General Certificate of Education (A/L)

(Grade 12 - 13)

Agricultural Science

Syllabus

(To be implemented from 2017)

Department of Technical Education
Faculty of Science and Technology
National Institute of Education
Maharagama
Sri Lanka
www.nie.lk
1.0 Introduction

Agriculture plays a substantial role in food security of Sri Lanka. In terms of direct and indirect employment, Agriculture sector provides employment to nearly 40% of the nation. Agriculture sector’s importance in nutrition and health of the nation is the basis for employment in non-agricultural sector. To achieve these multiple objectives, the efficiency and productivity of agriculture need to be in continuous improvement.

The purpose of the Advanced Level Agricultural Science syllabus is to provide the scientific context of agriculture at the upper-secondary level. This context improves knowledge, attributes and skills keeps touch with current practices of agriculture in Sri Lanka. This revised syllabus has included several changes in terms of updating the contents and application in both technical and management aspects of Agriculture. In particular, new competencies on sustainability, health and safety, challenges related to agriculture have been included.

Learning and teaching techniques included here should be implemented in the classroom as well as in the field. The teacher should pay attention to build up a good learning environment where students can gain successful learning experience. It will help to build a generation of competent students involved in Agriculture.
2.0 Common National Goals

The national system of education should assist individuals and groups to achieve major national goals that are relevant to the individual and society.

Over the years major education reports and documents in Sri Lanka have set goals that sought to meet individual and national needs. In the light of the weaknesses manifest in contemporary educational structures and processes, the National Education Commission has identified the following set of goals to be achieved through education within the conceptual framework of sustainable human development.

I. Nation building and the establishment of a Sri Lankan identity through the promotion of national cohesion, national integrity, national unity, harmony and peace, and recognizing cultural diversity in Sri Lanka’s plural society within a concept of respect for human dignity.

II. Recognizing and conserving the best elements of the nation’s heritage while responding to the challenges of a changing world.

III. Creating and supporting an environment imbued with the norms of social justice and a democratic way of life that promotes respect for human rights, awareness of duties and obligations, and a deep and abiding concern for one another.

IV. Promoting the mental and physical well-being of individuals and a sustainable life style based on respect for human values.

V. Developing creativity, initiative, critical thinking, responsibility, accountability and other positive elements of a well-integrated and balance personality.

VI. Human resource development by educating for productive work that enhances the quality of life of the individual and the nation and contributes to the economic development of Sri Lanka.

VII. Preparing individuals to adapt to and manage change, and to develop capacity to cope with complex and unforeseen situations in a rapidly changing world.

VIII. Fostering attitudes and skills that will contribute to securing an honourable place in the international community, based on justice, equality and mutual respect.
3.0 Common National Competencies

The following Basic Competencies developed through education will contribute to achieving the above National Goals.

(I) Competencies in Communication

Competencies in Communication are based on four subsets; Literacy, Numeracy, Graphics and IT proficiency.

- **Literacy**: Listen attentively, speak clearly, read for meaning, write accurately and lucidly and communicate ideas effectively.
- **Numeracy**: Use numbers for things, space and time, count, calculate and measure systematically.
- **Graphics**: Make sense of line and form, express and record details, instructions and ideas with line form and colour.
- **IT proficiency**: Computer literacy and the use of information and communication technologies (ICT) in learning, in the work environment and in personal life.

(II) Competencies relating to Personality Development

- **Generic skills** such as creativity, divergent thinking, initiative, decision making, problem solving, critical and analytical thinking, teamwork, interpersonal relations, discovering and exploring;
- **Values** such as integrity, tolerance and respect for human dignity;
- **Emotional intelligence**.
Competencies relating to the Environment

These competencies relate to the environment: social, biological and physical.

Social Environment: Awareness of the national heritage, sensitivity and skills linked to being members of a plural society, concern for distributive justice, social relationships, personal conduct, general and legal conventions, rights, responsibilities, duties and obligations.

Biological Environment: Awareness, sensitivity and skills linked to the living world, people and the ecosystem, the trees, forests, seas, water, air and life—plant, animal and human life.

Physical Environment: Awareness, sensitivity and skills linked to space, energy, fuels, matter, materials and their links with human living, food, clothing, shelter, health, comfort, respiration, sleep, relaxation, rest, wastes and excretion.

Included here are skills in using tools and technologies for learning, working and living.

Competencies relating to Preparation for the World of Work

Employment related skills to maximize their potential and to enhance their capacity

- To contribute to economic development,
- To discover their vocational interests and aptitudes,
- To choose a job that suits their abilities, and
- To engage in a rewarding and sustainable livelihood.
(V) Competencies relating to Religion and Ethics

Assimilating and internalizing values, so that individuals may function in a manner consistent with the ethical, moral and religious modes of conduct in everyday living, selecting that which is most appropriate.

(VI) Competencies in Play and the Use of Leisure

Pleasure, joy, emotions and such human experiences as expressed through aesthetics, literature, play, sports and athletics, leisure pursuits and other creative modes of living.

(VII) Competencies relating to “Learning to learn”

Empowering individuals to learn independently and to be sensitive and successful in responding to and managing change through a transformative process, in a rapidly changing, complex and interdependent world.

4.0 Objectives of the syllabus

- To explore the potential for available resources sustainably in Agriculture.
- To identify and create entrepreneurship opportunities in Agriculture.
- To plan eco-friendly Agricultural activities.
- To identify and use new advancements of Agro technology.
- To adapt to the changes successfully which occur in locally and export oriented Agriculture.
- To develop the confidence needed to face challenging agricultural problems.
- To create desire to do a self-employment or an employment related to Agricultural field.
- To use the knowledge and skills of Agriculture for a healthy and environmentally sustainable life style.
- To develop enthusiasm on Agricultural activities for spending leisure time productively.
- To focus on the conservation of environment and bio-diversity in Sri Lanka.
- To explore for new technological and business opportunities in Agriculture.
5.0 Evaluation and Assessment

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.

Teacher involved 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 programme 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 Grade 12-13 are measured two occasions, at school level and at national level.

School level

Assessment at school level needs to be done following the instructions given in the teachers’s guide and School Based programme of assessment. Provincial Education Department and the Ministry of Education take action to the streamline this.

National Level

This assessment is conducted at the end of grade 13 at the G.C.E. (A/L) examination held by the Department of Examinations. In the examination, a five hour question paper shall be given. The paper I consists of 50 multiple choice questions carrying 50 marks. The paper II consists of 4 structured essay questions, carrying out 20 marks and 6 essay questions. Any four from the essay questions need to be answered and each such question is awarded 7.5 marks.
## Suggested number of periods for each competency

### Grade 12

<table>
<thead>
<tr>
<th>Competency</th>
<th>No. of periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Investigates the contribution of agriculture sector to the development of Sri Lanka considering objectives of agriculture practically.</td>
<td>17</td>
</tr>
<tr>
<td>2. Investigates the importance of climatic factors on crop production.</td>
<td>16</td>
</tr>
<tr>
<td>3. Prepares plan to obtain high yield through the management of the quality of soil.</td>
<td>39</td>
</tr>
<tr>
<td>4. Plans strategies for the management of nutrients to obtain an optimum yield.</td>
<td>27</td>
</tr>
<tr>
<td>5. Exhibits the readiness for establishment of crops in a suitable soil environment.</td>
<td>24</td>
</tr>
<tr>
<td>6. Plans suitable irrigation and drainage methods for successful crop cultivation.</td>
<td>27</td>
</tr>
<tr>
<td>7. Exhibits readiness to obtain a high yield by optimizing plant physiological processes.</td>
<td>20</td>
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<td>8. Engages in plant propagation using suitable technologies.</td>
<td>48</td>
</tr>
<tr>
<td>9. Investigates the methodologies of plant breeding for crop improvement and conservation of genetic resources.</td>
<td>12</td>
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<tr>
<td>10. Plans controlled environmental conditions to obtain successful crop cultivation.</td>
<td>08</td>
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<tr>
<td>11. Plans soilless cultures for quantitative and qualitative yield.</td>
<td>12</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>250</strong></td>
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</tbody>
</table>

### Grade 13

<table>
<thead>
<tr>
<th>Competency</th>
<th>No. of periods</th>
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<tbody>
<tr>
<td>12. Plans the effective pest management practices to ensure successful crop production.</td>
<td>53</td>
</tr>
<tr>
<td>13. Plans quality food consumption patterns for the healthy life.</td>
<td>24</td>
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<td>14. Investigates pre and postharvest techniques for the high quality harvest.</td>
<td>22</td>
</tr>
<tr>
<td>15. Plans methodologies of animal husbandry to ensure high qualitative and quantitative yield.</td>
<td>69</td>
</tr>
<tr>
<td>16. Exhibits readiness to apply principles of economics to improve productivity in agricultural enterprises.</td>
<td>48</td>
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<tr>
<td>17. Exhibits readiness to engage in the sustainable agriculture.</td>
<td>19</td>
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<td>18. Investigates strategies to minimize health problems and exhibits readiness of engage in sustainable agriculture.</td>
<td>06</td>
</tr>
<tr>
<td>19. Exhibits readiness to plan to overcome challenges faced in agriculture.</td>
<td>09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>250</strong></td>
</tr>
</tbody>
</table>
### Competencies and competency levels for Grades 12 and 13

