

General Certificate of Education (A/L)  
(Grade 12-13)  
**Agricultural Science**  
Syllabus

(To be Implemented from 2009)



Department of Technical Education  
Faculty of Science & Technology  
National Institute of Education  
2009

## **1.0 Introduction**

The need has arisen to raise the contribution of agriculture to the National development of Sri Lanka with its proud history. A major portion of the national product and employment opportunities of our country have been provided by agriculture-based entrepreneurial enterprises. Cutting down on the foreign exchange spent on the import of essential food stocks, conversion of agricultural material exported as raw products into finished products of enhanced value and the storage of food stocks in anticipation of scarcities that might arise in face of the increasing population are some of the most obvious challenges that need to be countenanced. It is obvious that only the effective provision of Agriculture Education can help build up the environment conducive to overcoming these challenges.

The present Agricultural Science Syllabus has been developed so as to assist in the preparation of the basis necessary to produce individuals with the competency levels of achieving these goals.

The present curriculum is based on activities appropriate for the actualization of competencies, since the competencies identified here are broad they been so prepared that they can be achieved through several competency levels.

It is expected that the present syllabus will support development of the skills required for personal livelihood or provide entrepreneurial skills necessary to provide effective support for the economic development of Sri Lanka or in the alternative, provide the competencies required for the pursuit of a vocation or for self-employment to those who do not go on to higher education. Therefore, it is essential that the learning-teaching methodologies described here are implemented in the classroom and in the agriculture laboratory as well as in the field.

It is the responsibility of the teacher to take the above into consideration and create an environment conducive to the provision of effective learning experiences to the student. Through this a generation of students replete with competencies, will be produced.

## **2.0 Aims of the Syllabus**

- Motivate effective and sustainable use of agricultural resources abundantly available in the region.
- Provide the opportunity for the identification of entrepreneurial avenues in the field of agriculture.
- Implement environment-friendly agricultural pursuits.
- Provide the opportunity to acquaint oneself with and use modern agro-technological methods.
- Provide the opportunity for creativity in the field of agriculture.
- Provide the opportunity to associate with different individuals and institutions related to the field of agriculture.
- Adapt oneself to the changes in the field of agriculture.

### Suggested number of periods for each competency

#### Grade 12

Competency	Duration (No.of periods)
1. Plans to contribute effectively to the development of Agriculture in Sri Lanka.	23
2. Decides on crop management practices interms of climatic conditions.	21
3. Decides on the soil environment suitable for crop cultivation.	41
4. Plans to utilize environment friendly usage of fertilizer to obtain potential yields of crops.	30
5. Exhibits the readiness to establish crops in a suitable soil environment.	23
6. Plans suitable irrigation and drainage methods to make a success of crop cultivation.	27
7. Exhibits readiness to improve crop yield.	39
8. Plan plant breeding methods to increase qualitative and quantitative crop yield.	14
9. Plans control conditions to obtain increased crop yields qualitatively and quantitatively.	09
10. Exhibits readiness to obtain a higher yield by optimizing plant physiological conditions.	23
	250

#### Grade 13

Competency	Duration (No.of periods)
11. Plans use of pest management practices to ensure successful crop cultivation.	56
12. Plans use of post harvest technologies to obtain quantitatively and qualitatively high yields.	14
13. Plans increase of crop production through correct agricultural practices.	18
14. Exhibits readings to employ methods of animal husbandry to ensure a qualitatively quantitatively high yield.	85
15. Plans quality food consumption methods to enjoy a healthy life.	24
16. Exhibits preparedness for involvement in agricultural pursuits minimising its impact on the environment.	09
17. Plans methodologies for the application of the principles of economics for the purpose of increasing productivity of agricultural pursuits.	44
	250

### Competencies and competency levels for Grades 12<sup>th</sup> and 13<sup>th</sup>

Grade	Term	Competency and Competency level
12 <sup>th</sup> Grade	First Term	From first competency to third competency (19 competency levels)
	Second Term	From fourth competency to sixth competency (18 competency levels)
	Third Term	From seventh competency to tenth competency (19 competency levels)
13 <sup>th</sup> Grade	First Term	From eleventh competency to thirteenth competency (20 competency levels)
	Second Term	Fourteenth competency only (22 competency levels)
	Third Term	From fifteenth competency to seventeenth competency (18 competency levels)

Competency	Competency level	Subject contence	Duration (No. of periods)
1. Plans to contribute effectively to the development of Agriculture in Sri Lanka.	1.1 Analyze qualitatively and quantitatively the contribution of agriculture to the Sri Lankan economy.	<ul style="list-style-type: none"> <li>• Current situation of agriculture in Sri Lanka</li> <li>• Appropriate contribution by different sectors to the gross national product <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Industry</li> <li>• Services</li> </ul> </li> <li>• Different sectors in the agriculture that contribute to the gross domestic product <ul style="list-style-type: none"> <li>• Crops</li> <li>• Farm Animals</li> <li>• Fishery</li> <li>• Forestry</li> </ul> </li> <li>• Occupations in the Agriculture sector</li> <li>• Agriculture based industries <ul style="list-style-type: none"> <li>• Food</li> <li>• Production of agricultural inputs</li> <li>• Agricultural based constructions</li> <li>• Production of farm animal feed</li> </ul> </li> <li>• Agriculture related services <ul style="list-style-type: none"> <li>• Extension services</li> <li>• Agricultural inputs</li> <li>• Agricultural research</li> <li>• Transport</li> <li>• Maintenance</li> <li>• Marketing of Agricultural products</li> <li>• Supply of skilled workers</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	1.2 Makes suggestins for the future of agriculture while recalling the successes of the past	<ul style="list-style-type: none"> <li>• Prosperity of ancient Sri Lankan agriculture</li> <li>• Evidences of self sufficient economy in the past</li> <li>• Reasons for the self sufficient economy above               <ul style="list-style-type: none"> <li>• Irrigation facilities</li> <li>• Government support</li> <li>• Cultural and religious background</li> </ul> </li> <li>• Changes in agriculture in the recent past               <ul style="list-style-type: none"> <li>• Agricultural colonies and multi purpose development schemes</li> <li>• Green revolution</li> </ul> </li> </ul>	05
	1.3 Plans to overcome the challenges to modern agriculture.	<ul style="list-style-type: none"> <li>• Present challenges to agriculture               <ul style="list-style-type: none"> <li>• Import of food</li> <li>• International agreements and treaties</li> <li>• Regressive technology</li> <li>• Decrease in genetic potentials</li> <li>• Lack of entrepreneurships</li> <li>• Effects of adverse climatic conditions</li> </ul> </li> <li>• Possible action to overcome the challenges               <ul style="list-style-type: none"> <li>• Prevention of price fluctuation of food items</li> <li>• Introducing new technology</li> <li>• Upgrade indigenous gene pool</li> <li>• Minimize costs of agricultural products</li> <li>• Expand Agricultural extension services</li> </ul> </li> <li>• Future trends in agriculture and their contribution to the development of agriculture               <ul style="list-style-type: none"> <li>• Increase land use efficiency</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	1.4 Plan agricultural development of Sri Lanka according to the agricultural policies and regulations.	<ul style="list-style-type: none"> <li>• Upgrading quality of labour force</li> <li>• Ensure opptimum use of climatic factors</li> <li>• Ensure the food security in the country</li> <li>• National agricultural policy               <ul style="list-style-type: none"> <li>• Irrigation policy</li> <li>• Plant quarantine policy</li> <li>• Production, commercial and consumption policy</li> <li>• Chemical usage policy</li> <li>• Land policy</li> </ul> </li> <li>• Acts related to Agriculture               <ul style="list-style-type: none"> <li>• Agrarian development act</li> <li>• Water management act</li> <li>• Plant protection act</li> <li>• Environmental act</li> <li>• Soil protection act</li> </ul> </li> </ul>	04
	1.5 Investigate about possible institutions to obtain the services for agricultural activities.	<ul style="list-style-type: none"> <li>• Institutes and services important for agricultural developments               <ul style="list-style-type: none"> <li>• Government institutions                   <ul style="list-style-type: none"> <li>• Research Institutions</li> <li>• Institutions related to extension services</li> <li>• Institutions related to agricultural inputs (Fertilizer, seeds, water etc.)</li> <li>• Institutes related to marketing</li> </ul> </li> <li>• Private institutions</li> </ul> </li> </ul>	04



