparation • Importance of pesticide	-	1	1

		• Locally available bio-pesticide			
		• Proportion of materials			
		• Application of bio-pesticides			
4	Calculate quantity requirement of pesticide	• Label reading	-	1	1
		• Active ingredient (a.i.), dose, area of application, mathematical calculation (formula, unitary method etc.)			
5	Prepare solution dilution	• Ratio of preparation	-	1	1
		• Precaution			
6	Apply pesticides	• Dose, waiting period, time of application, method, precaution measures	-	1	1
7	Store pesticide	• Storage condition, precautions	-	1	1
8	Explain pesticide rules	• Government policies, name and types of pesticides, targeted pest, precautions, bonded pesticides, source (whole sellers, dealers and companies), market channel	1	1	2
9	Apply traps for against pest	• Types of traps • Types of different pheromone traps, targeted insect/pest	-	1	1
	Total:		**2**	**8**	**10**

Module:3: Horticultural, agronomical crops, post harvest and seed production

Description: It deals with the knowledge and skills related to vegetable, fruit, cereal, pulses, and cash crops as well as seed production.

Objectives: After its completion the trainees will be able:

- To produce vegetable crops
- To produce fruit crops
- To produce ornamental plants
- To produce cereal crops
- To produce pulses crops
- To produce cash crops
- To handle harvested products
- To produce seeds

Time (hrs)	
Th	53
Pr	100
Tot	153

Sub-modules:

1. Vegetable production
2. Fruit production
3. Ornamental plants production
4. Cereal, pulses, and cash crops production
5. Seed production

Sub-module:3.1: Vegetable production

Description: It deals with the knowledge and skills/tasks related to vegetable crop production. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To produce vegetable crops

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(8 hrs) + Pr.(17 hrs) = Tot.(25 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Explain Importance of vegetable production	• Types, concept, scope and importance	1	-	1
2	Select seed/ verities	• Criteria for selection of seed and verities according to soil, climate and other factors	-	1	1
3	Prepare soil	• Field preparation (ploughing, digging, leveling), manuring	-	1	1
4	Identify major vegetables	• Cole, solanaceous, root, leafy, cucurbits, leguminous and bulb crops	1	-	1
5	Transplant seedlings	• Direct method of planting, time, method, planting distance	-	1	1
6	Select seed/ varieties	• Criteria for selection of seed and verities according to soil, climate and other factors	1	2	3
7	Introduce Seed bed preparation	• different type seed bed for offseason production, Hi-tech Nursery	1	2	3
8	Identify major vegetables	• Cole, solanaceous, root, leafy, cucurbits, leguminous and bulb crops	1	2	3
9	Make tunnel	• Procedure of makingdifferent type of tunnel	1	2	3
10	Carry out intercultural Operation	• Weeding, hoeing, earthing up, irrigation, top dressing	-	1	1
11	Protect vegetable plant	• Pest/disease management (symptom identification, pest identification, method of protection(IPM/ICM/ IPNS/IDM, chemicals or organic	1	2	3

12	Harvest vegetable	• Maturity judgment or maturity index, harvesting method, time of harvest	1	2	3
13	Prepare fresh vegetable for sale	• Market demand • Price value of well prepared fresh Vegetable • Consumers choice	-	1	1
	Total:		**8**	**17**	**25**

Sub-module:3.2: Fruit production

Description: It deals with the knowledge and skills/tasks related to fruit crop production. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To produce fruit crops

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(9 hrs) + Pr.(18 hrs) = Tot.(27 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce fruit Production	• Types, concept, scope and importance	1	-	1
2	Introduce major fruits crops at local area	• Tropical, subtropical and temperate fruits	1	-	1
3	Make plan	• Site (topography, soil, aspects, area)	1	1	2
4	Perform layout	• Measurements, calculation, planting • system and methods	-	2	2
5	Transplant fruit sampling	• Time of plantation, field preparation, • fertilizer calculation and manuring, • planting distance, irrigation (method and • water requirement), pit digging	1	2	3
6	Carryout intercultural	• Weeding, hoeing, earthing up, irrigation, • training& pruning, mulching, Mulching, • chemicals (for disease and pest) • spraying/manuring	-	2	2
7	Prepare bordeaux mixture/ paste/paints	• Preparation methods and application	-	2	2
8	Protect fruit plant	• Pest/disease management (symptom	1	2	3

