

# The New Senior Secondary Curriculum for Sierra Leone

**Subject syllabus for Agricultural Science**  
Subject stream: Science and Technologies



This subject syllabus is based on the National Curriculum Framework for Senior Secondary Education. It was prepared by national curriculum specialists and subject experts.



## Curriculum elements for Agricultural Science – a core subject

### Subject Description

Agricultural sciences include sciences dealing with food and fibre production and processing. They include the technologies of soil cultivation, crop cultivation and harvesting, animal production, and the processing of plant and animal products for human consumption and use.

### Rationale for the inclusion of Agricultural Science in the Senior Secondary School Curriculum

Agricultural sciences cover a wide and complex area, extending far beyond the scope of this syllabus. This core syllabus focuses on those aspects which are most commonly applicable to Senior Secondary School students in the context of Sierra Leone. Directly or indirectly, agriculture is fundamental to the national and individual food security, nutrition and economy of all in the country. For this reason, it is appropriate that each pupil has some grounding in the basics of Agricultural Science. Additionally, the present-day essential topic of climate change is considered in relation to agriculture. The treatment of climate change and resources in this syllabus complement those in other subject syllabi, without duplicating content or resources.

### Subject content outline (Themes and topics to be covered)

*SS1 Level*

#### Introduction to Agricultural Science & Branches of Agricultural Science

- The meaning of agricultural science
- The main purpose of agricultural science
- Four types of agriculture
- Five main branches of agriculture
- The branches of agriculture: defining each branch

#### Major agricultural systems (subsistence and commercial)

- The three major types of subsistence agriculture
- Subsistence agriculture and commercial agriculture
- Three systems of agriculture
- A subsistence agriculture system

#### Definition of agricultural ecology

- Explaining the principle of agricultural ecology
- Explanations of an agro-ecological approach
- What agro-ecology is: a simple definition
- The five principles of agro-ecology



### **Definition of crop cultivation and harvesting**

- The meaning of 'crop cultivation'
- 'Harvesting' and 'cultivation'

*SSS 2 Level*

### **Definition of animal husbandry**

- Some examples of animal husbandry
- Animal husbandry and its importance
- Animal husbandry practices
- Five animals commonly involved in animal husbandry

### **Post-harvesting challenges**

- How to overcome post-harvest losses
- Four factors affecting post-harvest crops
- Post-harvest handling activities
- Post-harvest in agriculture

### **Definition of agricultural mechanisation**

- The meaning of agricultural mechanisation
- The best definition of 'mechanisation'
- Examples of agricultural mechanisation
- The benefits of agricultural mechanisation

### **Food processing and related processes/systems**

- Seven types of food processing
- Five food processing methods
- Food processing systems
- Three examples of food processing





SS3 Level

**Selected ornamental, medicinal, and cash crop cultivation in Sierra Leone**

- Definition of ornamental medicinal
- The meaning of ornamental horticulture
- What 'ornamental' means
- The difference between ornamental and medicinal plants
- Ornamental crops which are also medicinal

**Forestry and sustainable forest management**

- The key elements of sustainable forest management
- Sustainable forestry practices
- How forestry can be managed sustainably
- An example of sustainable forest management

**Definition of anatomy and physiology of farm animals**

- What farm 'animal anatomy' means
- The main objective of understanding the anatomy and physiology of farm animals
- The anatomy and physiology of common farm animals
- Distinguishing animal physiology from animal anatomy

**Agricultural economics and marketing systems**

- Marketing systems in agriculture
- Kinds of jobs you can get with an agricultural economics degree
- Careers in agricultural economics
- What an agricultural economist do does

**Climate change and agriculture**

- Agricultural climate change data for Sierra Leone and elsewhere
- Deforestation caused by agriculture, human activity, population pressure
- The threat climate change poses to agriculture in Africa