Competency	Competency level	Subject contence	Duration (No. of periods)
2. Decides on crop management practices in terms of climatic conditions.	2.1 Determines the climatic condition of the region by measuring major climatic factors affecting agriculture.	<ul style="list-style-type: none"> <li>• Non governmental organizations               <ul style="list-style-type: none"> <li>• Farmer Organizations</li> <li>• Institutions for credit facilities and subsidies</li> <li>• Educational Institutions                   <ul style="list-style-type: none"> <li>• Agriculture Schools</li> <li>• Universities</li> <li>• Others</li> </ul> </li> </ul> </li> <li>• Main climatic parameters               <ul style="list-style-type: none"> <li>• Rainfall</li> <li>• Light</li> <li>• Temperature</li> <li>• Relative humidity</li> <li>• Wind</li> <li>• Evoporation</li> </ul> </li> </ul>	04
	2.2 Inquires into the effect of climatic factors on agriculture.	<ul style="list-style-type: none"> <li>• How climatic factors affect crop cultivation               <ul style="list-style-type: none"> <li>• Rain fall                   <ul style="list-style-type: none"> <li>• Amount</li> <li>• Intensity</li> <li>• Pattern and cultivation seasons</li> </ul> </li> <li>• Light                   <ul style="list-style-type: none"> <li>• Intensity</li> <li>• Quality</li> <li>• Duration</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	2.3 Design an agro climatic unit in the school.	<ul style="list-style-type: none"> <li>• Temperature <ul style="list-style-type: none"> <li>• Atmospheric temperature</li> <li>• Soil temperature</li> </ul> </li> <li>• Relative humidity</li> <li>• Wind <ul style="list-style-type: none"> <li>• Direction</li> <li>• Velocity</li> </ul> </li> <li>• Effect of evaporation</li> <li>• Agro climatic unit <ul style="list-style-type: none"> <li>• Selecting a suitable location</li> <li>• Equipment <ul style="list-style-type: none"> <li>• Rain gauge</li> <li>• Evaporation pan</li> <li>• Anemometer and wind vane</li> <li>• Atmospheric thermometers</li> <li>• Soil thermometers</li> <li>• Sunshine recorder</li> <li>• Pyrheliometer</li> </ul> </li> <li>• Establishment <ul style="list-style-type: none"> <li>• Avoiding outside disturbances</li> <li>• Method of installation</li> </ul> </li> </ul> </li> </ul>	03
	2.4 Plan agricultural activities to minimize effect of climatic changes.	Climatic changes. <ul style="list-style-type: none"> <li>• Green house effect <ul style="list-style-type: none"> <li>• Green house gasses</li> <li>• Solar radiation</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	2.5 Studies maps to identify agro ecological zones Sri Lankan.	<ul style="list-style-type: none"> <li>• Natural green house cover</li> <li>• Enhanced green house cover</li> <li>• Current situation in Sri Lanka               <ul style="list-style-type: none"> <li>• Changes in rain fall pattern</li> <li>• Temperature increase</li> <li>• Rising of sea level.</li> </ul> </li> <li>• Effect on agricultural activities               <ul style="list-style-type: none"> <li>• Effect on crop yield.</li> <li>• Effect on soil productivity</li> </ul> </li> <li>• Possible and applicable remedies from agriculture               <ul style="list-style-type: none"> <li>• Water management</li> <li>• Crop selection</li> <li>• Legal actions</li> </ul> </li> <li>• Main climatic zones of Sri Lanka               <ul style="list-style-type: none"> <li>• Wet Zone</li> <li>• Intermediate Zone</li> <li>• Dry zone</li> </ul> </li> <li>• Agro ecological zones of Sri Lanka.               <ul style="list-style-type: none"> <li>• Classification                   <ul style="list-style-type: none"> <li>• Wet Zone – 15</li> <li>• Intermediate – 20</li> <li>• Dry zone – 11</li> </ul> </li> <li>• Benefits                   <ul style="list-style-type: none"> <li>• To identify the areas with equal climatic conditions</li> <li>• To recommend suitable crops</li> <li>• To organize the cultivation activities</li> </ul> </li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
3. Decides on the soil environment suitable for crop cultivation.	3.1 Inquire into the effect of soil formation and soil profile development on cultivation of crops.	<ul style="list-style-type: none"> <li>• Soil formation               <ul style="list-style-type: none"> <li>• Weathering of rocks                   <ul style="list-style-type: none"> <li>• Physical</li> <li>• Chemical</li> <li>• Biological</li> </ul> </li> <li>• Soil genesis                   <ul style="list-style-type: none"> <li>• Parent material</li> <li>• Topography</li> <li>• Time</li> <li>• Climate</li> <li>• Biological factors</li> </ul> </li> </ul> </li> <li>• Soil profile               <ul style="list-style-type: none"> <li>• A zone</li> <li>• B zone</li> <li>• C zone</li> <li>• Soil profile developmen</li> </ul> </li> <li>• Importance of studying the soil profile               <ul style="list-style-type: none"> <li>• For land preparation</li> <li>• To decide on suitable crops for cultivation</li> <li>• To decide on nutrient availability</li> </ul> </li> </ul>	06
	3.2 Decides on the soil constituents suitable for cultivating crops.	<ul style="list-style-type: none"> <li>• Soil constituents               <ul style="list-style-type: none"> <li>• Soil solid particles                   <ul style="list-style-type: none"> <li>• Soil minerals</li> <li>• Soil organic matter</li> </ul> </li> <li>• Soil fauna and flora</li> <li>• Soil water</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	3.3 Decides on the soil texture and consistency suitable for crop cultivation.	<ul style="list-style-type: none"> <li>• Soil air</li> <li>• Effect and management</li> <li>• Soil texture               <ul style="list-style-type: none"> <li>• Determination texture</li> <li>• Effect of texture</li> </ul> </li> <li>• Soil consistency               <ul style="list-style-type: none"> <li>• Decide the soil consistency</li> <li>• Effect of consistency</li> </ul> </li> </ul>	04
	3.4 Decides on the soil structure and colour suitable for crop cultivation.	<ul style="list-style-type: none"> <li>• Soil structure               <ul style="list-style-type: none"> <li>• Determination of structure</li> <li>• Effect of structure</li> </ul> </li> <li>• Soil colour               <ul style="list-style-type: none"> <li>• Deciding on colour</li> <li>• Effect of colour</li> </ul> </li> </ul>	04
	3.5 Decides on soil density and porosity suitable for crop cultivation.	Soil density <ul style="list-style-type: none"> <li>• Determination of soil density</li> <li>• Effect of soil density</li> </ul> <ul style="list-style-type: none"> <li>• Soil porosity               <ul style="list-style-type: none"> <li>• Determination of soil porosity</li> <li>• Effect of porosity</li> </ul> </li> </ul>	04
	3.6 Decides on the chemical properties of soil suitable for crop cultivation.	<ul style="list-style-type: none"> <li>• Chemical properties of soil               <ul style="list-style-type: none"> <li>• Soil reaction                   <ul style="list-style-type: none"> <li>• Acidity</li> </ul> </li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>3.7 Identifies different soil groups and selects suitable crops for them.</p> <p>3.8 Inquires into reasons for soil degradation and decides on crop for cultivation.</p>	<ul style="list-style-type: none"> <li>• Alkalinity</li> <li>• Ion exchange</li> <li>• Base saturation</li> <li>• Electrical conductivity</li> <li>• Main soil groups in Sri Lanka</li> <li>• Some common soil groups in Sri Lanka <ul style="list-style-type: none"> <li>• Redish brown earth</li> <li>• Redish Yellow Podsollic Soil</li> <li>• Non Calcic Brown Soil</li> <li>• Latosolic Soil</li> <li>• Alluvial Soil</li> </ul> </li> <li>• Agricultural potentials of each soil group</li> <li>• Factors affecting soil degradation <ul style="list-style-type: none"> <li>• Soil erosion <ul style="list-style-type: none"> <li>• Agents of soil erosion</li> <li>• Factors affecting a aggravation of soil erosion</li> <li>• Various means of soil erovion and their effect</li> <li>• Measuring soil erosion</li> </ul> </li> <li>• Improper land use</li> <li>• Improper crop cultivation methods and cropping systems</li> <li>• Irregular water management practices</li> <li>• Improper use of agro chemicals and organic fertilizer</li> </ul> </li> </ul>	<p>04</p> <p>05</p>

Competency	Competency level	Subject contence	Duration (No. of periods)
4. Plans to utilize environment-friendly usage of fertilizer to obtain potential yields of crops.	3.9 Inquires into the adverse effect of soil degradation and makes suggestions to improve the soil.	<ul style="list-style-type: none"> <li>• Results of soil degradation               <ul style="list-style-type: none"> <li>• Soil hardening</li> <li>• Soil inundation</li> <li>• Deplation of plant nutrients</li> <li>• Salinity in soil</li> <li>• Development of alkalinity</li> <li>• Development of acidity</li> <li>• Nutrient toxicity</li> </ul> </li> <li>• Soil development               <ul style="list-style-type: none"> <li>• Necessity of soil development</li> <li>• Various soil protection methods                   <ul style="list-style-type: none"> <li>• Soil development methods</li> <li>• Soil rehabilitation methods                       <ul style="list-style-type: none"> <li>• Rectifying pH</li> <li>• Reclamation saline soil</li> <li>• Use of correct agricultural practices</li> </ul> </li> </ul> </li> </ul> </li> </ul>	05
	4.1 Identify and classify nutrient elements required for plant growth and yield.	<ul style="list-style-type: none"> <li>• Major plant nutrients               <ul style="list-style-type: none"> <li>• Essential elements                   <ul style="list-style-type: none"> <li>• Macro elements</li> <li>• Micro elements</li> <li>• Beneficial elements</li> </ul> </li> <li>• Movable and non movable elements</li> </ul> </li> </ul>	03

Competency	Competency level	Subject contence	Duration (No. of periods)
	4.2 Select essential nutrient elements required to increase yield.	<ul style="list-style-type: none"> <li>• Effects and functions of essential nutrient elements               <ul style="list-style-type: none"> <li>• Mode of absorbing different elements by the plant</li> <li>• Main functions</li> <li>• Deficiency symptoms</li> <li>• Effect of excess amounts of elements</li> </ul> </li> <li>• Liebig's law of minimum</li> </ul>	04
	4.3 Decides on the availability of soil nutrients in terms of soil characteristics.	<ul style="list-style-type: none"> <li>• Availability of nutrients in relation to soil characteristics               <ul style="list-style-type: none"> <li>• pH value</li> <li>• Soil colloids</li> <li>• Soil porosity</li> <li>• Soil moisture</li> <li>• Soil aeration</li> </ul> </li> </ul>	04
	4.4 Inquires into direct organic fertilizers and their usage and determines the quality of their nutrients.	<ul style="list-style-type: none"> <li>• Direct inorganic fertilizers               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Composition</li> <li>• Physical properties</li> <li>• Advantages and disadvantages</li> </ul> </li> <li>• Problems due to improper use of fertilizers               <ul style="list-style-type: none"> <li>• Unfavorable chemical reactions on the soil</li> <li>• Weakening of the activities of soil organisms</li> <li>• Increase susceptibility of plants to pest damages</li> <li>• Environmental pollution</li> <li>• Excessive costs</li> </ul> </li> </ul>	05