<table>
<thead>
<tr>
<th>Grade</th>
<th>Term</th>
<th>Competency and competency level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 12</td>
<td>First Term</td>
<td>From first competency to fourth competency (28 competency levels)</td>
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<tr>
<td></td>
<td>Second Term</td>
<td>From fifth competency to seventh competency (17 competency levels)</td>
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<td></td>
<td>Third Term</td>
<td>From eighth competency to eleventh competency (20 competency levels)</td>
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<tr>
<td>Grade 13</td>
<td>First Term</td>
<td>From twelfth competency to fourteenth competency (21 competency levels)</td>
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<td></td>
<td>Second Term</td>
<td>From fifteenth competency to sixteenth competency (30 competency levels)</td>
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<td></td>
<td>Third Term</td>
<td>From seventeenth competency to nineteenth competency (07 competency levels)</td>
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<tr>
<td>Competency</td>
<td>Competency Level</td>
<td>Subject Content</td>
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</tbody>
</table>
| 1. Investigates the contribution of agriculture sector to the development of Sri Lanka considering objectives of agriculture practically. | 1.1 Inquires into how agriculture becomes a combination of technology and management. | - Scientific background of Agriculture  
  - Introduction  
  - Scientific applications  
  - Plant breeding  
  - Food technology  
  - Post harvest technology  
  - Agriculture engineering  
- Scientific background of Management  
  - Agricultural resources management  
  - Introduction  
  - Necessity  
- Economic and marketing problems  
  - Fluctuation of the price  
  - Agricultural extension service  
  - Storage facilities  
- Optimum usage of Agricultural resources  
  - Duty of the technology  
  - Price and quality conditions  
  - Data management  
  - Application of economic principles | - Explains scientific background of agriculture with examples.  
- Describes relationships of development barriers of the country to the Agriculture sector.  
- Shows that the many development barriers in the country are related to the technology and management.  
- Explains the role of the technology for Agricultural resource management | 03 |
<table>
<thead>
<tr>
<th>Competency</th>
<th>Competency Level</th>
<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1.2 | | Agriculture in Sri Lanka  
Ancient agrarian system in Sri Lanka  
Agricultural prosperity in ancient Sri Lanka  
Self sufficiency  
Indigenous agricultural technology  
Government support  
Irrigation technology and water management  
Cultural and religious background  
Green revolution  
Modern commercial agriculture  
Introduction  
Export oriented agriculture  
Agriculture based on private entrepreneurs | Explains ancient agrarian system in Sri Lanka.  
Describe factors that contribute to ancient agricultural prosperity in Sri Lanka.  
Explains establishment of plantation sector according to European commercial necessity.  
Explains positive and negative impact of plantation agriculture.  
Explains contribution of green revolution for the development of agriculture.  
Explain the necessity of commercial agriculture which is based on the present world market requirements with examples. | 03 |
<table>
<thead>
<tr>
<th>Competency</th>
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<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
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<tbody>
<tr>
<td>1.3</td>
<td></td>
<td>Restructuring of Agricultural development process</td>
<td>Defines restructuring process of Agricultural development and explains the importance.</td>
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<td></td>
<td></td>
<td>Introduction and necessity</td>
<td>Explains the importance of policies and acts in case of restructuring of Agricultural development process.</td>
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<td></td>
<td></td>
<td>Restructuring process</td>
<td>Describes the necessity of National Agriculture policy.</td>
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<td>Legal background</td>
<td>Lists out objectives and goals of National Agricultural policy.</td>
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<td>Policies and acts</td>
<td>Identifies the most important fields in implementation of policies.</td>
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<td>Objectives and goals</td>
<td>Identifies the most important policies, relevant institutions and acts.</td>
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<td>National agricultural policy</td>
<td>Explains the role of multi purpose development schemes in the process of restructuring the development process.</td>
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<td>Implementation of policies</td>
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<td>Targeting fields</td>
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<td>Related to resources</td>
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<td>Related to foods</td>
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<td>Related to market</td>
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<td>Institutional background</td>
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<td>Legal acts</td>
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<td>Development schemes</td>
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<td>Multi purpose development scheme</td>
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<td>Udalawala</td>
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<td>Galoya</td>
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<td>Objectives</td>
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<td></td>
<td></td>
<td>Contribution to socio economic development</td>
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<tr>
<td>Competency</td>
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<td>Subject Content</td>
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<td>1.4</td>
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</table>
| Investigates the contribution of Agriculture sector to gross domestic production and activities that taken to improve the Agriculture sector. | • Agriculture in present Sri Lanka  
  • Contribution to the gross domestic production  
  • Fields  
    • Crop  
    • Animal husbandry  
    • Fisheries  
    • Forestry  
  • Employment  
    • Direct  
    • Indirect  
  • Activities taken to improve Agricultural sector | • Compares amount of contribution by crops, animal husbandry, fisheries and forestry to gross domestic production.  
• States the importance of improvement of the above fields.  
• Lists out the information about job opportunities in Agricultural sector. | 02 |
| 1.5        |                  |                 |                  |          |
| Investigates about industries and services related to Agriculture sector. | • Industries related to agriculture.  
  • Production  
    • Main  
    • By-product  
  • Services related to Agriculture.  
    • Consultation and Extension  
    • Research  
    • Training  
    • Marketing  
    • Financial and insurance | • Classifies main industries related to Agriculture.  
• Prepares a leaflet including products and inputs related to Agriculture.  
• Presents information on the services related to Agriculture. | 02 |
<table>
<thead>
<tr>
<th>Competency</th>
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<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1.6        | Inquires into institutional structure that provides services in the present Agriculture | • Different institutions that important for the development of agriculture and their role  
  • Government institutions  
  • Non-government institutions  
  • Private institutions  
  • International institutes  
  • Community organizations  
  • Farmers organizations | • Names different institutions that contribute to agricultural development.  
  • Summarizes services provided by different institutions to develop agricultural sector.  
  • Presents suggestions to get services effectively from agricultural institutions. | 02 |
| 1.7        | Inquires into potentials which have to be developed Agricultural activities in the country. | • Agricultural potential  
  • Introduction  
  • Fields  
  • Crop production  
  • Animal husbandry  
  • Fisheries  
  • Forestry | • Defines Agricultural potential.  
  • Explains potentials in different fields for the development of agriculture in Sri Lanka. | 02 |
| 2          | Investigates the importance of climatic factors on crop production. | • Main agro-climatic factors  
  • Rainfall  
  • Water cycle  
  • Rainfall mechanisms  
  • Monsoon rain  
  • Inter-monsoon rain  
  • Weather systems  
  • Rainfall patterns and cropping seasons  
  • Light  
  • Temperature  
  • Relative Humidity  
  • Wind  
  • Evapo-transpiration | • States agro-climatic factors.  
  • Explains the rainfall mechanisms.  
  • Describes water cycle.  
  • Names elements of water cycle.  
  • Describes relationships between the rainfall patterns and cropping seasons. | 03 |
<table>
<thead>
<tr>
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<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 2.2        |                 | • Inquires into the impact of climatic factors on crop cultivation.  
             |                 | • Impact of climatic factors on crop cultivation  
             |                 | • Impact of rainfall  
             |                 | • Impact of light  
             |                 | • Impact of temperature  
             |                 | • Aerial  
             |                 | • Soil  
             |                 | • Impact of relative humidity  
             |                 | • Impact of wind  
             |                 | • Impact of evapo-transpiration  
             |                 | • Minimisation of adverse effects  
             |                 | • Explains effect of climatic factors on cultivation of crops cultivation according to climatic factors.  
             |                 | • Selects suitable crops according to prevailing climatic factors.  
             |                 | • Plans crop cultivation to obtain optimum use of climatic factors.  
             |                 | 04               |
| 2.3        |                 | • Involves in collecting meteorological data using instruments in an agrometeorological unit.  
             |                 | • Agro meteorological unit  
             |                 | • Introduction  
             |                 | • Necessity  
             |                 | • Selection of location  
             |                 | • Installing instruments  
             |                 | • Data collection  
             |                 | • Rainfall  
             |                 | • Duration  
             |                 | • Intensity  
             |                 | • Atmospheric temperature  
             |                 | • Soil temperature  
             |                 | • Wind speed and direction  
             |                 | • Relative humidity  
             |                 | • Evaporation  
             |                 | • Defines an Agro meteorological unit.  
             |                 | • Explains the necessity of establishing an Agro meteorological unit.  
             |                 | • Describes the factors to be considered in the establishment of an Agro meteorological unit.  
             |                 | • Describes the way of maintaining an Agro meteorological unit.  
             |                 | • Interprets meteorological data, recording and analysis.  
<pre><code>         |                 | 06               |
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<table>
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<tr>
<th>Competency</th>
<th>Competency Level</th>
<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
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</thead>
</table>
| 3.4        | Classifies climatic zones furthermore in order to facilitate agricultural activities. | - Climatic zones  
  - Introduction  
  - Classification  
  - Agro climatic zones  
  - Introduction  
  - Classification  
  - Agro ecological zones  
  - Introduction  
  - Classification  
  - Importance of classification | - States the base of determining the climatic zones of Sri Lanka.  
  - Locates the main climatic zones in a map.  
  - Classifies agro climatic zones and Agro ecological zones.  
  - Describes the importance of agro ecological map. | 03 |
| 3.1        | Inquires into the effect of soil formation and soil profile development on crop cultivation. | - Soil  
  - Introduction  
  - Agricultural importance  
  - Soil formation  
  - weathering of rocks  
  - Introduction  
  - Affecting factors  
  - Physical  
  - Chemical  
  - Biological  
  - Soil genesis  
  - Introduction  
  - Affecting Factors  
  - Soil profile  
  - Introduction  
  - Horizons  
  - Profile development  
  - Importance of studying the soil profile | - Explains the importance of soil in agriculture.  
  - Describes the factors affecting on weathering of rock.  
  - Explains factors affecting on soil genesis.  
  - Creates a model for a typical soil profile.  
  - Describes the importance of studying a soil profile. | 05 |
<table>
<thead>
<tr>
<th>Competency</th>
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<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td></td>
<td>• Soil components</td>
<td>• Illustrates the composition of soil components by using a pie chart.</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Solid soil particles</td>
<td>• Illustrates how soil components are being arranged in a typical soil.</td>
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<tr>
<td></td>
<td></td>
<td>• Soil minerals</td>
<td>• Determines the percentage of soil moisture in a soil.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Soil organic matter</td>
<td>• Explains the effects of soil components for crop cultivation.</td>
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<tr>
<td></td>
<td></td>
<td>• Soil organisms</td>
<td>• Determines the field capacity of a soil.</td>
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<td></td>
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<td>• Soil water</td>
<td>• Determines the permanent willingness point in a soil.</td>
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<td></td>
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<td>• Soil air</td>
<td>• Defines soil health.</td>
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<td></td>
<td></td>
<td>• Impact on crop cultivation</td>
<td>• Classifies the factors affecting soil health.</td>
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<td></td>
<td></td>
<td>• Explains the importance of soil health.</td>
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</tbody>
</table>

3.3 Determines the factors affecting soil health.

• Soil health
  • Introduction
  • Importance
  • Classification of factors
    • Physical properties
    • Chemical properties
    • Biological properties and organic matter.