## Structure of the Syllabus Over the Three-Year Senior Secondary School Cycle

	SSS 1	SSS 2	SSS 3
<b>Term 1</b>	<p><b>Introduction to agricultural science and branches of agricultural science</b></p> <ul style="list-style-type: none"> <li>The meaning of 'agricultural science'</li> <li>The main purpose of agricultural science</li> <li>Four main types of agriculture</li> <li>Five branches of agriculture</li> <li>Outlining the branches of agriculture and defining each branch</li> <li>A sixth branch of agriculture</li> </ul> <p><b>Major agricultural systems (subsistence and commercial)</b></p> <ul style="list-style-type: none"> <li>Three major types of subsistence agriculture</li> <li>What subsistence agriculture and commercial agriculture are</li> <li>Three systems of agriculture</li> <li>A subsistence agriculture system</li> </ul>	<p><b>Definition of animal husbandry</b></p> <ul style="list-style-type: none"> <li>Examples of animal husbandry</li> <li>Animal husbandry and its importance</li> <li>Animal husbandry practices</li> <li>Five animals involved in animal husbandry</li> </ul> <p><b>Post-harvesting challenges</b></p> <ul style="list-style-type: none"> <li>How to overcome post -harvest losses</li> <li>Four factors affecting post -harvest crops</li> <li>Post-harvest handling activities</li> <li>Post-harvest in agriculture</li> </ul>	<p><b>Selected ornamental medicinal and cash crop cultivation in Sierra Leone</b></p> <ul style="list-style-type: none"> <li>Definition of ornamental medicinal</li> <li>The meaning of ornamental horticulture</li> <li>What ornamental means</li> <li>The difference between ornamental and medicinal plants</li> <li>What ornamental crops are medicinal?</li> </ul> <p><b>Forestry and sustainable forest management</b></p> <ul style="list-style-type: none"> <li>The key elements of sustainable forest management</li> <li>Sustainable forestry practices</li> <li>How forestry can be managed sustainably</li> <li>An example of sustainable forest management</li> </ul>
<b>Term 2</b>	<p><b>Definition of agricultural ecology</b></p> <ul style="list-style-type: none"> <li>Explaining the underlying principle of agricultural ecology</li> <li>Explanations of an agro-ecological approach</li> <li>Agro-ecology: a simple definition</li> <li>Five component principles of agro-ecology</li> </ul>	<p><b>Definition of agricultural mechanisation</b></p> <ul style="list-style-type: none"> <li>What is meant by agricultural mechanisation</li> <li>The best definition for mechanisation</li> <li>Examples of agricultural mechanisation</li> <li>The benefits of agricultural mechanisation</li> </ul>	<p><b>Definition of anatomy and physiology of farm animals</b></p> <ul style="list-style-type: none"> <li>Farm animal anatomy</li> <li>The main objective of understanding the anatomy and physiology of farm animals</li> <li>What 'anatomy' and 'physiology' mean</li> <li>Animal physiology in relation to animal anatomy</li> </ul>



<p><b>Term 3</b></p>	<p><b>Definition of crop cultivation and harvesting</b></p> <ul style="list-style-type: none"> <li>• The meaning of 'crop cultivation'</li> <li>• Harvesting and cultivation</li> </ul>	<p><b>Food processing and related processes/systems</b></p> <ul style="list-style-type: none"> <li>• Seven types of food processing</li> <li>• Five food processing methods</li> <li>• Food processing systems</li> <li>• Three examples of food processing</li> </ul>	<p><b>Agricultural economics and marketing systems</b></p> <ul style="list-style-type: none"> <li>• Marketing systems in agriculture</li> <li>• The kind of jobs you can get with an agricultural economics degree</li> <li>• Careers in agricultural economics</li> <li>• What an agricultural economist does</li> </ul> <p><b>Climate change and agriculture</b></p> <ul style="list-style-type: none"> <li>• Agricultural climate change data for Sierra Leone and elsewhere</li> <li>• Deforestation caused by agriculture, human activity, population pressure</li> <li>• The threat climate change poses to agriculture in Africa</li> </ul>
----------------------	---	--	--





## Teaching Syllabus

### Senior Secondary Level 1

Topic/Theme/Unit	Expected learning outcomes	Recommended teaching methods	Suggested resources	Assessment of learning outcomes
Topic 1: Introduction to Agricultural Science and the branches of Agricultural Science	By the end of this topic pupils will be able to: <ul style="list-style-type: none"> <li>Define agricultural science</li> <li>State the various branches of agricultural science.</li> </ul>	Brainstorming, direct instruction, questions and answers, fieldtrips, application of knowledge and understanding about Agricultural Science in practical examples.	Textbooks, internet, videos, films, slides, revision guides, school garden, flip charts.	Oral questions and answers, research, short-answer structured questions, formative assessments, summative assessments.
Topic 2: Major agricultural systems (subsistence and commercial)	By the end of this topic pupils will be able to: <ul style="list-style-type: none"> <li>Know the two major agricultural systems – subsistence and commercial</li> <li>Recognise and explain between the two systems.</li> </ul>	Revision guides, brainstorming, questions and answers, fieldtrips, application of knowledge about the different major agricultural farm systems.	Textbooks, internet, videos, films, slides, power point presentation, specific models, specific charts.	Questions and answers, research, formative assessment, summative assessment.
Topic 3: Agricultural ecology	By the end of this topic pupils will be able to: <ul style="list-style-type: none"> <li>Explain the term 'ecology' as it is applied to the field of agriculture</li> <li>State various habitats in which we can find various species.</li> </ul>	Revision guide, brainstorming, field trips, school yard and garden, applying understanding of agricultural ecology.	Textbooks, school garden, internet, videos, films, slides, PowerPoint presentation.	Questions and answers, short-answer structured questions, formative assessment, summative assessment.