Competency	Competency level	Subject contence	Duration (No. of periods)
	4.5 Exhibits readiness to prepare fertilizer mixtures through use of direct fertilizers.	<ul style="list-style-type: none"> <li>• Fertilizer mixtures               <ul style="list-style-type: none"> <li>• Complete fertilizer mixtures</li> <li>• Incomplete fertilizer mixtures</li> </ul> </li> <li>• Preparation of fertilizer mixtures               <ul style="list-style-type: none"> <li>• Calculations</li> <li>• Selecting suitable fertilizers for the preparation of mixtures.</li> </ul> </li> </ul>	04
	4.6 Prepares different types of organic fertilizers.	<ul style="list-style-type: none"> <li>• Organic fertilizers               <ul style="list-style-type: none"> <li>• Green leaves</li> <li>• Farm yard manure</li> <li>• Animal fertilizer</li> <li>• Compost fertilizer</li> <li>• Organic liquid fertilizer</li> <li>• Bio fertilizer (Azolla)</li> </ul> </li> <li>• Advantages of using organic fertilizer               <ul style="list-style-type: none"> <li>• Improving soil structure</li> <li>• Increasing cation exchangeable capacity</li> <li>• Contains a large amount of nutrients</li> <li>• Increase of water retention capacity</li> <li>• Acts as a buffer</li> </ul> </li> <li>• Limiting factors of organic fertilizer usage               <ul style="list-style-type: none"> <li>• Difficulty of obtaining rawmaterials</li> <li>• Require large amounts</li> <li>• Difficult to prepare</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
5. Exhibits the readiness to establish crops in a suitable soil environment.	4.7 Designs different methodologies of effective fertilizer usage.	<ul style="list-style-type: none"> <li>• Strategies to increase fertilizer efficiency               <ul style="list-style-type: none"> <li>• Applying whenever suitable environmental conditions prevail</li> <li>• Test soil before applying</li> <li>• Applying recommended dosage in split doses</li> <li>• Applying organic and inorganic fertilizer at the same time</li> <li>• Applying as a foliar spray</li> </ul> </li> <li>• Integrated Plant Nutrition Systems (IPNS) in fertilizer usage</li> <li>• Applying fertilizer after testing soil</li> <li>• Methods of applying suitable fertilizers               <ul style="list-style-type: none"> <li>• Direct application to soil</li> <li>• Direct application to plant</li> <li>• Indirect application</li> </ul> </li> </ul>	05
	5.1 Inquires into the need for land preparation increase properties of soil.	<ul style="list-style-type: none"> <li>• Importance of soil environment in agriculture</li> <li>• Develop suitable soil environment in land preparation               <ul style="list-style-type: none"> <li>• Land preparation                   <ul style="list-style-type: none"> <li>• Objectives of land preparation</li> <li>• Changes that occur due to land preparation                       <ul style="list-style-type: none"> <li>• Random coarseness</li> <li>• Apparent density</li> <li>• Porosity</li> </ul> </li> </ul> </li> </ul> </li> </ul>	04
	5.2 Selects appropriate methods of land preparation.	<ul style="list-style-type: none"> <li>• Steps in land preparation               <ul style="list-style-type: none"> <li>• Primary tillage                   <ul style="list-style-type: none"> <li>• Primary land preparation</li> <li>• Secondary land preparation</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	5.3 Selects suitable equipment for land preparation.	<ul style="list-style-type: none"> <li>• Preparation of planting beds</li> <li>• Cultural practices</li> <li>• Methods of land preparation.               <ul style="list-style-type: none"> <li>• Maximum tillage                   <ul style="list-style-type: none"> <li>• Concept</li> <li>• Importance</li> </ul> </li> <li>• Minimum tillage                   <ul style="list-style-type: none"> <li>• Concept</li> <li>• Importance</li> </ul> </li> <li>• Zero tillage                   <ul style="list-style-type: none"> <li>• Concept</li> <li>• Importance</li> </ul> </li> <li>• Puddling                   <ul style="list-style-type: none"> <li>• Concept</li> <li>• Importance</li> </ul> </li> </ul> </li> <li>• Land preparation equipment               <ul style="list-style-type: none"> <li>• According to time of land preparation                   <ul style="list-style-type: none"> <li>• Primary tillage equipment</li> <li>• Secondary tillage equipment</li> <li>• Leveling equipment</li> </ul> </li> <li>• According to power-applied                   <ul style="list-style-type: none"> <li>• manual power</li> <li>• animal power</li> <li>• mechanical power</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	5.4 Inquires about different methods of crop establishment.	<ul style="list-style-type: none"> <li>• Establishment of crops               <ul style="list-style-type: none"> <li>• Concept</li> </ul> </li> <li>• Methods of establishing crops.               <ul style="list-style-type: none"> <li>• Establishment of seeds                   <ul style="list-style-type: none"> <li>• Regular methods</li> <li>• Irregular methods</li> </ul> </li> <li>• Establishment of seelings                   <ul style="list-style-type: none"> <li>• Regular methods</li> <li>• Irregular methods</li> </ul> </li> </ul> </li> <li>• Equipment for crop establishment               <ul style="list-style-type: none"> <li>• Seeder</li> <li>• Transplanter</li> </ul> </li> </ul>	04
	5.5 Prepares nurseries using different methods.	<ul style="list-style-type: none"> <li>• Production of seedlings for transplantation               <ul style="list-style-type: none"> <li>• Importance of nurseries</li> <li>• Different types of nurseries, suitability and preparation of nurseries                   <ul style="list-style-type: none"> <li>• Nursery beds                       <ul style="list-style-type: none"> <li>• Raised beds</li> <li>• Sunken beds</li> </ul> </li> </ul> </li> <li>• Poly bag nurseries</li> <li>• Special nurseries                   <ul style="list-style-type: none"> <li>• Noridoko nurseries</li> <li>• Sponge nurseries</li> <li>• Sand nurseries</li> <li>• Compact nurseries</li> <li>• Tray nurseries</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
6. Plans suitable irrigation and drainage methods to make a success of crop cultivation.	6.1 Decides on the necessity of irrigation to suit requirement.	<ul style="list-style-type: none"> <li>• Maintenance of nursery plants               <ul style="list-style-type: none"> <li>• Water management</li> <li>• Fertilizer application</li> <li>• Pest management</li> <li>• Shading</li> <li>• Hardening</li> </ul> </li> <li>• Irrigation               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Necessity</li> <li>• Factors that decide on the necessity of irrigation                   <ul style="list-style-type: none"> <li>• Crop factors</li> <li>• Soil factors</li> <li>• Climatic factors</li> </ul> </li> </ul> </li> <li>• Possible damage due to irrigation</li> </ul>	04
	6.2 Selects correct water sources for irrigation.	<ul style="list-style-type: none"> <li>• Sources of water               <ul style="list-style-type: none"> <li>• Natural sources of water                   <ul style="list-style-type: none"> <li>• Rivers, channels, streams</li> <li>• Rainfall</li> </ul> </li> <li>• Artificial sources of water                   <ul style="list-style-type: none"> <li>• Tanks</li> <li>• Agro wells</li> <li>• Artesian wells</li> </ul> </li> </ul> </li> <li>• Factors to be considered in selecting sources of water</li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	6.3 Plans suitable water lifting methods to increase potential water use.	<ul style="list-style-type: none"> <li>• Methods of water lifting               <ul style="list-style-type: none"> <li>• Traditional methods                   <ul style="list-style-type: none"> <li>• Use of pulleys</li> <li>• Andi wells</li> </ul> </li> </ul> </li> <li>• Rope pumps               <ul style="list-style-type: none"> <li>• Modern methods                   <ul style="list-style-type: none"> <li>• Water pumps                       <ul style="list-style-type: none"> <li>• Centrifugal pumps</li> <li>• Displacement pumps</li> </ul> </li> <li>• Installation and maintenance</li> </ul> </li> </ul> </li> </ul>	04
	6.4 Inquires into different methods of irrigation and selects method that suit the occasion.	<ul style="list-style-type: none"> <li>• Surface irrigation               <ul style="list-style-type: none"> <li>• Uncontrolled</li> <li>• Controlled                   <ul style="list-style-type: none"> <li>• Plots</li> <li>• Ridge and furrow</li> <li>• Basin type                       <ul style="list-style-type: none"> <li>• Strip</li> <li>• Ring</li> </ul> </li> </ul> </li> </ul> </li> <li>• Subsurface irrigation               <ul style="list-style-type: none"> <li>• Porous pipes</li> <li>• Clay pots</li> </ul> </li> <li>• Drip irrigation</li> <li>• Sprinkler irrigation</li> <li>• Factors to be considered in selecting irrigation systems</li> </ul>	06

Competency	Competency level	Subject contence	Duration (No. of periods)
	6.5 Perform necessary calculations to maximize the efficiency of irrigation.	<ul style="list-style-type: none"> <li>• Decides on need for irrigation               <ul style="list-style-type: none"> <li>• Net irrigation need</li> <li>• Gross irrigation need</li> <li>• Irrigation efficiency</li> </ul> </li> <li>• Decides on irrigation interval</li> </ul>	04
	6.6 Plans suitable drainage methods.	<ul style="list-style-type: none"> <li>• Drainage               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Adverse effects of poor drainage conditions</li> <li>• Reasons for poor drainage</li> <li>• Drainage methods                   <ul style="list-style-type: none"> <li>• Surface drainage methods</li> <li>• Open drains</li> <li>• Sub surface irrigation methods                       <ul style="list-style-type: none"> <li>• Stone drains</li> <li>• Timber drains</li> </ul> </li> <li>• Pumping.</li> <li>• Use of plants</li> </ul> </li> <li>• Designs drainage system                   <ul style="list-style-type: none"> <li>• Herring bone system</li> <li>• Grid iron system</li> <li>• Parallel drain system</li> <li>• Random drain system</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
7. Exhibits readiness to improve crop yield.	7.1 Selects suitable methods of sexual dissemination of plants.	<ul style="list-style-type: none"> <li>• Plant propagation               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Sexual propagation.                   <ul style="list-style-type: none"> <li>• Seed formation procedure                       <ul style="list-style-type: none"> <li>• Pollination</li> <li>• Fertilization and seed formation</li> </ul> </li> </ul> </li> <li>• Structure of a typical seed                   <ul style="list-style-type: none"> <li>• Monocotyledon</li> <li>• Dicotyledon</li> </ul> </li> <li>• Seed germination                   <ul style="list-style-type: none"> <li>• Definition</li> <li>• Germination types                       <ul style="list-style-type: none"> <li>• Hypogeal germination</li> <li>• Epigeal germination</li> </ul> </li> </ul> </li> <li>• Factors affecting seed germination</li> <li>• Polyembryony</li> </ul> </li> <li>• Advantages and disadvantages of plant propagation</li> </ul>	04
	7.2 Plans methodologies to safe-guard viability of seeds.	<ul style="list-style-type: none"> <li>• Seed viability               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Necessity</li> <li>• Factors affecting seed viability                   <ul style="list-style-type: none"> <li>• Internal factors</li> <li>• External factors</li> </ul> </li> <li>• Safeguarding viability</li> </ul> </li> </ul>	04