• Illustrates the composition of soil components by using a pie chart.
• Illustrates how soil components are being arranged in a typical soil.
• Determines the percentage of soil moisture in a soil.
• Explains the effects of soil components for crop cultivation.
• Determines the field capacity of a soil.
• Determines the permanent willingness point in a soil.
• Defines soil health.
• Classifies the factors affecting soil health.
• Explains the importance of soil health.
<table>
<thead>
<tr>
<th>Competency</th>
<th>Competency Level</th>
<th>Subject Content</th>
<th>Learning Outcomes</th>
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| 3.4 Determines the physical properties of soil affecting on soil health and quality. | | • Physical properties of soil  
• Soil texture  
  • Introduction  
  • Importance  
  • Management  
• Soil structure  
  • Introduction  
  • Importance  
  • Management  
• Soil consistency  
  • Introduction  
  • Determination  
  • Impact of consistency  
• Soil density  
  • True density  
    • Introduction  
    • Importance  
  • Bulk density  
    • Introduction  
    • Importance  
    • Management  
• Porosity  
  • Introduction  
  • Importance  
• Soil colour  
  • Introduction  
  • Importance | • Determines soil texture in soil using different methods.  
• Determines soil structure in soil.  
• Determines soil colour in soil.  
• Determines bulk density and soil true density in soil.  
• Calculates porosity of different soil samples.  
• Explains how soil physical characteristics of soil affect on crop cultivation. | 08 |
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| 3.5        | Inquires into the soil chemical properties which affect on soil health. | Chemical properties of soil  
- Soil reaction  
  - Introduction  
  - Acidity  
  - Alkalinity  
  - Salinity  
  - Management  
- Ion – exchange  
  - Introduction  
  - Importance  
  - Management  
- Base saturation  
  - Introduction  
  - Importance  
  - Management | Names soil chemical properties that affect on crop cultivation.  
Describes the impact of chemical characteristics of soil on crop cultivation.  
Determines pH value and salinity of different soil samples.  
Calculates base saturation in soil.  
Describes how chemical properties are managed to ensure soil health. | 05 |
| 3.6        | Inquires into biological factors of soil which affect on soil health. | Biological factors of soil  
- Introduction  
- Classification  
  - Macro  
  - Meso  
  - Micro | Names biological factors of soil which affect crop cultivation.  
Describes how biological factors of soil affect soil health. | 03 |
| 3.7        | Inquires into reasons for degradation of soil health and quality. | Degradation of soil health  
- Introduction  
- Factors affecting  
- Adverse effects. | Explains the reasons for degradation of soil health.  
Calculates amount of soil erosion.  
Explains adverse effects due to the degradation affects of soil health. | 02 |
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</table>
| 3.8 | Inquires into methods of improving soil health and quality. | • Soil Health and quality improvement  
  • Necessity  
  • Methods  
  • Soil conservation  
    • Introduction  
    • Methods  
      • Mechanical  
      • Agronomical  
      • Biological  
      • Soil rehabilitation | • Explains methods of soil health and quality improvement.  
  • Marks contour lines using "A" frame in a land  
  • Selects appropriate soil conservation methods according to the land.  
  • Determines soil health. | 05 |
| 3.9 | Investigates characteristics of the major soil groups in Sri Lanka. | • Classification of soil groups  
  • USDA classification  
  • Common soil groups in Sri Lanka  
    • Reddish brown earth  
    • Red yellow podsollic soil  
    • Non calcic brown soil  
    • Latosolic soil  
    • Alluvial soil  
    • Low Humid Glay soil  
  • Agricultural usage of each soil group | • States the base of classification of soil groups.  
  • Names common soil groups in Sri Lanka.  
  • Describes characteristics of the major soil groups.  
  • Explains the Agricultural potential of various soil groups.  
  • Selects suitable crops according to the prevailing soil group of the area. | 03 |
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</table>
| 4.1 | Classifies nutrients required for plant growth and development. | • Plant nutrients  
  • Introduction  
  • Classification  
  • According to necessity  
    • Essential nutrients  
      • According to quantity of nutrients absorbed by plants  
      • Macro nutrients  
        • Primary nutrients  
        • Secondary nutrients  
      • Micro nutrients  
      • Beneficial elements  
      • According to mobility of nutrients in plants  
      • Mobile nutrients  
      • Immobile nutrients | • Defines plant nutrients and plant nutrition.  
• Classifies plant nutrients with examples. | 02 |
| 4.2 | Inquires into the impact of soil nutrients on plant growth and development. | • Nutrient absorption  
  • Methods  
    • Active absorption  
    • Passive absorption  
  • Plant nutrition and growth  
  • Impact of nutrients on plants  
    • When in deficient  
    • When in – excess  
  • Liebig’s Law of minimum | • Explains the methods of absorption of nutrients by plants.  
• Explains the relationship between plant nutrients and the growth by using graphs.  
• Describes visible characteristics of plants due to deficiency of nutrients.  
• Identifies symptoms of plant nutrient deficiencies.  
• Describes symptoms of plants when the nutrients are in excess.  
• Describes the supply of nutrients using Liebig’s Law. | 05 |
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| 4.3              | Inquires into different types of fertilizer used for the crop cultivation. | - Fertilizer  
  - Introduction  
  - Needs for applying fertilizers  
  - Classification  
  - Chemical fertilizer  
  - Direct  
  - Mix  
  - Organic manure  
  - Bio fertilizer | - Defines the term "Fertilizer"  
 - Classifies fertilizer.  
 - Describes the necessity of fertilizer application.  
 - Defines organic manure and inorganic fertilizer and bio-fertilizer.  
 - Defines direct and mixed fertilizer. | 02 |
| 4.4              | Inquires into the various methods of making inorganic fertilizer mixtures. | - Chemical fertilizer  
  - Importance of usage  
  - Classification  
  - Direct fertilizer  
  - Physical and chemical properties  
  - Mixed fertilizer  
  - Preparation of fertilizer mixtures  
  - Factors to be considered  
  - Calculations | - Classifies chemical fertilizer.  
 - Identifies physical and chemical properties of direct fertilizer.  
 - Performs calculations to prepare fertilizer mixtures.  
 - Lists out the factors to be considered in the preparation of a fertilizer mixture. | 06 |
| 4.5              | Inquires into the preparation methods of different types of organic manure. | - Organic manure.  
  - Importance of application  
  - Types  
  - Compost manure  
  - Green leaf manure  
  - Farm yard manure  
  - Organic liquid fertilizer | - Gives examples for organic manure.  
 - Explains the importance of the use of organic manure.  
 - Explains the preparation of organic manure.  
 - Prepares compost manure. | 04 |
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</table>
|            | 4.6 Inquires into different types of bio fertilizer. | • Bio fertilizer  
  • Introduction  
  • Importance  
  • Type of bio-fertilizer  
  • Nitrogen Fixing Biofertilizer  
  • Phosphate Biofertilizer  
  • Phosphate solubilizing  
  • Phosphate mobilizing | • Gives examples for the types of bio fertilizer.  
• Explains the preparation of bio fertilizer.  
• Prepares bio fertilizer. | 04 |
|            | 4.7 Plans different methodologies for the effective use of fertilizer. | • Fertilizer use  
• Method of fertilizer application  
• Positive and Negative impacts on  
  • Soil  
  • Organism  
• Strategies to ensure efficiency of fertilizer usage | • Emphasizes the necessity of applying fertilizer productively for the maximum profit.  
• Differentiates positive and negative impacts on fertilizer usage.  
• Explains how fertilizer are used effectively and efficiently  
• Evaluates the methods of applying fertilizer. | 04 |
|            | 5.1 Inquires into the need for land preparation. | • Land preparation  
  • Introduction  
  • Objectives  
  • Changes in soil  
  • Physical  
  • Biological  
  • Chemical | • Describes objectives of land preparation.  
• Describes physical, biological and chemical changes of the physical properties of the soil due to the land preparation. | 02 |
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| 5.2 Inquires into appropriate steps and methods of land preparation. | | • Steps  
  - Basic land preparation  
    - Primary  
    - Secondary  
    - Intercultivation  
  • Methods  
    - Conventional  
    - Minimum tillage  
    - Zero tillage  
  • Land preparation for paddy cultivation | • Defines the terms 'basic land preparation' and 'intercultivation'.  
• Describes the steps land preparation.  
• Explains with examples that the land preparation techniques are according to the various requirements.  
• Selects the appropriate methods of land preparation to suite the situation and the crop.  
• Describes the method of land preparation for paddy cultivation. | 04 |
| 5.3 Inquires into the equipment used in land preparation. | | • Land preparation equipment  
  • Classification  
    - According to stage of land preparation  
      - Primary tillage equipment  
      - Secondary tillage equipment  
      - Intercultivation equipment  
    - According to power source  
      - Manual power  
      - Animal power  
      - Mechanical power | • Classifies land preparation equipment according to the various determinants.  
• Selects equipment according to soil and crop. | 05 |
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<td>• Describes the methods of crop establishment.</td>
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<td>• Introduction</td>
<td>• Names the equipment used in crop establishment.</td>
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<td>• Methods of establishment</td>
<td>• Describes the operation of crop establishment equipment.</td>
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<td>• Sowing</td>
<td>• Engages in crop establishment using different methods.</td>
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<td>• Crop establishment equipment</td>
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<td>• Seeders</td>
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<td>• Transplanters</td>
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<td>5.5 Engages in production of seedlings using different types of nurseries.</td>
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<td>• Plant Nursery</td>
<td>• Names the different types of plant nurseries</td>
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<tr>
<td></td>
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<td>• Introduction</td>
<td>• Selects suitable nursery according to type of seeds.</td>
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<td>• Importance</td>
<td>• Prepares various types of nurseries</td>
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<td>• Classification</td>
<td>• Establishes seeds in the nursery beds and maintains them.</td>
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<td>• According to agro climatic zone</td>
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<td>• Raised beds</td>
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<td>• According to containers</td>
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<td>• Pot nurseries</td>
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<td>• Sponge nurseries</td>
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<td>• According to potting medium</td>
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<td>• Noridoko nurseries</td>
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<td>• Sand nurseries</td>
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<td>• Mud nurseries</td>
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<td>• Dapog nurseries</td>
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<td>• Maintenance</td>
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</tbody>
</table>
| 6. Plans suitable irrigation and drainage methods for successful crop cultivation. | 6.1 Inquires into various water sources. | • Water sources  
  • Introduction  
  • Classification  
  • According to nature  
  • Natural  
  • Artificial  
  • According to location  
  • Surface  
  • Underground  
  • Methods of improving ground water recharge | • Defines water sources.  