Topic 4: Crop cultivation and harvesting	By the end of this topic pupils will be able to: <ul style="list-style-type: none"><li>• Explain what cultivation</li><li>• Describe what harvesting is</li><li>• Differentiate between cultivation and harvesting.</li><li>• Outline how the processes work (i.e., cultivation and harvesting).</li></ul>	Brainstorming, questions and answers, research, videos, films, slides, power point presentation, group work, using experts.	Textbooks, internet, locally available materials, school garden, application of knowledge and understanding.	Questions and answers, long essay questions, multiple-choice questions, group tasks, formative assessments, summative assessments.
--	--	---	--	--







## Senior Secondary Level 2

Topic/Theme/Unit	Expected learning outcomes	Recommended teaching methods	Suggested resources	Assessment of learning outcomes
Topic 5: Animal husbandry	By the end of this topic pupils will be able to explain: <ul style="list-style-type: none"> <li>• The processes involved in the breeding of farm animals</li> <li>• The basic process of farming of livestock</li> <li>• The process of caring for farm animals including cattle, dogs, sheep and horses by humans for advantage.</li> </ul>	Brainstorming, questions and answers, research, hands-on activities, group-work, fieldtrips, videos, films, slides, powerpoint presentation.	Textbooks, internet, locally available resources, school farm, videos, films, specific models, specific charts.	Oral questions and answers, multiple-choice questions, essay questions, formative assessments and summative assessments.
Topic 6: Post-harvesting challenges	By the end of this topic, pupils will be able to: <ul style="list-style-type: none"> <li>• Identify challenges in harvesting and offer some solutions.</li> </ul>	Brainstorming, research, questions and answers, fieldtrips, videos, films, slides, using experts, application of knowledge and understanding.	Textbooks, internet, videos clips, films and slides, PowerPoint presentation, school garden, LCD projector, whiteboards.	Questions and answers, group tasks, self-assessment, research, practical work, formative assessment, summative assessment.
Topic 7: Agricultural mechanisation	By the end of this topic pupils will be able to describe: <ul style="list-style-type: none"> <li>• The production, distribution and utilisation of a variety of tools, machinery</li> </ul>	Brainstorming, questions and answers, research, hands-on activities, group work, field trips, videos, films, slides.	Textbooks, internet, locally available resources, school farm, videos, specific models, specific charts.	Oral questions and answers, short answer questions, multiple choice questions, formative assessment, summative assessment.



	<p>and equipment for the development of agricultural land, planting, harvesting and processing</p> <ul style="list-style-type: none"> <li>• The main benefits of mechanisation in the agriculture industry</li> <li>• The common types of mechanisation.</li> </ul>			
Topic 8: Food processing and related processes and systems	<p>By the end of this topic pupils will be able to:</p> <ul style="list-style-type: none"> <li>• Discuss the various processes involved in food processing</li> <li>• State various equipment required for the production of food.</li> </ul>	Brainstorming, questions and answers, research, hands-on activities, practical application of knowledge and understanding about food processing, videos, films and slides, direct instruction.	Textbooks, internet, PowerPoint presentation, videos clips, films and slides, specific models, specific charts.	Questions and answers, research, open ended questions, formative assessments, summative assessments.



### Senior Secondary Level 3

Topic/Theme/Unit	Expected learning outcomes	Recommended teaching methods	Suggested resources	Assessment of learning outcomes
Topic 9: Selected ornamental, medicinal and ash crop cultivation in Sierra Leone	By the end of this topic pupils will be able to: <ul style="list-style-type: none"> <li>Identify plants that are ornamental, medicinal, and cash crops</li> <li>Describe how plants are cultivated in Sierra Leone.</li> </ul>	Brainstorming, application of knowledge and understanding, research, group work, field trips, hands-on activities, videos, films and slides.	Textbooks, internet, local available resources, videos clips, specific models, specific charts.	Oral questions and answers, multiple-choice questions, easy questions, formative assessment, summative assessment.
Topic 10: Forestry and sustainable forest management	By the end of this topic pupils will be able to: <ul style="list-style-type: none"> <li>State some forestry management practices needed to ensure healthy forests</li> <li>Explain how forests can be sustainably managed.</li> <li>Outline strategies for the sustainable use of forests</li> <li>State key elements of sustainable use and management of forests.</li> </ul>	Brainstorming, Q&As, research, hands-on activities, field trips, videos, films, slides, application of knowledge and understanding in practical work.	Textbooks, internet, local available resources, school garden, video clips, specific models, specific charts.	Questions and answers, oral, short answer questions, multiple choice questions, formative assessment, summative assessment.
Topic 11: Anatomy and physiology of farm animals	By the end of this topic pupils will be able to: <ul style="list-style-type: none"> <li>Outline the benefits of understanding the anatomy and</li> </ul>	Brainstorming, questions and answers, research, laboratory work, group work, field trips, videos, films and slides.	Textbooks, websites/internet, local available resources, video clips, specific models, specific charts.	Oral and written questions and answers, multiple-choice questions, formative assessment, summative assessment.