Competency	Competency level	Subject contence	Duration (No. of periods)
	7.3 Examines seed quality for successful cultivation.	<ul style="list-style-type: none"> <li>• Collecting seed sample for seed testing</li> <li>• Seed testing methods               <ul style="list-style-type: none"> <li>• Determination of germination percentage</li> <li>• Determination moisture percentage</li> <li>• Testing seed purity</li> </ul> </li> </ul>	04
	7.4 Removes seed dormancy to enhance germination.	<ul style="list-style-type: none"> <li>• Seed dormancy               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Importance</li> <li>• Factors affecting seed dormancy                   <ul style="list-style-type: none"> <li>• Characteristics of seed coat</li> <li>• Seed inhibitors</li> <li>• Immature seed embryo</li> <li>• Photosensitivity</li> </ul> </li> <li>• Methods used to remove seed dormancy                   <ul style="list-style-type: none"> <li>• Removing seed coat or scarification</li> <li>• Change temperature</li> <li>• Hot water treatment</li> <li>• Use of chemicals</li> <li>• Soaking</li> <li>• Washing</li> </ul> </li> </ul> </li> </ul>	05
	7.5 Uses suitable seed treatment.	<ul style="list-style-type: none"> <li>• Seed treatment               <ul style="list-style-type: none"> <li>• Importance</li> <li>• Treatment                   <ul style="list-style-type: none"> <li>• To remove empty seeds</li> </ul> </li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	7.6 Inquire into the methodology of producing certified seeds.	<ul style="list-style-type: none"> <li>• To accelerate germination</li> <li>• To reduce pest attack</li> <li>• To remove seed dormancy</li> <li>• Ease of planting</li> </ul>	03
	7.7 Propagates plants vegetatively using natural propagation structures.	<ul style="list-style-type: none"> <li>• Stages of production certified seeds               <ul style="list-style-type: none"> <li>• Breeder seeds</li> <li>• Foundation seeds</li> <li>• Registered seeds</li> <li>• Certified seeds</li> </ul> </li> <li>• Vegetative propagation               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Advantages and disadvantages</li> <li>• Natural propagation methods                   <ul style="list-style-type: none"> <li>• Use of corms and Rhyzomes</li> <li>• Use ofbulbs/ scales</li> <li>• Use of suckers</li> <li>• Use of offsets/ offshoots</li> <li>• Use of runners</li> <li>• Use of tubers/ tuberous roots - eg. Dhalia</li> </ul> </li> </ul> </li> </ul>	04
	7.8 Propagates artificially using propagation materials.	<ul style="list-style-type: none"> <li>• Cuttings               <ul style="list-style-type: none"> <li>• Leaves</li> <li>• Roots</li> <li>• Stems</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	7.9 Explores rapid vegetative propagation methods.	<ul style="list-style-type: none"> <li>• Layering <ul style="list-style-type: none"> <li>• Air layering</li> <li>• Ground loyering</li> </ul> </li> <li>• Budding and grafting <ul style="list-style-type: none"> <li>• Budding</li> <li>• Grafting</li> </ul> </li> <li>• Advantages and disadvantages</li> <li>• Fundamentals of tissue culture (Micro propagation).</li> <li>• Importance</li> <li>• Plant parts that can be used in tissue culture <ul style="list-style-type: none"> <li>• Meristematic tissues</li> <li>• Buds</li> <li>• Embryos</li> <li>• Pollen/Anthers</li> <li>• Callus</li> <li>• Protoplasm</li> </ul> </li> <li>• Steps in tissue culture procedure <ul style="list-style-type: none"> <li>• Arranging laboratory</li> <li>• Preparation of media</li> <li>• Sterilization</li> </ul> </li> <li>• Tissue culture <ul style="list-style-type: none"> <li>• Selecting suitable explant</li> <li>• Depositing in nutrient media</li> <li>• Sub culturing</li> <li>• Rooting</li> <li>• Acclimatization</li> </ul> </li> </ul>	06

Competency	Competency level	Subject contence	Duration (No. of periods)
8. Plan plant breeding methods to increase qualitative and quantitative crop yield.	8.1 Plans different methods of producing high quality planting materials.	<ul style="list-style-type: none"> <li>• Transmission of e characteristics of living organisms through genes               <ul style="list-style-type: none"> <li>• Mendal’s law of gene segregation</li> <li>• Mendal’s law of independent assortment</li> </ul> </li> <li>• Plant breeding               <ul style="list-style-type: none"> <li>• Necessity</li> <li>• Aims</li> </ul> </li> </ul>	04
	8.2 Plans to improve plants using inherent variabilities.	<ul style="list-style-type: none"> <li>• Fundamentals of plant breeding.</li> <li>• Plant breeding methods               <ul style="list-style-type: none"> <li>• Selection</li> <li>• Hybridization                   <ul style="list-style-type: none"> <li>• Hybrid vigour</li> <li>• Production of hybrid seeds</li> </ul> </li> <li>• Mutation breeding</li> <li>• Somatic variability</li> <li>• Produce Polyploids</li> <li>• Gene reconnection</li> </ul> </li> </ul>	05
	8.3 Plans conservation methods for the preservation of genetic resources.	<ul style="list-style-type: none"> <li>• Conservation of genetic resources               <ul style="list-style-type: none"> <li>• Importance</li> <li>• Reasons for destruction of genetic resources</li> <li>• Conserving genetic resources                   <ul style="list-style-type: none"> <li>• In-Situ Conservation</li> <li>• Ex-Situ conservation</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
9. Plan control conditions to obtain increased crop yields qualitatively and quantitatively.	9.1 Selects suitable strategies to control different environmental conditions.	<ul style="list-style-type: none"> <li>• Importance of "controlling environmental conditions" in crop cultivation.</li> <li>• Environmental conditions that should be controlled.</li> <li>• Strategies employed to control environmental conditions and their use               <ul style="list-style-type: none"> <li>• Mulching</li> <li>• Fruit covering</li> <li>• Temporary propagation structures.                   <ul style="list-style-type: none"> <li>• Single plant cover</li> <li>• Row cover</li> <li>• Bed cover</li> </ul> </li> </ul> </li> <li>• Semi and permanent propagation structures.               <ul style="list-style-type: none"> <li>• Lath houses                   <ul style="list-style-type: none"> <li>• Coir mesh houses</li> <li>• Net houses</li> <li>• Slat houses</li> </ul> </li> <li>• Plant propagators                   <ul style="list-style-type: none"> <li>• Simple solar radiator houses</li> <li>• Solar radiator houses</li> </ul> </li> <li>• Polyunnel</li> <li>• Green house, shade house, plant house</li> <li>• Water conservating propagation structures.</li> </ul> </li> <li>• Problems</li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	9.2 Plans soilless cultures/Hydroponics for qualitative yields.	<ul style="list-style-type: none"> <li>• Soilless culture/Hydroponics               <ul style="list-style-type: none"> <li>• Importance</li> <li>• Growing medium and nutrient medium</li> </ul> </li> <li>• Soilless culture/Hydroponic methods               <ul style="list-style-type: none"> <li>• Growing in nutrient solutions                   <ul style="list-style-type: none"> <li>• Circulation methods                       <ul style="list-style-type: none"> <li>• Nutrient Film Technique (NFT)</li> <li>• Deep Flow Technique (DFT) – Pipe System</li> </ul> </li> <li>• Non circulating methods                       <ul style="list-style-type: none"> <li>• Root dipping Technique</li> <li>• Floating Technique</li> <li>• Capillary action Technique</li> </ul> </li> </ul> </li> <li>• Solid media culture/Aggregate systems</li> <li>• Grow bag Technique                   <ul style="list-style-type: none"> <li>• Hanging bag Technique</li> <li>• Trench Technique</li> <li>• Pot Technique</li> </ul> </li> <li>• Aeroponic Technique</li> <li>• Problems</li> </ul> </li></ul>	04
10. Exhibits readiness to obtain a higher yield by optimizing plant physiological processes.	10.1 Plans oplimization of photosynthetic activity.	<ul style="list-style-type: none"> <li>• Photosynthesis               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Process</li> <li>• Factors affecting                   <ul style="list-style-type: none"> <li>• Internal factors</li> <li>• External factors</li> </ul> </li> <li>• Methods of making photosynthesis efficient</li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	10.2 Plans to optimize respiration in plants.	<ul style="list-style-type: none"> <li>• Respiration               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Process</li> <li>• Factors affecting.                   <ul style="list-style-type: none"> <li>• Internal factors</li> <li>• External factors</li> </ul> </li> <li>• Methods of regulating respiration</li> </ul> </li> </ul>	04
	10.3 Plans to optimize transpiration in plants.	<ul style="list-style-type: none"> <li>• Transpiration               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Process</li> <li>• Factors affecting.                   <ul style="list-style-type: none"> <li>• Internal factors</li> <li>• External factors</li> </ul> </li> <li>• Necessity of controlling transpiration</li> <li>• Methods of controlling transpiration                   <ul style="list-style-type: none"> <li>• Shading</li> <li>• Removal of leaves</li> <li>• Cultivation in green houses</li> <li>• Use of anti respiratory agents</li> </ul> </li> </ul> </li> </ul>	05
	10.4 Plans regulation of absorption and transportation of materials.	<ul style="list-style-type: none"> <li>• Absorption               <ul style="list-style-type: none"> <li>• Active absorption</li> <li>• Passive absorption</li> </ul> </li> <li>• Transportation               <ul style="list-style-type: none"> <li>• Ascent of the sap and translocation</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
11. Plan use of pest management practices to ensure successful crop cultivation.	10.5 Plans increase of crop production using growth regulators.	<ul style="list-style-type: none"> <li>• Phloem transportation</li> <li>• Material absorption and regulation of their transporation</li> <li>• Plant hormones               <ul style="list-style-type: none"> <li>• Plant hormone groups                   <ul style="list-style-type: none"> <li>• Auxin</li> <li>• Cytokinine</li> <li>• Gibberelline</li> <li>• Abscisic acid</li> <li>• Ethylene</li> </ul> </li> </ul> </li> <li>• Effect on plant physiology</li> <li>• Use of growth regulators in agriculture</li> </ul>	05
	11.1 Investigates pests and pest populations and decides on making a success of crop cultivations.	<ul style="list-style-type: none"> <li>• Concept of pests</li> <li>• Situations under which living organisms become pests.               <ul style="list-style-type: none"> <li>• Occurrence of living organisms to pests</li> <li>• Important population levels when measuring pest incidence                   <ul style="list-style-type: none"> <li>• Economic Injury Level (EIL)</li> <li>• Economic Threshold Level (ETL)</li> <li>• Epidemic level</li> </ul> </li> </ul> </li> </ul>	03
	11.2 Separates insect and non insect pests important in agriculture.	<ul style="list-style-type: none"> <li>• Insect Orders of pests important in agriculture               <ul style="list-style-type: none"> <li>• Lepidoptera</li> <li>• Diptera</li> <li>• Orthoptera</li> <li>• Hemiptera</li> </ul> </li> </ul>	05