		• identification, pest identification, method • of protection(IPM/ IDM, chemicals or • organic)			
9	Carryout training / Pruning	• Training/pruning: methods and timing	1	2	3
10	Harvest fruit	• Maturity index, method and time of • harvest	1	2	3
11	Promote Fusi apple variety	• Information and advantages of Fusi varity of apple	1	1	2
12	Promote Chyanglar variety of walnut	• Information about the chyanglar variety and advantages over others variety	1	2	3
	Total:		**9**	**18**	**27**

Sub-module:3.3: Ornamental plant production

Description: It deals with the knowledge and skills/tasks related to ornamental plants production. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To produce ornamental plants

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(4 hrs) + Pr.(9 hrs) = Tot.(13 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce ornamental Plants	• Types, concept, scope and importance	1	-	1
2	Identify ornamental plants	• Scientific/English/common • name/varieties and family, morphological • character and habit, type	-	1	1
3	Make plans	• Site (topography, soil, aspects, area), • designing	1	1	2
4	Carryout plantation	• Time of plantation, field preparation, • fertilizer calculation and manuring, • planting distance, irrigation (method and • water requirement)	-	1	1
5	Carryout intercultural operation	• Weeding, hoeing, irrigation, top dressing, • training& pruning, chemicals (for disease	-	1	1

		• and pest) spraying			
6	Protect plant	• Pest/disease management (symptom • identification, pest identification, method • of protection(IPM/ IDM, chemicals or • organic)	-	1	1
7	Carryout training / Pruning	• Training/pruning: methods (specific to • plants) and timing	1	2	3
8	Harvest flower/plant	• Maturity index, method and time of harvest	1	2	3
	Total:		**4**	**9**	**13**

Sub-module:3.4: Cereal, pulses, and cash crops production

Description: It deals with the knowledge and skills/tasks related to cereal, pulses, and cash crops production. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To produce cereal crops
- To produce pulses crops
- To produce crops

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge.

	Th.(5 hrs) + Pr.(10 hrs) = Tot.(15 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce cereal, pulses, and cash crops	• Types, concept, scope and importance	1	-	1
2	Prepare land	• Land preparation(ploughing, leveling, manuring)	1	2	3
3	Sow seeds / transplant seedling	• Time of plantation, planting distance, planting method (broadcast, line sowing, transplantation)	-	2	2
4	Carryout intercultural Operation	• Weeding, hoeing, irrigation, top dressing	1	2	3
5	Protect plant	• Pest/disease management (symptom identification, pest identification, method of protection(IPM/ IDM, chemicals or organic)	1	2	3
6	Harvest crop	• Maturity index, method and time of harvest	1	2	3
	Total:		**5**	**10**	**15**

Sub-module:3.5: Post harvest Agriculture

NEED TO REVIEW

Description: It deals with the knowledge and skills/tasks related to post harvest agriculture. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To handle harvested Agricultural products
- To store harvested Agricultural products