• Classifies water sources.  
• States the importance of recharge of ground water and explains the strategies to improve it. | 04 |
| | 6.2 Inquires into suitable water-lifting methods to increase water potential. | • Water-lifting  
  • Introduction  
  • Methods  
  • Traditional methods  
  • Pulleys  
  • Andi wells  
  • Water wheel  
  • Yoitha  
  • Non traditional methods  
  • Water pumps  
  • Centrifugal pumps  
  • Operation & maintenance  
  • Displacement pumps  
  • Operation & maintenance | • Lists various water-lifting methods.  
• Describes the principles used for water-lifting.  
• Explains the mechanisms of water pumps.  
• Describes the methods of installation and maintenance of water pumps. | 06 |
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</table>
| 6.3        |                  | Carries out necessary calculations for ensuring effectiveness of irrigation | • Defines irrigation.  
• Describes objectives of irrigation.  
• Defines irrigation requirement.  
• Calculates irrigation requirement.  
• Describes factors affecting irrigation interval.  
• Calculates irrigation interval.  
• Calculates evapo-transpiration of plants.  
• Defines irrigation efficiency.  
• Explains strategies of increasing irrigation efficiency.  
• Explains various methods of irrigation.  
• Draws diagrams of various methods of irrigation.  
• Names the components of sprinkler and the drip irrigation systems.  
• Performs experiments on different methods of irrigation.  
• Lists out the advantages and disadvantages of irrigation methods.  
• Selects appropriate method for irrigation according to the situation. | 05 |
| 6.4        |                  | Inquires into different methods of irrigation. | • Methods of irrigation  
• Surface irrigation  
• Furrow  
• Basin  
• Strip  
• Ring  
• Sub Surface irrigation  
• Porous pipes and drains  
• Pitter irrigation  
• Drip  
• Sprinkler | 06 |
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<td>Environmental pollution</td>
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</table>
| 7.1 Plans to optimize the process of photosynthesis.                      | 7.1              | **Photosynthesis**                                                              | - Defines the process of photosynthesis.  
- States the steps of the photosynthesis process.  
- Explains the factors affecting photosynthesis.  
- Describes strategies used to improve efficiency of photosynthesis. | 02       |
| 7.2 Plans to optimize respiration in plants.                              | 7.2              | **Respiration**                                                                 | - Defines plant respiration.  
- Names steps of the process of respiration.  
- Names the factors that affect respiration. | 03       |
| 7.3 Plans strategies to maintain optimized transpiration in plants.       | 7.3              | **Transpiration**                                                              | - Defines the process of transpiration.  
- Explains the factors affecting transpiration.  
- Describes strategies used to control the process of transpiration.  
- Determines transpiration that occurs mainly through stomata. | 04       |
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</table>
| 7.4        | Plans strategies to regulate the absorption and translocation of materials in plants. | • Absorption of materials in plants  
  • Passive absorption  
  • Active absorption  
  • Translocation  
  • Ascent of sap or translocation of water  
  • Phloem translocation  
  • Material absorption and regulation of translocation | • Describes absorption of materials into plants.  
  • Describes translocation of materials in plants.  
  • Points out food translocation occurs through phloem.  
  • Explains the way of obtaining maximum yield by through efficient absorption and translocation. | 03 |
| 7.5        | Plans to improve crop production by using growth regulators. | • Plant hormones  
  • Introduction  
  • Plant hormone groups  
  • Auxin  
  • Cytokinin  
  • Gibberellin  
  • Abscisic acid  
  • Ethylene  
  • Impact on plant physiology  
  • Growth regulators  
  • Introduction  
  • Agricultural usage | • Defines plant hormones.  
  • Describes the functions of plant hormones.  
  • Describes the ways of improving productivity of agricultural crops using plant regulators. | 04 |
| 7.6        | Determines the plant development using growth parameters. | • Plant growth & development  
  • Introduction  
  • Growth parameters  
  • Growth curve  
  • Growth indices  
  • Crop Growth Rate (CGR)  
  • Leaf Area Index (LAI) | • Names plant growth parameters.  
  • Obtains measurements required to measure plant growth.  
  • Draws plant growth curves.  
  • Calculates LAI. | 04 |
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<td>8.2</td>
<td>Seed formation process</td>
<td>Label the parts of a typical flower.</td>
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<td>Pollination</td>
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<td>Fertilization &amp; seed formation</td>
<td>Label the parts of a typical seed.</td>
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<td>Structure of a typical seed</td>
<td>Explain the process of seed formation.</td>
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<td></td>
<td>Monocotyledon</td>
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<td>Dicotyledon</td>
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<td>Seed germination</td>
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<td></td>
<td></td>
<td>Factors necessary for seed germination</td>
<td>Describe seed germination types by observing the seedlings.</td>
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<td>Germination types</td>
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<td>Epigeal germination</td>
<td>Determine the factors necessary for seed germination.</td>
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<td>Hypogeal germination</td>
<td>Compare features of monocotyledonous and dicotyledonous seeds.</td>
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<td>Seed germination process</td>
<td>Describe the process of seed germination.</td>
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<td>8.3</td>
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<td>Seed viability</td>
<td>Defines seed viability.</td>
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<td></td>
<td></td>
<td>Introduction</td>
<td>Describes factors affecting seed viability.</td>
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<td>Importance</td>
<td>Explains the method of determining seed viability.</td>
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<td>Factors affecting</td>
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<td>External factors</td>
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<td>Internal factors</td>
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<td>Methods of Determination</td>
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<td>Measuring the percentage of germination</td>
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<td>Tetrasolium test</td>
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<td>Measuring the CO$_2$ concentration</td>
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<td>8.4</td>
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<td>Seed testing</td>
<td>Explains necessities of seed testing.</td>
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<td></td>
<td>Importance</td>
<td>Describes the methods of seed testing.</td>
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<td>Methods</td>
<td>Calculates the germination percentage of seeds by using different methods.</td>
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<td>Determination of seed germination percentage</td>
<td>Calculates the moisture percentage of seeds.</td>
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<td>Testing physical purity</td>
<td>Selects suitable seeds for cultivation.</td>
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<td>Determination of moisture percentage</td>
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<td>Determination of seed viability</td>
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<td>Testing of seed health</td>
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<td>Testing of seed vigour</td>
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<td>8.5</td>
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<td>Seed dormancy</td>
<td>Explains the importance of seed dormancy.</td>
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<td></td>
<td></td>
<td>Introduction</td>
<td>Describes the factors affecting on seed dormancy.</td>
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<td></td>
<td></td>
<td>Importance</td>
<td>Explains the various types of seed dormancy.</td>
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<td>Types of dormancy</td>
<td>Processes seeds for germination after removing seed dormancy</td>
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<td>External dormancy</td>
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<td>Methods used to remove seed dormancy</td>
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<td>8.6</td>
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<td>Seed health</td>
<td>Defines seed health.</td>
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<td></td>
<td>Introduction</td>
<td>Describes the importance of selecting healthy seeds for seed planting</td>
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<td>Importance</td>
<td>Tests for the pest and disease casual agents of seeds.</td>
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<td>Methods of determination</td>
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<td>For fungi</td>
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<td>For bacteria</td>
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<td>For virus</td>
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<td>8.7</td>
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<td>Steps of producing certified seeds</td>
<td>Describes the process of production of certified seeds.</td>
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<td>Breeder seeds</td>
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<td>Foundation seeds</td>
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<td>Registered seeds</td>
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<td>Certified seeds</td>
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<td>Quality standards of the seeds enabling them to be used as planting materials</td>
<td>States the quality standards of seed paddy.</td>
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</tbody>
</table>
| 8.8 Engages in asexual plant propagation by separating plant propagative structures. | | • Separation  
• Structures used  
  • Underground stems  
    • Rhyzome  
    • Corm  
    • Tuber  
    • Bulb  
  • Runner  
  • Sucker  
  • Bulbil  
• Preparation for planting | • Selects plant propagative structures for a sexual reproduction.  
• Prepares plant propagative structures for planting. | 04 |
| 8.9 Engages in asexual plant propagation using cuttings. | | • Plant cuttings  
• Leaves  
• Branches  
• Roots  
• Preparation for planting | • Selects suitable cuttings for planting  
• Prepares cuttings for planting | 02 |
| 8.10 Engages in plant propagation using layering. | | • Methods of layering  
  • Air layering  
  • Ground layering  
    • Simple  
    • Compound  
    • Tip  
    • Mound | • Selects suitable plant types for layering.  
• Tests on different methods of layering. | 06 |
<table>
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<tr>
<th>Competency</th>
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<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
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</thead>
</table>
| **8.11 Engages in plant propagation using budding and grafting.** | | • Methods of grafting  
  - Cleft  
  - Crown  
  - Inarch  
  - Stone  
  - Tongue  
  • Methods of budding  
  - T-budding  
  - H-budding  
  - Patch budding  
  - Chip budding | • Selects suitable plants for budding and grafting.  
• Performs experiments on different methods of budding and grafting. | 06 |
| **8.12 Inquires into the techniques of micro propagation.** | | • Sections of the tissue culture laboratory  
  - Cleaning room  
  - Media preparation room  
  - Inoculation room  
  - Culture room  
  • Micro propagation  
  - Introduction  
  - Steps  
  - Mother plant selection  
  - Explant establishment  
  - Multiplication stage  
  - Rooting  
  - Acclimatization | • Defines micro-propagation.  