Competency	Competency level	Subject contence	Duration (No. of periods)
	11.3 Decides on type of insect damage by observing insect mouth parts.	<ul style="list-style-type: none"> <li>• Thysanoptera</li> <li>• Coleoptera</li> <li>• Order characteristics</li> <li>• Damage symptoms</li> <li>• Crops damaged by insect pests</li> <li>• Non insect pests               <ul style="list-style-type: none"> <li>• Mites</li> <li>• Rodents</li> <li>• Molluscus</li> <li>• Birds and Mammal</li> </ul> </li> <li>• Type of damage</li> <li>• Insect pests               <ul style="list-style-type: none"> <li>• Insect mouth parts                   <ul style="list-style-type: none"> <li>• Biting or chewing mouth parts</li> <li>• Piercing and sucking mouth parts</li> <li>• Rasping and sucking mouth parts</li> </ul> </li> <li>• Symptoms of insect pest damage</li> </ul> </li> </ul>	04
	11.4 Plan appropriate methods of insect and non insect pests control.	<ul style="list-style-type: none"> <li>• Methods of insect and non insect pest control               <ul style="list-style-type: none"> <li>• Mechanical methods</li> <li>• Agronomic methods</li> <li>• Biological methods</li> <li>• Statutory methods</li> <li>• Chemical methods</li> <li>• Hormone usage</li> <li>• Genetical control methods (Sterilization)</li> <li>• Integrated pest Management</li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	11.5 Selects suitable agro chemicals to control insect and non insect pests.	<ul style="list-style-type: none"> <li>• Pesticides used to manage insect and non insect pests               <ul style="list-style-type: none"> <li>• Insecticides                   <ul style="list-style-type: none"> <li>• LD<sub>50</sub> value</li> <li>• Classification of insecticides                       <ul style="list-style-type: none"> <li>• According to physical characteristics.                           <ul style="list-style-type: none"> <li>• Dust</li> <li>• Pellets</li> <li>• Emulsifiable concentrations.</li> <li>• Liquids</li> <li>• Fumigants</li> </ul> </li> <li>• According to the mode of action                           <ul style="list-style-type: none"> <li>• Stomach poisoning</li> <li>• Contact poisoning</li> <li>• Systemic poisoning</li> <li>• Acute poisoning</li> </ul> </li> </ul> </li> <li>• According to the nature of chemicals                       <ul style="list-style-type: none"> <li>• Inorganic compounds</li> <li>• Botanical compounds</li> <li>• Organochlorine compounds</li> <li>• Carbamate compounds</li> <li>• Organophosphates</li> <li>• Synthetic Pyrethriod Insecticides</li> <li>• Third generation insecticides</li> </ul> </li> </ul> </li> <li>• Chemicals used to control non insect pests                   <ul style="list-style-type: none"> <li>• Molluscides</li> <li>• Rodenticides</li> <li>• Miticide</li> </ul> </li> </ul> </li> </ul>	06

Competency	Competency level	Subject contence	Duration (No. of periods)
	11.6 Selects weeds present in the crop lands.	<ul style="list-style-type: none"> <li>• Weeds               <ul style="list-style-type: none"> <li>• Concepts</li> <li>• Advantages and disadvantages</li> <li>• Adaptations to establish as a weed</li> <li>• Common weeds in Sri Lanka</li> <li>• Introduced weeds to Sri Lanka</li> </ul> </li> </ul>	03
	11.7 Identifies different weed categories found in cultivations to decide on correct management methods.	<ul style="list-style-type: none"> <li>• Classification of weeds               <ul style="list-style-type: none"> <li>• According to life span</li> <li>• According to morphological character</li> <li>• According to habitat</li> </ul> </li> </ul>	04
	11.8 Selects suitable methods of weed control.	<ul style="list-style-type: none"> <li>• Weed control methods               <ul style="list-style-type: none"> <li>• Mechanical methods</li> <li>• Agronomic methods</li> <li>• Biological methods</li> <li>• Statutory methods</li> <li>• Chemical methods</li> <li>• Integrated weed control</li> </ul> </li> </ul>	04
	11.9 Selects suitable weedicides to control weeds.	<ul style="list-style-type: none"> <li>• Classification of weedicides               <ul style="list-style-type: none"> <li>• Selectivity</li> <li>• Mode of action.</li> <li>• Time of application</li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	11.10 Determines control methods to minimized plant diseases.	<ul style="list-style-type: none"> <li>• Plant diseases               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Classification of plant diseases                   <ul style="list-style-type: none"> <li>• Diseases due to abiotic factors                       <ul style="list-style-type: none"> <li>• Physiological disorders                           <ul style="list-style-type: none"> <li>• nutrient defficiencies</li> <li>• due to adverse environments</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• Disease due to biotic factors               <ul style="list-style-type: none"> <li>• Bacterial diseases</li> <li>• Fungal diseases</li> <li>• Viral diseases</li> <li>• Mycoplsma/Phytoplsma diseases</li> <li>• Nematode diseases</li> <li>• Diseases due to parasitic flowering plants</li> </ul> </li> <li>• Spread of diseases               <ul style="list-style-type: none"> <li>• Soil</li> <li>• Air</li> <li>• Seeds</li> <li>• Vectors</li> </ul> </li> </ul>	06
	11.11 Plans suitable methods of disease control.	<ul style="list-style-type: none"> <li>• Control of plant diseases               <ul style="list-style-type: none"> <li>• Mechanical method</li> <li>• Agronomic method</li> <li>• Biological method</li> <li>• Statutory method</li> <li>• Chemical method</li> <li>• Integrated disease control</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
12. Plan use of post harvest technologies to obtain quantitatively and qualitatively higher yields.	11.12 Correctly handles and maintains equipment used in pest management activities.	<ul style="list-style-type: none"> <li>• Equipment used to control pests               <ul style="list-style-type: none"> <li>• Sprayers</li> <li>• Dusters</li> <li>• Fumigators</li> </ul> </li> </ul>	04
	11.13 Decide on safety measures to be adopted when applying insecticides.	<ul style="list-style-type: none"> <li>• Advantages and disadvantages of pesticides</li> <li>• Safety measures to be followed               <ul style="list-style-type: none"> <li>• Before application</li> <li>• During application</li> <li>• After application</li> </ul> </li> </ul>	04
	12.1 Inquires about possible safety precautions applicable when using pesticides.	<ul style="list-style-type: none"> <li>• Commonly grown crops in Sri Lanka               <ul style="list-style-type: none"> <li>• Cereals</li> <li>• Legumes</li> <li>• Tuber crops</li> <li>• Vegetables</li> <li>• Spices</li> <li>• Oil crops</li> <li>• Fruit crops</li> </ul> </li> <li>• Cultivating regions and land extent</li> <li>• Harvest season</li> <li>• Maturity index</li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	12.2 Decide on stages of post harvest losses.	<ul style="list-style-type: none"> <li>• Importance of post harvest technology               <ul style="list-style-type: none"> <li>• Post harvest losses</li> <li>• Types of post harvest losses                   <ul style="list-style-type: none"> <li>• Physical/Mechanical losses</li> <li>• Chemical losses</li> </ul> </li> <li>• Factors affecting post harvest losses                   <ul style="list-style-type: none"> <li>• Internal factors                       <ul style="list-style-type: none"> <li>• Losses due to physiological processes</li> </ul> </li> <li>• External factors                       <ul style="list-style-type: none"> <li>• Climate, ways of handling insects and diseases</li> </ul> </li> </ul> </li> </ul> </li> <li>• Different stages of post harvest losses               <ul style="list-style-type: none"> <li>• Harvesting</li> <li>• Cleaning</li> <li>• Stacking</li> <li>• Storing</li> <li>• Transporting</li> <li>• Processing</li> <li>• Selling</li> <li>• Handling</li> </ul> </li> </ul>	05
	12.3 Plans minimization of post harvest losses using appropriate techniques.	<ul style="list-style-type: none"> <li>• Measures to minimize the post harvest losses               <ul style="list-style-type: none"> <li>• Pre harvest measures</li> <li>• Post harvest measures                   <ul style="list-style-type: none"> <li>• Harvesting</li> <li>• Cleaning</li> <li>• Stacking</li> <li>• Storing</li> </ul> </li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
13. Plans increase of crop production through correct agricultural practices.	13.1 Plans home garden suitable for available land.	<ul style="list-style-type: none"> <li>• Storage</li> <li>• Transport</li> <li>• Processing</li> <li>• Selling</li> </ul> <ul style="list-style-type: none"> <li>• Concept of the home garden</li> <li>• Importance</li> <li>• Crops</li> <li>• Prepare plans suitable for the land available               <ul style="list-style-type: none"> <li>• Urban farming</li> <li>• Traditional farming</li> </ul> </li> <li>• Preparation of planting materials</li> <li>• Establishment and maintenance</li> </ul>	05
	13.2 Selects varieties of paddy suitable for different environmental conditions.	<ul style="list-style-type: none"> <li>• Importance of paddy cultivation</li> <li>• Areas of cultivation</li> <li>• Selection of varieties</li> <li>• Climatic requirements and/Soil requirements</li> <li>• Planting seasons</li> <li>• Production of seed paddy</li> </ul>	
	13.3 Plans methods of establishing paddy.	<ul style="list-style-type: none"> <li>• Land preparation for paddy cultivation</li> <li>• Nursery types</li> <li>• Establishment of field               <ul style="list-style-type: none"> <li>• Seed broadcast or row seeding</li> <li>• Transplanting                   <ul style="list-style-type: none"> <li>• random planting</li> </ul> </li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
14. Exhibits readiness to employ methods of animal husbandry to ensure a quantitatively and qualitatively high yield.	13.4 Plans appropriate management practices for paddy cultivation.	<ul style="list-style-type: none"> <li>• raw planting</li> <li>• Seedling broadcasting/ parachute method</li> <li>• Stages of paddy plants               <ul style="list-style-type: none"> <li>• Seedling stage</li> <li>• Tillering stage</li> <li>• flowering ---&gt; grain filling stage</li> <li>• Maturing stage</li> </ul> </li> <li>• After planting               <ul style="list-style-type: none"> <li>• Fertilization</li> <li>• Weed management</li> <li>• Pest and non pest management</li> <li>• Disease management</li> </ul> </li> <li>• Harvesting</li> </ul>	05
	14.1 Inquires about employment opportunities in the field of animal husbandry.	<ul style="list-style-type: none"> <li>• Importance of animal husbandry in Sri Lanka               <ul style="list-style-type: none"> <li>• National Production</li> <li>• Consumer demand</li> </ul> </li> <li>• Potential for animal husbandry               <ul style="list-style-type: none"> <li>• Local demand</li> <li>• Animal farms</li> <li>• Pasture lands</li> <li>• Excess labour</li> <li>• Extension services</li> <li>• Self employment opportunities</li> </ul> </li> </ul>	04