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(17 hrs) + Pr.(31 hrs) = Tot.(48 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce post harvest technology	• Definition, scope and importance	1	-	1
2	Handle harvested products	• Harvesting time/methods, cleaning, • sorting, grading, waxing, packaging, • labeling, transportation and distribution	1	2	3
3	Process/preserve products	• Types (Drying, caning, freezing, • fermentation) and Product preparation • methods (Jam, Jelly, Marmalades, • Ketchup, Pickle, Chips)	1	2	3
4	Store products	• Types and methods	1	2	3
5	Know the importance and scope of post harvest technology	• History of postharvest technology Primary and secondary processing Scope and Importance of postharvest technology	2	-	2
6	Maturity judgment and harvesting	• Harvesting, handling, packing house operations and various postharvest practices Appropriate time of harvesting or Maturity indices of different fruits and vegetables Fungicide treatment, smoking, sulphuring Packaging and transportation Commercial harvesting, Harvesting of fruit, Cleaning, sorting, and grading	2	3	5
7	Identify factors affecting storage	• Factors: temperature, relative humidity, gases and pre-cooling of the produce. Principles and methods of storage Methods of storage; cold	2	2	4

		storage, modified atmosphere storage, controlled atmosphere storage, cellar storage and rustic storage			
8	Introduce Packaging	• Specific packaging of fruits	1	2	3
9	Prepare of Jam, Jelly or marmalade	• Preparation of jam , jelly or marmalade from seasonal fruits	2	7	11
10	Preparation of candy and murabba	• Preparation of candy Preparation of murabba	2	5	7
11	Prepare of pickle	• Preparation of pickle	1	3	5
12	Perform organoleptic taste and hedonic rating to judge quality	• Organoleotic test of preserved or processed product Hedonic rating of fresh fruit and vegetables	1	3	5
	Total:		**17**	**31**	**48**

Sub-module:3.6: Seed production

Description: It deals with the knowledge and skills/tasks related to seeds production. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To produce seeds

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(10 hrs) + Pr.(15 hrs) = Tot.(25 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce seed production	• Definition, scope and importance, seed certification	1	-	1
2	Make plan	• Seed type (self or crossed), site • (topography, soil, aspects, area)	1	1	2
3	Take seed sample	• Importance of seed sampling	1	1	2
4	Treat seed	• Definition, importance and types	1	1	2
5	Perform germination test	• Importance of germination test		2	2
6	Produce / receive foundation seeds	• Concept, source, method (if produced)	1	1	2

7	Prepare land	• Land preparation(ploughing, leveling, manuring)	-	2	2
8	Sow seed / plant	• Seed quality (purity, viability), planting distance, isolation distance, method		1	1
9	Carryout intercultural operation	• Weeding, hoeing, irrigation, top dressing	1	1	2
10	Protect plants	• Pest/disease management (symptom identification, pest identification, method of protection (IPM/ IDM, chemicals or organic)	1	1	2
11	Perform roughing	• Control quality, inspection, moisture content	1	2	3
12	Maintain isolation	• Concept, importance, distance	1	1	2
13	Harvest seeds	• Maturity index, time and method • (threshing, curing, cleaning, drying)	1	1	2
	Total:		**10**	**15**	**25**

Module:4: Mushroom, sericulture, beekeeping, fish and duck farming

Description: It deals with the knowledge and skills related to Mushroom**, s**ericulture, beekeeping, fish and duck farming**.**

Objectives: After its completion the trainees will be able:

- To produce mushroom
- To develop **s**ericulture
- To rear bee
- To produce fish farming
- To rear duck

Time (hrs)	
Th	28
Pr	26
Tot	54

Sub-modules:

1. Mushroom
2. Sericulture
3. Beekeeping
4. Fish farming
5. Duck farming

Sub-module:4.1: Mushroom

Description: It deals with the knowledge and skills/tasks related to mushroom. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To produce mushroom

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(5 hrs) + Pr.(6 hrs) = Tot.(11 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**

1	Introduce mushroom	• Definition, types, scope and importance	1	-	1
2	Make plan	• Structure designing and material selection	1	1	2
3	Cultivate mushroom	• Methods of cultivation	1	3	4
4	Protect mushroom	• Identification and management insect pest	1	1	2
5	Harvest mushroom	• Time, method	1	1	2
	Total:		**5**	**6**	**11**

Sub-module:4.2: Beekeeping (Apiculture)

Description: It deals with the knowledge and skills/tasks related to beekeeping. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To rear bee