• Describes the process of micro propagation.  
• Describes the functions of each section of a tissue culture laboratory and the conditions to be maintained in these sections. | 04 |
<table>
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<tr>
<th>Competency</th>
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<th>Subject Content</th>
<th>Learning Outcomes</th>
<th>Duration</th>
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</table>
| 9.1 | Explores into scientific information on transmission on characteristics of living organisms related to basic genetic information. | • Basic concepts of genetics  
• Heredity  
• Inheritance  
• Terminology related to genetics  
• Control of characteristics of living organisms  
• Factors affecting  
  • Environment  
  • Genotype  
• Mendel's laws  
  • Law of gene segregation  
  • Law of independent assortment | • Describes the basic concepts of genetics.  
• Explains transmission of characteristics inherited in living organisms from generation to generation.  
• Describes the factors which control the characteristics of living organisms.  
• Explains Mendel's law.  
• Solves simple problems using Mendel's law. | 04 |
| 9.2 | Investigates the scientific knowledge of inheritance for crop improvement. | • Plant breeding  
• Introduction  
• Objectives  
• Methods  
  • Introduction  
  • Selection  
• Hybridization  
  • Hybrid vigour  
  • Mutation breeding  
• Polyploids  
• Biotechnology  
  • Recombinant DNA technology  
  • Genetically modified crops | • Defines plant breeding.  
• Describes the objectives of plant breeding.  
• Explains how inheritance is used for plant breeding.  
• Describes the process of improving plants by using breeding.  
• Explains the use of biotechnology for the improvement of crops. | 04 |
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<th>Learning Outcomes</th>
<th>Duration</th>
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</table>
| 10. Plans controlled environmental conditions to obtain successful crop cultivation. | 9.3 | Explores information on conservation of genetic resources. | - Defines genetic resources.  
- Describes the importance of conservation of genetic resources.  
- Explains the reasons for degradation of genetic resources.  
- Presents how genetic resources are conserved with examples. | 04 |
| 10.1 Investigates the importance of controlling the aerial and soil conditions on crop cultivation. | 10.1 | - Genetic resources  
- Introduction  
- Importance  
- Degradation of genetic resources  
  - Introduction  
  - Reasons  
  - Adverse effects  
- Conservation of genetic resources  
  - Introduction  
  - Importance  
  - Methods  
  - In-situ conservation  
  - Ex-situ conservation | - States importance of controlling environmental conditions in crop cultivation.  
- Explains soil and environmental conditions that should be controlled for successful cultivation.  
- States suitable crops for cultivating under controlled environmental conditions. | 02 |
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<tr>
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<tr>
<td>10.2</td>
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<td>The protective structures used for controlling environmental conditions.</td>
<td>Classifies the protective structures used in the control of environmental conditions</td>
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<td></td>
<td></td>
<td>• Fruit cover</td>
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<td></td>
<td>• Row cover</td>
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<td>• Single plant</td>
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<td></td>
<td></td>
<td>• Rows</td>
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<td>• Beds</td>
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<td></td>
<td>Propagative structures</td>
<td>Describes procedures for preparing various protective structures.</td>
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<td></td>
<td>• Simple solar propagator</td>
<td>Selects suitable protective structures according to the area and crop.</td>
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<td></td>
<td></td>
<td>• Solar propagator</td>
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<td>Lath houses</td>
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<td>Shade houses</td>
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<td></td>
<td>• Net houses</td>
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<td></td>
<td></td>
<td>Water conservative shelters</td>
<td>Prepares solar propagative structures.</td>
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<td>Poly tunnels</td>
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<td>Green houses</td>
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<td></td>
<td>Minimizing the problems that arise in the crop cultivation within the protected houses</td>
<td>Present proposals to minimize the problems that arise in the crop cultivation within the protective structures.</td>
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<tr>
<td>11</td>
<td>11.1 Classifies the methods of soilless culture.</td>
<td>Soilless culture</td>
<td>Describes the importance of soilless culture.</td>
<td>04</td>
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<tr>
<td></td>
<td></td>
<td>• Introduction</td>
<td>Names the methods of soilless culture.</td>
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<td></td>
<td>• Importance</td>
<td>Explains the nutrient media and cultivation media used in soilless culture.</td>
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<td></td>
<td>Methods of cultivation</td>
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<td>Hydroponics</td>
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<td>Solid media culture</td>
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<td>Aeroponics</td>
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<td>Cultivation media and their characteristics</td>
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<td>Nutrient media and preparation</td>
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</table>
| 11.2             | Inquires into hydroponic methods. | • Hydroponics methods  
• Circulating solutions  
• Nutrient Film Technique (NFT)  
• Deep Flow Technique (DFT)  
• Non-circulating solutions  
• Root dipping technique  
• Floating technique  
• Capillary technique | • Explains procedures of cultivation in various soilless media.  
• Explains advantages of hydroponics techniques.  
• Performs experiments on hydroponics methods. | 04       |
| 11.3             | Inquires into soilless culture in solid media. | • Cultivation in the solid media  
• Vertical and horizontal grow bags  
• Pots  
• Trenches  
• Problems related to soilless culture and strategies to minimize the problems | • Describes the methods of soilless culture in solid media.  
• Prepares hanging bags and cultivates suitable crops.  
• States problems related to soilless culture.  
• Suggests strategies to minimize the above problems. | 04       |
| 12.1             | Investigates the impact of pest on crop cultivation through classifying them. | • Pests  
• Introduction  
• Classification  
• Animal pests  
• Weeds  
• Pathogenic micro-organisms  
• Impact on crop cultivation | • Defines pests.  
• Classifies pests with examples.  
• Explains the impacts of pests on crops. | 02       |
<p>| 12.2             | Plans the effective pest management practices to ensure successful crop production. |                                                                                  |                                                                                  |          |</p>
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<th>Competency</th>
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</table>
| 12.2       | Classifies animal pests and inquires into their damages. | • Animal pests  
  • Invertebrates  
    • Insects  
      • Mouth parts  
        • Biting and chewing  
        • Punching and sucking  
        • Reaping and sucking  
      • Mites  
      • Molluscs  
    • Vertebrates  
      • Birds  
      • Rodents  
      • Mammals  
  • Damages done to crops | • Identifies and labels the typical mouthparts of insects.  
• Classifies pests with examples.  
• Identifies the mouth parts of the insect according to the nature of damage done to crops.  
• Differentiates between mites and insects.  
• States damages done by animal pests with examples. | 06 |
| 12.3       | Inquires into damages done to crops by insect pests in various orders. | • Insect orders which harmful to agriculture  
  • Orthoptera  
  • Isoptera  
  • Hemiptera  
  • Homoptera  
  • Thysanoptera  
  • Coleoptera  
  • Diptera  
  • Lepidoptera  
  • Impact on crops | • Lists insect orders belonging to pests that predominantly damage to crops.  
• Identifies specific characteristics of insect orders using insects specimens.  
• Describes the damages done by various insects orders  
• Prepares a collection of insects or a pest box after identifying various insect pest orders. | 06 |
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<tr>
<td>12.4</td>
<td></td>
<td>• Weed</td>
<td>• Classifies causal agents of plant diseases and inquires into plant diseases caused by them.</td>
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<td></td>
<td></td>
<td>• Introduction</td>
<td>• States plant diseases caused by different casual agents with examples.</td>
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<td></td>
<td></td>
<td>• Classification</td>
<td>• Describes the common symptoms of the plant diseases caused by the various casual agents.</td>
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<td>• According to life span</td>
<td>• Identifies the plant diseases by observing infected plant parts.</td>
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<td></td>
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<td>• According to morphological features</td>
<td>• Identifies plant parasitic bacteria, fungi and nematodes.</td>
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<td>• According to habitat</td>
<td>• Classifies causal agents of plant diseases.</td>
<td>08</td>
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<td>• Impact on agricultural activities</td>
<td>• Describes plant diseases caused by different casual agents with examples.</td>
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<td></td>
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<td>• Invasive species</td>
<td>• Describes the common symptoms of the plant diseases caused by the various casual agents.</td>
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<td></td>
<td></td>
<td>• Introduction</td>
<td>• Identifies the plant diseases by observing infected plant parts.</td>
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<tr>
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<td></td>
<td>• Adaptation for survival</td>
<td>• Identifies plant parasitic bacteria, fungi and nematodes.</td>
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<td>• Impact on agricultural activities</td>
<td>• Classifies causal agents of plant diseases.</td>
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<td>12.5</td>
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<td>• Plant diseases</td>
<td>• States plant diseases caused by different casual agents with examples.</td>
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<tr>
<td></td>
<td></td>
<td>• Introduction</td>
<td>• Describes the common symptoms of the plant diseases caused by the various casual agents.</td>
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<td>• Casual agents</td>
<td>• Identifies the plant diseases by observing infected plant parts.</td>
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<td>• Classification</td>
<td>• Identifies plant parasitic bacteria, fungi and nematodes.</td>
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<td>• Bacteria</td>
<td>• States plant diseases caused by different casual agents with examples.</td>
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<td>• Fungi</td>
<td>• Describes the common symptoms of the plant diseases caused by the various casual agents.</td>
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<td>• Virus</td>
<td>• Identifies the plant diseases by observing infected plant parts.</td>
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<td>• Phytoplasma</td>
<td>• Identifies plant parasitic bacteria, fungi and nematodes.</td>
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<td>• Nematodes</td>
<td>• States plant diseases caused by different casual agents with examples.</td>
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<td>• Common plant diseases</td>