Competency	Competency level	Subject contence	Duration (No. of periods)
	14.2 Plans to obtain a high production from cattle and poultry by minimizing adverse climatic factors.	<ul style="list-style-type: none"> <li>• Farm animals               <ul style="list-style-type: none"> <li>• Up country</li> <li>• Mid country</li> <li>• Low country wet zone and coconut triangle</li> <li>• Dry zone</li> </ul> </li> <li>• Effect of climatic factors on cattle and poultry               <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Light</li> <li>• Rainfall</li> <li>• Wind</li> <li>• Relative Humidity</li> </ul> </li> <li>• Responses and adaptations of animals to withstand adverse environmental conditions</li> <li>• Control of adverse climatic factors</li> </ul>	04
	14.3 Plans methods of upgrading animals in order to obtain a high production.	<ul style="list-style-type: none"> <li>• Improving animals               <ul style="list-style-type: none"> <li>• Aims</li> <li>• Improving methods (methods of upgrading)                   <ul style="list-style-type: none"> <li>• Selection</li> <li>• Hybridization</li> <li>• Cross breeding</li> </ul> </li> </ul> </li> </ul>	04
	14.4 Selects suitable feeds to obtain the optimum nutrition levels for farm animals.	<ul style="list-style-type: none"> <li>• Animal nutrition               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Nutrients</li> <li>• Animal feed</li> </ul> </li> </ul>	03

Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>14.5 Plans feeding activities considering structure and functions of digestive systems of farm animals.</p> <p>14.6 Selects suitable breeds of poultry for different purposes.</p>	<ul style="list-style-type: none"> <li>• Raw foods <ul style="list-style-type: none"> <li>• Wet</li> <li>• Dry</li> <li>• Others</li> </ul> </li> <li>• Concentrates <ul style="list-style-type: none"> <li>• Plant based</li> <li>• Animal based</li> </ul> </li> <li>• Pasture conservation <ul style="list-style-type: none"> <li>• Silage</li> <li>• Hay</li> </ul> </li> <li>• Structure of the digestive system <ul style="list-style-type: none"> <li>• Cattle</li> <li>• Poultry</li> </ul> </li> <li>• Digestive process <ul style="list-style-type: none"> <li>• Cattle <ul style="list-style-type: none"> <li>• Mechanical</li> <li>• Chemical</li> <li>• Microbial</li> </ul> </li> <li>• Poultry <ul style="list-style-type: none"> <li>• Mechanical</li> <li>• Chemical</li> </ul> </li> </ul> </li> <li>• Poultry farming in Sri Lanka. <ul style="list-style-type: none"> <li>• Population</li> <li>• Distribution</li> <li>• Production level</li> </ul> </li> </ul>	<p>04</p> <p>04</p>

Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>14.7 Plans methods of healthy chicks for rearing.</p> <p>14.8 Plans correct management practices from day old stage to point of laying.</p>	<ul style="list-style-type: none"> <li>• Related Institutions</li> <li>• Poultry breeds               <ul style="list-style-type: none"> <li>• According to Origin                   <ul style="list-style-type: none"> <li>• Breeds</li> <li>• American breeds</li> <li>• Asian breeds</li> <li>• Mediterranean breeds</li> </ul> </li> <li>• According to purpose                   <ul style="list-style-type: none"> <li>• Breeds for egg production</li> <li>• Breeds for meat production</li> <li>• Breeds for dual perforce</li> </ul> </li> </ul> </li> <li>• Structure and composition of an egg               <ul style="list-style-type: none"> <li>• Produce eggs for hatching</li> <li>• Maintain breeder stock</li> </ul> </li> <li>• Select eggs for hatching</li> <li>• Hatching               <ul style="list-style-type: none"> <li>• Conditions required for hatching.</li> <li>• Hatching methods                   <ul style="list-style-type: none"> <li>• Natural</li> <li>• Artificial</li> </ul> </li> </ul> </li> <li>• Management of day old chicks               <ul style="list-style-type: none"> <li>• Methods of rearing</li> <li>• Feeding</li> <li>• Other management practices</li> </ul> </li> </ul>	<p>04</p> <p>03</p>

Competency	Competency level	Subject contence	Duration (No. of periods)
	14.9 Plans correct management practices for layers.	<ul style="list-style-type: none"> <li>• Management of layers               <ul style="list-style-type: none"> <li>• Feeding</li> <li>• Management of environmental factors</li> <li>• Space requirements</li> <li>• Clean egg production</li> <li>• Nest boxes</li> <li>• Other management practices</li> </ul> </li> </ul>	04
	14.10 Selects suitable birds for profitable poultry farming.	<ul style="list-style-type: none"> <li>• Culling of poultry               <ul style="list-style-type: none"> <li>• Importance</li> <li>• Stages</li> <li>• Characteristics use</li> </ul> </li> </ul>	03
	14.11 Plans poultry pens according to the rearing system.	<ul style="list-style-type: none"> <li>• Poultry rearing methods               <ul style="list-style-type: none"> <li>• Intensive</li> <li>• Semi intensive</li> <li>• Extensive</li> </ul> </li> <li>• Factors to be considered when making pens               <ul style="list-style-type: none"> <li>• Requirement</li> <li>• Housing types</li> <li>• Equipment</li> <li>• Space requirement</li> <li>• Litter management</li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	14.12 Exhibits capability of managing a broiler flock.	<ul style="list-style-type: none"> <li>• Mangement of broilers               <ul style="list-style-type: none"> <li>• Spacing</li> <li>• Feeding requirements                   <ul style="list-style-type: none"> <li>• Feed troughs</li> <li>• Water trough</li> <li>• Broiler Rations</li> </ul> </li> <li>• Other management practices                   <ul style="list-style-type: none"> <li>• Lighting</li> <li>• Vaccination</li> </ul> </li> </ul> </li> <li>• Broiler meat processing</li> <li>• Marketing</li> </ul>	04
	14.13 Selects cattle breeds suitable for different purposes.	<ul style="list-style-type: none"> <li>• Cattle management in Sri Lanka               <ul style="list-style-type: none"> <li>• Population</li> <li>• Distribution</li> <li>• Milk production</li> <li>• Meat production</li> <li>• Problems</li> <li>• Potentials</li> </ul> </li> <li>• Cattle breeds               <ul style="list-style-type: none"> <li>• Based on origin</li> <li>• According to the based on perpose</li> </ul> </li> <li>• Buffalo breeds</li> <li>• Suitable breeds for different livestock regions</li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	14.14 Plans procedures for proper management practices of calves.	<ul style="list-style-type: none"> <li>• Taking care of newborn calves</li> <li>• Colostrum feeding</li> <li>• Providing space</li> <li>• Feeding</li> <li>• Other management practices</li> <li>• Weaning</li> </ul>	04
	14.15 Plans procedures for proper management of heifers and pregnant cows	<ul style="list-style-type: none"> <li>• Heifer management               <ul style="list-style-type: none"> <li>• Feeding</li> <li>• Heat signs</li> <li>• Insemination                   <ul style="list-style-type: none"> <li>• Natural Insemination (using stud bull)</li> <li>• Artificial Insemination</li> </ul> </li> </ul> </li> <li>• Management of pregnant cows               <ul style="list-style-type: none"> <li>• Feeding</li> <li>• Parturition                   <ul style="list-style-type: none"> <li>• Signs of calving</li> <li>• Preparation</li> </ul> </li> </ul> </li> </ul>	04
	14.16 Exhibits capability of obtaining high milk yield from a cow.	<ul style="list-style-type: none"> <li>• Management system               <ul style="list-style-type: none"> <li>• Structure</li> <li>• Function</li> <li>• Characteristics of a good cow</li> <li>• Milk let down</li> <li>• Factors affecting release of milk</li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>14.17 Plans conditions to obtain high and quality milk production.</p> <p>14.18 Plans cattle sheds according to rearing system.</p>	<ul style="list-style-type: none"> <li>• Milking <ul style="list-style-type: none"> <li>• Qualities to maintain</li> <li>• Sanitation</li> <li>• Strip cup test</li> <li>• Methods of milking <ul style="list-style-type: none"> <li>• Hand milking</li> <li>• Machine milking</li> </ul> </li> </ul> </li> <li>• Production of high quality milk <ul style="list-style-type: none"> <li>• Composition of milk</li> <li>• Factors affecting the composition and yield</li> </ul> </li> <li>• Milk testing <ul style="list-style-type: none"> <li>• Solid Non Fat</li> <li>• Calculating Fat percentage</li> <li>• Identifying the low quality milk</li> </ul> </li> <li>• Methods of cattle rearing <ul style="list-style-type: none"> <li>• Free range method</li> <li>• Intensive method</li> </ul> </li> <li>• Factors to be considered when constructing cattle sheds. <ul style="list-style-type: none"> <li>• Selecting location</li> <li>• Requirement</li> <li>• Types of houses</li> <li>• Equipment</li> <li>• Space requirement</li> </ul> </li> </ul>	<p>04</p> <p>04</p>