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(6 hrs) + Pr.(7 hrs) = Tot.(13 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce apiculture	• Definition, types of honey bees, scope and importance	1	-	1
2	Identify species	• Name (scientific and common name) morphological characters (size and colour)	1	1	2
3	Rear bees	• Methods of bee rearing, care and management	1	2	3
4	Protect bees	• Danger area identification (highly chemicals used cultivated area), disease predictors, parasites	1	1	2
5	Role of honey bee in pollination	• Pollination, self-pollination, cross-pollination, visit to local farm, observe the pollination	1	1	2
6	Extract honey	• Method, precautions, time	1	2	3
	Total:		**6**	**7**	**13**

Sub-module:4.3: Fish farming (Pisciculture)

Description: It deals with the knowledge and skills/tasks related to fish farming. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To develop fish farming

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(7 hrs) + Pr.(6 hrs) = Tot.(13 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce pisciculture	• Definition, scope and importance	1		1
2	Make Plan	• Site (Topography, area, water availability, aspects), structure, designing	1	1	2
3	Manage fish pond	• Climate/weathercondition(temperature, • humidity), water condition (temperature, viscosity, sanitation), time of feeding, tools and equipments	1	1	2
4	Identify species	• Common name, morphological characters • (size, colour, body shape etc.),	1	1	2
5	Rear fish	• Feeding behavior (carnivorous, • herbivorous, omnivorous,/bottom or • surface feeder), feeding ingredients, • source of availability	1	1	2
6	Protect fish	• Monitoring (time and method), feeding • ingredients, temperature management, • pond sanitation, symptoms of disease and parasite and management	1	1	2
7	Harvest fish	• Harvesting methods	1	1	2
	Total:		**7**	**6**	**13**

Sub-module:4.4: Sericulture

Description: It deals with the knowledge and skills/tasks related to sericulture. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To develop **s**ericulture

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(4 hrs) + Pr.(5 hrs) = Tot.(9 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce sericulture	• Definition, scope and • importance	1		1

2	Make plan	• Structure designing	1		2
3	Cultivate mulberry	• Site of mulberry cultivation • (topography, soil, area), • method of growing • mulberry	1	1	2
4	Identify species	• Name, morphological • characters	1	1	2
5	Rear silk worms	• Time and method		1	1
6	Feed silk worms	• Time, amount, feeding habit		1	1
7	Harvest cocoon	• Time, method of harvesting		1	1
	Total:		**4**	**5**	**9**

Sub-module:4.5: Duck farming

Description: It deals with the knowledge and skills/tasks related to duck farming. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To develop duck farming

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(6 hrs) + Pr.(2 hrs) = Tot.(8 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Introduce duck farming	• Definition, scope and importance	1		1
2	Make plan	• Site (Topography, area, water availability, aspects), structure, designing	1		1
3	Identify breeds	• Name of breeds, morphological characters	1	1	2
4	Rear ducks	• Rearing area/mwthods	1	1	2
5	Feed ducks	• Feeding behavior, feeding ingredients/ • feeding methods	1		2
6	Protect ducks	• Sanitation, symptoms of disease and • management	1		2
	Total:		**6**	**2**	**8**

Module:5: Marketing, communication and entrepreneur development

Description: It deals with the knowledge and skills related to **m**arketing, communication, and entrepreneur development**.**

Objectives: After its completion the trainees will be able:

- To market agricultural products
- To communicate with others
- To develop entrepreneurship skills

Time (hrs)	
Th	22
Pr	22
Tot	44

Sub-modules:

1. Agricultural product marketing
2. Communication
3. Entrepreneur development

Sub-module:5.1: Agricultural product marketing

Description: It deals with the knowledge and skills/tasks related to agricultural products marketing. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To market agricultural products