<td>• Describes the common symptoms of the plant diseases caused by the various casual agents.</td>
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<td>• Pathways of disease transmission</td>
<td>• Identifies the plant diseases by observing infected plant parts.</td>
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<td>• by vectors</td>
<td>• Identifies plant parasitic bacteria, fungi and nematodes.</td>
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<td>• by soil</td>
<td>• States plant diseases caused by different casual agents with examples.</td>
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<td>• by water</td>
<td>• Describes the common symptoms of the plant diseases caused by the various casual agents.</td>
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<td>• by air</td>
<td>• Identifies the plant diseases by observing infected plant parts.</td>
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<td>• by equipment</td>
<td>• Identifies plant parasitic bacteria, fungi and nematodes.</td>
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<td>• by planting materials</td>
<td>• States plant diseases caused by different casual agents with examples.</td>
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<td>12.6</td>
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<td><strong>Pest population density</strong>&lt;br&gt;• Introduction&lt;br&gt;• Factors affecting&lt;br&gt;• Determination of pest population density&lt;br&gt;• Pest population levels&lt;br&gt;• Economic Damage (ED)&lt;br&gt;• Economic Injury Level (EIL)&lt;br&gt;• Economic Threshold Level (ETL)&lt;br&gt;• Epidemic Level</td>
<td>• Defines pest population density.&lt;br&gt;• Explains the factors affecting for pest population density.&lt;br&gt;• Determines pest population density in the field.&lt;br&gt;• Describes pest population levels by using graphs.</td>
<td>03</td>
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<td>12.7</td>
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<td><strong>Pest management</strong>&lt;br&gt;• Introduction&lt;br&gt;• Principles&lt;br&gt;• Prevention&lt;br&gt;• Control&lt;br&gt;• Pest management methods&lt;br&gt;• Mechanical and Physical&lt;br&gt;• Agronomic&lt;br&gt;• Biological&lt;br&gt;• Legislative&lt;br&gt;• Chemical&lt;br&gt;• Integrated Pest Management (IPM)&lt;br&gt;• Introduction&lt;br&gt;• Importance&lt;br&gt;• Methodology</td>
<td>• States the principles of pest management.&lt;br&gt;• Classifies the methods of pest management using examples.&lt;br&gt;• Controls pests in the field by using various methods.&lt;br&gt;• Describes importance of integrated pest management.&lt;br&gt;• Explains the methodology of pest management.</td>
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</table>
| 12.8       | Selects suitable pesticides for pest management. | • Pesticides  
• Introduction  
• Classification  
• Insecticides  
• Classification  
• According to the physical nature  
• According to mode of action  
• Based on chemical nature  
• Organic  
• Inorganic  
• According to origin  
• Natural  
• Synthetic  
• Weedicides  
• Classification  
• According to selectivity  
• According to mode of action  
• According to stage of application  
• Fungicides  
• Based on chemical nature  
• Nematocides  
• Toxicity of pesticides (LD 50)  
• Introduction  
• Toxicity levels  
• Problems that arise when using pesticides and minimizing these problems | • Classifies pesticides according to various criteria with examples.  
• Classifies insecticides according to their physical characteristics with examples.  
• Defines the toxicity level of pesticide.  
• States toxicity levels according to toxicity.  
• Describes the problems related to pesticides use and explains the strategies to minimise these problems. | 08        |
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<th>Competency</th>
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</table>
| 12.9 Plans the methods of applying pesticides with safety measures. |  | • Application of pesticides  
• Methods of application  
  • Foliar application  
  • Mixing with soil  
  • Baits  
  • Injecting  
  • Dipping and coating  
• Safety measures to be followed  
  • Before application  
  • During application  
  • After application | • Describes the methods of applying pesticides with examples.  
• States the safety measures needed to be followed in the application of the pesticides. | 03 |
| 12.10 Inquires into equipment used in application pesticides. |  | • Equipment used in pesticide application  
  • Classification  
  • Based on the nature of chemicals  
    • Liquid chemical sprayers  
    • Dust / granule sprayers  
    • Fumigators  
  • Based on the amount of liquid applying  
    • High volume sprayers  
    • Low volume sprayers  
    • Micro volume sprayers  
  • Based on the internal mode of action  
    • Piston type  
    • Centrifugal type  
• Operation and maintenance | • States the criteria relevant to the classification of equipment used in pesticides application.  
• Assembles the parts of liquid sprayers.  
• Draws and labels the parts of liquid sprayers  
• Describes the action of piston type sprayers.  
• Identifies problems in the equipment used for pesticides application and applies remedial measures. | 08 |
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<th>Competency</th>
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</table>
| 13. Plans quality food consumption strategies for the healthy life. | 13.1 Investigates into the constituents required in a food in order to minimise nutrition complications. | • Human nutrition  
  - Introduction  
  - Nutrient constituents and their importance  
    - Macro nutrients  
    - Micro nutrients  
    - Other important constituents  
    - Water  
    - Fiber  
    - Food pyramid  
    - Body Mass Index (BMI) | • Names the nutrient constituents of food.  
• Describes the importance of various nutrients related to human nutrition.  
• Provides examples for macro and micro nutrients.  
• States the functions of non-nutrient components related to human nutrition.  
• Describes the way of selecting appropriate food items for a balanced diet using the food pyramid.  
• Explains how nutrition complications are minimized, based on Body Mass Index (BMI). | 02 |
| 13.2 Inquires into the solutions of preventing nutritional problems. | • Nutritional problems in Sri Lanka and related remedial measures  
  - Malnutrition  
    - Under nourishment  
      - Protein-calorie mal-nutrition  
      - Vitamin & mineral deficiencies  
        - Vitamin A  
        - Iron  
        - Iodine  
        - Zinc  
    - Over nutrition | • Explains the problematic situations that arise due to the improper nutrition.  
• Names the common nutritional deficiencies in Sri Lanka.  
• Submits proposals to minimize the nutritional problems.  
• Selects foods to minimize nutritional problems. | 02 |
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<tr>
<td>13.3</td>
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<td>• Food spoilage</td>
<td>• Names factors affecting on food spoilage.</td>
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<td></td>
<td></td>
<td>• Introduction</td>
<td>• Describes the effect of each factor on food spoilage.</td>
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<td>• Factors affecting</td>
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<td>13.4</td>
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<td>• Food preservation</td>
<td>• States the importance of food preservation.</td>
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<td></td>
<td>• Introduction</td>
<td>• States the principles of food preservation.</td>
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<td>• Importance</td>
<td>• Suggests the appropriate food preservation method based on the type of food.</td>
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<td>• Principles</td>
<td>• Performs experiments on food preservation methods.</td>
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<td>• Inhibition</td>
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<td>• Inactivation</td>
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<td>• Methods</td>
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<td>• Physical methods</td>
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<td>• Low temperature</td>
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<td>• Refrigeration</td>
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<td>• Freezing</td>
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<td>• Thermal preservation</td>
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<td>• Sterilisation</td>
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<td>• Pasteurization</td>
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<td>• Blanching</td>
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<td>• Dehydration</td>
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<td>• Irradiation</td>
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<td>• Chemical methods</td>
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<td>• Smoking</td>
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<td>• Adding preservatives</td>
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<td>• Bio-chemical methods</td>
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<td>• Fermentation</td>
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<td>• combined methods</td>
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| 13.5       | Inquires into new trends in food processing. | • New trends  
  • Food diversification  
  • Value addition  
  • Enrichment  
  • Fortification  
  • Minimal processing | • Describes food diversification with examples.  
  • Explains value addition and enrichment with examples.  
  • Performs experiments on the minimal processing.  
  • Prepares diversified foods suitable for domestic consumption. | 04 |
| 13.6       | Inquires into the standards important in food hygiene and quality control. | • Food hygiene and quality control  
  • Importance  
  • Standards  
  • System standards  
  • Goods standards | • Describes the importance of maintaining food hygiene.  
  • Explains the importance of quality control of food.  
  • Presents information on standards which are important in the food industry. | 03 |
| 13.7       | Plans appropriate methodologies for food packaging and labelling. | • Food packaging  
  • Introduction  
  • Importance  
  • Materials used  
  • Food labeling  
  • Introduction  
  • Importance  
  • Factors to be considered | • Defines food packaging.  
  • States the importance of food packaging.  
  • Names the materials used in food packaging.  
  • Selects suitable packaging material for food.  
  • Describes the importance of food labeling.  
  • Designs a suitable label for the food item. | 04 |
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| 14. Investigates pre and postharvest techniques for the high quality harvest. | 14.1 Investigates on information on maturity for crop harvest. | • Maturity of crop harvest:  
  • Introduction  
  • Factors determined  
  • Physical  
  • Chemical  
  • Time  
  • Maturity index  
  • Introduction  
  • Methods of determining  
  • Visual inspection  
  • According to calendar dates  
  • By measuring acidity  | • Describes the determining factors of the maturity of the crop harvest.  
  • Defines maturity index of crop harvest.  
  • Determines maturity index of crops using various techniques | 06 |
| | 14.2 Investigates the information on ripening of fruits. | • Ripening of fruits  
  • Introduction  
  • Classification of fruits according to ripening process  
  • Climacteric  
  • Non - climacteric  
  • Artificial ripening  
  • Importance  
  • Ripening agents  
  • Methods  
  • Traditional  
  • Modern  | • Classifies fruits according to the ripening process.  
  • States importance of artificial fruit ripening.  
  • Names the substances used for artificial ripening.  
  • Performs experiments on fruit ripening using various methods. | 06 |
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| 14.3 Inquires into the reasons for post harvest losses. | | Post harvest losses  
• Introduction  
• Different instances of post harvest losses  
• Harvesting  
• Collecting  
• Cleaning  
• Grading  
• Storage  
• Transporting  
• Packaging  
• Marketing  
• Reasons  
• Pre-harvest factors  
• Physiological/Biological  
• Ethylene production  
• Growth & Development  
• Transpiration  
• Environmental factors  
• Temperature  
• Relative humidity  
• Composition of air  
• Physical factors  
• Injuries  
• Problems arising | | | 06 |