	<p>physiology of farm animals</p> <ul style="list-style-type: none"> <li>• Show basic understanding of the anatomy of farm animals</li> <li>• Explain the various uses of farm animals</li> <li>• State characteristics of some farm animals.</li> </ul>			
Topic 12: Agricultural economics and marketing systems	<p>By the end of this topic pupils will be able to:</p> <ul style="list-style-type: none"> <li>• Show they are familiar with and can apply basic principles of agricultural economics and marketing</li> <li>• Explain basic agricultural economics concepts</li> <li>• Outline the work and main functions of economists.</li> </ul>	Brainstorming, Q&A sessions, small-scale local research, practical activities, group work, field trips, videos, films and slides, application of knowledge and understanding in practical tasks.	Textbooks, websites audio clips, locally available resources, video clips, specific models and charts.	Oral and written questions and answers, multiple choice questions, research, formative assessment, summative assessment.
Topic 13: Climate change and agriculture	<p>By the end of this topic pupils will be able to:</p> <ul style="list-style-type: none"> <li>• Locate and explore agricultural climate change basic data for Sierra Leone, other countries and globally</li> <li>• Explain in simple terms the problem of deforestation caused</li> </ul>	Depending on facilities and resources available, share selections from the resources directly with pupils online, or present key points from the resources for information, explanation and to promote discussion and research.	<ul style="list-style-type: none"> <li>• Video synopsis of the climate change crisis <a href="#">Our Planet   How to save our planet</a></li> <li>• Video on deforestation <a href="#">Our Planet   The Amazon is Dying</a></li> <li>• Agriculture climate change data globally <a href="#">Agriculture Climate</a></li> </ul>	<p>Presentations by groups of their understanding of how climate change impacts on agriculture, how agriculture contributes to climate change, and how the problem can be turned to the positive.</p> <p>Review groups' farmer interview reports.</p>



	<p>by agriculture, other human activity and population pressure</p> <ul style="list-style-type: none"> <li>• Discuss with examples the threat climate change poses to agriculture in Africa,</li> </ul>	<p>Small groups investigate different aspects within the areas covered in the resources and report back to the full class.</p> <p>Pupils interview local farmers on their experience and beliefs of climate change and their strategies to respond to it.</p> <p>Pupils in groups research and map climate change data and crop yield data locally, identifying and using local knowledge and published data.</p> <p>Pupils propose and debate strategies to adopt to minimise climate change and to improve and protect agriculture for a sustainable future.</p>	<p><a href="https://climatewatchdata.org/">Change Data   Climate Watch (climatewatchdata.org)</a></p> <ul style="list-style-type: none"> <li>• Agriculture climate change data Sierra Leone <a href="https://climatewatchdata.org/">Agriculture Climate Change Data   Climate Watch (climatewatchdata.org)</a></li> <li>• Overview of challenges climate change poses to crop cultivation and livestock rearing in Africa, with links to more detailed documents <a href="https://www.ilri.org/news/climate-change-africa-what-will-it-mean-agriculture-and-food-security">Climate change in Africa: What will it mean for agriculture and food security?   International Livestock Research Institute (ilri.org)</a></li> </ul>	<p>Teams' performance in climate strategies debate.</p>
--	---	--	--	---

### Resources on climate change and agriculture: links as titles and as URL text

- Video synopsis of the climate change crisis: Our Planet | How to save our planet <https://www.ourplanet.com/en/video/how-to-save-our-planet/>
- Video on deforestation: Our Planet | The Amazon is Dying <https://www.ourplanet.com/en/video/the-amazon-is-dying/>
- Agriculture climate change data globally: Agriculture Climate Change Data | Climate Watch (climatewatchdata.org) <https://www.climatewatchdata.org/sectors/agriculture#drivers-of-emissions>
- Agriculture climate change data Sierra Leone: Agriculture Climate Change Data | Climate Watch (climatewatchdata.org) <https://www.climatewatchdata.org/sectors/agriculture?emissionsCountry=SLE#drivers-of-emissions>
- Overview of challenges climate change poses to crop cultivation and livestock rearing in Africa, with links to more detailed documents: Climate change in Africa: What will it mean for agriculture and food security? | International Livestock Research Institute (ilri.org) <https://www.ilri.org/news/climate-change-africa-what-will-it-mean-agriculture-and-food-security>