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(6 hrs) + Pr.(6 hrs) = Tot.(12 hrs)		Time(hrs)		
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Store agricultural product	• Grading, storage condition (temp, RH, ventilation)	1	1	2
2	Season agricultural product	• Perishability, method of handling	1	1	2
3	Identify market	• Market information: price, demand, supply, market access	1	1	2
4	Manage transportation	• Means, facilities	1	1	2
5	Promote sales	• Market policy, price promotion, place, product(type and quality), value chain	1	1	2
6	Prepare packages	• Quality of both product and package, market availability	1	1	2
	Total		**6**	**6**	**12**

Sub-module:5.2: Communication

Description: It deals with the knowledge and skills/tasks related to communication. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To communicate with others

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(9 hrs) + Pr.(9 hrs) = Tot.(18 hrs)				Time(hrs)
S.N.	**Tasks/ Skills**	**Related Technical Knowledge**	**Th.**	**Pr.**	**Total**
1	Write job application	• Method, application format, language	1	1	2
2	Prepare resume	• Format, language, self details	1	1	2
3	Communicate with senior	• Social value, motivating factors (human • ethics), characteristics of good • communication	1	1	2
4	Communicate with junior	• Social value, job accountability, human • ethics, characteristics of good • communication	1	1	2
5	Deal with customers	• Subject matter, human ethics	1	1	2
6	Communicate with other farm owners.	• Relationship, other views and knowledge	1	1	2
7	Request / purchase tool, supplies, materials and equipment	• Price, quality, uses, source	1	1	2
8	Fill up leave requisition form	• Language, idea of filling	1	1	2
9	Communicate with individual, group and mass.	• Farm visit • Format of poster, pamphlet, leaf let, • broacher etc.	1	1	2
	Total		**9**	**9**	**18**

Sub-module:5.3: Entrepreneur development

Description: It deals with the knowledge and skills/tasks related to entrepreneur development. Each task consists of terminal performance objective, minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

Objective: After its completion the trainees will be able:

- To develop entrepreneurship skills

Tasks: To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

	Th.(7 hrs) + Pr.(7 hrs) = Tot.(14 hrs)	Time(hrs)

S.N.	Tasks/ Skills	Related Technical Knowledge	Th.	Pr.	Total
1	Develop entrepreneurial competencies	• Market information, govt. policies, market channel	1	1	2
2	Select / identify a project	• Scope, market demand, project formulation, project feasibility	1	1	2
3	Manage an enterprise	• Office establishment, staff selection, human resource management, market channel	1	1	2
4	Develop marketing skill	• market strategies, market information, company policies, market channel	1	1	2
5	Conduct promotional activities	• Types (Training, advertisement, fair)	1	1	2
6	Prepare a business plan / scheme	• Inventory, budget allocation	1	1	2
7	Develop communication skills	• Type of communication : mass, individual, group and media	1	1	2
	Total		**7**	**7**	**14**

<table>
<tr><th colspan="2">Reading materials</th></tr>
<tr><td>• Handbook of agriculture
By: Indian Council of Agricultural Research(ICAR)
• Modern techniques of raising field crops
By: Dr. Chnida Singh
• Cropping system By: B.N.Chatterjee, S. Maiti, and B.K. Mandal
• Fundamentals of horticulture
By: Edimond-Senn-Andrews-halfacre
• Fundamental of horticulture
By: S.M. Shakya et. al.
• Laboratory manual on vegetable production and ornamental horticulture
By: S.M. Shakya et. al. And communication Center
• Krishi Diary
By: Agriculture Information</td><td>• Vegetable crops By: Rose, Som & Kabir
• Plant propagation
• By: Hortman, Kester & David
• Nepalma Adharbhut tarkari kheti
By: UMN/N
• Balibiruwaka Satru ra Tiniharuka Rogtham
By: Prof. Dr. Fanindra Prasad Neaupane
• Beekeeping By: L. R. Verma
• Sericulture and Silk production
By: Prabha Shekhar and Martin Hardingham
• Trainers manual on tropical, subtropical and
temperate fruits By: Laxman Pun
• Trainers manual on vegetable production
By: Laxman Pun
• Training Mannual
By: Central Agriculture Training Center</td></tr>
<tr><th colspan="2">Facilities</th></tr>
<tr><td>• Well equipped enough class/ office rooms
• Demonstration farms for various crop species
• Demonstration farms for various species of mushroom, bee, duck, fish and silk worms</td><td>• Laboratory / library
• OHP/computers/ pictures
• Multimedia presentation set
• Hostel/canteen /drinking water
• Electricity
• Field for cultivation practices
• Transportation facilities</td></tr>
</table>