Competency	Competency level	Subject contence	Duration (No. of periods)
	14.19 Exhibits readiness produce animal products at optimum levels by investigaing methods of health management.	<ul style="list-style-type: none"> <li>• Importance of animal health management</li> <li>• Reasons for disease development</li> <li>• Common disease symptoms</li> <li>• Disease management               <ul style="list-style-type: none"> <li>• Vaccination</li> <li>• Quarantine</li> <li>• Treatments for infected animals</li> </ul> </li> </ul>	04
	14.20 Plans procedure for the identification and control of animal diseases.	<ul style="list-style-type: none"> <li>• Animal diseases and disease control               <ul style="list-style-type: none"> <li>• Cattle diseases                   <ul style="list-style-type: none"> <li>• Worm diseases</li> <li>• Milk fever</li> <li>• Mastitis</li> <li>• Foot and mouth disease</li> <li>• H.S. (Hemnrogic septicemia)</li> <li>• Tick fever</li> <li>• Bloat</li> </ul> </li> <li>• Poultry diseases                   <ul style="list-style-type: none"> <li>• Worm diseases</li> <li>• Pullorum</li> <li>• Coccidiosis</li> <li>• Gamboro</li> <li>• chickenpox</li> <li>• Raniket</li> </ul> </li> </ul> </li> </ul>	05



Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>14.21 Plans small scale animal farm.</p> <p>14.22 Plans farm for maintenance of records for successful operation of a farm.</p>	<ul style="list-style-type: none"> <li>• Transitional diseases from animal to human               <ul style="list-style-type: none"> <li>• Mad cow disease</li> <li>• Bird flue</li> <li>• Brucellosis</li> <li>• Rabies</li> </ul> </li> <li>• Factors to be considered planning a farm               <ul style="list-style-type: none"> <li>• Cost</li> <li>• Income</li> <li>• Inputs</li> <li>• Services</li> <li>• Methods of rearing animals</li> <li>• Plans to increase the profit</li> <li>• Method of waste disposal</li> </ul> </li> <li>• Planning a farm               <ul style="list-style-type: none"> <li>• For two heifers</li> <li>• For 50 layers/broilers</li> </ul> </li> <li>• Farm records               <ul style="list-style-type: none"> <li>• Requirements</li> <li>• Types                   <ul style="list-style-type: none"> <li>• Pedigree records</li> <li>• Insemination records</li> <li>• Birth records</li> <li>• Production records</li> <li>• Culling records</li> </ul> </li> </ul> </li> </ul>	<p>04</p> <p>03</p>

Competency	Competency level	Subject contence	Duration (No. of periods)
15. Plans quality food consumption methods to enjoy a healthy life.	15.1 Selects suitable food for consumption considering nutrient levels.	<ul style="list-style-type: none"> <li>• Human nutrition               <ul style="list-style-type: none"> <li>• Definition</li> <li>• Nutrients                   <ul style="list-style-type: none"> <li>• Macro elements (Carbohydrate, Proteins, Lipids, Water)</li> <li>• Micro elements (Vitamin, Minerals)</li> </ul> </li> <li>• Requirement of nutrients</li> <li>• Criteria for selection of foods                   <ul style="list-style-type: none"> <li>• Varieties of nutrient constituents</li> <li>• Amounts of nutrient constituents</li> </ul> </li> </ul> </li> </ul>	03
	15.2 Identify and manage factors responsible for food spoilage.	<ul style="list-style-type: none"> <li>• Concept of food spoilage</li> <li>• Factors affecting food spoilage               <ul style="list-style-type: none"> <li>• Physical factors                   <ul style="list-style-type: none"> <li>• Moisture level</li> <li>• Temperature</li> <li>• Mechanical</li> <li>• Time</li> </ul> </li> <li>• Chemical factors                   <ul style="list-style-type: none"> <li>• pH value</li> <li>• Enzyme activity</li> </ul> </li> <li>• Biologic al factors                   <ul style="list-style-type: none"> <li>• Microorganisms</li> <li>• Macro organisms</li> </ul> </li> </ul> </li> <li>• Adverse affects of food spoilage</li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	15.3 Uses different techniques of food preservation.	<ul style="list-style-type: none"> <li>• Food preservation               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Importance</li> <li>• Fundamentals                   <ul style="list-style-type: none"> <li>• Inactivating enzymes</li> <li>• Inactivating micro organism</li> <li>• Minimizing damage of macro organisms</li> <li>• Inhibition of chemical reactions</li> <li>• Minimizing physical damage</li> </ul> </li> </ul> </li> <li>• Preservation and technology methods               <ul style="list-style-type: none"> <li>• Control of temperature                   <ul style="list-style-type: none"> <li>• Sterilization</li> <li>• Pasteurization</li> <li>• Blanching</li> <li>• Tenderization</li> </ul> </li> <li>• Use of low temperature levels                   <ul style="list-style-type: none"> <li>• Cooling</li> <li>• Freezing</li> <li>• Freez drying</li> <li>• Dehydration                       <ul style="list-style-type: none"> <li>• Solar drying</li> <li>• Spray drying</li> </ul> </li> <li>• Concentrated                       <ul style="list-style-type: none"> <li>• Adding salt</li> <li>• Adding sugar</li> <li>• Adding treacle</li> </ul> </li> </ul> </li> </ul> </li> </ul>	06

Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>15.4 Selects diversified food discriminately.</p> <p>15.5 Select food according to standards, rules and regulations.</p>	<ul style="list-style-type: none"> <li>• Fermentation               <ul style="list-style-type: none"> <li>• Lactic</li> <li>• Acetic</li> <li>• Alcohol</li> </ul> </li> <li>• Smoking</li> <li>• Irradiation</li> <li>• Canning</li> <li>• Food diversification               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Different techniques used                   <ul style="list-style-type: none"> <li>• Enrichment</li> <li>• Fortification</li> </ul> </li> <li>• Advantages</li> <li>• Disadvantages</li> <li>• Limitations</li> </ul> </li> <li>• Importance of standards, rules and regulations to consumers               <ul style="list-style-type: none"> <li>• Food act</li> <li>• Consumer protection act</li> </ul> </li> <li>• Food packaging               <ul style="list-style-type: none"> <li>• Concept</li> <li>• Rules and regulation</li> <li>• Importance</li> <li>• Materials used</li> <li>• Labeling</li> </ul> </li> </ul>	<p>03</p> <p>04</p>