- Describes pre-harvest factors that contribute to post harvest losses.
- Describes various stages that occurred on the post harvest losses.
- Describes the reasons for occurring post harvest losses.
- Describes the problems that occur due to post harvest losses.
- Takes necessary measures to minimise post harvest losses.
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</table>
| 15. Plans methodologies of animal husbandry to ensure high qualitative and quantitative yield. | 14.4 Identifies the stages of post harvest losses and make plans to minimise them | - Post harvest technology  
  - Introduction  
  - Importance  
  - Minimising post harvest losses  
    - Instances  
    - Harvesting  
    - Collecting  
    - Cleaning  
    - Grading  
    - Storage  
    - Transporting  
    - Packaging  
    - Marketing | - Defines post harvest technology.  
    - Describes the importance of post harvest technology.  
    - Explains how each post harvest losses are minimised at the different stages  
    - Takes necessary measures to minimize post harvest losses | 04 |
| 15.1 Inquires into the potential to develop animal husbandry in Sri Lanka. | Farm animals  
  - Introduction  
  - Importance  
  - Potential for the development  
  - Zones of animal husbandry  
    - Classification  
    - Importance | - Describe the importance of animal husbandry.  
    - Marks animal husbandry zones on the map of Sri Lanka.  
    - States potential to develop animal husbandry in Sri Lanka. | 02 |
| 15.2 Investigates the ways of minimising impact of adverse climatic factors on animal husbandry. | Impact of adverse climatic factors  
  - Temperature  
    - Temperature zones  
  - Rainfall  
  - Wind  
  - Minimisation of adverse impact | - Describes the impact of adverse climatic factors on animal husbandry.  
    - Illustrates the temperature zones that important in animal husbandry by using diagrams.  
    - Describe responses of animals for adverse climatic factors.  
    - States the remedial actions to increase animal production by minimising adverse climatic factors. | 02 |
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<td>15.3</td>
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<td>Animal nutrition</td>
<td>States the importan</td>
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<td>Inquires into the importance of constituents in various animal feed</td>
<td>Animal nutrition</td>
<td>of animal nutrition.</td>
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<td>States the nutrient in animal feed</td>
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<td>Describes the importance of each component in an animal feed.</td>
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<td>15.4</td>
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<td>Farm animal feed</td>
<td>Classifies animal feed with examples.</td>
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<td>Inquires into the animal feed for proper animal nutrition</td>
<td>Farm animal feed</td>
<td>Compare roughage and concentrates.</td>
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<td>States main features of roughage and concentrates.</td>
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<td>15.5</td>
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<td>Roughage conserva</td>
<td>Describes the importance of roughage conservation.</td>
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<td>Plans the methodologies of roughage conservation for animal nutrition</td>
<td>Roughage conserva</td>
<td>Explains principles of hay and silage production.</td>
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<td>Performs experiments on preparation of roughage.</td>
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<td>15.6</td>
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<td>-Digestive system&lt;br&gt;• Introduction&lt;br&gt;• Structure and physiology&lt;br&gt;• Ruminant&lt;br&gt;• Non-ruminant</td>
<td>- Draws diagrams of the digestive system of cattle and poultry.&lt;br&gt;- Describe the physiology of digestive systems of cattle and poultry&lt;br&gt;- Identifies the parts of digestive systems of cattle and poultry by using live specimens.</td>
<td>06</td>
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<tr>
<td>15.7</td>
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<td>- Cattle breeds&lt;br&gt;• External features&lt;br&gt;• Suitable breeds for different agro-ecological zones.&lt;br&gt;• Cattle rearing methods&lt;br&gt;• Extensive&lt;br&gt;• Semi-intensive&lt;br&gt;• Intensive&lt;br&gt;• Cattle sheds&lt;br&gt;• Importance&lt;br&gt;• Types</td>
<td>- Compares external features of different cattle breeds.&lt;br&gt;- Selects suitable breeds for different agro-ecological zones in Sri Lanka.&lt;br&gt;- Explains cattle rearing methods.&lt;br&gt;- Describes the different types of cattle barns.&lt;br&gt;- Describes the importance of cattle sheds.</td>
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<td>15.8</td>
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<td>- Management practices of calves&lt;br&gt;• Growth stages and husbandry practices.&lt;br&gt;• Until first 2 weeks&lt;br&gt;• Until weaning&lt;br&gt;• Special management practices</td>
<td>- States the different growth stages of a calf.&lt;br&gt;- Explains the practices to be followed after the birth of new born calf.&lt;br&gt;- Describes the process of weaning calves.&lt;br&gt;- Explain the special management practices followed for calves.</td>
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<td>15.9</td>
<td></td>
<td>The reproductive system of a cow</td>
<td>Draws and labels a diagram of the reproductive system of the cow.</td>
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<td></td>
<td>• Structure</td>
<td>Describes the functions of the reproductive system of the cow.</td>
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<td>• Function</td>
<td>Explains the heat cycle of a cow.</td>
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<td>• Heat cycle</td>
<td>Identifies heat detection of a cow.</td>
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<td>• Introduction</td>
<td>Explains how to get a cow pregnant.</td>
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<td>15.10</td>
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<td>Management practices of pregnant cows</td>
<td>Describes the feeding practices of a pregnant cow.</td>
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<td></td>
<td></td>
<td>• Feeding</td>
<td>Lists the parturition signs.</td>
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<td>• Parturition of a cow.</td>
<td>Explains how to arrange the place and the cow for parturition.</td>
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<td>15.11</td>
<td></td>
<td>Breeding of farm animals</td>
<td>Describes the importance of breeding farm animals.</td>
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<td></td>
<td></td>
<td>• Introduction</td>
<td>States the methods of breeding farm animals.</td>
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<td>• Importance</td>
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<td>• Controlled</td>
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<td>• Selection</td>
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<td>• Cross breeding</td>
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<td>15.12</td>
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|            | Plans necessary conditions to maintain qualitative milk production. | • Milk  
  • Introduction  
  • Gross composition  
  • Factors affecting on the composition of milk | • Describes the composition of milk.  
  • States the factors affecting on the composition of milk. | 02 |
| 15.13      |                  |                 |                   |          |
|            | Investigates the structure and the function of the mammary system of a cow. | • Mammary system of a cow  
  • Introduction  
  • Structure  
  • Function  
  • Secretion  
  • Milk let down  
  • Factors affecting on milk yield | • Illustrates the structure of the mammary system of the cow.  
  • Explains the function of mammary system of the cow  
  • Explains the processes of milk secretion and milk let down.  
  • Describes the factors affecting on milk yield. | 04 |
| 15.14      |                  |                 |                   |          |
|            | Inquires into the procedure of high quality milking. | • Hygienic milking  
  • Importance  
  • Procedure  
  • Methods  
  • By hands  
  • By machines  
  • Production of quality milk  
  • Introduction  
  • Importance  
  • Identification | • States the importance of hygienic milking.  
  • Describes the methodology to be followed in hygiene milking  
  • Describes the procedures of milking.  
  • Selects high quality milk by following different methods. | 05 |
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<tr>
<td>15.15</td>
<td></td>
<td><strong>Farm animal diseases</strong>&lt;br&gt;• Introduction&lt;br&gt;• Importance&lt;br&gt;• Cattle diseases&lt;br&gt;  • Classification&lt;br&gt;  • Infectious diseases&lt;br&gt;  • Bacterial diseases&lt;br&gt;  • Mastitis&lt;br&gt;  • Hemorrhagic septicemia&lt;br&gt;  • Brucellosis&lt;br&gt;  • Viral diseases&lt;br&gt;  • Foot &amp; mouth disease&lt;br&gt;  • Protozoa diseases&lt;br&gt;  • Tick fever&lt;br&gt;  • Non infectious diseases&lt;br&gt;  • Milk fever&lt;br&gt;  • Bloating&lt;br&gt;  • Animal health management.</td>
<td>• Classifies cattle diseases.&lt;br&gt;• Presents information on common cattle diseases.&lt;br&gt;• Identifies cattle diseases according to symptoms.&lt;br&gt;• Describes the practices involved in the control of cattle diseases.&lt;br&gt;• Describes the non-infectious diseases that affect on cattle.&lt;br&gt;• States the importance of the animal health management.</td>
<td>04</td>
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<td>15.16</td>
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<td><strong>Poultry management</strong>&lt;br&gt;• Breeds and strains&lt;br&gt;• Rearing methods&lt;br&gt;  • Extensive&lt;br&gt;  • Semi intensive&lt;br&gt;  • Intensive&lt;br&gt;  • Super intensive</td>
<td>States the suitable poultry breeds for rearing.&lt;br&gt;• Describes the methods of poultry rearing.&lt;br&gt;• Presents information on types of poultry houses.</td>
<td>04</td>
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<td>15.17</td>
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<td>Inquires into methods of producing healthy chicks for rearing.</td>
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<td>Rearing of chicks</td>
<td>Explains day-old chick management.</td>
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<td>Management of day-old chicks</td>
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<td>Brooding</td>
<td>Compares natural and artificial brooding methods.</td>
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<td></td>
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<td>Natural method</td>
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<td>Artificial method</td>
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<td>Immunization schedule</td>
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<td>15.18</td>
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<td>Grower management</td>
<td>Explains the way of rearing growers</td>
<td>02</td>
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<tr>
<td>Inquires into the suitable management methods for growers.</td>
<td></td>
<td>Providing shelters</td>
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<td>Providing feed and water</td>
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<td>Other management practices</td>
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<td>15.19</td>