Tools and Equipment

List of Tools and Equipments for 20 Students

S.N.	Tools and Equipment	Total Number
1	Kuto	10 pcs
2	Kodalo	10 pcs
3	Plow	1 pcs
4	Doko	2 pcs
5	Hand Sprayer	1 pc
6	Rope	1 role
7	Sickle	10 pcs
8	Thresher	1 pc
9	Location map	1 pc
10	Measuring tape	2 pcs
11	Hammer	5 pcs
12	Handsaw	5 pcs
13	Rose can (Hajari)	5 pcs
14	Knife (Budding, Grafting)	20 pcs
15	Scature	10 pcs
16	Rootex (1,2,3)	3 dabba
17	Grafting tape	3 role
18	Soil sample agar	5 pcs
19	pH meter	2 pcs
20	Calculator	5 pcs
21	Plastic drum (150 Ltr capacity)	2 pcs
22	Bucket (20 liter)	10 pcs
23	Measuring cylinder	10 pcs
24	Pheromone trap	5 pcs
25	Pick	1pc
26	Sabel	5 pics
27	Planting board	2 pics
28	Refrigenator	1 pic
29	Stove	1 pic
30	Packing bottles (250 ml)	20 pics
31	Peeling machine	2 pics
32	Seed sampler	3 pics
33	Petri dish	20 pics
34	Seed germinator	1 pic
35	Forceps	10 pics
36	Plastic bag	50 pcs
37	Mushroom seed bottle	5 pcs
38	Drum for heating 100 Liter	1 pic
39	Bee hive	1 pic
40	Apron	2 pics
41	Smoker	5 pics
42	Honey Extractor (Small)	1 set

43	Cast net	1 pcs
44	Hook	5 pcs
45	Bread specimen	6 pcs
46	Lab thermometer	2 pcs
47	Feeder	2 pcs
48	Nanglo	5 pcs
49	Wooden rack	1 pc
50	Basila	2 pcs
51	Power tiller/ Tractor	1 set

आवश्यक स्टेशनरी/विविध सामग्रीहरु

१	कापी	१ दर्जन
२	डटपेन	१ दर्जन
३	सार्पनर ठूलो	२ थान
४	करेक्सन पेन	१ दर्जन
५	साइन पेन	३ दर्जन
६	पाइलट/जेल पेन	३ दर्जन
७	इरेजर	३ दर्जन
८	पेन्सील	३ दर्जन
९	फलाटिन कपडा	१० मीटर
१०	नमुना	१२ थान
११	कार्वन पेपर नीलो/सेतो	२-२ प्याकेट
१२	फिलिप चार्ट पेपर	आवश्यकता अनुसार
१३	फ्ल्यास कार्ड	आवश्यकता अनुसार
१४	फोटोकपी पेपर	आवश्यकता अनुसार
१५	फाइल	आवश्यकता अनुसार
१६	हवाइट बोर्ड	१ थान
१७	बोर्ड मार्कर	१ दर्जन
१८	परमानेन्ट मार्कर	१ दर्जन
१९	डस्टर	२ थान

नोट : तालीमका बखत सैद्धान्तिक बिषयको प्रशिक्षणका क्रममा उपलब्ध हुन सक्ने अवस्थामा ओभरहेड प्रोजेक्टर, फ्लिपचार्ट बोर्ड, पिन बोर्ड प्रयोगमा ल्याउन सकिनेछ ।

Developed by : Karnali Technical School, Jumla