Competency	Competency level	Subject contence	Duration (No. of periods)
	15.6 Decides on solutions to avoid the nutritional problems.	<ul style="list-style-type: none"> <li>• Food additives               <ul style="list-style-type: none"> <li>• Concepts</li> <li>• Approved coloring agents</li> <li>• Preservatives</li> <li>• Flavoring agents</li> <li>• Antioxidants</li> </ul> </li> <li>• Standard certificates               <ul style="list-style-type: none"> <li>• SLS</li> <li>• ISO</li> </ul> </li> <li>• Nutritional problems in Sri Lanka               <ul style="list-style-type: none"> <li>• Mal nutrition</li> <li>• Under nutrition                   <ul style="list-style-type: none"> <li>• Vitamin A deficiency</li> <li>• Iodine deficiency</li> <li>• Protein and energy deficiency</li> <li>• Other micro nutrient deficiency symptoms</li> </ul> </li> <li>• Over nutrition                   <ul style="list-style-type: none"> <li>• Obesity</li> <li>• Diabetics</li> <li>• Hypertension</li> <li>• Heart diseases (disease relevant to the heart and circulatory system)</li> </ul> </li> </ul> </li> <li>• Body Mass Index (BMI)</li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
16. Exhibits preparedness for involvement in agricultured pursuits minimising its impact on the environment.	16.1 Avoids environmentally unfavorable agricultural activities.	<ul style="list-style-type: none"> <li>• Agricultural activities that pase harmful effects to the environment.               <ul style="list-style-type: none"> <li>• Improper land preparation methods</li> <li>• Improper use of fertilizer</li> <li>• Misuse of pesticides.</li> <li>• Unsuitable water management</li> <li>• Improper disposal of waste materials</li> <li>• Failure to practice correct methods of farming and cropping patterns</li> </ul> </li> <li>• Prevention of adverse effects on the environment due to unfavourable agricultural practices.</li> </ul>	04
	16.2 Uses environmentallally or eco-friendly farming and cropping patterns.	<ul style="list-style-type: none"> <li>• Farming systems               <ul style="list-style-type: none"> <li>• Chena cultivation</li> <li>• Dry farming</li> <li>• Integrated farming</li> <li>• Protective farming                   <ul style="list-style-type: none"> <li>• Forest farming                       <ul style="list-style-type: none"> <li>• Urban farming</li> </ul> </li> <li>• Multiple layer cropping system                       <ul style="list-style-type: none"> <li>• Home gardening</li> <li>• Kandyan home gardening</li> </ul> </li> </ul> </li> <li>• Use of crop resides and mulching.</li> <li>• Animal crop integration</li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
17. Plans methodologies for the application of the principles of economic for the purpose of increasing productivity of agricultural pursuits.	17.1 Inquires about proper management of production factors.	<ul style="list-style-type: none"> <li>• Cultivation systems               <ul style="list-style-type: none"> <li>• Crop rotation</li> <li>• Continuous cultivation</li> <li>• Inter cultivation</li> <li>• Mixed cropping</li> <li>• Discontinuous cultivation</li> </ul> </li> <li>• Production factors and their use               <ul style="list-style-type: none"> <li>• Production factors                   <ul style="list-style-type: none"> <li>• Land</li> <li>• Labour</li> <li>• Capital</li> <li>• Entrepreneur</li> </ul> </li> </ul> </li> <li>• Efficient use of production factors</li> </ul>	03
	17.2 Analyzes demand for crop products in terms of the utility theory.	<ul style="list-style-type: none"> <li>• Consumer demand according to utility theory.               <ul style="list-style-type: none"> <li>• Cardinal utility approach</li> <li>• Total utility</li> <li>• Marginal utility</li> </ul> </li> </ul>	04
	17.3 Plans to take decisions according to the demand of agricultural enterprises.	<ul style="list-style-type: none"> <li>• Consumer demand               <ul style="list-style-type: none"> <li>• Definition</li> <li>• Factors affecting demand</li> <li>• Demand schedule</li> <li>• Demand curve</li> <li>• Shifting demand curve</li> <li>• Nature of demand of agricultural products</li> </ul> </li> </ul>	04

Competency	Competency level	Subject contence	Duration (No. of periods)
	17.4 Plans to take decisions according to demand in agricultural businesses.	<ul style="list-style-type: none"> <li>• Supply of the products               <ul style="list-style-type: none"> <li>• Definition</li> <li>• Factors affecting supply</li> <li>• Supply schedule</li> <li>• supply curve</li> <li>• Shifting of supply curve</li> <li>• Nature of supply in agricultural products</li> </ul> </li> </ul>	05
	17.5 Plans to take decisions considering market conditions.	<ul style="list-style-type: none"> <li>• Manrket prices decided by supply and demand.</li> <li>• Market equilibrium</li> <li>• Influences on equilibrium (Government interferences, Shifting of curves)</li> <li>• Main characteristics of different market structures               <ul style="list-style-type: none"> <li>• Competitive</li> <li>• Monopoly</li> </ul> </li> </ul>	05
	17.6 Exhibits preparedness for cost minimization in agricultural enterprises.	<ul style="list-style-type: none"> <li>• Different types of production costs               <ul style="list-style-type: none"> <li>• Fixed costs</li> <li>• Variable costs</li> <li>• Total costs</li> <li>• Marginal costs</li> <li>• Opportunity cost</li> </ul> </li> </ul>	04



Competency	Competency level	Subject contence	Duration (No. of periods)
	17.7 Decides on the possibility of utilizing production relationships to maximize profits from agricultural products.	<ul style="list-style-type: none"> <li>• Use production relationships to maximize profit               <ul style="list-style-type: none"> <li>• Relationship between Inputs and outputs</li> <li>• Production curve                   <ul style="list-style-type: none"> <li>• Production zone</li> <li>• Total production</li> <li>• Marginal production</li> <li>• Average production</li> </ul> </li> </ul> </li> <li>• Input – Input relationship               <ul style="list-style-type: none"> <li>• Equal production curve</li> <li>• Decide on input level to maximizes the profit</li> </ul> </li> <li>• Output – Output relationship               <ul style="list-style-type: none"> <li>• Production possibility frontier</li> <li>• Distribution of resources to maximize profits when producing different types of products from the same resources</li> </ul> </li> </ul>	06
	17.8 Maintains records to run an agricultural business enterprices methodically.	<ul style="list-style-type: none"> <li>• Importance of maintaining farm records</li> <li>• Classify farm records               <ul style="list-style-type: none"> <li>• Financial records                   <ul style="list-style-type: none"> <li>• Cash book</li> <li>• Petty cash book</li> <li>• Profit and loss account</li> </ul> </li> <li>• Physical records                   <ul style="list-style-type: none"> <li>• Inventory book</li> <li>• Weather records</li> <li>• Labour records</li> <li>• Production records</li> </ul> </li> </ul> </li> </ul>	05

Competency	Competency level	Subject contence	Duration (No. of periods)
	<p>17.9 Prepares a business plan for a small scale agriculture business enterprise.</p> <p>17.10 Plans for efficiency of marketing process of agricultural products.</p>	<ul style="list-style-type: none"> <li>• Relevant fields of business <ul style="list-style-type: none"> <li>• Business environment</li> <li>• Business resources</li> <li>• Business ethics</li> </ul> </li> <li>• Project proposal <ul style="list-style-type: none"> <li>• Requirement</li> <li>• Content</li> <li>• Preparation</li> </ul> </li> <li>• Marketing <ul style="list-style-type: none"> <li>• Steps in marketing</li> <li>• Increase of marketing efficiency. <ul style="list-style-type: none"> <li>• Requirements</li> <li>• Methods</li> </ul> </li> </ul> </li> </ul>	<p>04</p> <p>04</p>

## 5.0 School Policy and Programmes

G.C.E. (A/L) Agriculture Science is a subject with a dominant weightage to its practical aspect. The learning-teaching process here, has been so planned as to ensure that the student gains hands on experience related to each stage without his being totally confined to the classroom. Opportunities have been provided to enable the student to inculcate habits of life while actualizing the expected skills. An activity continuum has been provided for this purpose. A maximum of three hours have allowed with respect to each activity. But the time allocated for the subject is quite adequate for the purpose of changing this time according to requirements.

It is desirable that a teacher with a minimum of at least one of the qualifications below along with the theoretical as well as practical knowledge of the subject is involved in order to actualize the objectives of the subject Agriculture Science.

- Bachelor of Science degree - Food Science & Technology or
- Bachelor of Science degree - Agriculture or
- Bachelor of Education degree - Agriculture

The very core element of Agriculture Science is the building up of habitats that can be exhibited throughout ones life through provision of the opportunity to inculcate skills. It is very important that even a small-scale plot is maintained in the school garden. This agricultural plot can be commenced by assigning a block of 10m x 10m in size on a suitable location in the school land. While the school agricultural plot should provide a firm foundation for the planned implementation of the practical activities relevant to the subject activities, the school agricultural plot should be so prepared as to facilitate implementation of the subject activities successfully.

The experiences gained from the learning-teaching activities and co-curricular activities in the classroom are extremely important in the process of producing a generation of students capable of facing the challenges of the future.

While an environment suitable for the implementation of Agriculture science can be developed through the school policies and programmes below, the development of the subject also take place through them.

- Implementation of a programme that can provide the necessary facilities continuously for the activities.
- Provision of facilities to obtain the services of external resource persons.
- Provision of opportunities for the observation and study of relevant Industries, Institutions and work sites.
- Provision of opportunities for the implementation of Projects, Student Societies, Exhibitions, Field Trips etc.

An Annual Plan should be drawn up so as to include these programmes and policies should be prepared at school level for their systematic organization and implementation. In drawing up these policies care should be taken regarding:

- the school environment and its surroundings.
- needs and expectations of the school community.
- human, physical and financial resources the school can acquire.

It would be meaningful if a committee made up of the school Principal, teachers and students is set up to support and monitor this programme. Ensuring the participation of all the teachers and students in programmes implemented throughout the school is very important. The guidance of the Principal in activities of this nature is invaluable.

### **Assessment and Evaluation**

Assessment and Evaluation has been introduced as two interrelated programmes that can be easily implemented in the classroom to identify the efficiency/ levels students have achieved in order to confirm their actualization of the expected learning outcomes through the learning-teaching process. If assessment is carried out properly it is not difficult for students learning competence. On the other hand evaluation proposes to identify what the competency the student has achieved is.

Teachers involved in assessing can provide the students with guidance of two types. This guidance is called Feedback and Feed Forward. The teacher's task is to provide the student with Feedback in order to overcome their learning difficulties once their weaknesses and inabilities are discovered and to give them Feed Forward when student abilities and strengths are discovered to enable them to improve abilities.

There is need that the students themselves identify the extent to which a particular competency in the course had been actualized for the success of the learning-teaching process. While, according to this, the teacher is expected to determine the competency level the student has achieved, in the course of the program of evaluation, the teacher has to take the initiative to communicate student progress to students and parents including other relevant parties. It is necessary that achievement levels in Grades 12-13 are measured two occasions; at school level and at national level.

### **School Level**

It is advisable that the methods of assessment followed by the Ministry of Education and the Provincial Ministry of Education in common as well as the school based programme of assessment followed by the Department of Examinations, for school levels, are followed. In such instances special attention needs to be paid to the aims of this syllabus along with learning outcomes.

### **National Level**

The present Syllabus covers the requirements of the General Certificate of Education (Advanced Level) examination conducted by the Department of Examinations, at the close of Grade 13.