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<td>Management of layers</td>
<td>Lists the body characteristics of layers.</td>
<td>02</td>
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<tr>
<td>Inquires into the proper management practices for layer poultry farming.</td>
<td></td>
<td>Providing shelters</td>
<td>Explains the way of building houses for layers.</td>
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<td>Providing water and feed</td>
<td>Presents the information on nutritional requirements of the layers.</td>
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<td>Other management practices</td>
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<td>Light control</td>
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<td>15.20</td>
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<td>Eggs</td>
<td>Illustrates the structure of the chicken egg.</td>
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<td>Inquires into the quality of poultry eggs and hatching.</td>
<td></td>
<td>Structure</td>
<td>States the composition and nutritional value of an egg.</td>
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<td>Gross composition and nutritional value</td>
<td>Determines the quality of eggs.</td>
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<td>Determination of the quality of eggs</td>
<td>Compares the hatching methods of eggs.</td>
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|             | 15.21 | Exhibits the readiness for broiler management. | • Broiler management  
  • Types of shelters  
  • Provision of feed and water  
  • Other management practices | • States the suitable types of shelters for broilers.  
• Explains the practices of feeding and watering for broilers. | 02 |
|             | 15.22 | Plans methodologies in controlling poultry diseases. | • Poultry diseases  
  • Bacterial diseases  
  • Salmonellosis  
  • Viral diseases  
  • Raniket  
  • Gambora  
  • Bird flu  
  • Protozoa  
  • Coccidiosis  
  • Management of diseases | • Names the common poultry diseases.  
• Identifies poultry diseases according to symptoms.  
• Describes the practices involved in the control of diseases. | 04 |
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<th>Competency</th>
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</table>
| 16. Exhibits readiness to apply principles of economics to improve the    | 16.1 Inquires into the efficient management of the | • Agricultural economics  
- Introduction  
- Importance  
  - Factors of production  
    - Land  
    - Labour  
    - Capital  
    - Entrepreneurship | • Defines agricultural economics.  
• States the characteristics of the factors of production.  
• Describes the efficient handling of each production factor in the production process. | 03       |
| productivit in agricultural enterprises.                                 | factors of production.                           |                                                                                 |                                                                                 |          |
|                                                                           | 16.2 Plans to take decisions according to nature of | • Utility  
- Introduction  
- Consumer demand  
- Introduction  
- Theory of demand  
- Demand table  
- Demand curves  
- Factors affecting on demand  
- Shifting of demand curves  
- Nature of demand for agricultural products & services | • Defines utility.  
• Defines consumer demand.  
• Names the major factors affecting the demand for a good or services.  
• Explains the relationship between price and demand of goods or services.  
• Illustrates how demand curve shifts as the factors affecting on demand change.  
• Explains the nature of demand for agricultural goods and services. | 06       |
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| 16.3       | Plans to take decision according to the nature of supply in the agricultural enterprises. | • Market supply  
- Introduction  
- Theory of supply  
- Supply table  
- Supply curves  
- Factors affecting on supply  
- Shifting of supply curves  
- Nature of supply for agricultural goods | • Defines market supply.  
• Names the main factors affecting the supply of goods.  
• Describes the relationship between price & supply of good.  
• Describes the reasons for shifting of the supply curve.  
• Draws shifting of the demand curve as a result of changing factors affecting supply.  
• Describes the nature of supply of agricultural goods. | 08 |
| 16.4       | Plans to make decisions in agribusiness by taking account the market condition. | • Determination of the price based on the demand and supply  
- Market equilibrium  
- Nature of agricultural market  
- Factors affecting the market equilibrium  
  - State intervention  
    • Subsidies  
    • Taxes  
    • Price controls  
- Structure of market  
  • Perfectly competition  
  • Monopoly  
  • Oligopoly | • Defines market equilibrium.  
• States the characteristics of a perfectly competitive market.  
• Explains how market equilibrium can change based on subsidies, taxes and price control.  
• Classifies the market structures based on market characteristics. | 08 |
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| 16.5       | Displays readiness for minimizing cost in the agricultural enterprises. | • Types of cost of production  
• Fixed cost  
• Variable cost  
• Total cost  
• Average cost  
• Marginal cost | • Defines: cost of production.  
• Draws cost curves.  
• Illustrates the minimum cost of production based on cost curves. | 04 |
| 16.6       | Investigates the involvement in production so as to maximize the profit in agricultural activities. | • Production relationships of the agricultural goods  
• Factor – Product relationship  
• production curves  
• Total production  
• Average production  
• Marginal production  
• Production zones  
• Factor – Factor relationship  
• Isoquant curve  
• Product – Product relationship  
• Production possibility curve | • Estimates the average and the marginal production in the factor – product relationship.  
• Demarcates the efficient production zone by production zone.  
• Uses iso-quant curves to determine efficient production combinations.  
• Uses production possibility curves to determine the efficient production combinations. | 08 |
| 16.7       | Inquires into business opportunities for a small scale agribusiness. | • Opportunities for Agribusiness  
• Business environment  
• Business ethics  
• Preparing a business plan for an agribusiness  
• Importance  
• Components of a business plan  
• Preparing agribusiness plan  
• Organization  
• Direction  
• Control | • Explains the nature of business environment in small scale agribusiness.  
• Lists the business resources required to run an agribusiness effectively.  
• Describes the importance of external and internal ethics related to business.  
• Prepares a project plan for an agribusiness. | 04 |
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| 16.8 | Investigates the contribution of the supply chain in planning and assessing in agribusiness. | - Value chain analysis  
  - Introduction  
  - Importance  
  - Organisation structure  
    - Actor chain  
    - Activity chain  
    - Marketing  
    - Supportive services  
  - Assessing the efficiency of stage in value chain analysis | - Defines value chain analysis and states the importance of it.  
- Differentiates the supply chain from value chain.  
- Explains the process of value chain through flow charts.  
- Describes the role of supporting services in value chain analysis process.  
- Explains the assessing of stages in value chain follow up process. | 07 |
| 17.1 | Investigates the necessity and the objectives of the sustainable agriculture. | - Sustainable agriculture  
  - Introduction  
  - Necessity  
  - Objectives  
  - Features  
  - Environmental principles  
  - Process  
  - Benefits | - Defines "Sustainability"  
- Explains the necessity and main objectives of sustainable agriculture.  
- Lists out the environmental principles which are important for sustainable agriculture.  
- Describes the techniques to be followed for sustainable agriculture.  
- Describes the benefits of the sustainable agriculture. | 04 |
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| 17.2       | Inquires into the methodologies to be followed in sustainable Agriculture through optimal resource management. | • Sustainable resources management  
• Introduction  
• Resources  
• Methodologies  
  • Cropping systems  
  • Rainfed cultivation  
  • Conservative agriculture  
  • Kandyan Forest garden  
  • Agroforestry  
  • Organic farming  
  • Bio-dynamic farming  
• Cropping patterns  
  • Multiple cropping  
  • Mix cropping  
  • Inter cropping  
  • Relay cropping  
  • Crop rotation | • Defines sustainable resources management.  
• Presents environmental friendly cropping systems and cropping patterns by using layouts.  
• Lists out advantages and disadvantages of various cropping patterns.  
• Describes engaging in the sustainable agriculture by minimizing the adverse effects of the environmental factors. | 15 |
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| 18. Prepares readiness to minimise hazards and health problems in Agriculture sector. | 18.1 Inquires into probable hazards in Agriculture. | - Hazards  
  - Physical  
  - Dehydration  
  - Noises and vibrations  
  - Dust  
  - Accidents  
  - Due to agricultural equipment  
  - Serpent Bite  
  - Insect Bite  
  - Poison ingestion  
  - Agro chemicals  
  - Minimisation of hazards | - Describes the probable physical hazards in Agriculture.  
 - Identifies probable accidents in agriculture.  
 - Proposes strategies to minimise probable hazards in Agriculture. | 03 |
| | 18.2 Investigates the information on physical and mental health problems occur in agriculture. | - Health problems  
  - Zoonotic diseases  
  - Brucellosis  
  - Tuberculosis  
  - Leptospirosis  
  - Mental problems  
  - Stress  
  - Undesirable environmental conditions  
  - Legal problems  
  - Financial problems  
  - Minimizing health problems | - Collects information on zoonotic diseases occur in agriculture.  
 - Describe mental problems in agriculture sector.  
 - Describes strategies to minimize health problems in agriculture sector. | 03 |
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| 19. Exhibits readiness to plan to overcome challenges faced in agriculture. | 19.1 Plans to minimise the negative impact on agricultural activities due to climate changes. | • Climate change  
  • Introduction  
  • Reasons for occurrence  
  • Impact on Agriculture  
  • Temperature fluctuation  
  • Rainfall fluctuation  
  • Mitigation the impact | • Explains the reasons for climate change.  
 • Describes the impact of climate change on Agriculture.  
 • Suggests methodologies to minimise the negative impact of climate change. | 05 |
| 19.2 Plans to protect pollinating agents important in Agriculture. | | • Pollinating agents  
  • Introduction  
  • Importance  
  • Reasons for shortage  
  • Ways to protect pollinating agents | • Describes the importance of pollinating agents in agriculture.  
 • Describes the reasons for shortage of pollinating agents.  
 • Suggests proposals to protect pollinating agents. | 02 |
| 19.3 Plans to avoid technology related challenges faced in agriculture. | | • Technology related challenges  
  • Introduction  
  • Seed monopoly  
  • Genetically modified food  
  • Shortage of resources  
  • Minimisation of negative impact | • Describes technology related challenges in agriculture.  
 • Submits suggestions in minimizing the influence of challenges related to technology. | 02 |